

MAS in Cardiovascular Perfusion

005 Perfusion Science II

An extensive equipment and monitoring technology is needed for cardiopulmonary bypass. This module will cover the perfusion requirements of the various operations for paediatric and adult patients, as well as the perfusion procedures required for emergency medicine. Topics of development and improvement of soft- and hardware with the medical industry round off the module.

A surgical intervention on the heart is always a challenge, regardless of the best experience, competence and routine of all involved. There is ever-present surgical, anaesthetic, and technical risk involved. Complications can mean serious consequences or death for the patient. Yet most perfusion errors can be avoided if discovered and corrected at an early stage. Acquired expertise and the necessary attention support the detection of potential problem situations. The operation of the involved equipment is complex and requires the full attention of the perfusionist.

Learning Outcomes/Competencies

The students will be able to,

- assume responsibility for independent and assisted tasks in perfusion diagnostics, therapies, and techniques for adult and paediatric patients
- operate the heart-lung machine and extracorporeal assist systems
- control the patient temperature with the hypothermia machine
- differentiate between the perfusion requirements of the various operations for paediatric and adult patients, as well as the perfusion procedures required for emergency medicine
- differentiate between the conventional ECC setup and special ECC systems
- collaborate in the development and improvement of soft- and hardware with the medical industry.

Module Content

- Cardiology für adults and pediatric cardiology
- PVC/Plasticizer
- Normo-hypothermia machine
- Hygiene and sterility
- Perfusion aortic surgery and surroundings vessels
- MECC
- Optimized Perfusion
- NIRS
- CBP-System and Set
- Centrifugal Pumps
- Perfusion for Chemotherapy

Teaching and Learning Methods

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

Proof of Performance

CPB-Circuit assembly

Literature

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

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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](#)

Sarrazin, T. (2009). Erste Verordnung zur Änderung der ausbildungs- und Prüfungsordnung für Kardiotechnikerinnen und Kardiotechniker. Berlin: Senatsverwaltung für Gesundheit, Umweltschutz und Verbraucherschutz.

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

Schuler, J. (2010). Perioperative drug management: inhibition of platelet function in cardiovascular diseases. Arzneimittelbrief, 44 (17). Berlin: Westkreuz.

Module Convener

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

Teaching Staff

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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_005

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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