



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Assistenza Infermieristica in Area Critica

2122-3-I0101D017

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#### Aims

Early recognition of critical situations. Nursing in specific clinical situations like shock, respiratory failure, cardiac failure, sepsis. Nursing to patients undergoing to a surgical intervention, concerning the management of the anesthesia. Pharmacology: knowledge of the drugs used in a critical care situation like myorelaxants, volatile anesthetic gases, analgesics. Knowledge of mechanical ventilation, anesthesia and life-support systems. Students will be able to describe the clinical picture of the main diseases that may alter the homeostatic balance and suggest the therapeutic approach; indicate the pathophysiological mechanisms that determine them; identify signs and symptoms related to the considered diseases for the influence on nursing process.

#### Contents

The course aims to provide students with the ability to identify and manage medical-surgical emergencies related to nursing in a critical context and operating room. The student will be able to program nursing plans to people in the intensive care unit and in an emergency situation.

#### Detailed program

INTERNAL MEDICINE 4 - Drugs in the emergency. Shock. Coma. Cardiac arrest. Respiratory failure. Intubation. Monitoring in emergency / urgency. The transport of critical patients. GENERAL SURGERY 3 - Acute abdomen: classification, anatomy, semiotics. Acute abdomen: clinical, diagnosis, therapy. Causes of digestive hemorrhage and treatment. Evidence: diagnosis, diagnosis and therapy. Polytrauma: classification, clinical diagnosis, management. Head trauma: classification, clinical diagnosis, management. Burns: anatomy, classification, complications, therapy, evolution of the different degrees of burns. Learning Objectives: knowledge of the basics of anesthesiology and resuscitation with attention to nursing interventions; knowledge of the basics of anesthetic management in both elective and emergency-urgency situations, with specific reference to the operating room and

focused on nursing. ANESTHESIOLOGY - Introduction to anesthesia. Different types of anesthesia and choice. General anesthesia. Safety in Anesthesia, and equipments. The Informed Consent to anesthesia. The premedication. Intravenous Anesthesia: Hypnotics. Analgesia in Anaesthesia: Opioids. Inhalation anesthesia. Curare. The Airway management and mechanical ventilation. Local anesthetics. Locoregional anesthesia: central blocks and peripheral blocks. The intravenous infusions in the operating room. Intra-operative and post-operative monitoring. Pre-operative assessment. The Risk in Anesthesia. Patient's posture. Complications of anesthesia. Treatment of Acute Postoperative Pain. Anesthesia in Patients with Concomitant diseases.

#### **NURSING ASSISTANCE IN CRITICAL AREA - The Emergency Department:**

- Origin of the emergency culture in Italy and evolution
- Planning instruments and nursing data: the "scheda di soccorso", "scheda di triage" and nursing record
- The assessment of critical patient and the use of scales
- Accountability and skills of critical nurse in using diagnostic and therapeutic protocols in emergency situations and triage
- Triage in Emergency Room: goals, process and skills

#### **Respiratory support in critical care (adult, newborn and infant)**

##### Nursing to patient during:

- Tracheal intubation (nasal, oral)
- Percutaneous tracheotomy
- Tracheal suctioning
- Invasive ventilation: mains methods, management and assessment
- Non invasive ventilation: mains methods, management and assessment (CPAP helmet, mask PSV)

##### *Respiratory and Ventilatory assessment*

Arterial blood sample and evaluation

#### **Cardiovascular support in Intensive Care Unit (ICU) (adult, notes in newborn and infant)**

##### *Cardiovascular assessment*

- Clinical and instrumental monitoring: heart rate (HR), non invasive blood pressure (NIBP), invasive blood pressure (IBP), centrale venous pressure (CVP), pulmonary artery pressure (PAP), pulmonary artery wedge pressure (PAWP), cardiac output (CO), venous oxygen saturation (SVO?), electrocardiographic (ECG).

