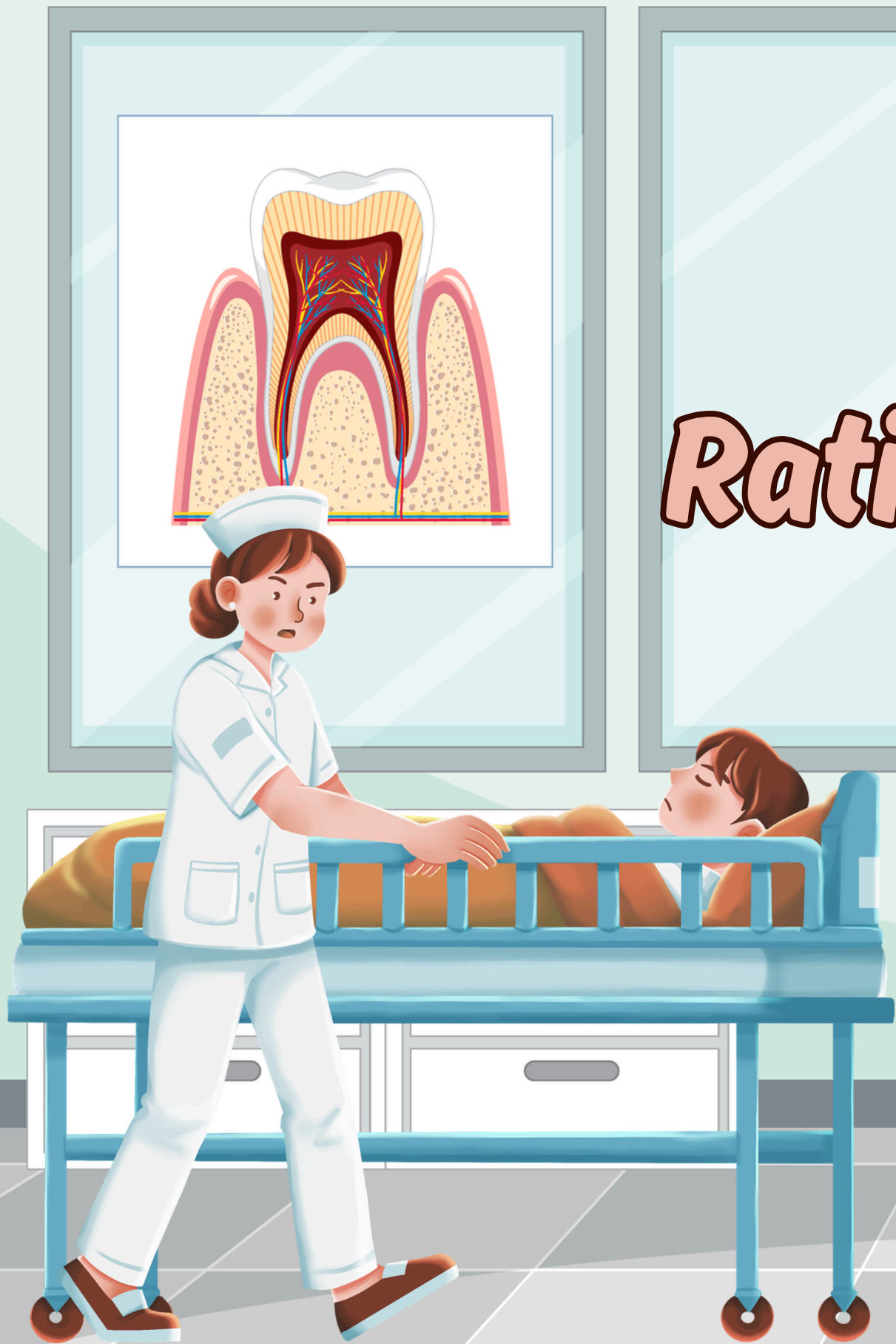
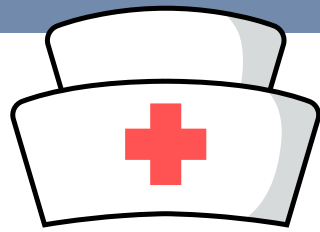




Unit 4

Rational Drug Use (RDU)

