

Corso di Laurea in Infermieristica

Teaching: NURSING IN EMERGENCY MEDICINE AND SURGERY AND CRITICAL CARE

SSD Course: Bio/14, Med/09, med/45, Med/41, Med/18

Credits: 7

Coordinator: Manuele Cesare

email: manuele.cesare@unicamillus.com

Module: Clinical Nursing Critical Care

SSD Course: MED/45

Credits: 2

Professor: Manuele Cesare

e-mail: manuele.cesare@unicamillus.com

Module: Pharmacology

SSD Course: Bio/14

Credits: 2

Professor: Matteo De Martino

e-mail: matteo.demartino@unicamillus.com

Module: Internal Medicine-Emergency Medicine

SSD Course: Med/09

Credits: 1

Professor: Antonio De Vincentis

e-mail: antonio.devincentis@gmail.com

Module: Anesthesiology

SSD Course: MED/41

Credits: 1

Professor: Anselmo Caricato

e-mail: anselmo.caricato@unicamillus.org

Module: General Surgery-Emergency Surgery

SSD Course: MED/18

Credits: 1

Professor: Celestino Pio Lombardi

e-mail: celestinopio.lombardi@unicatt.it

PREREQUISITES

Even though no prior exams passed are necessary to follow the course, in order to understand the course, the student should have basic knowledge of general nursing, clinical nursing, anesthesiology and pharmacology, biology, biochemistry, physiology, anatomy, physiopathology, semeiotics, and medical pathology. Knowledge of technique and timing of most important surgical procedures.

LEARNING OBJECTIVES

Aim of the Teaching is to:

- provide knowledge of the principles of advanced nursing care for the early recognition, management, monitoring and re-evaluation of the person in a vitally critical condition with reference to the main medical-surgical emergencies and clinical problems in conditions of high complexity of care.
- Provide knowledge of pharmacological concepts including an overview of the history of drugs along with current issues. The topics discussed will include: pharmacotherapeutics, pharmacodynamics, pharmacokinetics, along with drugs contraindications and precautions. Major emphasis will be placed on the drugs used in the nursing field, as well as the nurse's role in pharmacological research.
- provide students with knowledge on the approach to acute patients in the emergency setting, from clinical presentation, diagnostic work-up and therapeutic options.
- Provide knowledge on: general and peripheral anesthesia in surgical specialties, monitoring in Intensive Care Unit, organ failure, physiopathology and treatment, mechanical ventilation, extracorporeal removal techniques, the patient in shock, stupor and coma.
- provide students with knowledge of surgical diseases. In addition, general knowledge on diagnostic approaches is required. Moreover, general information concerning surgical approach on emergency will be explained.

LEARNING OUTCOMES

knowledge and understanding

At the end of this teaching the student will have to know:

- The role, skills and organization of the nurse in the critical care setting.
- The signs and symptoms related to clinical deterioration.
- The first-aid actions aimed at guaranteeing the stabilization of the vital parameters and the person's survival during clinical emergency situations.
- The clinical manifestations of the main diseases treated in the critical care setting.
- The strategies and tools used to support vital functions.
- The development of the nursing care plan in patients with high complexity of care.
- commonly used drug groups in relation to their actions, uses, side effects, and nursing implications.
- the process involved in bringing a drug to the market.
- the role of the nurse in drug testing and marketing, particularly in the realm of patient advocacy.
- how to compare gender, racial and ethnic differences in response to medication administration, action and response.
- how to delineate nursing strategies to optimize the administration of a reliable treatment.
- the organization of the emergency department
- to define the concept of emergency
- the triage procedure
- approach to the patient with dyspnoea, chest pain, shock, headache, alteration or loss of consciousness or focal neurological disorder

