UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Critical Care Nursing

2526-3-I0101D017-I0101D055M

Aims

General Objective

1. Knowledge and understanding
   The student will acquire knowledge related to nursing care for individuals in life-threatening conditions, understanding the specific characteristics of interventions across different critical care settings.

2. Applying knowledge and understanding
   The student will be able to plan nursing care by identifying care priorities and tailoring interventions based on the patient's clinical condition and the operational context.

3. Making judgements
   The student will develop the ability to critically assess clinical situations, define care priorities, and make appropriate decisions in managing patients in critical conditions.

4. Communication skills
   The student will be able to communicate effectively with the multidisciplinary team and with the patient, ensuring clarity in the planning and sharing of care across the various critical care settings.

5. Learning skills
   The student will develop the ability to independently update and deepen their knowledge and skills in critical care nursing, integrating course learning with future professional practice.

Intermediate Objectives

1. Knowledge and understanding
   The student will understand the organization of the Emergency and Urgency Department (DEA), including the roles and competencies of the different professionals working in both hospital and pre-hospital settings.

They will also be familiar with the care continuity pathways in critical care, including NUE112, AREU Emergency Medical Services, Emergency Department, Intensive Care Unit, and an overview of specialized settings.

2. Applying knowledge and understanding
   The student will be able to identify critical care pathways and apply the systematic assessment of vital functions (ABCDE approach) in adults, neonates, and children. They will be able to plan and document nursing care for patients in life-threatening conditions.

3. Making judgements
   The student will develop critical thinking skills to identify intervention priorities and to make timely and appropriate decisions based on the clinical condition of the critically ill patient.

4. Communication skills
   The student will acquire effective communication skills for collaboration with the multidisciplinary team in various critical care settings, using appropriate terminology and ensuring accurate information sharing in care planning and documentation.

5. Learning skills
   The student will develop autonomous learning skills to continuously update their knowledge and competencies regarding emergency and critical care organization, care pathways, and methods of assessment and intervention in critical settings.

Contents

Summary of Contents

- Maintenance of respiratory function in individuals in life-threatening conditions (adult, neonate, and child)
- Maintenance of cardiovascular function in individuals in life-threatening conditions (adult, with references to neonates and children)
- Maintenance of regulatory systems in individuals in life-threatening conditions (adult, with references to neonates and children)
- Neurological assessment of individuals in life-threatening conditions (adult, with references to neonates and children)
- Altered level of consciousness; assessment of sedation/agitation levels
- Delirium in the Intensive Care Unit
- Nursing responsibilities and competencies related to:
- Management of polytrauma patients in the pre-hospital setting

The course includes Basic Life Support and Defibrillation (BLS-D) training for each student, with certification upon completion

Detailed program

Specific Contents

The Emergency and Urgent Care Department
• The development of an emergency care culture and the historical evolution of the critical care setting
• Planning and documentation tools for nursing care: emergency care report, triage form, nursing record
• Initial and ongoing assessment of the critically ill patient and use of clinical scales
• Responsibilities and competencies of the critical care nurse in applying diagnostic and therapeutic protocols in pre-hospital emergency care and Emergency Department triage
• Triage in the Emergency Department: objectives, process, and competencies
• Triage in infectious emergency-urgency situations (overview)

Maintenance of respiratory function in critically ill patients (adult, neonate, and child)
Nursing care for patients undergoing:
• Oro/nasotracheal intubation
• Percutaneous tracheostomy
• Tracheobronchial suctioning (via tube/tracheostomy cannula)
• Invasive ventilation: main ventilation techniques, management and monitoring of devices and alarms
• Non-invasive ventilation: main techniques, management and monitoring of patients on CPAP via helmet/mask
• Pronation maneuver
Assessment of respiratory function:
• Performing and interpreting an arterial blood gas (ABG) test from radial access

Maintenance of cardiovascular function in critically ill patients (adult, with references to neonates and children)
Assessment of cardiovascular function in the ICU:
• Instrumental and clinical monitoring: heart rate (HR), non-invasive blood pressure (NIBP), invasive blood pressure (IBP), central venous pressure (CVP), pulmonary artery pressure (PAP), pulmonary capillary wedge pressure (PCWP), cardiac output (CO), mixed venous oxygen saturation (SvO?), electrocardiogram (ECG)
Nursing care for patients undergoing:
• External electrical cardioversion and cardiac pacing