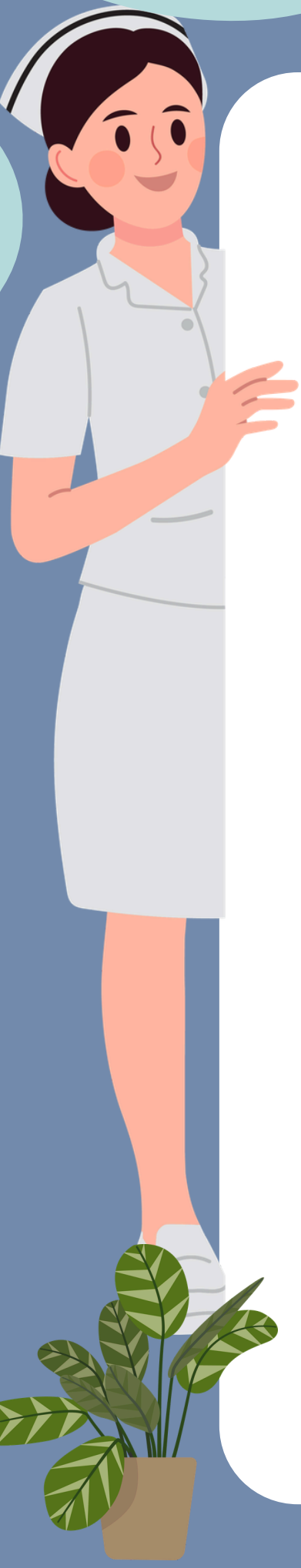


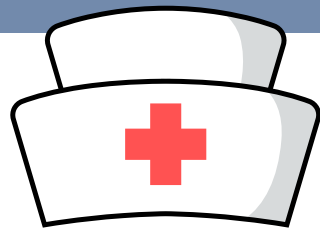


LEARNING OBJECTIVES

Upon completion of this chapter, students will be able to:

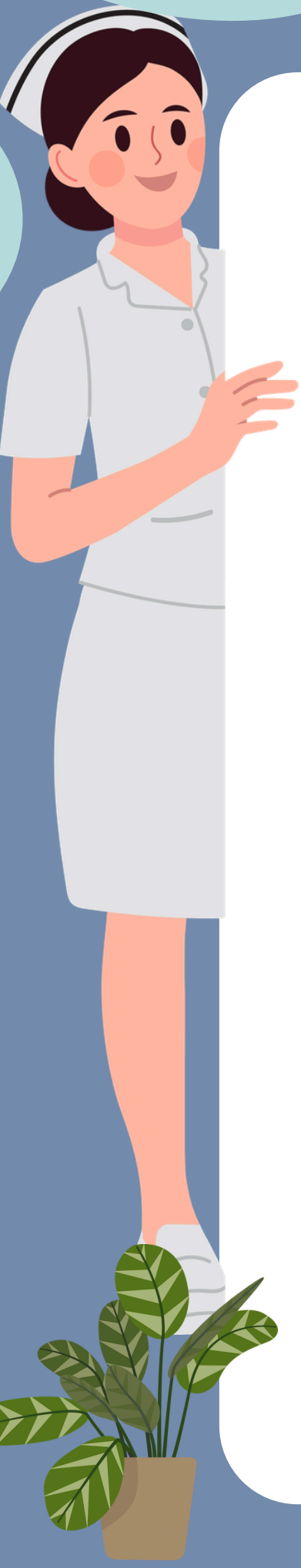
1. Explain the principles, concepts, and significance of Rational Drug Use (RDU) in accordance with the framework of the World Health Organization and Thailand's national policies on rational medicine use.
2. Analyze the appropriateness of medication use by applying the nursing process in conjunction with Evidence-Based Practice (EBP) to support sound clinical decision-making.
3. Assess and identify risks associated with medication use, including polypharmacy, adverse drug reactions (ADRs), medication errors, and antimicrobial resistance.





LEARNING OBJECTIVES

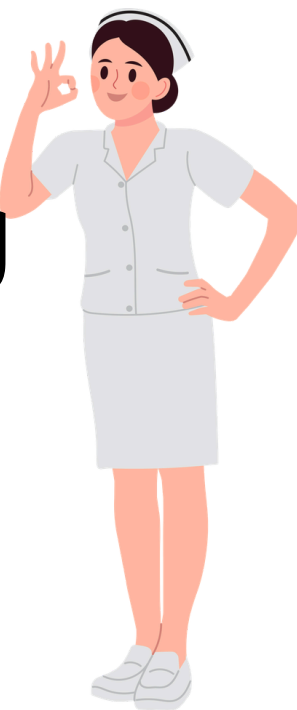
- 4. Develop and implement nursing care plans that promote rational drug use, taking into consideration patient rights, safety, quality of care, and professional ethical standards.**
- 5. Utilize digital technologies—such as Clinical Decision Support Systems (CDSS) and electronic Medication Administration Records (e-MAR)—to enhance the accuracy, safety, and effectiveness of medication use in clinical settings.**
- 6. Engage in ethical reflection regarding medication use within the context of Thai culture and the Thai healthcare system, considering sociocultural factors that influence medication-related behaviors at individual, family, and community levels.**





