



Effective January 2022

REx-PN[®]

Test Plan for the Regulatory Exam – Practical Nurse



Mission Statements

NCSBN® empowers and supports nursing regulators in their mandate to protect the public.

(Mission Statement Adopted by Delegate Assembly 2019)

The British Columbia College of Nurses and Midwives (BCCNM) is the regulator for all nurses in British Columbia, including licensed practical nurses (LPNs), nurse practitioners (NPs), registered nurses (RNs) and registered psychiatric nurses (RPNs). BCCNM meets its public protection mandate by setting standards of practice, assessing nursing education programs in B.C., and addressing complaints about BCCNM registrants.

The College of Nurses of Ontario (CNO) is the governing body for Registered Nurses (RNs), Registered Practical Nurses (RPNs) and Nurse Practitioners (NPs) in Ontario. CNO's mission is to regulate nursing in the public interest. CNO fulfills its role by: establishing requirements for entry to practice; articulating and promoting practice standards; administering its Quality Assurance Program and enforcing standards of practice and conduct.

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**National Council of
State Boards of Nursing**

***British Columbia and Ontario Test Plan
for the Regulatory Examination –
Practical Nurse***

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I. Background

This Test Plan contains detailed information about the content areas tested in British Columbia's and Ontario's Regulatory Exam-Practical Nurse (REx-PN). Its purposes are to:

- guide candidates preparing to write the exam;
- direct REx-PN exam content writers in developing items (questions); and
- provide a way to classify exam items.

This booklet contains the:

- *2022 REx-PN Test Plan*: a comprehensive list of content for each category and subcategory of items;
- Information on testing requirements and sample exam items;
- A guide with sample case scenarios to provide nurse educators with hands-on experience in writing REx-PN-style test items; and
- Bibliography and Appendix.

British Columbia College of Nurses and Midwives (BCCNM) and the College of Nurses of Ontario (CNO) developed this document in collaboration with the National Council of State Boards of Nursing, Inc. (NCSBN). The test plan is reviewed and approved by the REx-PN® Examination Committee every five years. Multiple resources are used in this review, including:

- BCCNM Entry-Level Competencies for LPNs (BCCNM, 2019);
- CNO Entry-to-Practice Competencies for RPNs (CNO, 2019);
- 2019 REx-PN Practice Analysis (NCSBN, 2019); and
- expert opinions of the REx-PN Examination Committee (PNEC), NCSBN content staff, and nursing regulatory bodies to ensure that the test plan is consistent with nursing acts and legislation.

For up-to-date information on the REx-PN, visit the NCSBN website at rexpnp.com.

II. 2022 REx-PN® Test Plan

Purpose of the REx-PN

Entry into the practice of nursing is regulated in British Columbia by the BC College of Nurses and Midwives (BCCNM) and in Ontario by the College of Nurses of Ontario (CNO). To protect the public, BCCNM and CNO require those candidates registering to practice to meet specific requirements. These include passing a regulatory examination to assess whether the candidate has the knowledge, skills and judgment essential for an entry-level nurse to safely meet clients' needs within the first year of practice. BCCNM and CNO use the Regulatory Examination-Practical Nurse (REx-PN®) for this purpose.

The first step in developing the REx-PN involved collecting data on the current practice of entry-level practical nurses (*2019 REx-PN Practice Analysis*, NCSBN®, 2019). A total of 6,625 newly registered PNs (762 LPNs in BC and 5,863 RPNs in Ontario) were asked about the frequency and importance of performing nursing care activities. These activities were analyzed based on the following:

- how often each is performed by PNs
- the impact on client safety
- the client care settings where these activities are performed

This practice analysis was then used to develop a framework for entry-level nursing practice that incorporates specific client needs and processes fundamental to the practice of nursing.

Next, this REx-PN Test Plan — a concise summary of the content and scope of the exam — was developed as a guide in selecting the content and behaviours to be tested. It is also a guide for the candidate to use in preparing to write the exam.

Assumptions

Certain assumptions about people and nursing are integral to the content being tested on the exam, including:

- People are unique; live according to their own set of values, motives and lifestyles; and are able to function in society to varying capacities.
- People have the right to make decisions regarding their health care needs and to participate in meeting those needs. The nurse-client relationship is the foundation of nursing practice across all practice settings. It is always client focused, based on clients' care needs and maintains professional boundaries.
- A client's right to safe, competent and ethical care is of the highest importance.
- Nurses advocate for and educate their clients.
- PNs must have the knowledge, skills and judgment (competencies) required to provide clients with safe, competent, ethical and compassionate care.
- Graduates of PN education programs achieve the competencies required for entry-level practice

through a variety of learning experiences including: theory courses, lab, simulation, and practice placements.

- PNs provide care across the life span and continuum of clients' care as members of a health care team. Client care is consistent with the client's unique cultural and spiritual preferences, and adheres to provincial standards, regulations, legislation and employer policies.
- Nursing is a dynamic, continually evolving discipline. PNs must think critically to integrate complex knowledge, skills, technologies and client care activities into evidence-based nursing practice.
- The goals of nursing in client care are:
 - preventing illness and potential complications.
 - protecting, promoting, restoring and facilitating comfort, health and dignity in dying.

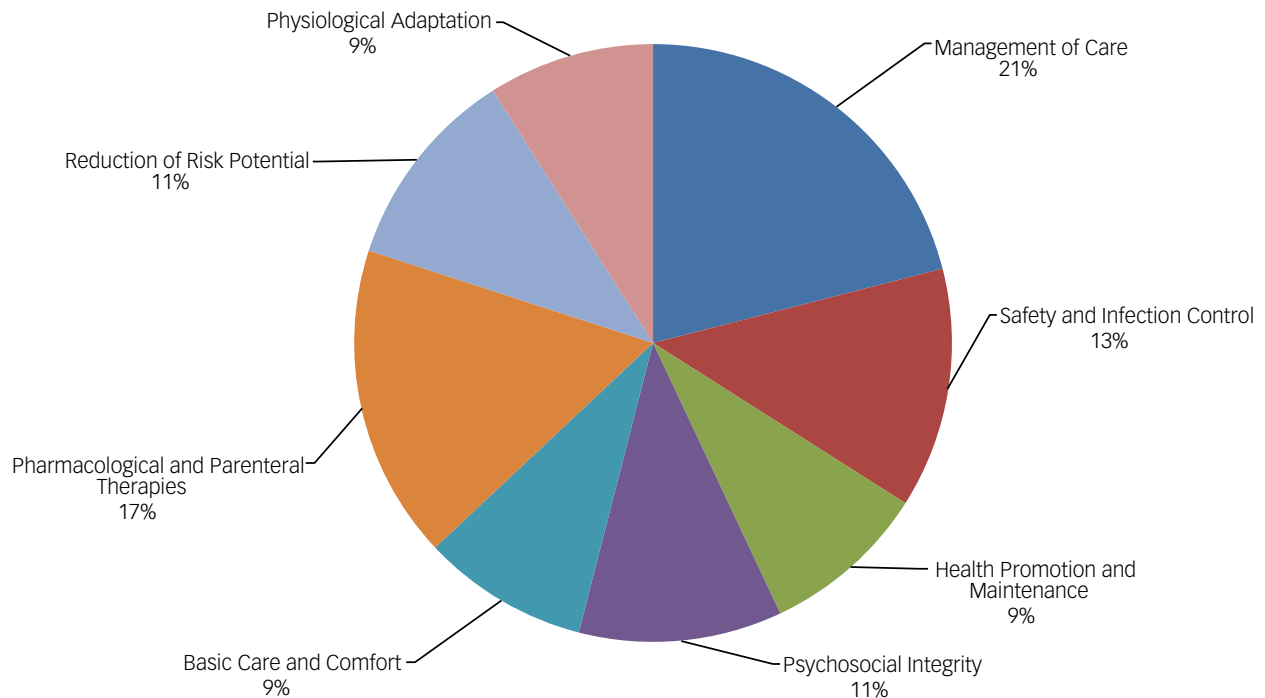
Test Plan Structure Based on Client Care Needs

Client care needs are the framework for the REx-PN. They provide a universal structure for defining entry-level nursing actions and competencies, while focusing on clients in all settings.

The REx-PN Test Plan is organized as follows, with a percentage of test items assigned to each Client Needs category and subcategory. They are based on the results of the *2019 REx-PN Practice Analysis* (NCSBN, 2019), and expert review from members of the REx-PN Examination Committee.

Client Needs	Percentage of Items (questions) from each Category/Subcategory
Safe and Effective Care Environment	
■ Management of Care	18–24%
■ Safety and Infection Control	10–16%
Health Promotion and Maintenance	6–12%
Psychosocial Integrity	8–14%
Physiological Integrity	
■ Basic Care and Comfort	6–12%
■ Pharmacological and Parenteral Therapies	14–20%
■ Reduction of Risk Potential	8–14%
■ Physiological Adaptation	6–12%

Distribution of Content for the REx-PN™ Test Plan



REx-PN is administered adaptively in varying lengths to target a candidate's specific ability. To accommodate this, the distribution of content in individual examinations may differ up to $\pm 3\%$ in each category.