- therapeutic management of the patient with acute coronary syndrome, stroke, pulmonary embolism, deep vein thrombosis, shock, respiratory failure, acute kidney injury, hypo and hyperglycaemia.
 - how to collaborate with the anesthesiologist in the main phases of general and peripheral anesthesia in surgical specialties.
 - the main techniques for peripheral and central venous catheterization.
 - the management of a patient in Intensive Care Unit. Monitoring and treatment.
 - how to manage the surgical patient and some of the pathologies related to the surgical field.
- The course provides the theoretical knowledge useful for the planning of a safe nursing assistance based on scientific evidence through the application of nursing process.
- the basic principles of clinical pharmacology, pharmacokinetics and pharmacodynamics and of the main classes of drugs
 - the basic notions of clinical pharmacology, the main classes of drugs, and the history of the drug
 - the basic knowledge of the history of ancient and western modern pharmacology.
 - the mechanisms of action, efficacy and adverse reactions of the main classes of drugs, in particular, anti-inflammatories and analgesics, antibiotics, antiparasitics, antifungals, antivirals.
 - all the main phases of the pathophysiology of the major and most frequent diseases of Internal Medicine.
 - the criteria of clinical diagnosis of the major and most frequent diseases of Internal Medicine.
 - the criteria for instrumental diagnosis of the major and most frequent diseases of Internal Medicine.
 - the criteria for laboratory diagnosis of the major and most frequent diseases of Internal Medicine.
 - the pharmacological and therapeutic applications of the major and most frequent diseases of Internal Medicine.
 - the combined nursing and medical management paths in the management of patients suffering from internal pathology.
 - how to recognize main signs and symptoms, diagnostic flow chart, risk and complication of an emergency surgical patient; to describe surgery principles and techniques.

Applying knowledge and understanding

At the end of the teaching, the student will be able to:

- Use and deepen the acquired knowledge necessary to apply the best evidence in an updated, clear and effective way during the professional clinical practice in critical care.
- Use the acquired knowledge for the autonomous deepening of aspects related to the specific field in which the student will focus within the professional activity;
- describe the fundamental aspects of the pathological conditions envisaged by the program, in relation to the different clinical-assistance pathways.
- judge the basic efficacy and toxicity of the main drug classes

Communication skills

At the end of the teaching, the student will need to know:

- how to communicate the principles of nursing in the critical care setting using specific and appropriate scientific terminology.

- how to use the specific scientific terminology in an appropriate manner.
- how to communicate with the patient about his / her skills in the field of diseases that require a surgical approach
- how to present historical notes on pharmacology, basic principles of pharmacokinetics and pharmacodynamics of the main classes of drugs.

Making judgements

At the end of the teaching, the student will need to know:

- how to collect, judge and interpret scientific evidence to choose the most appropriate nursing interventions in relation to the specific situation in the critical care setting.
- how to assess the condition of a patient admitted to a general surgery department
- the difference, efficacy and toxicity between drugs belonging to the same pharmacological classes.
- how to carry out general conclusions regarding the topics covered.

COURSE SYLLABUS

Clinical Nursing Critical Care:

FUNDAMENTAL CONCEPTS

Overview of critical care nursing: Definition of critical care nursing, Evolution of critical care, Professional organizations, Critical care nurse characteristics, Nursing care models in critical care settings.

Patient and family response to the critical care experience: The critical care environment, The critically ill patient, Family members of the critically ill patient.

Ethical and legal issues in critical care nursing: Ethical decision making, Ethical principles, Selected ethical topics in critical care.

End-of-life care in the critical care unit: Effects on nurses and the healthcare team, Dimensions of end-of-life care.

TOOLS FOR THE CRITICAL CARE NURSE

Comfort and Sedation: Assessment of pain and anxiety, Pain measurement tool, Anxiety and sedation Measurement tools, Continuous monitoring of sedation, Management of pain and anxiety, Substance abuse, Restraining devices.

Management of enteral nutrition in critical Care: Nursing assessment of Nutritional Status, Enteral Nutrition and enteral access devices, Administering a tube feeding, Drug-Nutrient Interactions, Complications of Nutritional Support.

Management of fluid in critical care: Composition and regulating of body fluid, Intravenous solutions, Intravenous catheters (peripheral and central catheters), Management of venous catheters' exit site, Intravenous infusion equipment, Devices to control infusions, Adverse events from infusion catheters.

Dysrhythmia interpretation and management: Overview of electrocardiogram monitoring, Causes of dysrhythmias, Dysrhythmia analysis, Basic dysrhythmias, Cardiac pacemakers.