TEACHING TOPICS

- 1. Concepts and Policy Framework of Rational Drug Use (RDU Framework)**
- 2. The Situation of Irrational Drug Use at the Global and National Levels**
- 3. The Nurse's Role in Promoting RDU within the Nursing Process**
- 4. Medication Safety and Prevention of Medication Errors**
- 5. Digital Technologies Supporting Rational Drug Use**
- 6. Ethics, Patient Rights, and Communication for Rational Drug Use**





1.CONCEPTS AND POLICY FRAMEWORK OF RATIONAL DRUG USE (RDU FRAMEWORK)



1. Concepts and Meaning of Rational Drug Use

Rational drug use (RDU) is a fundamental concept that is crucial to 21st-century nursing, especially in the context of selected nursing practice, digital technology, and nursing innovation courses. These courses aim to enable students to integrate clinical knowledge, technology, and professional ethics into safe and effective patient care.



1. CONCEPTS AND POLICY FRAMEWORK OF RATIONAL DRUG USE (RDU FRAMEWORK)



The Meaning of Rational Drug Use

The World Health Organization (WHO) defines rational drug use as “patients receiving medication that is appropriate for their condition, in the correct dosage, for the appropriate duration, and at a cost that is appropriate for the individual and the community” (WHO, 2022). This concept reflects four key principles: clinical appropriateness, dose and duration accuracy, safety, and cost-effectiveness.



1.CONCEPTS AND POLICY FRAMEWORK OF RATIONAL DRUG USE (RDU FRAMEWORK)



In the context of Thailand, the Ministry of Public Health has established RDU as a national policy, focusing on three important dimensions: (1) effectiveness, (2) safety, and (3) cost-effectiveness (MOPH, 2023), which is consistent with the universal health coverage system and sustainable drug resource management.

1.1 Effectiveness dimension

1.2 Safety dimension

1.3 Cost-effectiveness dimension



1.CONCEPTS AND POLICY FRAMEWORK OF RATIONAL DRUG USE (RDU FRAMEWORK)



The Role of Nurses in the Digital Technology Context

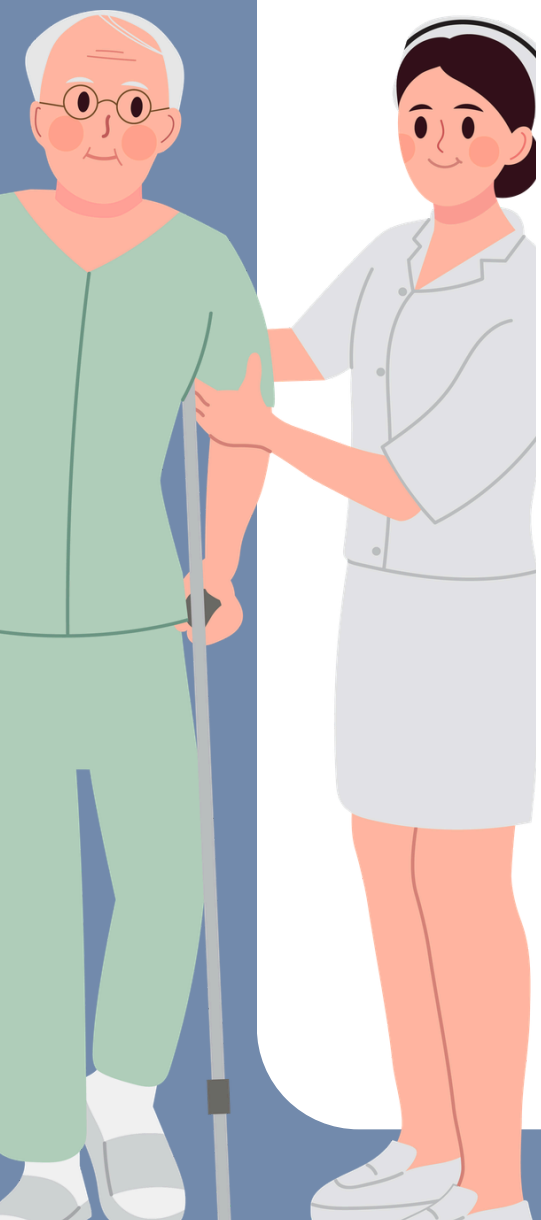
In the digital age, nurses are not just medication administrators, but "Medication Safety Managers," utilizing technologies such as Electronic Health Records (EHR), e-Prescribing, and Barcode Medication Administration. A systematic review found that CDSS technology significantly reduces prescribing errors (Tawfik et al., 2022).

