

MAS in Cardiovascular Perfusion

003 Medical Technology and Natural Science II

In perfusion practice it is recommended to collect and analyze data. The aim is continuous quality improvement. In this module, the necessary fundamental knowledge of technology, mathematics and statistics will be compiled so that the perfusionist can engage competently in data collection and documentation during independent control of the heart-lung machine (HLM) and other medical devices.

Perfusionists are supported by modern data management systems that relieve them from much manual work, collected data and parameters must still be obtained and analyzed on a targeted basis. Legal and safety related aspects must be considered for data documentation and their analysis while using electrical engineering and measurement technology. Dangerous accidents can be avoided through conscientious control of devices for possible faults and defects. The comprehensive machine check has to be recorded and entered in the data-system for quality control purposes.

Learning Outcomes/Competencies

The students will be able to,

- manage mathematical calculations and interpret statistical information
- describe fundamental basics in physics and medical technology to ensure the correct understanding and management of medico-technical processes
- independently manage special clinical databases and information systems
- define relevant parameters for data collection and verify their continuous recording
- accurately collect, document, and process device parameters
- convey the basic principles of physics involved in perfusion science.

Module Content

- Mathematics
- Statistics
- Physics: Mechanics, Hydrodynamics, Transfer
- Data management systems: PDMS and local
- Data management systems: global, eHealth
- Device parameters
- Data management & safety

Teaching and Learning Methods

Lectures, learning on the model, discussions, case studies, Guided Self-Study

Proof of Performance

Description of the assignment

Literature

- eHealth Suisse (Ed.). (2009). Standards und Architektur. Erste Empfehlungen (Normes et architecture. Premières recommandations). Unter <http://www.e-health-suisse.ch/>
- Giancoli, D. (2005). Physics. Principles with applications. (6th ed.). New Jersey: Upper Saddle River. Gravlee, G. M.D., Davis, R., Stammers, A. (2016). Cardiopulmonary Bypass: Principles and Practice (4th edition). Walters Kluwer.
- Haas, P. (2006). Gesundheitstelematik. Grundlagen, Anwendungen, Potenziale. Berlin, Heidelberg & New York: Springer-Verlag.

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- Schmid, C & Philipp, A. (2011). Guidelines for Extracorporeal Circulation. Heidelberg: Springer.
- Schmid, A., Marik, C., Wyss, S., Hofmänner, I., & Lovis, C. (Eds.). (2010). Standards und Architektur. Empfehlungen II (Normes et architecture. Recommandations II).
- Schmid, A., Marik, C., Wyss, S., Hofmänner, I., & Lovis, C. (Eds.). (2011). Standards und Architektur. Empfehlungen III: Personenidentifikation und Berechtigungssystem (Normes et architecture. Recommandations III: Identification de personnes et système d'autorisation).
- Schmid, A., Bugmann, C., Hofmänner, I., Kim, S.-I., Wyss, S., & Lovis, C. (Eds.). (2013). Standards und Architektur. Empfehlungen IV: Kommunikation zwischen Gemeinschaften/Zugangsportale (Normes et architecture. Recommandations IV: Communication entre communautés/Portail d'accès).
- Schmid, A., Bugmann, C., Hofmänner, I., Kim, S.-I., Wyss, S., von Känel, C., & Lovis, C. (Eds.). (2014). Standards und Architektur. Empfehlung V: Regeln für die Steuerung der Zugriffsrechte (Normes et architecture. Recommandations V: Règles concernant la gestion des droits d'accès).

Module Convener

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

Teaching Staff

Dreizler Thomas, clinical perfusionist ECCP
Dr. Fusina Fabian
Dr. Ganter Christoph
Jenny Hansjörg, clinical perfusionist ECCP
Nastarowitz Bernhard
Paal Sebastian, clinical perfusionist ECCP
Staub Timo
Wenger Lukas

Requirements

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

Module Code

MAS_CP_003

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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