Hemodynamic Monitoring: Hemodynamic monitoring modalities (invasive, non invasive), Arterial pressure monitoring, Right atrial pressure/Central venous pressure monitoring, Pulmonary artery pressure monitoring, Cardiac output monitoring, Esophageal doppler monitoring.

Ventilatory Assistance: Physiology of breathing and respiratory mechanics, Nursing respiratory assessment, Arterial blood gas test and its interpretation, Oxygen administration, Oxygen delivery devices, Airway management, Endotracheal intubation, Tracheostomy, Endotracheal suctioning, Mechanical ventilation, Positive-pressure ventilation, Noninvasive positive-pressure ventilation, Respiratory monitoring during mechanical ventilation, Complications of mechanical ventilation, Nursing

care during mechanical ventilation, Communication during mechanical ventilation, Weaning patients from mechanical ventilation, Extubation.

Rapid response teams and clinical emergency management: Rapid response teams, Basic life support, Advanced cardiac life support, Recognition and treatment of dysrhythmias, Electrical therapy, Pharmacological interventions during an emergency, Documentation of the emergency situation, Care of the patient after resuscitation, Therapeutic hypothermia after cardiac arrest.

CLINICAL MANIFESTATIONS AND NURSING CARE DURING CRITICAL ILLNESS

Shock, sepsis and multiple organ dysfunction syndrome (MODS); Cardiovascular alterations (Angina, Heart failure, Aortic aneurysms); **Nervous system alterations** (Acute stroke, Seizures and status epilepticus, Central nervous system infections, Spinal cord injury); **Acute respiratory failure** (Acute respiratory distress syndrome (ARDS), Acute respiratory secondary to chronic obstructive pulmonary disease (COPD)/asthma/pneumonia/pulmonary embolism, Ventilator-associated pneumonia); **Acute gastrointestinal bleeding; Endocrine alterations** (Hyperglycemia and hypoglycemia in the critically ill patient); **Trauma and management of specific organ injuries; SARS-CoV-2.**

Pharmacology

General principles of pharmacology

Pharmacokinetics

Pharmacodynamics

Principles of therapy

Principles of toxicology

Active drugs on synapsis and neuroeffective junctions

Neurotransmission

Agonist antagonist muscarinic receptor

Catecholamines, sympathomimetic and adrenergic receptor antagonists

Principles of anesthesiology

Analgesics, opioids

Diuretics

Renine and angiotensin

Drugs for cardiac ischemia treatment

Anti-hypertensive drugs

Pharmacology of gastrointestinal tract

Chemotherapy of infectious diseases

Autacoids, pharmacologic therapy of inflammation

EMERGENCY MEDICINE

Organization of the emergency department. Definition of emergency. The triage procedure. Approach to the patient with chest pain, dyspnoea, headache, shock, alteration or loss of consciousness. Therapeutic management of the patient with acute coronary syndrome, stroke, pulmonary embolism, deep vein thrombosis, shock, respiratory failure, acute kidney injury, hypo and hyperglycaemia.

Anesthesiology

- Use of anesthetics. Management of preanesthesia phase in surgical specialties.
- Techniques for peripheral and central venous catheterization
- Organ failure. Physiopathology and treatment
- Mechanical Ventilation
- Extracorporeal removal techniques
- The patient in shock
- Stupor and coma
- Brain death

Emergency Surgery

- SHOCK
- DIGESTIVE HEMORRHAGE
- ACUTE ABDOMEN
- THORACIC-ABDOMINAL TRAUMA
- NURSING FRAMEWORK OF EMERGENCY SURGICAL PATIENTS

COURSE STRUCTURE

The module of Clinical Nursing Critical Care is structured in 28 hours of frontal teaching, divided into lessons of 3, 4 or 5 hours according to the academic calendar. Frontal teaching includes theoretical lessons and additional seminars on the topics covered.

The module of Pharmacology consists of 28 hours of frontal instruction, divided into lessons of 4 hours according to the academic calendar. Frontal instructions includes theoretical lessons and additional seminars on the topics covered.