Integrated Processes

The following processes are fundamental to the practice of nursing and are integrated throughout the Client Needs categories and subcategories:

- *Nursing Process* – using a scientific, clinical reasoning approach to client care based on assessment, analysis, planning, implementation and evaluation
- *Caring* – interacting with clients in an atmosphere of mutual respect and trust. In this collaborative environment, the nurse provides encouragement, hope, support and compassion to help achieve the client's desired outcomes
- *Communication and Documentation* – engaging in verbal and nonverbal interactions with the nurse and the client, the client's significant others, and members of the health care team. Events and activities associated with client care are recorded in written and/or electronic records that adhere to the standards of practice and accountability in providing care

- *Teaching/Learning* – empowering the client to make autonomous decisions to prevent illness, promote health and well-being, and foster lasting changes in behaviour
- *Culture and Spirituality* – interacting with the client (individual, family or group, including significant others and populations) while considering the client's self-identified, unique and individual care preferences; the applicable standard of care; and legal considerations
- *Client Safety* – creating a safe environment for the client by continually assessing, preventing, managing and treating unsafe and potentially unsafe acts within the care context

Overview of Content

The activity statements used in the *2019 REX-PN Practice Analysis* (NCSBN, 2019) preface each of the eight content categories/subcategories, and are identified throughout the test plan by an asterisk (*). NCSBN performs an analysis of those activities used frequently and identified as important by entry-level nurses to ensure client safety. The practice analysis provides data to support the REX-PN as a reliable, valid measure of competent, entry-level nursing practice. The practice analysis is conducted every five years. Findings from the *2019 REX-PN Practice Analysis* can be found at rexpnp.com.

The practice analysis report is used in the development of the *REX-PN® Test Plan*. All task statements in the *2022 REX-PN Test Plan* require the nurse to apply the fundamental principles of clinical decision-making and critical thinking to nursing practice. The test plan also assumes that the nurse integrates concepts from social, biological and physical sciences.

Safe and Effective Care Environment

The nurse promotes achievement of client outcomes by providing and directing nursing care that enhances the care delivery setting in order to protect clients and health care personnel.

Management of Care

- **Management of Care** – the nurse provides and directs nursing care that enhances the care delivery setting to protect the client and health care personnel.

MANAGEMENT OF CARE
Related Activity Statements from the 2019 REx-PN Practice Analysis
<ul style="list-style-type: none"> ■ Integrate advance directives into client plan of care ■ Advocate for client rights and needs ■ Delegate and supervise care of client provided by others (e.g., unregulated care providers) ■ Organize workload to manage time effectively ■ Initiate, evaluate and update client care plan ■ Provide education to clients and staff about client rights and responsibilities ■ Involve client in care decision making ■ Collaborate with interprofessional team members when providing client care ■ Provides support and facilitates learning to new staff and health care students ■ Participates in conflict resolution ■ Maintain client confidentiality and privacy ■ Provide and receive hand-off of care (report) on assigned clients ■ Use approved abbreviations and standard terminology when documenting care ■ Perform procedures necessary to safely admit, transfer and/or discharge a client ■ Prioritize the delivery of client care ■ Recognize ethical dilemmas and take appropriate action ■ Practice in a manner consistent with a code of ethics for nurses ■ Assess and develop professional competence (e.g., self-reflection, professional activities) ■ Obtain consent for nursing care and procedures and provide appropriate client education ■ Receive and transcribe health care provider orders ■ Use resources to enhance client care (e.g., evidence-based research, information technology, policies and procedures) ■ Provide care within the legislated scope of practice ■ Recognize limitations of one's competence and seek assistance when needed ■ Report client information as required by law (e.g., abuse/neglect and communicable disease) ■ Respond to the unsafe practice of a health care provider (e.g., intervene, report) ■ Participate in performance improvement projects and quality improvement processes ■ Assess the need for referrals/consults and obtain necessary orders

Related content includes, but is **not limited** to:

Advance Directives/Self-Determination/Life Planning

■ Integrate advance directives into client plan of care*

- Assess client and/or staff member knowledge of legally documented advance directives
- Provide client with information about advance directives, self-care determination, life planning

Advocacy

■ Advocate for client rights and needs*

- Discuss identified treatment options with client and respect their decisions
- Provide information on advocacy to staff members
- Act in the role of client advocate
- Use advocacy resources appropriately (e.g., social worker, chain of command, interpreter)

Assignment, Delegation and Supervision

■ Delegate and supervise care of client provided by others (e.g., unregulated care providers)*

- Identify tasks for assignment or delegation based on client needs
- Delegate and assign appropriate task, based on client's needs, to personnel with competency to perform task
- Communicate tasks to be completed and report client concerns immediately
- Evaluate delegated tasks to ensure correct completion of activity
- Evaluate ability of staff members to perform assigned tasks considering personnel's allowable tasks/duties, competency and ability to use sound judgment and decision-making

■ Organize workload to manage time effectively*

- Evaluate effectiveness of staff members' time management skills

Case Management

■ Initiate, evaluate and update client plan of care*

- Plan individualized care for client based on need (e.g., client diagnosis, self-care ability, prescribed treatments)
- Explore resources available to assist the client with achieving or maintaining independence
- Assess the client's need for materials and equipment (e.g., oxygen, suction machine, wound care supplies)
- Provide client with information on discharge procedures to home or community setting

Client Rights

- **Provide education to clients and staff about client rights and responsibilities***
 - Discuss treatment options/decisions with client
 - Evaluate client/staff understanding of client rights
- **Involve client in care decision-making***
 - Recognize the client's right to informed consent including the right to refuse treatments/procedures

Collaboration with Interprofessional Team

- **Collaborate with interprofessional team members when providing client care***
 - Identify the need for interdisciplinary conferences
 - Identify significant information to report to other interprofessional teams (e.g., health care provider, pharmacist, social worker, respiratory therapist)
 - Review plan of care to ensure continuity across interprofessional teams

Concepts of Management

- **Provides support and facilitates learning to new staff and health care students***
 - Serve as resource person to other staff
 - Identify roles/responsibilities of health care team members
 - Evaluate management outcomes
- **Participates in conflict resolution***
 - Plan overall strategies to address client problems
 - Act as liaison between client and others (e.g., coordinate or manage care)

Confidentiality/Information Security

- **Maintain client confidentiality and privacy***
 - Assess staff member and client understanding of confidentiality requirements
 - Intervene appropriately when confidentiality has been breached by staff members

Continuity of Care

- **Provide and receive hand-off of care (report) on assigned clients***
 - Use documents to record and communicate client information (e.g., medical record, referral/transfer form)
 - Follow up on unresolved issues regarding client care (e.g., laboratory results, client requests)
- **Use approved abbreviations and standard terminology when documenting care***

- **Perform procedures necessary to safely admit, transfer and/or discharge a client***

Establishing Priorities

- **Prioritize the delivery of client care***
 - Apply nursing knowledge of environment and pathophysiology when establishing priorities for interventions with multiple clients
 - Evaluate plans of care for multiple clients and revise plans of care as needed

Ethical Practice

- **Recognize ethical dilemmas and take appropriate action***
 - Inform client/staff members of ethical issues affecting client care
 - Evaluate outcomes of interventions to promote ethical practice
- **Practice in a manner consistent with a code of ethics for nurses***
- **Assess and develop professional competence (e.g., self-reflection, professional activities) ***

Informed Consent

- **Obtain consent for nursing care and procedures and provide appropriate client education***
 - Identify appropriate person to provide informed consent for client
 - Provide written materials in client's spoken language, when possible
 - Describe components of informed consent
 - Participate in obtaining informed consent

Information Technology

- **Receive and transcribe health care provider orders***
 - Enter computer documentation accurately, completely and in a timely manner
- **Use resources to enhance client care (e.g., evidence-based research, information technology, policies and procedures)***

Legal Rights and Responsibilities

- **Provide care within the legislated scope of practice***
 - Apply knowledge of facility policy and relevant legislation when accessing client records
 - Review legal considerations prior to agreeing to serve as an interpreter for staff or primary health care provider
 - Identify legal issues affecting the client (e.g., refusing treatment)
 - Educate client/staff on legal issues

- **Recognize limitations of one's competence and seek assistance when needed***
- **Report client information as required by law (e.g., abuse/neglect and communicable disease)***
- **Respond to the unsafe practice of a health care provider (e.g., intervene, report)***

Quality Improvement

- **Participate in performance improvement projects and quality improvement processes***
 - Identify quality improvement opportunities
 - Report identified client care issues/problems to appropriate personnel
 - Use research and other references for quality improvement actions
 - Evaluate the impact of quality improvement measures on client care and resource use

Referrals

- **Assess the need for referrals/consults and obtain necessary orders***
 - Assess the need to refer clients for assistance with actual or potential problems (e.g., physical therapy, speech therapy)
 - Identify community resources for the client (e.g., respite care, social services, shelters)
 - Identify which documents to include when referring a client (e.g. medical record, referral form)

Sample Item
<p>The nurse has received the following information about assigned clients. The nurse should first assess the client with</p> <ol style="list-style-type: none"> atrial fibrillation who has an irregular pulse of 90 pericarditis who has a temperature of 37.8° C peripheral vascular disease (PVD) who has a capillary refill time of 4 seconds end-stage renal disease (ESRD) who has a serum potassium level of 6.0 mmol/L (key)

(**Key**) is used throughout this document to denote the correct answer(s) for the exam item.

Safety and Infection Control

- **Safety and Infection Control** – the nurse protects clients and health care personnel from health and environmental hazards.