Therefore, learning RDU in this course must connect clinical, technological, and professional ethics dimensions.



2.THE SITUATION OF IRRATIONAL DRUG USE AT THE GLOBAL AND NATIONAL LEVELS

Drug irrationality is a significant issue in global healthcare systems and represents a systemic challenge encompassing clinical dimensions, health economics, digital technology, and professional ethics. Within the context of the selected nursing practice, digital technology, and nursing innovation courses, fourth-year nursing students need a deep understanding of this problem to develop analytical skills, clinical decision-making abilities, and the safe use of technology to support care.

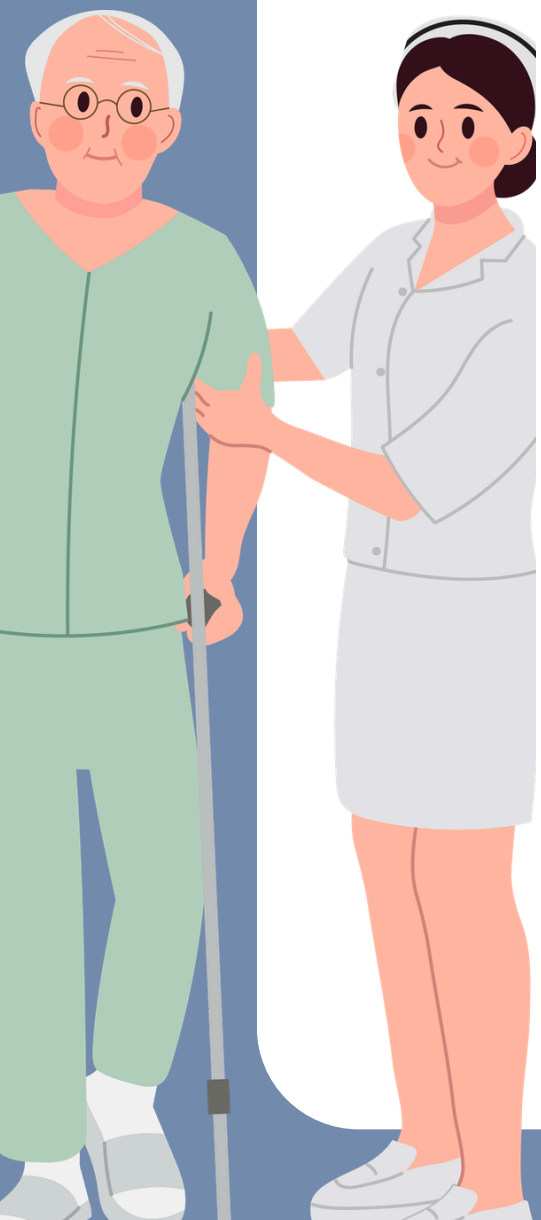




2.THE SITUATION OF IRRATIONAL DRUG USE AT THE GLOBAL AND NATIONAL LEVELS

2.1 Overuse of Antibiotics

Overuse of antibiotics is the most common form of irrational drug use. A 2022 report by the Centers for Disease Control and Prevention indicates that more than 50% of antibiotic prescriptions in some healthcare facilities may be inappropriate in terms of indication, dosage, or treatment duration. Such use is a major factor contributing to the development of antimicrobial resistance (AMR).