Maintenance of regulatory systems in critically ill patients (adult, with references to neonates and children)
Nursing care for patients with:
• Endocrine system alterations
• Thermoregulation disorders
• Acid-base, electrolyte, and metabolic imbalances
• Altered volemia, edema, dehydration
• Liver dysfunction
• Renal dysfunction (continuous veno-venous hemofiltration – CVVH, overview)
• Nutritional imbalance [assessment of nutritional status, management of artificial nutrition (gastric residual volume, enteral nutrition intolerance), glycemic control]

Neurological assessment of critically ill patients (adult, with references to neonates and children)
• Altered level of consciousness
• Unresponsive Wakefulness Syndrome (UWS), Minimally Conscious State (MCS), Coma, Long Lasting Coma (LLC), brain death (overview)
• Clinical and instrumental monitoring
• Assessment scales
• Intracranial pressure (ICP) monitoring, electroencephalogram (EEG) [overview]
• Pain assessment in critically ill patients using validated scales

Assessment of sedation/agitation level
• Use of validated scales

Delirium in the Intensive Care Unit
• Risk factors
• Screening
• Assessment

Nursing responsibilities and competencies related to:
• Management of pharmacological therapy in critical care
• Use of early warning systems to detect deterioration in vital functions (EWS systems)
• Use of physical restraints in the ICU: legal, ethical, and regulatory aspects (individual study)
• Approaching the patient/caregiver in high-stress critical situations; communicating “bad news”
• Management of in-hospital emergencies (Medical Emergency Team – MET activation criteria)
• Prevention of ICU-acquired infections: ventilator-associated pneumonia (VAP), sepsis, and septic shock

Management of polytrauma patients in the pre-hospital setting:
• General principles
• Event assessment, primary and secondary ABCDE survey
• Mobilization of polytrauma patients (evaluation and management of limb and spinal trauma)
• Immobilization and transport aids
• Monitoring of body temperature
• Treatment and management of wounds, burns, and major bone injuries

The program includes Basic Life Support and Defibrillation (BLS-D) training for all students, with official certification as BLS-D providers.

Prerequisites

As per regulations

Teaching form

Lectures delivered in-person in didactic mode, including practical exercises based on clinical cases.

Textbook and teaching resource

ESSENTIAL REFERENCE
Adult e pediatric
AARC Clinical Practice Guidelines: Artificial Airway Suctioning (2022). Respiratory Care. Vol 67 N. 2

Ausili D., Baccin G., Bezze S., Bompan A., Macchi B., Alberio M., Sironi C., Di Mauro S. (2018) Il Modello assistenziale dei processi umani 2018: un quadro teorico per l’assistenza infermieristica di fronte alla sfida della complessità. Stampa: www.lulu.com

Boettger S, Meyer R, Richter A, Fernandez SF, Rudiger A, Schubert M, Jenewein J, Nuñez DG (2019) Screening for delirium with the Intensive Care Delirium Screening Checklist (ICDSC): Symptom profile and utility of individual items in the identification of delirium dependent on the level of sedation. *Palliative and Supportive Care *17, 74 –81

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Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU (2018) *Critical Care Medicine*

Davis MD, Walsh BK, Sittig SE, Restrepo RD (2013) AARC clinical practice guideline: blood gas analysis and hemoximetry. *Respiratory Care* 58(10):1694-703

Guidelines for the provision of nutrition support therapy in the adult critically ill patient: The American Society for Parenteral and Enteral Nutrition (2022) *Journal of Parenteral and Enteral Nutrition.* 46(1):12-41

Infusion Therapy Standards of Practice – INS (2021) Blood Sampling via Direct Arterial Puncture 44: 128-129 *Journal of Infusion Nursing*

Kallet R.H. (2019), Ventilator Bundles in Transition: From Prevention of Ventilator-Associated Pneumonia to Prevention of Ventilator-Associated Events. *Respiratory Care.* Vol 64 N. 8

Klaus – Fanaroff's (2020) Cure del neonato ad alto rischio 7° ed. Antonio Delfino Editore
Linee di indirizzo nazionali sul triage intraospedaliero – atto intesa stato regioni – Ministero della Salute (2019)

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Società Italiana di Neonatologia (2015), Raccomandazioni per la rianimazione neonatale. BioMedia

Società Italiana di Neonatologia (2017), Percorsi assistenziali neonatologici. BioMedia

Sousa AS, Ferrito C, Paiva JA (2018), Intubation-associated pneumonia: An integrative review. 44: 45-52

Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults with Coronavirus Disease 2019 (COVID-19)

IN-DEPTH REFERENCE

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American Academy of Pediatrics and American heart Association (2016), Textbook of Neonatal Resuscitation. 7th edition. American Academy of Pediatrics

A.S.P.E.N. Clinical Guidelines: Nutrition Support of Adult Patients With Hyperglycemia (2013) *Journal of Parenteral and Enteral Nutrition*, Volume 37 Number 1:23-36

Australasian College of Emergency Medicine (2009), Emergency triage education kit

Australasian College for Emergency Medicine (2016), Guidelines on the implementation of the Australasian triage scale in emergency departments

Badon P, Cesaro S (2012). Manuale di nursing pediatrico. Casa Editrice Ambrosiana

Delibera Regione Toscana n° 806 del 24-07-2017

Gelinas C (2016) Pain assessment in the critical ill adult: Recent evidence and new trends. *Intensive and Critical Care Nursing*, 34: 1 – 11

Giacino JT, Katz DI, Schiff ND, Whyte J, Ashman EJ, Ashwal S, Barbano R, Hammond FM, Laureys S, Ling GSF, Nakase- Richardson R, Seel RT, Yablon S, Getchius TSD, Gronseth GS, Armstrong MJ, Gratton RJ, Bazaracai N, Cameron I, Watts N, Brayman C, Hancock G, Twohey R, AlShanteer S, Ryder JE, Wodrich K, Williams E, Guay A, Basso M, Smithson DS (2016). Acuity Assessment in Obstetrical Triage. *J Obstet Gynaecol Can*. 38(2):125-33

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Istituto Superiore di Sanità (2021), Rapporto ISS COVID-19 n 45/2020. Indicazioni ad interim per gravidanza, parto, allattamento e cura dei piccolissimi di 0-2 anni in risposta alla pandemia COVID 19.

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Karlsen K A (2012), The S.T.A.B.L.E. Program Learner Manual, 6th Edition. Post-resuscitation/Pre-transport Stabilization Care of Sick Infants: Guidelines for Neonatal Healthcare Providers. The S.T.A.B.L.E. Program

Lamond E, Murray S, Gibson CE (2017) Delirium screening in Intensive care: a life saving opportunity. Intensive and Critical Care Nursing, 44: 105-109

Linee d'indirizzo per il triage in pronto soccorso. Proposta del Coordinamento nazionale Triage di Pronto Soccorso – Monitor 29 ed. 2012 – AGENAS

Manuale formativo di triage pediatrico (2009). Biomedia

Ministero della salute (2010), Raccomandazioni per le cure perinatali nelle età gestazionali estremamente basse (22-25 settimane)

Ministero della salute (2010), Linee di indirizzo sull'organizzazione del sistema di trasporto materno assistito (STAM) e del sistema in emergenza del neonato (STEN)

Ministero della salute (2014), Il dolore nel bambino. Strumenti pratici di valutazione e terapia. Rodrigo editore srl.

Ministero della salute (2014), Raccomandazione per la prevenzione della morte o disabilità permanente in neonato sano di peso > 2500 grammi non correlata a malattia congenita.

Ministero della salute (2014), Linee di indirizzo nazionale per l'organizzazione e la gestione delle banche del latte umano donato nell'ambito della protezione, promozione e sostegno dell'allattamento al seno

Semester

3d year, 2nd semester

Assessment method

The course includes a final exam consisting of a written test (40 minutes) followed by a mandatory oral exam.

Written test
The written test consists of one open-ended question for each module (Internal Medicine 4, General Surgery 3, and Anesthesiology), aimed at assessing the student's broad understanding of the exam syllabus contents.

Oral exam
The oral exam refers to the Nursing in Critical Care module and consists of a discussion on the topics covered in lectures and in the required textbooks.

Office hours

Meetings are held by appointment.

Sustainable Development Goals

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