SAFETY AND INFECTION CONTROL	
Related Activity Statements from the 2019 REX-PN Practice Analysis	
<ul style="list-style-type: none"> ■ Assess client for allergies and sensitivities and intervene as needed ■ Promote and educate client on safety and injury prevention (e.g., falls, electrical hazards) ■ Ensure proper identification of client when providing care ■ Verify appropriateness and accuracy of health care provider order ■ Participate in internal/external emergency response plans ■ Use ergonomic principles when providing care (e.g., safe client handling, proper lifting) ■ Follow procedures for handling biohazardous and hazardous materials ■ Identify practice errors/near misses and intervene ■ Safely and appropriately use equipment ■ Adhere to security procedures (e.g., newborn nursery security, controlled access) ■ Apply principles of infection control (e.g., hand hygiene, aseptic technique, universal precautions) ■ Educate client and staff regarding infection control measures ■ Follow policies and procedures for use of restraints 	

Related content includes, but is **not limited** to:

Accident/Error/Injury Prevention

- **Assess client for allergies and sensitivities and intervene as needed***
- **Promote and educate client on safety and injury prevention (e.g., falls, electrical hazards)***
 - Determine client/staff member knowledge of safety procedures
 - Identify factors that influence accident/injury prevention (e.g., age, developmental stage, lifestyle, mental status)
 - Identify deficits that may impede client safety (e.g., visual, hearing, sensory/perceptual)
 - Identify and verify orders for treatments that may contribute to an accident or injury (does not include medication)
 - Identify and facilitate correct use of infant and child car seats

*Activity Statements used in the 2019 British Columbia and Ontario PN Practice Analysis

- Provide client with appropriate method to signal staff members
- Implement seizure precautions for at-risk clients
- Make appropriate room assignments for cognitively impaired clients
- **Ensure proper identification of client when providing care***
- **Verify appropriateness and accuracy of health care provider order***

Emergency Response Plan

- **Participate in internal/external emergency response plans***
 - Determine which client(s) to recommend for discharge in a disaster situation
 - Identify nursing roles in disaster planning
 - Use clinical decision-making/critical thinking for emergency response plan
 - Participate in disaster planning activities/drills
 - Apply principles of triage and evacuation procedures/protocols

Ergonomic Principles

- **Use ergonomic principles when providing care (e.g., safe client handling, proper lifting)***
 - Assess client ability to balance, transfer and use assistive devices prior to planning care (e.g., crutches, walker)
 - Review necessary modifications with client to reduce stress on specific muscle or skeletal groups (e.g., frequent changing of position, routine stretching of the shoulders, neck, arms, hands, fingers)

Handling Hazardous and Infectious Materials

- **Follow procedures for handling biohazardous and hazardous materials***
 - Identify biohazardous, flammable and infectious materials
 - Demonstrate safe handling techniques to staff and client
 - Ensure safe implementation of internal radiation therapy
- **Home Safety**
 - Assess need for client home modifications (e.g., lighting, handrails, kitchen safety)
 - Apply knowledge of client pathophysiology to home safety interventions
 - Encourage client to use protective equipment when using devices that can cause injury
 - Evaluate client care environment for fire/environmental hazards

Reporting of Incident/Event/Irregular Occurrence/Variance**■ Identify practice errors/near misses and intervene***

- Identify need/situation where reporting of incident/event/irregular occurrence/variance is appropriate
- Evaluate response to error/event/occurrence

Safe Use of Equipment**■ Safely and appropriately use equipment***

- Inspect equipment for safety hazards (e.g., frayed electrical cords, loose/missing parts)
- Teach client about the safe use of equipment needed for health care
- Remove malfunctioning equipment from client care area and report the problem to appropriate personnel

Security Plan**■ Adhere to security procedures (e.g., newborn nursery security, controlled access)***

- Use clinical decision making/critical thinking in situations related to security planning

Standard Precautions/Transmission-Based Precautions/Surgical Asepsis**■ Apply principles of infection control (e.g., hand hygiene, aseptic technique, universal precautions)***

- Follow correct policy and procedures when reporting a client with a communicable disease
- Use appropriate precautions for immunocompromised clients
- Use appropriate technique to set up a sterile field/maintain asepsis
- Identify signs, symptoms and incubation periods of infectious diseases

■ Educate client and staff regarding infection control measures*

- Evaluate infection control precautions implemented by staff members
- Evaluate whether aseptic technique is performed correctly

Use of Restraints/Safety Devices**■ Follow policies and procedures for use of restraints***

- Assess appropriateness of the type of restraint/safety device used
- Monitor/evaluate client response to restraints/safety device

Sample Item

The nurse is planning a staff education program about Clostridium difficile infection. Which of the following information should the nurse include?

1. "Clients who have Clostridium difficile infections should be placed on droplet precautions."
2. "After recovery from Clostridium difficile infections, clients are immune from a recurrence of the infection."
3. "Items used in caring for clients who have Clostridium difficile infections should be cleaned with a household bleach solution." **(key)**
4. "After caring for clients who have Clostridium difficile infections, the nurse should cleanse the nurse's hands with an alcohol-based hand rub."

Health Promotion and Maintenance

- **Health Promotion and Maintenance** – the nurse provides and directs nursing care of the client that incorporates knowledge of expected growth and development; prevention and early detection of health problems, and strategies to achieve optimal health.

<p style="text-align: center;">HEALTH PROMOTION AND MAINTENANCE</p> <p style="text-align: center;">Related Activity Statements from the <i>2019 REx-PN Practice Analysis</i></p>
<ul style="list-style-type: none"> ■ Provide care and education for the newborn, infant, and toddler client from birth through 2 years ■ Provide care and education for the preschool, school age and adolescent client ages 3 through 17 years ■ Provide care and education for the adult client ages 18 through 64 years ■ Provide care and education for the adult client ages 65 years and over ■ Provide prenatal care and education ■ Provide care and education to an antepartum client ■ Provide care and education to a client in labour ■ Provide postpartum care and education ■ Identify and facilitate access to community resources for clients ■ Assess client's growth and development throughout the lifespan ■ Identify barriers to communication ■ Assess client about determinants of health and implement interventions ■ Assess client's readiness to learn, learning preferences and barriers to learning ■ Plan and/or participate in health care activities for clients in community setting ■ Educate client about health promotion and maintenance recommendations (e.g., physician visits, immunizations) ■ Perform preventative screening assessments (e.g., vision, hearing, cognitive, nutrition) ■ Educate client about prevention and treatment of high-risk health behaviours (e.g., smoking cessation, safe sexual practice, needle exchange) ■ Assess client ability to manage care in home environment and plan care accordingly ■ Perform comprehensive health assessments

Related content includes, but is **not limited** to:

Aging Process

- **Provide care and education for the newborn, infant and toddler client from birth through 2 years***
- **Provide care and education for the preschool, school age and adolescent client ages 3 through 17 years***
- **Provide care and education for the adult client ages 18 through 64 years***
- **Provide care and education for the adult client ages 65 years and over***
 - Assess client's reactions to expected age-related changes

Ante/Intra/Postpartum and Newborn Care

- **Provide prenatal care and education***
 - Calculate expected delivery date
 - Check fetal heart rate during routine prenatal exams
 - Identify signs of potential prenatal complications
- **Provide care and education to an antepartum client***
 - Assess client's psychosocial response to pregnancy (e.g., support systems, perception of pregnancy, coping mechanisms)
 - Recognize cultural differences in childbearing practices
- **Provide care and education to a client in labour***
 - Identify, assess and refer a client in labour
- **Provide postpartum care and education***
 - Assess client for symptoms of postpartum complications (e.g., hemorrhage, infection)
 - Assist client with performing/learning newborn care (e.g. feeding)
 - Provide discharge instructions (e.g., postpartum and newborn care)
 - Evaluate client's ability to care for the newborn

Community Resources

- **Identify and facilitate access to community resources for clients***
 - Assist and/or participate in community health education
 - Reinforce teaching with client about health risks based on family, population, and/or community characteristics

Developmental Stages and Transitions

■ Assess client's growth and development throughout the lifespan*

- Identify expected physical, cognitive and psychosocial stages of development
- Identify expected body image changes associated with client developmental age (e.g., aging, pregnancy)
- Compare client development to expected age/developmental stage and report any deviations
- Assess impact of change on family system (e.g., one-parent family, divorce, ill family member)
- Recognize cultural and religious influences that may impact family functioning
- Assist client to cope with life transitions (e.g., attachment to newborn, parenting, puberty, retirement)
- Modify approaches to care in accordance with client developmental stage (use age appropriate explanations of procedures and treatments)
- Provide education to client/staff members about expected age-related changes and age-specific growth and development (e.g., developmental stages)
- Evaluate client's achievement of expected developmental level (e.g., developmental milestones)
- Evaluate impact of expected body image changes on client and family

■ Identify barriers to communication*

Health Promotion/Disease Prevention

■ Assess client about determinants of health and implement interventions*

- Identify risk factors for disease/illness (e.g., age, gender, ethnicity, lifestyle)
- Integrate complementary therapies into health promotion activities for the well client
- Provide follow-up to the client following participation in health promotion program (e.g., diet counselling)
- Assist client in maintaining an optimum level of health

■ Assess client's readiness to learn, learning preferences and barriers to learning*

- Evaluate client understanding of health promotion behaviours/activities (e.g., weight control, exercise actions)
- Educate client on actions to promote/maintain health and prevent disease (e.g., smoking cessation, diet, weight loss)

- **Plan and/or participate in health care activities for clients in community setting***
- **Educate client about health promotion and maintenance recommendations (e.g., physician visits, immunizations)***
 - Inform client of appropriate immunization schedules

Health Screening

- **Perform preventative screening assessments (e.g., vision, hearing, cognitive, nutrition)***
 - Apply knowledge of pathophysiology to health screening
 - Identify risk factors linked to ethnicity (e.g., hypertension, diabetes)
 - Perform health history/health and risk assessments (e.g., lifestyle, family and genetic history)
 - Use appropriate procedure and interviewing techniques when taking the client health history

High-Risk Behaviours

- **Educate client about prevention and treatment of high-risk health behaviours (e.g., smoking cessation, safe sexual practice, needle exchange)***
 - Assess client lifestyle practice risks that may impact health (e.g., excessive sun exposure, lack of regular exercise)
 - Assist client to identify behaviours/risks that may impact health

Lifestyle Choices

- Assess client's lifestyle choices
- Assess client's attitudes/perceptions on sexuality
- Assess client's need/desire for contraception
- Identify contraindications to chosen contraceptive method (e.g., smoking, compliance, medical conditions)
- Identify expected outcomes for family planning methods
- Recognize client who is socially or environmentally isolated
- Educate client on sexuality changes (e.g., family planning, safe sexual practices, menopause, impotence)
- Evaluate client alternative or homeopathic health care practices (e.g., massage therapy, acupuncture, herbal medicine and minerals)

Self-Care

- **Assess client ability to manage care in home environment and plan care accordingly***

- Consider client self-care needs before developing or revising care plan
- Assist primary caregivers working with the client to meet self-care goals
- Identify family structures and roles of family members (e.g., nuclear, blended, adoptive)

Techniques of Physical and Psychosocial Assessment

■ Perform comprehensive health assessments*

- Apply knowledge of nursing procedures and psychomotor skills to techniques of physical assessment
- Apply knowledge of psychosocial assessment techniques
- Choose physical assessment equipment and technique appropriate for the client (e.g., age of client, measurement of vital signs)

Sample Item
<p>The nurse is teaching about recommended lifestyle modifications for a client who is at risk of hypertension. Which of the following information should the nurse include?</p> <ol style="list-style-type: none"> 1. "Maintain a body mass index (BMI) of 25 to 30." 2. "Reduce daily cigarette smoking to one-half pack." 3. "Decrease salt intake by consuming only processed food products." 4. "Perform aerobic physical activity for at least 30 minutes daily for 5 days per week." (key)

Psychosocial Integrity

- **Psychosocial Integrity** – the nurse provides and directs nursing care that promotes and supports the emotional, mental and social well-being of the client experiencing stressful events, as well as clients with acute or chronic mental illness.