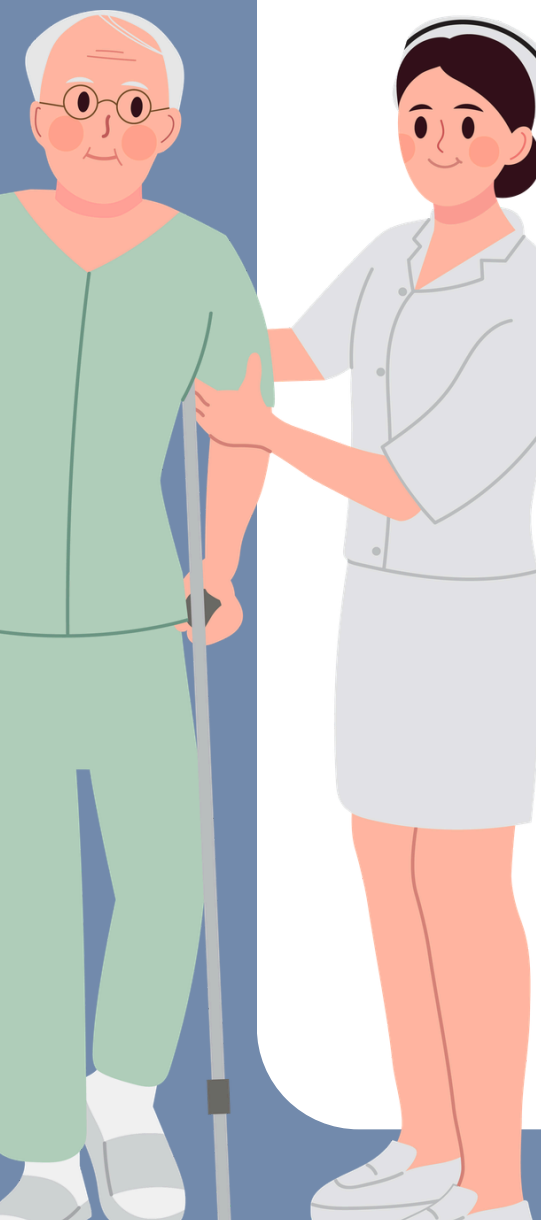




2.THE SITUATION OF IRRATIONAL DRUG USE AT THE GLOBAL AND NATIONAL LEVELS

Context of Thailand:

Thailand has implemented the Phase 2 National Strategy for Antimicrobial Resistance Management (2023–2027) by the Ministry of Public Health (2023), with the goal of significantly reducing unnecessary antibiotic use in humans and promoting rational drug use at all levels of care.



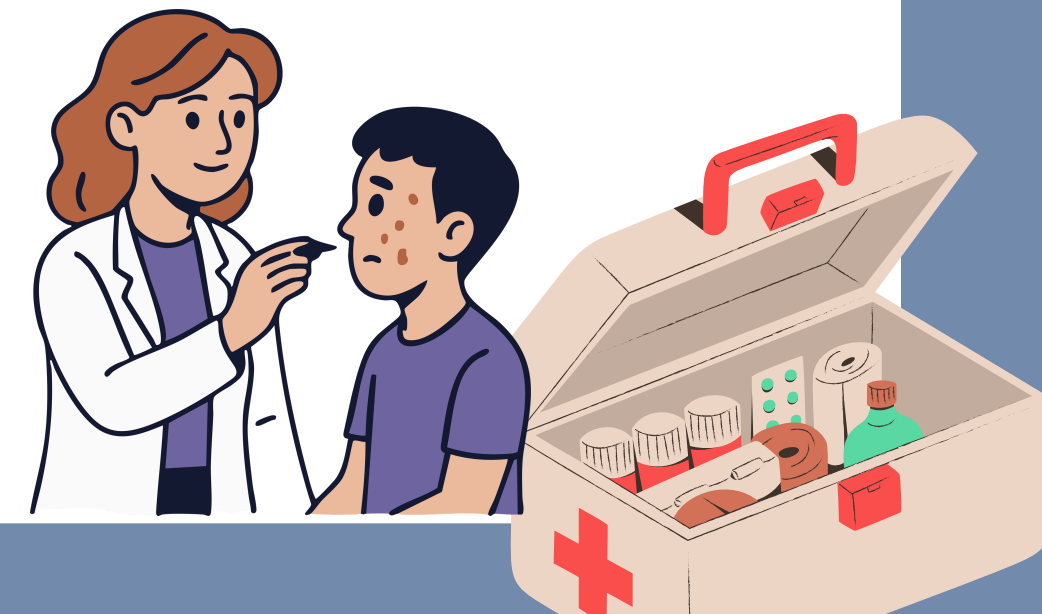
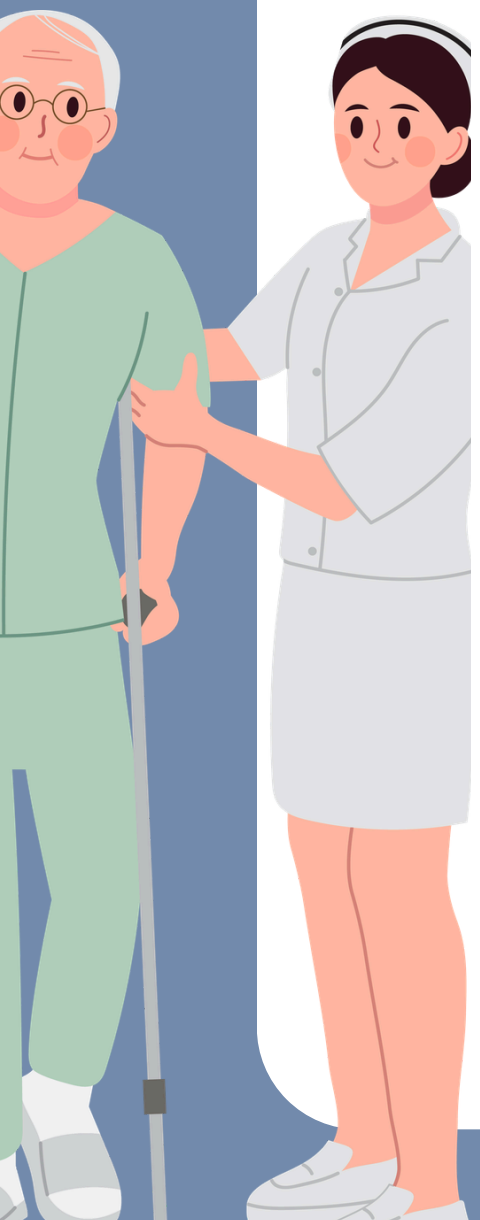