##### *Nursing to patient during:*

- External cardioversion (CVE) and pacing

#### **Regulatory system process support in critical care (adult, notes in newborn and infant)**

##### *Nursing to patient with:*

- Impaired Endocrine System Process
- Impaired Thermoregulation
- Electrolyte Imbalance
- Acid Base Imbalance
- Impaired Fluid Volume
- Impaired Kidney Function (continuous veno-venous hemofiltration – CVVH)
- Impaired Nutritional Status [nutritional assessment, enteral feeding management (Gastric residual volume (GRV) measurements), managing blood glucose.

### **Neurological assessment in critical care (adult, notes in newborn and infant)**

#### *Impaired Consciousness*

- Unresponsive Wakefulness Syndrome (UWS), Minimally Conscious State (MCS), Coma, Long Lasting Coma (LLC), Brain death (notes)

Clinical and instrumental monitoring

- Evaluation scales
- Intracranial pressure monitoring (ICP), electroencephalogram (EEG) [notes]

### **Pain assessment in critical care**

- Evaluation scales

### **Agitation and sedation**

- Evaluation scales

### **Delirium in ICU**

- Risk Factors
- *Screening*
- Assessment

### ***Accountability and skills in:***

- Drugs management in critical conditions
- Using the Early Warning Score (EWS) to identify impaired vital functions
- Physical restraint management in ICU: regulations, professional ethics and precedents (individual work)

- Caring patient/caregiver in critical situations, with high levels of stress: communication of "bad news"
- Management of emergency situation (refer to Medical Emergency Team – MET)
- Nosocomial infections prevention in ICU: Ventilator-Associated Pneumonia (VAP), Sepsis e septic shock.

#### **Multi traumatic event management in an extra hospital setting**

- Premises
- ABCDE evaluation (primary and secondary)
- Mobilization of a patient with a multi trauma (evaluation and management of legs, arms and spinal column)
- Main devices to move and transport patients with trauma
- Temperature management
- Wound, burn and fracture management

The curriculum include the acquisition for each student of the BLS-D executor certificate, according to guidelines of Regione Lombardia.

#### **Prerequisites**

Positive evaluation in the following exams: Fundamentals of Nursing and Midwifery Sciences; Nursing Clinical Methodology; Biomedical Sciences 1; Biomedical Sciences 2; Human Physiology; Clinical Specialty Nursing; Surgical Specialty Nursing.

#### **Teaching form**

Lectures, exercises. Group work.

#### **Textbook and teaching resource**

Chiaranda M. (2016) Urgenze ed Emergenze – Istituzioni, IV ed., Piccin; Linee Guida Italian Resuscitation Council e European Resuscitation Council, 2015; Galvagni M., Perini C. (2010) L'infermiere in sala operatoria, McGraw-Hill Education. Chiaranda M., Urgenze ed Emergenze - Istituzioni. 3° edizione. Piccin (2011). Linee Guida Italian Resuscitation Council e European Resuscitation Council 2015.

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AARC Clinical Practice Guideline: Blood Gas Analysis and Hemoximetry (2013) *Respiratory Care*, 58(10):1694–1703.

AARC Clinical Practice Guidelines: Endotracheal Suctioning of Mechanically Ventilated Patients With Artificial

Airways (2010). *Respiratory care*. Vol. 55 N 6

Ausili D, Baccin G, Bezze S, Di Mauro S, Sironi C (2015) *L'impiego dell'ICNP® con il Modello assistenziale dei processi umani: un quadro teorico per l'assistenza infermieristica di fronte alla sfida della complessità*. Stampa: [www.lulu.com](http://www.lulu.com)

Chiaranda M (2016) *Urgenze ed emergenze – Istituzioni*. 4<sup>a</sup> edizione. Padova: Piccin

Circolare Ministero della Salute - Consiglio superiore di Sanità - Sessione XLV del 23 giugno 2005 effettuazione del prelievo arterioso dall'arteria radiale per emogasanalisi da parte dell'infermiere