PSYCHOSOCIAL INTEGRITY
Related Activity Statements from the 2019 REx-PN Practice Analysis
<ul style="list-style-type: none"> ■ Assess client for abuse or neglect and intervene ■ Manage and support clients with emotional/behavioural issues ■ Assess client's ability to cope with life changes and provide support ■ Assist client to cope/adapt to stressful events and changes in health status ■ Assess the potential for violence/aggression and use safety precautions ■ Incorporate client cultural practices and beliefs when planning and providing care ■ Incorporate the use of Indigenous health knowledge and practices when planning and providing care to Indigenous clients ■ Provide end-of-life care to clients ■ Assess family dynamics to determine care plan ■ Provide care for a client experiencing grief or loss ■ Provide care of the cognitively impaired client ■ Provide care and support to clients with acute and chronic mental health disorders ■ Explore reasons for client non-adherence with treatment plan ■ Provide care for a client experiencing sensory and/or cognitive distortions ■ Recognize client stressors that affect care ■ Recognize nonverbal cues to physical and/or psychological stressors ■ Recognize health care provider stressors that affect client care ■ Assess client for substance misuse, dependency, withdrawal or toxicities, and intervene ■ Use therapeutic communication techniques

Related content includes, but is **not limited** to:

Abuse/Neglect

- **Assess client for abuse or neglect and intervene***
 - Identify risk factors for domestic, child, elder abuse/neglect and sexual abuse
 - Plan interventions for victims/suspected victims of abuse
 - Counsel victims/suspected victims of abuse and their families on coping strategies
 - Provide a safe environment for the abused/neglected client
 - Evaluate client response to interventions

Behavioural Interventions

■ Manage and support clients with emotional/behavioural issues*

- Assess client's appearance, mood and psychomotor behaviour and identify/respond to inappropriate/abnormal behaviour
- Assist client with achieving and maintaining self-control of behaviour (e.g., behaviour modification)
- Assist client to develop and use strategies to decrease anxiety
- Orient the client to reality
- Participate in group sessions (e.g., support groups)
- Evaluate client's response to treatment plan

Coping Mechanisms

■ Assess client's ability to cope with life changes and provide support*

- Assess client's support systems and available resources
- Assess client's ability to adapt to temporary/permanent role changes
- Assess client's reaction to a diagnosis of acute or chronic mental illness (e.g., rationalization, hopefulness, anger)
- Evaluate the constructive use of defense mechanisms by a client
- Evaluate whether the client has successfully adapted to situational role changes (e.g., accept dependency on others)

■ Assist client to cope/adapt to stressful events and changes in health status*

- Identify situations which may necessitate role changes for a client (e.g., spouse with chronic illness, death of parent)
- Provide support to the client with unexpected altered body image (e.g., alopecia, amputation, burns)

Crisis Intervention

■ Assess the potential for violence/aggression and use safety precautions*

- Identify the client in crisis
- Use crisis intervention techniques to assist the client in coping
- Apply knowledge of client psychopathology to crisis intervention
- Guide the client to resources for recovery from crisis (e.g., social supports)

Cultural Awareness/Cultural Influences on Health

- **Incorporate client cultural practices and beliefs when planning and providing care***
 - Evaluate and document how client language needs were met
 - Assess the importance of client culture/ethnicity when planning/providing/evaluating care
 - Recognize cultural issues that may impact the client's understanding/acceptance of psychiatric diagnosis
 - Respect cultural background/practices of the client
- **Incorporate the use of Indigenous health knowledge and practices when planning and providing care to Indigenous clients***

End-of-Life Care

- **Provide end-of-life care to clients***
 - Assess client's ability to cope with end-of-life interventions
 - Identify end-of-life needs of the client (e.g., financial concerns, fear, loss of control, role changes)
 - Recognize the need for and provide psychosocial support to the family/caregiver
 - Assist client in resolution of end-of-life issues

Family Dynamics

- **Assess family dynamics to determine care plan***
 - Assess barriers/stressors that impact family functioning (e.g., meeting client care needs, divorce)
 - Assess parental techniques related to discipline
 - Encourage the client's participation in group/family therapy
 - Assist client to integrate new members into family structure (e.g., new infant, blended family)
 - Evaluate resources available to assist family functioning

Grief and Loss

- **Provide care for a client experiencing grief or loss***
 - Support the client in anticipatory grieving
 - Inform the client of expected reactions to grief and loss (e.g., denial, fear)
 - Provide the client with resources to adjust to loss/bereavement (e.g., individual counseling, support groups)
 - Evaluate the client's coping and fears related to grief and loss

Mental Health Concepts

- **Provide care of the cognitively impaired client***
 - Identify signs and symptoms of impaired cognition (e.g., memory loss, poor hygiene)
 - Recognize signs and symptoms of acute and chronic mental illness (e.g., schizophrenia, depression, bipolar disorder)
- **Provide care and support to clients with acute and chronic mental health disorders***
 - Recognize client use of defense mechanisms
 - Assess client for alterations in mood, judgment, cognition and reasoning
 - Apply knowledge of client psychopathology to mental health concepts applied in individual/group/family therapy
 - Evaluate client's abnormal response to the aging process (e.g., depression)
- **Explore reasons for client non-adherence with treatment plan***
 - Assess client adherence to treatment plan
 - Evaluate client's ability to adhere to treatment plan

Religious and Spiritual Influences on Health

- Identify the emotional problems of client or client needs that are related to religious/spiritual beliefs (e.g., spiritual distress, conflict between recommended treatment and beliefs)
- Assess and plan interventions that meet the client's emotional and spiritual needs
- Evaluate whether the client's religious/spiritual needs are met

Sensory/Perceptual Alterations

- **Provide care for a client experiencing sensory and/or cognitive distortions***
 - Identify time, place, and stimuli surrounding the appearance of symptoms
 - Assist client to develop strategies for dealing with sensory and thought disturbances
 - Provide care in a nonthreatening and nonjudgmental manner
 - Provide reality-based diversions

Stress Management

- **Recognize client stressors that affect care***
 - Provide information to client on stress management techniques (e.g., relaxation techniques, exercise, meditation)
 - Evaluate client's use of stress management techniques
- **Recognize nonverbal cues to physical and/or psychological stressors***
- **Recognize health care provider stressors that affect client care***

Substance Use and Other Disorders and Dependencies**■ Assess client for substance misuse, dependency, withdrawal or toxicities, and intervene***

- Assess client's reactions to the diagnosis/treatment of substance-related disorder
- Plan and provide care to clients experiencing substance-related withdrawal or toxicity (e.g., nicotine, opioid, sedative)
- Educate client on substance use diagnosis and treatment plan
- Provide care and/or support for a client with non-substance-related dependencies (e.g., gambling, sexual addiction)
- Provide symptom management for clients experiencing withdrawal or toxicity
- Encourage client to participate in support groups
- Evaluate client's response to a treatment plan and revise as needed

Support Systems

- Assist family to plan care for client with impaired cognition (e.g., Alzheimer's disease)
- Encourage client's involvement in the health care decision-making process
- Evaluate client's feelings about the diagnosis/treatment plan

Therapeutic Communication**■ Use therapeutic communication techniques***

- Assess verbal and nonverbal client communication needs
- Respect the client's personal values and beliefs
- Allow time to communicate with the client
- Encourage client to verbalize feelings (e.g., fear, discomfort)
- Evaluate the effectiveness of communications with the client

Therapeutic Environment

- Identify external factors that may interfere with client recovery (e.g., stressors, family dynamics)
- Make client room assignments that support the therapeutic milieu

Sample Item

The nurse is planning care for a client with moderate Alzheimer's disease (AD) who is experiencing difficulty meeting basic physiologic needs. Which of the following interventions should the nurse include in the client's plan of care? **Select all that apply.**

1. Weigh the client monthly.
2. Monitor the client's food and fluid intake. **(key)**
3. Provide the client with a wide range of choices at mealtimes.
4. Offer the client finger foods that can be taken away from the table. **(key)**
5. Minimize the client's exposure to noise and distraction at mealtimes. **(key)**

Physiological Integrity

The nurse promotes physical health and wellness by providing care and comfort, reducing client risk potential and managing health alterations.

Basic Care and Comfort

- **Basic Care and Comfort** – the nurse provides comfort and assistance in the performance of activities of daily living.