2.THE SITUATION OF IRRATIONAL DRUG USE AT THE GLOBAL AND NATIONAL LEVELS

Example of a Clinical Scenario

Case Study: A working-age patient presented with sore throat and cough, without high fever. The physician diagnosed viral pharyngitis, but the patient requested antibiotics. The role of the nursing student should include:

- 1. Assessing symptoms based on evidence.**
- 2. Educating the patient about the differences between viral and bacterial infections.**
- 3. Explaining the risks of antibiotic resistance.**
- 4. Supporting supportive care.**

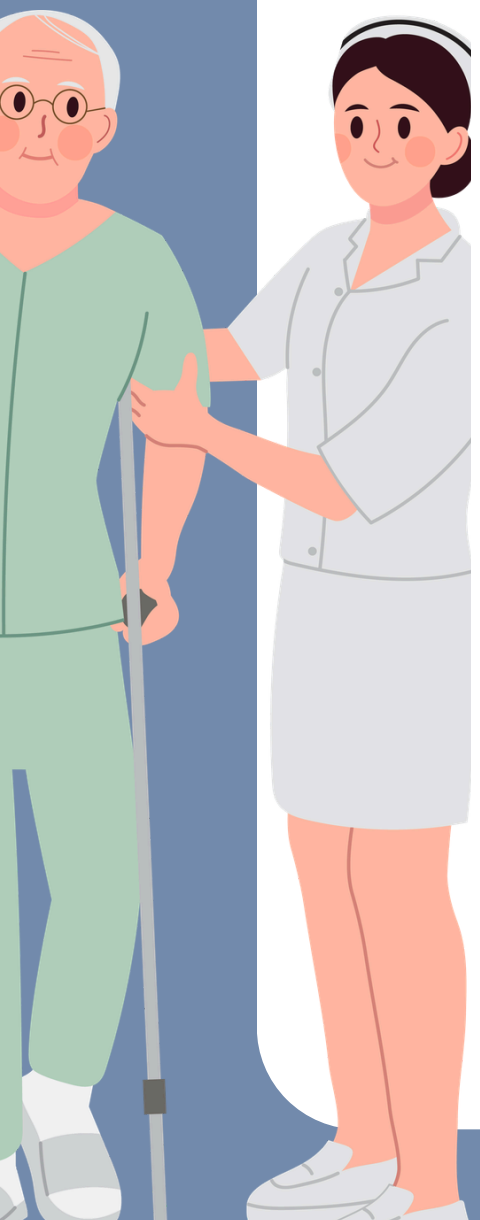




2.THE SITUATION OF IRRATIONAL DRUG USE AT THE GLOBAL AND NATIONAL LEVELS

2.2 Polypharmacy in the Elderly

Polypharmacy refers to the simultaneous use of five or more medications, which is common in elderly individuals with multiple chronic diseases. Research by Maher et al. (2021) found that polypharmacy increases the risk of adverse drug reactions (ADRs), drug-drug interactions, falls, and readmissions to the hospital. In Thailand, the aging society is leading to a continuously increasing trend in this problem.



