UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Using Ecmo in Emergency Department

2526-3-I0101D143

Aims

The course aims to provide students of the Bachelor's Degree in Nursing a solid theoretical and practical preparation on the use of veno-arterial (VA) ECMO support in emergency situations, both intra- and extra-hospital.

In particular, the course aims to:

1. Knowledge and understanding: Deepen knowledge of the main clinical indications for the activation and positioning of an ECMO VA support. Understand the working principles of the ECMO technique and its pathophysiological impact on the patient.
2. Application of knowledge and understanding ability: Recognize key nursing diagnoses associated with patient management in ECMO VA. Identify and apply the most appropriate nursing interventions and monitor clinical-care outcomes.
3. Autonomy of judgement: Develop the ability to collect, interpret and evaluate clinical-care data related to the person in ECMO VA, formulating critical and autonomous judgements. Consider the ethical, organisational and relational implications of ECMO patient care.
4. Communication skills: Acquire effective communication skills to interact professionally with the multidisciplinary team involved in patient management in ECMO. Be able to convey clinical information in a clear and appropriate manner to both specialist and non-specialist interlocutors (family members, caregivers, etc.).
5. Ability to learn: Promote a proactive approach to lifelong learning, facilitating the updating of nursing skills in relation to the evolution of ECMO management technologies and protocols.

Contents

Historical background and definition of ecmo support
• Basic ecmo v-a physiology, clinical indications, inclusion criteria
• Main complications

• Taking charge of the supporting person
• Activation, protocols and team work
• State of the art and research, ethical considerations

Detailed program

Knowledge of the main indications and contraindications to the positioning of an ECMO V-A support

• Basic physiology of ECMO V-A, clinical indications, inclusion criteria

• ECMO V-A operating techniques

• Exposure of a clinical case of ECMO V-A positioning in emergency

• Patient Management in ECMO V-A: Nursing, monitoring, transport and complications

• Weaning from ECMO V-A or bridge to VAD/transplantation

• State of the art and research, ethical considerations

Prerequisites

Enrolment in the third year of Degree in Nursing

Teaching form

The lesson takes place in the dispensing mode in presence through frontal lesson and guided discussion.

Textbook and teaching resource

Richardson, A. S. C., Tonna, J. E., Nanjayya, V., Nixon, P., Abrams, D. C., Raman, L., Bernard, S., Finney, S. J., Grunau, B., Youngquist, S. T., McKellar, S. H., Shinar, Z., Bartos, J. A., Becker, L. B., Yannopoulos, D., B?elohlávek, J., Lamhaut, L., & Pellegrino, V. (2021). Extracorporeal Cardiopulmonary Resuscitation in Adults. Interim Guideline Consensus Statement From the Extracorporeal Life Support Organization. ASAIO journal (American Society for Artificial Internal Organs : 1992), 67(3), 221–228.

Ubben, J. F. H., Heuts, S., Delnoij, T. S. R., Suverein, M. M., van de Koolwijk, A. F., van der Horst, I. C. C., Maessen, J. G., Bartos, J., Kavalkova, P., Rob, D., Yannopoulos, D., B?lohlávek, J., Lorusso, R., & van de Poll, M. C. G. (2023). Extracorporeal cardiopulmonary resuscitation for refractory OHCA: lessons from three randomized controlled trials-the trialists' view. European heart journal. Acute cardiovascular care, 12(8), 540–547.

Rao, P., Khalpey, Z., Smith, R., Burkhoff, D., & Kociol, R. D. (2018). Venoarterial Extracorporeal Membrane Oxygenation for Cardiogenic Shock and Cardiac Arrest. Circulation. Heart failure, 11(9), e004905.

Panchal, A. R., Bartos, J. A., Cabañas, J. G., Donnino, M. W., Drennan, I. R., Hirsch, K. G., Kudenchuk, P. J., Kurz, M. C., Lavonas, E. J., Morley, P. T., O'Neil, B. J., Peberdy, M. A., Rittenberger, J. C., Rodriguez, A. J., Sawyer, K. N., Berg, K. M., & Adult Basic and Advanced Life Support Writing Group (2020). Part 3: Adult Basic and Advanced Life Support: 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation, 142(16_suppl_2), S366–S468.

Lorusso, R., Shekar, K., MacLaren, G., Schmidt, M., Pellegrino, V., Meyns, B., Haft, J., Vercaemst, L., Pappalardo, F., Bermudez, C., Belohlavek, J., Hou, X., Boeken, U., Castillo, R., Donker, D. W., Abrams, D., Ranucci, M., Hryniewicz, K., Chavez, I., Chen, Y. S., … Whitman, G. (2021). ELSO Interim Guidelines for Venoarterial Extracorporeal Membrane Oxygenation in Adult Cardiac Patients. ASAIO journal (American Society for Artificial Internal Organs : 1992), 67(8), 827–844.

Belohlavek, J., Smalcova, J., Rob, D., Franek, O., Smid, O., Pokorna, M., Horák, J., Mrazek, V., Kovarnik, T., Zemanek, D., Kral, A., Havranek, S., Kavalkova, P., Kompelentova, L., Tomková, H., Mejstrik, A., Valasek, J., Peran, D., Pekara, J., Rulisek, J., … Prague OHCA Study Group (2022). Effect of Intra-arrest Transport, Extracorporeal Cardiopulmonary Resuscitation, and Immediate Invasive Assessment and Treatment on Functional Neurologic Outcome in Refractory Out-of-Hospital Cardiac Arrest: A Randomized Clinical Trial. JAMA, 327(8), 737–747.

Abrams, D., Garan, A. R., Abdelbary, A., Bacchetta, M., Bartlett, R. H., Beck, J., Belohlavek, J., Chen, Y. S., Fan, E., Ferguson, N. D., Fowles, J. A., Fraser, J., Gong, M., Hassan, I. F., Hodgson, C., Hou, X., Hryniewicz, K., Ichiba, S., Jakobleff, W. A., Lorusso, R., … International ECMO Network (ECMONet) and The Extracorporeal Life Support Organization (ELSO) (2018). Position paper for the organization of ECMO programs for cardiac failure in adults. Intensive care medicine, 44(6), 717–729.

Semester

Second semester

Assessment method

Frequency

Office hours

By appointment

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION