

MAS in Cardiovascular Perfusion

004 Medicine II and Perfusion Science I

Cardiopulmonary bypass (CPB) is used to maintain systemic circulation during cardiac surgery and for support for cardiac and respiratory failure. This module will cover the guidance procedures of the components involved with extracorporeal circulation and the technical responsibilities relating to arrhythmia therapies. Topics of differentiate between the extracorporeal techniques utilised for children, adults and for different operations round off the module.

The performance of cardiopulmonary bypass is the key responsibility of the perfusionist. The preparation and implementation of CPB support is accomplished through close coordination between the perfusionist and the involved cardiac surgeons. Nowadays, the routine use of circulatory support systems is applied to a growing spectrum of treatment indications and therefore the perfusionist requires a broad fundamental knowledge of the functional principles of these complex technical systems. The scope of tasks of a perfusionist include the participation in the implantation of these systems in neighbouring hospitals to enable the transport of patients by the involved rescue services to the proper care units.

Learning Outcomes/Competencies

The students will be able to,

- differentiate between the extracorporeal techniques utilised for children and adults and for different operations
- determine and coordinate the guidance procedures of the components involved with extracorporeal circulation
- perform technical responsibilities relating to arrhythmia therapies
- describe the components, systems, and controls used in extracorporeal circulation
- differentiate and apply the various techniques used in cardiac assist and extracorporeal life support.

Module Content

- Blood Management
- Vascular Surgery
- Cardiac Surgery (congenital)
- Cardiac Arrhythmia
- Cardiopulmonary Bypass (CBP)
- Cannulation Techniques, Reservoir, Vacuum
- Components: Oxygenators, e.g.
- Pathophysiology of CPB
- Parameters CPB
- Assist Devices

Teaching and Learning Methods

Lectures, Learning on the model, Discussions, Case Studies, Guided Self-Study, Training, etc.

Proof of Performance

Case study

Literature

Chikwe, J., Cooke, D. & Weiss, A. (2013). Cardiothoracic Surgery. (2th Edition). Oxford: Oxford Specialist Handbooks in Surgery.

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Givertz, M. (2011). Ventricular Assist Devices. Important Information for Patients and Families. Circulation, 124: e305-e311. Greenville Ave: American Heart Association.

Gravlee, G., Davis, R., Hammon, J. & Kussmann, B. (2016). Cardiopulmonary Bypass and Mechanical Support: Principles & Practice (4th edition). Philadelphia: Wolters Kluwer.

National Heart, Lung, and Blood Institute (NHLBI) (2015). Bethesda. [Home | NHLBI, NIH](#)

Schmid, C & Philipp, A. (2011). Guidelines for Extracorporeal Circulation. Heidelberg: Springer.

Module Convener

Manuel Iafrate, Head of MAS in Cardiovascular Perfusion; BSc in Cardiovascular Perfusion, ECCP

Teaching Staff

Araujo Batista Grazielle, BA Language and Literature
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Weber René

Requirements

- ability to read and understand English expert literature and to follow classes taught in English
- knowledge of Scientific Work
- prospect of an internship in the area Cardiovascular Perfusion

Module Code

MAS_CP_004

Module Type/Module Order

Mandatory Module in the course MAS Cardiovascular Perfusion
The module order is fix.

Study Time/ECTS

150 hours, 5 ECTS points
40 hours Classroom Lessons and 110 hours Guided Self-Study

Module Fees

On request

Teaching Language

English

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