3.THE NURSE'S ROLE IN PROMOTING RDU WITHIN THE NURSING PROCESS



Rational drug use (RDU) is not solely the responsibility of physicians or pharmacists. Nurses play a crucial role throughout the medication management cycle, from assessment and planning to implementation and evaluation. This is especially true within the context of selected nursing practice courses, digital technologies, and nursing innovations, which aim to develop competencies in clinical reasoning, patient safety, and digital literacy. Globally significant frameworks, **such as the World Health Organization's (2022) "Medication Without Harm" project, highlight nurses as a key force in reducing medication errors within the healthcare system.**



3.THE NURSE'S ROLE IN PROMOTING RDU WITHIN THE NURSING PROCESS

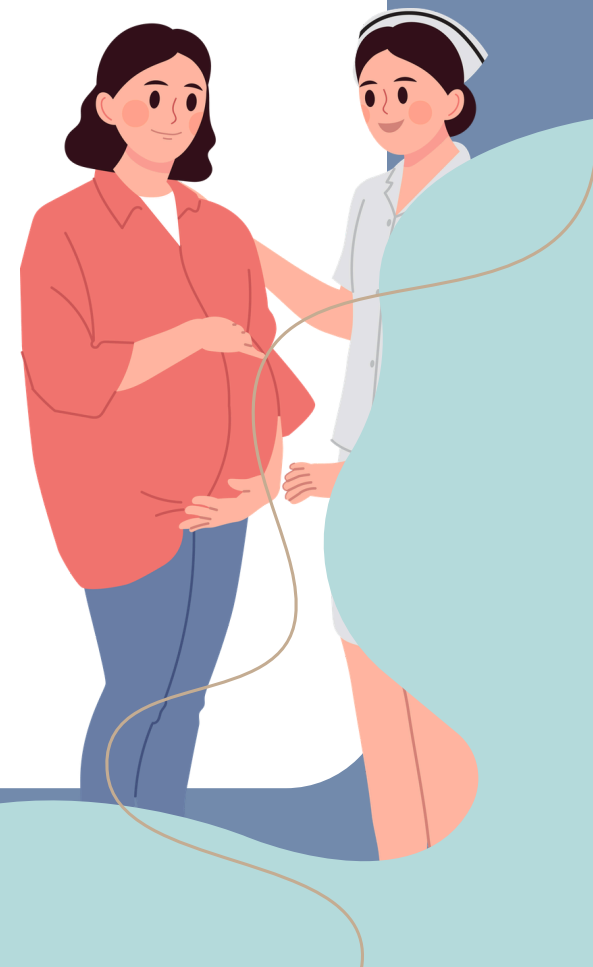


3.1 Assessment: Comprehensive assessment for drug safety.
Assessment is the most crucial step in RDU (Routine Drug Use) because even small discrepancies in information can lead to adverse drug events (ADEs).

3.1.1 Drug Allergy Assessment

3.1.2 Assessment of herbal and over-the-counter (OTC) drug use

3.1.3 Assessment of patient understanding (Health Literacy)



3.THE NURSE'S ROLE IN PROMOTING RDU WITHIN THE NURSING PROCESS



3.2 Nursing Diagnosis: Nursing diagnoses related to drug risks.
Nursing diagnoses link information from the assessment to the care plan. Examples of nursing diagnoses related to drug risks include: Risk for adverse drug reactions, ineffective health management, and risk for unstable blood glucose levels (due to incorrect medication use), etc.



3.THE NURSE'S ROLE IN PROMOTING RDU WITHIN THE NURSING PROCESS



3.3 Planning: Collaborative Healthcare Team Planning

Planning must be interprofessional, with nurses playing a coordinating role.

Key components of Planning:

1. Select medication according to clinical practice guidelines.
2. Determine appropriate dosage based on patient condition.
3. Plan for monitoring adverse drug reactions (ADRs).
4. Educate patients.



3.THE NURSE'S ROLE IN PROMOTING RDU WITHIN THE NURSING PROCESS



3.4 Implementation: Safe Medication Administration

The implementation must adhere to the **10 Rights of Medication Administration**, which include: Right patient, drug, dose, route, time, documentation, reason, response, education, and right to refuse.



4. MEDICATION SAFETY AND PREVENTION OF MEDICATION ERRORS

Medication safety is a crucial component of nursing quality and patient safety, especially in today's complex healthcare environment that utilizes digital technology and involves the use of multiple medications in a single patient. Medication errors therefore represent a systemic risk that requires systematic management.