BASIC CARE AND COMFORT	
Related Activity Statements from the 2019 REX-PN Practice Analysis	
<ul style="list-style-type: none"> ■ Educate and assist client to compensate for a physical or sensory impairment (e.g., assistive devices, positioning, compensatory techniques) ■ Assess client elimination and intervene ■ Apply, maintain or remove orthopedic devices (e.g., traction, splints, braces) ■ Perform skin assessment and/or implement measures to maintain skin integrity ■ Implement measures to promote circulation and venous return (e.g., active or passive range of motion, anti-embolic stockings, sequential compression devices, positioning and mobilization) ■ Provide non-pharmacological comfort measures ■ Assess client for pain and intervene ■ Perform irrigations (e.g., bladder, wound, eye) ■ Identify use of client alternative therapies and potential contraindications (e.g., aromatherapy, acupressure, supplements) ■ Monitor the client's nutritional status ■ Provide enteral nutrition ■ Assess and maintain site care for client with enteral tubes ■ Assess client intake and output and intervene ■ Assess client ability to perform activities of daily living and intervene ■ Perform postmortem care ■ Assess client sleep/rest pattern and intervene 	

Related content includes, but is **not limited** to:

Assistive Devices

- **Educate and assist client to compensate for a physical or sensory impairment (e.g., assistive devices, positioning, compensatory techniques)***
 - Assess the client for actual/potential difficulty with communication and speech/vision/hearing problems
 - Assess the client's use of assistive devices (e.g., prosthetic limbs, hearing aid)

- Manage the client who uses assistive devices or prostheses (e.g., eating utensils, telecommunication devices, dentures)
- Evaluate the correct use of assistive devices by the client

Elimination

■ Assess client elimination and intervene*

- Provide skin care to clients who are incontinent (e.g., wash frequently, barrier creams/ ointments)
- Use alternative methods to promote voiding
- Evaluate whether the client's ability to eliminate is restored/maintained

Mobility/Immobility

■ Apply, maintain, or remove orthopedic devices (e.g., traction, splints, braces)*

- Assess the client for mobility, gait, strength and motor skills
- Apply knowledge of nursing procedures and psychomotor skills when providing care to clients with immobility
- Maintain the client's correct body alignment
- Maintain/correct the adjustment of client's traction device (e.g., external fixation device, halo traction, skeletal traction)
- Evaluate the client's response to interventions to prevent complications from immobility

■ Perform skin assessment and/or implement measures to maintain skin integrity*

- Identify complications of immobility (e.g., skin breakdown, contractures)
- Educate the client regarding proper methods used when repositioning an immobilized client

■ Implement measures to promote circulation and venous return (e.g., active or passive range of motion, anti-embolic stockings, sequential compression devices, positioning and mobilization)*

Non-Pharmacological Comfort Interventions

■ Provide non-pharmacological comfort measures*

- Evaluate the client's response to non-pharmacological interventions (e.g., pain rating scale, verbal reports)
- Apply knowledge of pathophysiology to non-pharmacological comfort/palliative care interventions

- **Assess client for pain and intervene***

- Plan measures to provide comfort interventions to clients with anticipated or actual impaired comfort
- Assess the client's need for palliative care/symptom management or non-curative treatments
- Respect client's palliative care/symptom management or non-curative treatment choices
- Assist client in receiving appropriate end-of-life physical symptom management
- Evaluate outcome of palliative care/symptom management or non-curative treatments

- **Perform irrigations (e.g., bladder, wound, eye)***

- **Identify use of client alternative therapies and potential contraindications (e.g., aroma-therapy, acupressure, supplements)***

- Incorporate alternative/complementary therapies into client plan of care (e.g., music therapy, relaxation therapy)
- Evaluate the outcomes of alternative and/or complementary therapy practice

Nutrition and Oral Hydration

- **Monitor the client's nutritional status***

- Assess client ability to eat (e.g., chew, swallow)
- Assess client for actual/potential specific food and medication interactions
- Consider client choices regarding meeting nutritional requirements and/or maintaining dietary restrictions, including mention of specific food items
- Monitor client hydration status (e.g., edema, signs and symptoms of dehydration)
- Initiate calorie counts for clients
- Apply knowledge of mathematics to client nutrition (e.g., body mass index)
- Promote the client's independence in eating
- Provide/maintain special diets based on the client diagnosis/nutritional needs and cultural considerations (e.g., low sodium, high protein, calorie restrictions)
- Provide nutritional supplements as needed (e.g., high protein drinks)
- Evaluate the impact of disease/illness on nutritional status of a client

- **Provide enteral nutrition***

- Evaluate side effects of client tube feedings and intervene as needed (e.g., diarrhea, dehydration)

- **Assess and maintain site care for client with enteral tubes***

- **Assess client intake and output and intervene***

Personal Hygiene

- **Assess client ability to perform activities of daily living and intervene***
 - Assess the client for personal hygiene habits/routine
 - Provide information to the client on required adaptations for performing activities of daily living (e.g., shower chair, hand rails)

Postmortem Care

- **Perform postmortem care***
 - Provide psychosocial support to family
 - Incorporate cultural practices in postmortem care
 - Prepare the client for viewing by the family
 - Ensure proper identification of client prior to transport to the morgue/funeral home

Rest and Sleep

- **Assess client sleep/rest pattern and intervene***
 - Apply knowledge of client pathophysiology to rest and sleep interventions
 - Schedule client care activities to promote adequate rest

Sample Item
<p>The nurse is teaching a client about reporting and relieving pain. Which of the following information should the nurse include? Select all that apply.</p> <ol style="list-style-type: none"> 1. "The use of multiple pain scales helps to prove the severity of your pain." 2. "The use of a pain scale helps me understand the quality of the pain you are having." 3. "You will be asked regularly if you have pain and to rate your pain by using a pain scale." (key) 4. "You should report when you are having pain so that I will know when you are uncomfortable." (key) 5. "You will consistently receive the strongest pain medication to ensure as much pain relief as possible."

Pharmacological and Parenteral Therapies

- **Pharmacological and Parenteral Therapies** – the nurse provides care related to the administration of medications and parenteral therapies.

PHARMACOLOGICAL AND PARENTERAL THERAPIES Related Activity Statements from the 2019 REx-PN Practice Analysis
<ul style="list-style-type: none"> ■ Administer blood products and evaluate client response ■ Evaluate client response to medication ■ Perform calculations needed for medication administration ■ Educate client about medications ■ Prepare and administer medications using rights of medication administration ■ Review pertinent data prior to medication administration (e.g., contraindications, lab results, allergies, potential interactions) ■ Administer medication by oral route ■ Administer medication by enteral/gastrointestinal tube ■ Administer a subcutaneous, intradermal or intramuscular medication ■ Administer medication by ear, eye, nose, inhalation, rectum, vagina or skin route ■ Administer intravenous medications via secondary line ■ Initiate, maintain and remove a continuous subcutaneous infusion ■ Participate in medication reconciliation process ■ Titrate dosage of medication based on assessment and ordered parameters ■ Handle and maintain medication in a safe and controlled environment ■ Handle and/or administer high-alert medications ■ Handle and/or administer controlled substances within legislated guidelines ■ Access peripheral venous access devices ■ Monitor intravenous infusion and maintain site ■ Calculate and monitor intravenous flow rate ■ Maintain pain control devices (e.g., epidural, client control analgesia, peripheral nerve catheter) ■ Administer parenteral nutrition and evaluate client response

Related content includes, but is **not limited** to:

Adverse Effects/Contraindications/Side Effects/Interactions

- Identify a contraindication to the administration of a medication to the client
- Identify actual and potential incompatibilities of ordered client medications

- Identify symptoms/evidence of an allergic reaction to medications
- Assess the client for actual or potential side effects and adverse effects of medications (e.g., prescribed, over-the-counter, herbal supplements, pre-existing condition)
- Provide information to the client on common side effects/adverse effects/potential interactions of medications and inform the client when to notify the primary health care provider
- Notify the primary health care provider of side effects, adverse effects and contraindications of medications and parenteral therapy
- Document side effects and adverse effects of medications and parenteral therapy
- Monitor for anticipated interactions among the client's ordered medications and fluids (e.g., oral, topical, subcutaneous, IM, IV)
- Evaluate and document the client's response to actions taken to counteract side effects and adverse effects of medications and parenteral therapy

Blood and Blood Products

■ Administer blood products and evaluate client response*

- Identify the client according to facility/agency policy prior to administration of red blood cells/blood products (e.g., order for administration, correct type, correct client, cross matching complete, consent obtained)
- Check the client for appropriate venous access for red blood cell/blood product administration (e.g., correct gauge needle, integrity of access site)
- Document necessary information on the administration of red blood cells/blood products
- Provide care for client receiving blood products and evaluate client response

Expected Actions/Outcomes

■ Evaluate client response to medication*

- Obtain information on a client's prescribed medications (e.g., review formulary, consult pharmacist)
- Use clinical decision making/critical thinking when addressing expected effects/outcomes of medications (e.g., oral, intradermal, subcutaneous, IM, topical)
- Evaluate the client's use of medications over time (e.g., order, over-the-counter, home remedies)

Medication Administration

■ Perform calculations needed for medication administration*

■ Educate client about medications*

- **Prepare and administer medications using rights of medication administration***
- **Review pertinent data prior to medication administration (e.g., contraindications, lab results, allergies, potential interactions)***
- **Administer medication by oral route***
- **Administer medication by enteral/gastrointestinal tube***
- **Administer a subcutaneous, intradermal or intramuscular medication***
- **Administer medication by ear, eye, nose, inhalation, rectum, vagina or skin route***
- **Administer intravenous medications via secondary line***
- **Initiate, maintain, and remove a continuous subcutaneous infusion***
- **Participate in medication reconciliation process***
- **Titrate dosage of medication based on assessment and ordered parameters***
- **Handle and maintain medication in a safe and controlled environment***
- **Handle and/or administer high-alert medications***
- **Handle and/or administer controlled substances within legislated guidelines***

Parenteral/Intravenous Therapies

- **Access peripheral venous access devices***
 - Educate the client on the reason for and care of a venous access device
 - Identify appropriate veins that should be accessed for various therapies
 - Prepare the client for intravenous catheter insertion
- **Monitor intravenous infusion and maintain site***
 - Evaluate the client's response to intermittent parenteral fluid therapy
 - Monitor the use of an infusion pump (e.g., IV, client-controlled analgesia device)
 - Educate client on the need for intermittent parenteral fluid therapy
- **Calculate and monitor intravenous flow rate***
 - Apply knowledge and concepts of mathematics/nursing procedures/psychomotor skills when caring for a client receiving intravenous and parenteral therapy

Pharmacological Pain Management Devices

- **Maintain pain control devices (e.g., epidural, client control analgesia, peripheral nerve catheter)***
 - Evaluate and document the client's use and response to pain medications
 - Identify signs and symptoms of complications of pain control devices

Total Parenteral Nutrition (TPN)**■ Administer parenteral nutrition and evaluate client response ***

- Identify side effects/adverse events related to TPN and intervene as appropriate (e.g., hyperglycemia, fluid imbalance, infection)
- Educate client on the need for and use of TPN
- Apply knowledge of nursing procedures and psychomotor skills when caring for a client receiving TPN
- Apply knowledge of client pathophysiology and mathematics to TPN interventions

Sample Item

The nurse is caring for a client who has an order for 0.9% sodium chloride (normal saline) with 5% dextrose in water, 1 L, IV, to be infused over 3 hours. The nurse has tubing with a drop factor of 10 available. How many gtt/min should the client receive? **Record your answer using a whole number.**

Answer: 56 gtt/min **(key)**

Reduction of Risk Potential

- **Reduction of Risk Potential** – the nurse reduces the likelihood that clients will develop complications or health problems related to existing conditions, treatments or procedures.

REDUCTION OF RISK POTENTIAL
Related Activity Statements from the <i>2019 REx-PN Practice Analysis</i>
<ul style="list-style-type: none"> ■ Assess and respond to changes and/or trends in client vital signs ■ Perform diagnostic testing (e.g., bladder scanning, oxygen saturation, glucose monitoring) and intervene ■ Monitor the results of diagnostic testing and intervene ■ Obtain specimens other than blood for diagnostic testing (e.g., wound, stool, urine) ■ Use precautions to prevent injury and/or complications associated with a procedure or diagnosis ■ Evaluate responses to procedures and treatments and intervene ■ Insert a nasal/oral gastrointestinal tube ■ Maintain or remove a nasal/oral gastrointestinal tube ■ Monitor continuous or intermittent suction of nasogastric (NG) tube ■ Insert, maintain or remove a urinary catheter ■ Insert a peripheral intravenous line ■ Maintain or remove a peripheral intravenous line ■ Maintain percutaneous feeding tube ■ Perform focused assessments ■ Recognize trends and changes in client condition and intervene ■ Educate client about treatments and procedures ■ Provide preoperative or postoperative education ■ Provide preoperative care ■ Manage client following a procedure with moderate sedation

Related content includes, but is **not limited** to:

Changes/Abnormalities in Vital Signs

- **Assess and respond to changes and/or trends in client vital signs***
 - Apply knowledge needed to perform related nursing procedures and psychomotor skills when assessing vital signs
 - Apply knowledge of client pathophysiology when measuring vital signs

Diagnostic Tests

- **Perform diagnostic testing (e.g., bladder scanning, oxygen saturation, glucose monitoring) and intervene***
 - Perform fetal heart monitoring
 - Apply knowledge of related nursing procedures and psychomotor skills when caring for clients undergoing diagnostic testing
- **Monitor the results of diagnostic testing and intervene***
 - Compare client diagnostic findings with pre-test results
 - Monitor results of maternal and fetal diagnostic tests (e.g., non-stress test, amniocentesis, ultrasound)
- **Obtain specimens other than blood for diagnostic testing (e.g., wound, stool, urine)***

Laboratory Values

- Identify laboratory values for ABGs (pH, PO₂, PCO₂, SaO₂, HCO₃), BUN, cholesterol (total), creatinine, glucose, glycosylated hemoglobin (HgbA1C), hematocrit, hemoglobin, INR, platelets, potassium, PT, PTT & APTT, sodium, WBC
- Compare client laboratory values to normal laboratory values
- Educate client about the purpose and procedure of prescribed laboratory tests
- Monitor client laboratory values (e.g., glucose testing results for the client with diabetes)
- Notify the appropriate health care team member about laboratory test results

Potential for Alterations in Body Systems

- Identify client potential for aspiration (e.g., feeding tube, sedation, swallowing difficulties)
- Identify client potential for skin breakdown (e.g., immobility, nutritional status, incontinence)
- Identify client with increased risk for insufficient vascular perfusion (e.g., immobilized limb, post-surgery, diabetes)
- Educate client on methods to prevent complications associated with activity level/diagnosed illness/disease (e.g., contractures, foot care for client with diabetes mellitus)
- Compare current client data to baseline client data (e.g., symptoms of illness/disease)
- Monitor client output for changes from baseline (e.g., nasogastric tube, emesis, stool, urine)

Potential for Complications of Diagnostic Tests/Treatments/Procedures

- **Use precautions to prevent injury and/or complications associated with a procedure or diagnosis***
 - Assess client for an abnormal response following a diagnostic test/procedure (e.g., dysrhythmia following cardiac catheterization)

- Apply knowledge of nursing procedures and psychomotor skills when caring for a client with potential for complications
- Monitor the client for signs of bleeding
- Position the client to prevent complications following tests/treatments/procedures (e.g., elevate head of bed, immobilize extremity)
- **Evaluate responses to procedures and treatments and intervene***
 - Intervene to manage potential circulatory complications (e.g., hemorrhage, embolus, shock)
 - Intervene to prevent aspiration (e.g., check nasogastric tube placement)
 - Intervene to prevent potential neurological complications (e.g., foot drop, numbness, tingling)
 - Apply knowledge of pathophysiology to monitoring for complications (e.g., recognize signs of thrombocytopenia)
 - Evaluate the client's response to postoperative interventions to prevent complications (e.g., prevent aspiration, promote venous return, promote mobility)
 - Provide care for client undergoing electroconvulsive therapy (e.g., monitor airway, assess for side effects, teach client about procedure)
- **Insert a nasal/oral gastrointestinal tube***
 - Apply knowledge of skill of inserting a nasal/oral gastrointestinal tube
- **Maintain or remove a nasal/oral gastrointestinal tube***
- **Monitor continuous or intermittent suction of nasogastric (NG) tube***
- **Insert, maintain or remove a urinary catheter***
- **Insert a peripheral intravenous line***
- **Maintain or remove a peripheral intravenous line***
- **Maintain percutaneous feeding tube***

System Specific Assessments

- **Perform focused assessments***
 - Assess the client for abnormal peripheral pulses after a procedure or treatment
 - Assess the client for abnormal neurological status (e.g., level of consciousness, muscle strength, mobility)
 - Assess the client for peripheral edema
 - Assess the client for signs of hypoglycemia or hyperglycemia
 - Identify factors that result in delayed wound healing
 - Perform a risk assessment (e.g., sensory impairment, potential for falls, level of mobility, skin integrity)
- **Recognize trends and changes in client condition and intervene***

Therapeutic Procedures

- **Educate client about treatments and procedures***
 - Educate client about home management of care
 - Apply knowledge of related nursing procedures and psychomotor skills when caring for clients undergoing therapeutic procedures
- **Provide preoperative or postoperative education***
- **Provide preoperative care***
- **Manage client following a procedure with moderate sedation***

Sample Item
<p>The nurse is caring for a client who had a colonoscopy 20 minutes ago. The nurse should understand which of the following findings are to be expected?</p> <ol style="list-style-type: none">1. weakness and dizziness2. flatulence and abdominal cramps (key)3. frequent and bloody bowel movements4. abdominal distention and the urge to defecate

Physiological Adaptation

- **Physiological Adaptation** – the nurse manages and provides care for clients with acute, chronic or life-threatening physical health conditions.

PHYSIOLOGICAL ADAPTATION
Related Activity Statements from the 2019 REx-PN Practice Analysis
<ul style="list-style-type: none"> ■ Assist with invasive procedures (e.g., central line, thoracentesis, bronchoscopy) ■ Maintain optimal temperature of client ■ Monitor and maintain devices and equipment used for drainage (e.g., surgical wound drains, chest tube suction, negative pressure wound therapy) ■ Perform suctioning (oral, tracheal, nasopharyngeal) ■ Perform wound care and/or dressing change ■ Perform wound drainage device removal ■ Remove wound sutures or staples ■ Provide ostomy care and/or education (e.g., tracheal, enteral) ■ Provide postoperative care ■ Manage the care of the client with a fluid and electrolyte imbalance ■ Manage the care of a client with alteration in hemodynamics, tissue perfusion and/or hemostasis ■ Manage the care of a client with a permanent pacing device ■ Educate client regarding an acute or chronic condition ■ Manage the care of a client with impaired ventilation/oxygenation ■ Evaluate the effectiveness of the treatment plan for a client with an acute or chronic diagnosis ■ Perform emergency care procedures (e.g., cardio-pulmonary resuscitation, respiratory support, automated external defibrillator) ■ Identify pathophysiology related to an acute or chronic condition ■ Recognize signs and symptoms of client complications and intervene

Related content includes, but is **not limited** to:

Alterations in Body Systems

- **Assist with invasive procedures (e.g., central line, thoracentesis, bronchoscopy)***
- **Maintain optimal temperature of client***
- **Monitor and maintain devices and equipment used for drainage (e.g., surgical wound drains, chest tube suction, negative pressure wound therapy)***
 - Assess tube drainage during the time the client has an alteration in body systems (e.g. amount, colour)
- **Perform suctioning (oral, tracheal, nasopharyngeal)***

- **Perform wound care and/or dressing change***
 - Monitor wounds for signs and symptoms of infection
- **Perform wound drainage device removal***
- **Remove wound sutures or staples***
- **Provide ostomy care and/or education (e.g., tracheal, enteral)***
- **Provide postoperative care***
 - Evaluate client response to surgery

Fluid and Electrolyte Imbalances

- **Manage the care of the client with a fluid and electrolyte imbalance***
 - Identify signs and symptoms of client fluid and/or electrolyte imbalance
 - Apply knowledge of pathophysiology when caring for the client with fluid and electrolyte imbalances
 - Evaluate the client's response to interventions to correct fluid or electrolyte imbalance

Hemodynamics

- **Manage the care of a client with alteration in hemodynamics, tissue perfusion and/or hemostasis***
 - Apply knowledge of pathophysiology to interventions in response to client abnormal hemodynamics
 - Provide client with strategies to manage decreased cardiac output (e.g., frequent rest periods, limit activities)
- **Manage the care of a client with a permanent pacing device***
 - Assess client for decreased cardiac output (e.g., diminished peripheral pulses, hypotension)
 - Identify cardiac rhythm strip abnormalities (e.g., sinus bradycardia, premature ventricular contractions, ventricular tachycardia, atrial fibrillation, ventricular fibrillation)
 - Intervene to improve client cardiovascular status (e.g., initiate protocol to manage cardiac arrhythmias, monitor pacemaker functions)

Illness Management

- **Educate client regarding an acute or chronic condition***
- **Manage the care of a client with impaired ventilation/oxygenation***
- **Evaluate the effectiveness of the treatment plan for a client with an acute or chronic diagnosis***
 - Implement interventions to manage the client's recovery from an illness

- Promote and provide continuity of care in illness management activities
- Identify client data that needs to be reported immediately
- Apply knowledge of client pathophysiology to illness management
- Implement interventions to address side/adverse effects of radiation therapy (e.g., dietary modifications, avoid sunlight)
- Assess adaptation of a client to health alteration, illness and/or disease
- Assess client for signs and symptoms of adverse effects of radiation therapy
- Apply knowledge of nursing procedures, pathophysiology and psychomotor skills when caring for a client with an alteration in body systems
- Promote client progress toward recovery from an alteration in body systems

Medical Emergencies

- **Perform emergency care procedures (e.g., cardio-pulmonary resuscitation, respiratory support, automated external defibrillator)***
 - Apply knowledge of pathophysiology when caring for a client experiencing a medical emergency
 - Apply knowledge of nursing procedures and psychomotor skills when caring for a client experiencing a medical emergency
 - Explain emergency interventions to a client
 - Notify primary health care provider about unexpected client response/emergency situation
 - Provide emergency care for wound disruption (e.g., dehiscence)
 - Evaluate and document the client's response to emergency interventions (e.g., restoration of breathing, pulse)

Pathophysiology

- **Identify pathophysiology related to an acute or chronic condition***
 - Understand general principles of pathophysiology (e.g., injury and repair, immunity, cellular structure)

Unexpected Response to Therapies

- **Recognize signs and symptoms of client complications and intervene***
 - Assess the client for unexpected adverse response to therapy (e.g., increased intracranial pressure, hemorrhage)
 - Promote recovery of the client from unexpected response to therapy (e.g., urinary tract infection)

Sample Item

The nurse is teaching a client who has gout. Which of the following information should the nurse reinforce?

Select all that apply.

1. "Gout can cause deformity but is usually painless."
2. "Medications and a low-purine diet help to manage gout." **(key)**
3. "Gout is a metabolic disorder of excess uric acid production." **(key)**
4. "Gout attacks can be precipitated by increased ingestion of alcohol." **(key)**
5. "Supplemental vitamins and herbs should be eliminated to reduce gout attacks."

III. Administration of the REX-PN®

The REX-PN is administered to candidates by computerized adaptive testing (CAT). CAT is a method of delivering examinations using computer technology and measurement theory. With CAT, each candidate's examination is unique because it is assembled interactively as the examination proceeds. Computer technology selects items to administer that match the candidate's ability. The items, which are stored in a large item pool, are classified by test plan category and level of difficulty. After the candidate answers an item, the computer calculates an ability estimate based on all of the previous answers the candidate selected. The next item administered is chosen to measure the candidate's ability in the appropriate test plan category. This process is repeated for each item, creating an examination tailored to the candidate's knowledge, skills and judgment while fulfilling all test plan requirements. The examination continues with items selected and administered in this way until a pass or fail decision is made.

Computerized Adaptive Testing (CAT)

The REX-PN is different from a traditional fixed-length examination, which administers the same items to every candidate. Fixed-length examinations ensure the difficulty of the examination is constant for every candidate; therefore, the percentage correct is the indicator of the candidate's ability. This approach requires high ability candidates to answer all easy items on the examination and low ability candidates to guess on difficult items. This method provides less accurate information about the candidate's true ability.

The REX-PN uses CAT to administer items. CAT is able to produce exam results that are more precise and efficient, using fewer items by targeting them to the candidate's ability. The computer (that is, the CAT scoring algorithm) estimates the ability of the candidate in relation to the passing standard. Every time the candidate answers an item, the computer re-estimates the candidate's ability. With each additional answered item, the ability estimate becomes more precise.

Each item the candidate receives is selected from a large pool using three criteria:

1. The item is limited to the content area that will produce the best match to the test plan percentages. CAT ensures that each candidate's exam contains enough items from each content area to match the required test plan percentages.
2. An item is selected that the candidate is expected to find challenging. The computer estimates the candidate's ability based on all previous answers and the difficulty of those items, and selects an item that the candidate should have a 50 percent chance of answering correctly. This ensures the next item should not be too easy or too difficult and the examination can obtain maximum information about the candidate's ability from the item.
3. The CAT program excludes any items previously seen by repeat candidates in the current item pool, therefore repeat candidates will not receive duplicate items on subsequent examinations.

Examination Length

The REX-PN is a variable length computerized adaptive test and can range from 90 to 150 items. Of these items, 30 are pretest items that are not scored. Regardless of the number of items administered, the time limit for this examination is four hours. The time allotted for the examination **includes** the tutorial, sample items, all optional breaks and the examination.

The length of the examination is determined by the candidate's response to the items. Depending upon the particular pattern of correct and incorrect responses, candidates receive different numbers of items and therefore use varying amounts of time. The candidate should select and maintain a reasonable pace that permits them to complete the examination within the allotted time should the maximum number of items be administered. In general, it is recommended that the candidate spend approximately one to two minutes per item in order to maintain this pace.

Each candidate is given an examination that adheres to the test plan and is therefore given the opportunity to demonstrate their ability. The length of the candidate's examination is not an indication of a pass or fail result. A candidate may pass or fail regardless of the length of the examination. Additional information on passing and failing rules are included in further detail in this section.

Scoring the REX-PN®

Pretest Items

For CAT to function properly, the difficulty of each item must be known in advance. The degree of difficulty is determined by administering the items as pretest items to a large sample of REX-PN candidates. Pretest items are not included when estimating the candidate's ability or when making pass-fail decisions. When enough responses are collected, the pretest items are statistically analyzed and calibrated. If the pretest items meet REX-PN statistical standards, they can be administered on future examinations as operational items. There are 30 pretest items included each time a candidate writes the REX-PN. Pretest items appear identical to operational items, therefore it is recommended that candidates give their best effort for every item.

Passing and Failing

The decision whether a candidate passes or fails the REX-PN is governed by three different scenarios:

Scenario #1: The 95% Confidence Interval Rule

This scenario is the most common for REX-PN candidates. The computer will stop administering items when it is 95% certain that the candidate's ability is either clearly above or clearly below the passing standard.

Scenario 2: Maximum-Length Exam

Some candidate's ability levels will be very close to the passing standard. When this is the case, the computer continues to administer items until the maximum number of items is reached. At this point, the computer disregards the 95% confidence interval rule and considers only the final ability estimate:

- If the final ability estimate is above the passing standard, the candidate passes
- If the final ability estimate is at or below the passing standard, the candidate fails.

Scenario 3: Run-Out-Of-Time Rule (R.O.O.T)

If a candidate runs out of time before reaching the maximum number of items and the computer has not determined with 95% certainty whether the candidate has passed or failed, an alternate criterion is used.

- If the candidate has not answered the minimum number of required items, the candidate automatically fails.
- If at least the minimum number of required items were answered, the computer looks at the final ability estimate:
 - If the final ability estimate is above the passing standard, the candidate passes
 - If the final ability estimate is at or below the passing standard, the candidate fails.

Types of Items on the REx-PN®

During the administration of the REx-PN, candidates will be required to respond to items in a variety of formats. These formats may include multiple-choice, multiple response, fill-in-the-blank calculation, exhibit, and graphics.

Scoring Items

Many items on the REx-PN are multiple-choice, however other item formats exist. Items are scored as either correct or incorrect. There is no partial credit. Effective January 2026, all items will be scored dichotomously (i.e., correct or incorrect) except for multiple response, select all that apply items. These items will be scored polytomously for partial credit. For updated information on the administration of the examination, access rexpnp.com.

The Passing Standard

The REx-PN Examination Committee (PNEC) re-evaluates the passing standard once every five years. The criterion that the PNEC uses to set the standard is the minimum level of ability required for safe and effective entry-level nursing practice. To assist the PNEC in making this decision, they are provided information on the results of a standard setting exercise performed by a panel of experts with the assistance of psychometricians.

Once the passing standard is set, it is applied uniformly to every examination according to the procedures laid out in the Scoring the REx-PN section. To pass the REx-PN Exam, a candidate must perform **above** the passing standard. There is no fixed percentage of candidates that pass or fail each examination.

Similar Items

Occasionally, a candidate may receive an item that seems to be very similar to one received earlier in the examination. This may happen for a variety of reasons. Items may contain content pertaining to similar symptoms, diseases, or disorders, yet address different phases of the nursing process. Alternatively, a pretest (unscored) item may contain content similar to an operational (scored) item. Candidates should not assume they received a second item similar in content to a previously administered item because the candidate answered the first one incorrectly. The candidate is instructed to always select the answer believed to be correct for each item administered.

Reviewing Answers and Guessing

Examination items are presented to the candidate one at a time on a computer screen. There is no time limit for a candidate to spend on each individual item. Once an answer to an item is selected, the candidate has the ability to consider the answer and change it, if necessary. However, once the candidate confirms the answer and proceeds to the next item by pressing the <NEXT> button, the candidate will no longer have the ability to return to a previous item. Every item must be answered even if the candidate is not sure of the correct answer. If the candidate is unsure of the correct answer, the candidate should consider all response options and provide their best answer in order to proceed to the next item. The computer will not allow the candidate to proceed to the next item without answering the current item on the screen. The best advice is to maintain a reasonable pace (one item every minute or two), and carefully read and consider each item before answering.

REX-PN Terminology

Advance directive: A legal document in which a client specifies what actions should be taken for their health if they are no longer able to make decisions for themselves because of illness or incapacity.

Assignment: The act of determining or allocating responsibility for particular aspects of care to another individual.

Client: Individuals, families, groups, communities and populations.

Delegation: A formal process through which a regulated health professional who has the authority and competence to perform a procedure delegates the performance of that procedure to another individual.

Do Not Resuscitate (DNR): A legal document stating a client does not want cardiopulmonary resuscitation if their heart stops beating.

Licensed: Registration with the regulatory body.

Supervision: The monitoring and directing of specific activities or procedures.

Unregulated Care Provider (UCP): Any unregulated, paid care provider trained to function in a supportive role, regardless of title. They are neither registered nor licensed by a regulatory body. They have no legally defined scope of practice. Unregulated care providers do not have mandatory education or practice standards. Unregulated care providers include, but are not limited to, personal support workers, resident care attendants, home support workers, mental health workers, teaching assistants and community health representatives.

Examination Security and Confidentiality

Any candidate that violates test centre regulations or rules, or engages in irregular behaviour, misconduct and/or does not follow a test centre administrator's warning to discontinue inappropriate behaviour may be dismissed from the test centre. Additionally, exam results may be withheld or cancelled and the nursing regulatory body may take other disciplinary action such as denial of a registration and/or disqualifying the candidate from future registrations. Refer to the current candidate bulletin at rexpnp.com for more information.

Candidates should be aware and understand that the disclosure of examination items before, during, or after the examination is a violation of law. Violations of confidentiality and/or candidates' rules can result in criminal prosecution or civil liability and/or disciplinary actions by the nursing regulatory body including the denial of registration.

Tutorial

Each REx-PN candidate is provided information on how to answer examination items. A tutorial is given at the beginning of the examination explaining the various formats that candidates may see on the examination. More information on alternate item formats is available at the NCSBN website at rexpnp.com.

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V. Appendix A

Item Writing Exercises for Educators

The following written exercises are designed to provide nurse educators with hands-on experience in writing REX-PN style items. Please note, not all item types are provided in the Item Writing Exercises. Refer to the NCSBN website, rexpri.com/faqs.page, for answers to Frequently Asked Questions and additional information on alternate item formats.

NCSBN offers two online web-based courses for nursing faculty (*Test Development and Item Writing, and Assessment of Critical Thinking*). Please use these web-based courses as a means of supplementing knowledge of test writing principles and to encourage compliance with the REX-PN style of writing. The above-mentioned courses may be found at www.learningext.com.

Steps to Item Writing

A well-designed, multiple-choice item consists of three main components: a stem (asks a question or poses a statement which requires completion), key (the correct answer/s) and distractor(s) (incorrect option/s). The following section is designed to enhance the writer's understanding of the REX-PN item writing process. Steps are provided below to assist in creating a well-designed item.

Step 1. Select an area of the test plan for the focus of the item.

Step 2. Select a subcategory from the chosen area of the test plan.

Step 3. Select an important concept within that subcategory.

Step 4. Use the concept selected and write the stem.

Step 5. Write a key to represent important information the entry-level nurse should know.

Step 6. Identify common errors, misconceptions, or irrelevant information.

Step 7. Use the previous information and write the distractors.

Step 8. Complete the item using the stem, key and distractors.

Examples Using the Steps to Item Writing

Please find below an example of how to write an item using the steps provided.

1. Select an area of the test plan for the focus of the item.

*Pharmacological and Parenteral Therapies

2. Select a subcategory from the chosen area of the test plan.

*Medication Administration

3. Select an important concept within that subcategory.

*Educate client about medications

4. Use the selected concept and write the stem.

*The nurse is teaching a client who is using a bronchodilator via a metred-dose inhaler (MDI) without a spacer. Which of the following statements by the client indicate a correct understanding of the teaching?

5. Write a key to represent important information the entry-level nurse should know.

*Correct understanding of metred-dose inhaler use:

~ "I should shake the canister for 5 seconds to mix the medication before using the MDI."

6. Identify common errors, misconceptions or irrelevant information.

*Lack of understanding of metred-dose inhaler use

*Uncertainty of metred-dose inhaler preparation

7. Use the previous information and write the distractors.

~ "After inhaling the medication, I should hold my breath for 30 seconds."

~ "Before taking the second puff of the medication, I should wait at least 15 minutes."

~ "After inhaling the medication, I should exhale through my nose when I let my breath out."

8. Complete the item using the stem, key and distractors.

The nurse is teaching a client who is using a bronchodilator via a metred-dose inhaler (MDI) without a spacer. Which of the following statements by the client indicates a correct understanding of the teaching?

1. "After inhaling the medication, I should hold my breath for 30 seconds."
2. "Before taking the second puff of the medication, I should wait at least 15 minutes."
3. "I should shake the canister for 5 seconds to mix the medication before using the MDI." **(key)**
4. "After inhaling the medication, I should exhale through my nose when I let my breath out."

Exercises

Case Scenarios: Using the steps listed above create an item based on the following situations. Example items based on these case scenarios are provided at the completion of this section.

Management of Care

The nurse is caring for assigned clients. Write an item with four different client scenarios in which one client should be the priority to assess first.

Safety and Infection Control

The nurse is assessing a client for allergies. Write an item indicating correct understanding of potential risk factors for an allergic reaction.

Health Promotion and Maintenance

The nurse is assessing an older adult client. Write an item that includes expected age-related findings.

Psychosocial Integrity

The nurse is caring for a school-age client. Write an item in which the nurse provides therapeutic communication techniques based on a client statement.

Basic Care and Comfort

The nurse is teaching a client about sleep hygiene. Write an item in which the nurse provides correct information to the client.

Pharmacological and Parenteral Therapies

The nurse is preparing to administer a medication to a client. Write an item that indicates correct understanding of side effects of the medication.

Reduction of Risk Potential

The nurse is teaching a client who is postoperative day 1. Write an item that indicates that the client has correct understanding of the teaching for the surgical procedure.

Physiological Adaptation

The nurse is caring for a client with a chest tube. Write an item that indicates correct understanding of client complications related to chest tubes.

Case Scenario Answers/Examples

Management of Care

The nurse has received the following information about assigned clients. The nurse should **first** assess the client who had:

1. a subtotal thyroidectomy one day ago and is experiencing tingling of the toes **(key)**
2. a thoracotomy one day ago and is experiencing serosanguineous drainage from the chest tube
3. a repair of an aortic aneurysm four hours ago and has had urinary output of 125 ml within the past two hours
4. a removal of an impaled object from the left eye two hours ago and requires an application of an eye patch

Safety and Infection Control

The nurse is planning a staff education program about latex allergies and associated food allergies. Which of the following foods are associated with latex allergies?

1. bananas **(key)**
2. broccoli
3. plums
4. cauliflower

Health Promotion and Maintenance

The nurse is assessing an older adult client's genitourinary system. Which of the following is an expected age-related finding?

1. nocturia **(key)**
2. renal calculi
3. glomerulonephritis
4. overflow incontinence

Psychosocial Integrity

The nurse is talking with a 9-year-old client who states, "I do not like school." Which of the following responses would be appropriate for the nurse to make?

1. "I did not like school when I was your age."
2. "You must enjoy seeing your friends at school."
3. "I am interested in hearing more about your feelings." **(key)**
4. "You may begin to like school if you can find a favourite subject."

Basic Care and Comfort

The nurse is teaching a group of older adult clients about sleep hygiene. Which of the following information should the nurse include?

1. "Use an over-the-counter (OTC) sleep medication to stay asleep during the night."
2. "Eat a snack that contains L-tryptophan, such as milk, at bedtime to induce sleep." (**key**)
3. "Exercise for at least 30 minutes prior to going to sleep to ensure that you are tired."
4. "Avoid taking over-the-counter (OTC) melatonin because it is unlikely to help with insomnia."

Pharmacological and Parenteral Therapies

The nurse is caring for a client who is receiving gentamicin. Which of the following findings should the nurse recognize as a side effect of the medication?

1. vertigo (**key**)
2. constipation
3. increased serum sodium level
4. decreased blood urea nitrogen (BUN)

Reduction of Risk Potential

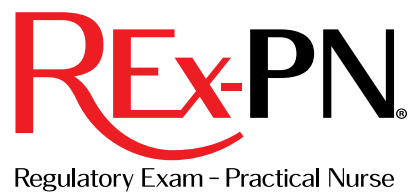
The nurse is teaching a client who had a total hip replacement by posterior approach 1 day ago. Which of the following statements by the client would indicate a correct understanding of the teaching?

1. "I will lie on the operative side."
2. "I should avoid crossing my legs." (**key**)
3. "I will begin jogging again after a few weeks."
4. "I should elevate my affected leg when sitting in a chair."

Physiological Adaptation

The nurse is caring for a client who has a chest tube connected to a closed-chest drainage system and observes continuous bubbling in the water seal chamber. The nurse should recognize that this could indicate that:

1. there may be an air leak (**key**)
2. the tubing may be occluded
3. the suction pressure is too high
4. there are blood clots in the tubing



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