MAS in Cardiovascular Perfusion

007 Applied Perfusion Science II

The module "Applied Perfusion Science II" deals with four main topics: Paediatric perfusion, autologous blood collection with blood salvaging techniques, the management of patient temperature for hypothermic circulatory and hyperthermic intraperitoneal chemotherapy.

1. Paediatric perfusion is a specialised area for perfusionists performing cardiopulmonary bypass (CPB), because children who need cardiac surgery are not just “small adults”: other clinical pictures and syndromes, other circulatory conditions and paediatric dimensions require additional knowledge.
2. Perfusion techniques such as autologous blood collection, haemodilution, reinfusion of collected blood through blood salvaging techniques using the Autotransfusion device (Cell Saver) can effectively lead to a reduction of blood loss and need for foreign blood products during surgery.
3. The management of patient temperature for hypothermic circulatory arrest can reduce the risk of neurological complications during surgery on the thoracic aorta, while on the other hand patient rewarming in cases of acci-dental hypothermia is still a life threatening challenge.
4. The use of an extracorporeal circuit is essential to deliver hyperthermic intraperitoneal chemotherapy (HIPEC). One of the advantages here is that HIPEC causes fewer side effects than intravenous chemotherapy, because there is very little systemic infiltration of the toxic chemotherapy.

Learning Outcomes/Competencies

The students will be able to,

- prevent and efficiently handle emergency situations in perfusion techniques
- apply blood saving techniques
- operate the heart-lung machine (HLM) and extracorporeal life support systems for paediatric patients
- operate the heart-lung machine under exceptional circumstances
- regulate non-pulsatile and pulsatile flow with the HLM
- carefully conduct temperature management of the patient during ECC
- identify, summarize, and communicate significant aspects of a scientific presentation
- perform a cardiopulmonary resuscitation procedure for cardiac patients
- successfully pass the EBCP examination for certification.

Module Content

- Transfusion Guidelines
- Emergency cardiac medicine
- Emergency vascular Surgery
- Congenital Cardiac Surgery
- Pediatric Perfusion
- Temperature Management
- Autotransfusion systems
- (Non)pulsatile flow regulation
- HIPEC
- Washing stored red blood cells
- Information MAS Thesis

Teaching and Learning Methods

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

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of Applied Sciences

Proof of Performance

Written examination

Literature

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

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.

Module Convener

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

Teaching Staff

HJ. Jenny
P. Baartmans
G. Erdös
M. Araujo Klein
R. Prêtre
Z. Rancic
M. Schärli
N. Scharpf

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_007

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

Careum Hochschule Gesundheit
Gloriastrasse 18a, CH-8006 Zürich
T +41 43 222 63 00
gesundheit@careum-hochschule.ch
careum-hochschule.ch