4. MEDICATION SAFETY AND PREVENTION OF MEDICATION ERRORS

Medication Error

Meaning of a medication error: A medication error refers to an error that occurs in the process of prescribing, dispensing, or administering medication, which may or may not be harmful (WHO, 2022). Understanding the types of errors helps nurses implement appropriate preventive measures.



4. MEDICATION SAFETY AND PREVENTION OF MEDICATION ERRORS

4.1 Prescribing Error: Prescribing errors occur during the medication prescribing process, such as selecting the wrong type of medication, the wrong dosage, inappropriate treatment duration, or failing to consider contraindications or drug interactions. Although doctors prescribe the medication, nurses play a crucial role in checking its appropriateness before administration.



4. MEDICATION SAFETY AND PREVENTION OF MEDICATION ERRORS

4.2 Dispensing Error: Dispensing errors occur during the preparation or dispensing of medication, such as dispensing the wrong type of medication (look-alike or sound-alike drugs), incorrect labeling, or dosages that do not match the prescription. Although pharmacists are primarily responsible, nurses are the "final point" before the medication reaches the patient.



4. MEDICATION SAFETY AND PREVENTION OF MEDICATION ERRORS

4.3 Administration Error. Administration errors are the most common type, and nurses play a direct role. Examples include administering medication to the wrong patient, in the wrong dosage, at the wrong time, or in the wrong manner. Adhering to the 10 Rights of Medication Administration is an international standard for reducing risk.



4. MEDICATION SAFETY AND PREVENTION OF MEDICATION ERRORS

Incident reporting is part of a safety culture that promotes a non-punitive approach. Nurses are required to record incidents through the hospital's incident reporting system, even near misses, which help create a database for analyzing trends and developing preventive measures.





5.DIGITAL TECHNOLOGIES SUPPORTING RATIONAL DRUG USE

In the Digital Health Era, rational drug use (RDU) cannot rely solely on the clinical knowledge of healthcare professionals. It also requires health information technology (HIT) systems to increase accuracy, reduce errors, and support evidence-based decision-making. The World Health Organization (2022) identifies digital technology as a key mechanism for driving the goal of “Medication Without Harm,” particularly in the context of preventing medication errors and promoting antimicrobial stewardship.



5.DIGITAL TECHNOLOGIES SUPPORTING RATIONAL DRUG USE



5.1 Clinical Decision Support Systems (CDSS)

5.2 Electronic Medical Records (EMR)

5.3 e-Prescribing (Electronic Prescribing)





5.DIGITAL TECHNOLOGIES SUPPORTING RATIONAL DRUG USE

From an ethical perspective, while technology helps reduce errors, challenges remain such as alert fatigue, data entry errors, and data privacy issues. Therefore, nurses must use "clinical judgment" in conjunction with technology, and not rely solely on systems without critical thinking.



6.ETHICS, PATIENT RIGHTS, AND COMMUNICATION FOR RATIONAL DRUG USE



Rational drug use (RDU) considers not only scientific accuracy and medical practice guidelines, but must also be based on professional ethics, patient rights, and effective communication, especially in the context of digital nursing where electronic medical records (EMR), computerized prescribing systems (e-Prescribing), and clinical decision support systems (CDSS) are involved. Therefore, nurses must possess competencies in clinical, technological, and ethical aspects simultaneously (American Nurses Association [ANA], 2022).



6.ETHICS, PATIENT RIGHTS, AND COMMUNICATION FOR RATIONAL DRUG USE



Basic ethical principles related to medication use include:

6.1 Right to Information

6.2 Shared Decision-Making (SDM)

6.3 Principles of Autonomy and Beneficence in medication use

6.3.1 Autonomy (Respect for individual independence)

6.3.2 Beneficence (Acting in the best interest)



6.ETHICS, PATIENT RIGHTS, AND COMMUNICATION FOR RATIONAL DRUG USE



The Role of Nurses in the Digital Age: In the digital age, nurses must:

- 1. Use EMR (Electronic Monitoring Record) to record complete medication information.**
- 2. Use CDSS (Circular Data Protection System) to assess drug interactions.**
- 3. Communicate securely and maintain data confidentiality via telehealth.**
- 4. Comply with the Personal Data Protection Act (PDPA).**

A balanced integration of ethics, patient rights, and technology will help ensure safe, transparent, and patient-centered care.





DEMONSTRATING A CLINICAL SCENARIO: RATIONAL USE OF ANTIBIOTICS.

**ANY
QUESTION?**





Thank You