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*

Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Pediatric Critically Ill Patient: Society of Critical Care Medicine and American Society for Parenteral and Enteral Nutrition (2017). *Journal of Parenteral and Enteral Nutrition*. Vol 41: 706 –742

Linee Guida *Italian Resuscitation Council and European Resuscitation Council* (2015)

National Institute for Health and Care Excellence Health [NICE] (2016) Guideline Sepsis: recognition, diagnosis and early management (2016)

Practice guideline update: Disorders of consciousness (2017) *Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology; the American Congress of Rehabilitation Medicine; and the National Institute on Disability, Independent Living, and Rehabilitation Research*

Registered Nurses' Association of Ontario [RNAO] (2012). Promoting safety: alternative approaches to the use of restraints.

## **BIBLIOGRAFIA DI APPROFONDIMENTO**

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Blackwood B, Burns KEA, Cardwell CR, O'Halloran P (2014) Protocolized versus non-protocolized weaning for reducing the duration of mechanical ventilation in critically ill adult patients (Review). *Cochrane Database of Systematic Reviews*

Burry L, Rose L, McCullagh IJ, Fergusson DA, Ferguson ND, Mehta S, (2014) Daily sedation interruption versus no daily sedation interruption for critically ill adult patients requiring invasive mechanical ventilation (Review), *Cochrane Database of Systematic Reviews*

Clinical indicators for Endotracheal Suctioning in adult Patients receiving Mechanical Ventilation (2015) *AJCC AMERICAN JOURNAL OF CRITICAL CARE*, Volume 24, No. 4

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

Hua F, Xie H, Worthington HV, Furness S, Zhang Q, Li C (2017) Oral hygiene care for critically ill patients to prevent ventilator-associated pneumonia (Review) *Cochrane Database of Systematic Reviews*

Lamond E, Murray S, Gibson C.E (2017) Delirium screening in Intensive care: a Life saving opportunity. *Intensive*

and *Critical Care Nursing*, 44: 105-109

Oddo M, Bracard S, Cariou A, Chanques G, Citerio G, Clerckx B, Godeau B, Godier A, Horn J, Jaber S, Jung B, Kuteifan K, Leone M, Mailles A, Mazighi M, Mégarbane B, Outin H, Puybasset L, Sharshar T, Sandroni C, Sonnevile R, Weiss N, Taccone FS (2019) Update in Neurocritical Care: a summary of the 2018 Paris international conference of the French Society of Intensive Care. *Annals of Intensive Care*, 9:47

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Shetty RM, Bellini A, Wijayatilake DS, Hamilton MA, Jain R, Karanth S, Namachivayam A (2018) BIS monitoring versus clinical assessment for sedation in mechanically ventilated adults in the intensive care unit and its impact on clinical outcomes and resource utilization (Review), *Cochrane Database of Systematic Reviews*

Siti R, Hairani D, Tri Utami G, Nurcahyati S (2018) Organ failure of patients using ventilator based on the sequence organ failure assessment score (SOFA) admitted in Intensive Care Unit. *Enfermeria Clinica*, 29: 5 – 8

Subirana M, Solà I, Benito S. (2010) Closed tracheal suction systems versus open tracheal suction systems for mechanically ventilated adult patients (Review) *Cochrane Database of Systematic Reviews*

Villar C, Pannuti C, Nery D, Morillo C, Carmona MJ, Romito G (2016) Effectiveness of Intraoral Chlorhexidine Protocols in the Prevention of Ventilator-Associated Pneumonia: Meta-Analysis and Systematic Review. *Respiratory Care Vol 61(9)*

Wang L, Li X, Yang Z, Tang X, Yuan Q, Deng L, Sun X (2016) Semi-recumbent position versus supine position for the prevention of ventilator-associated pneumonia in adults requiring mechanical ventilation (Review). *Cochrane Database of Systematic Reviews*

## **Semester**

3 Year - 2 Semester

## **Assessment method**

Multiple choice questions: for an exhaustive verification of the program.

## **Office hours**

On appointment

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