The module of Emergency Medicine is structured in 14 hours of frontal teaching, divided into lessons of 2 or 4 hours according to the academic calendar. Frontal teaching includes theoretical lessons and additional seminars on the topics covered.

The module of Anesthesiology is structured in frontal interactive lessons for a total of 14 hours.

The module of Emergency Surgery is structured in 14 hours of frontal teaching, divided into lessons of 2 or 4 hours according to the academic calendar. Frontal teaching includes theoretical lessons and additional seminars on the topics covered.

COURSE GRADE DETERMINATION

The exam of the Teaching of NURSING IN EMERGENCY MEDICINE AND SURGERY AND CRITICAL CARE is comprised of an exam of the modules of CLINICAL NURSING CRITICAL CARE, PHARMACOLOGY, EMERGENCY MEDICINE, ANESTHESIOLOGY, EMERGENCY SURGERY whose marks are an integral part of the Teaching.

The knowledge and ability to understand, the ability to apply knowledge and understanding, the autonomy of judgment and the communication skills of the student will weigh in the final score as follows 30%, 30%, 30% and 10%, respectively.

CLINICAL NURSING CRITICAL CARE: a written test (multiple choice test) is required followed by an oral test. The written test consists of 30 multiple choice questions with 4 options of which only one is correct. The correct answer is 1 point. Any wrong answer counts 0. The final score of the written test will be given by the sum of the partial scores assigned to each question answered correctly. To access the oral exam, the student must have scored at least a minimum of 18 points.

PHARMACOLOGY: The exam will consist of a written test followed by an oral interview.

The written test will consist of 30 multiple-choice questions. A point will be assigned to each correct answer. The final score of the written test will be given by the sum of the partial scores assigned to each question answered correctly. In order to access the oral exam, the student must have scored at least 15 points.

EMERGENCY MEDICINE: Students' skills will be verified with a written exam followed by an oral exam. The written test will consist of 30 questions with multiple-choice answers, for each exact answer a point will be assigned. The final score of the written test will be given by the sum of the partial scores assigned to each question answered correctly. To take the oral exam, the student must have scored at least 15 points.

ANESTHESIOLOGY: Oral examination on the content of teaching

EMERGENCY SURGERY: Students' skills will be verified with a written exam followed by an eventual oral interview (to improve first judgment). The written test will consist of 30 questions with multiple-choice answers, for each exact answer a point will be assigned. The minimum score to pass the exam is 18.

OPTIONAL ACTIVITIES

In addition to teaching activities, students will be given the opportunity to participate in Seminars, Research Internships, Department Internships and Monographic Courses. The topics discussed during the optional activities will not be asked during the exam. Advanced simulation. Individual study, group work, and home work on particular topics.

READING MATERIALS

- Sole, M. L., Klein, D. G., & Moseley, M. J. (2013). Introduction to Critical Care Nursing (6th ed.). St. Louis, Mo: Elsevier/Saunders.
- Berman, A., Snyder, S. J., & Frandsen, G. (2016). Kozier & Erb's fundamentals of nursing: concepts, process, and practice (10th ed.). Boston: Pearson.
- Pharmacology text books, professor's notes.
- McGraw-Hill Education - O. John Ma, Judith Tintinalli, Donald Yealy, Garth Meckler, J. Stapczynski, David Cline, Stephen Thomas - Tintinalli's Emergency Medicine: A Comprehensive Study Guide
- Saunders - ENA - Emergency Nurses Association. Emergency Nursing Core Curriculum
- AACN Essentials of Critical Care Nursing, 4th Ed. Authors: S. Burns, S. Delgado McGraw Hill Editor
- Critical Care Nursing: Science and Practice di Sheila Adam, Sue Osborne, e al. OUP Oxford Ed
- Assistenza infermieristica in anestesia. Giorgio Torri, Elena Moizo. Antonio Delfino Editore
- Guida al monitoraggio in area critica.GD Giusti Maggioli Editore
- Oh. Manuale di terapia Intensiva Bersten AD, Soni NElsevier Masson Editore
- Compendio di Chirurgia per le professioni sanitarie. ESDD – A. Divizia C. Fiorani G. Maggi F. Romano