CV Research Challenges in organ systems

Code: M_BCVRC19
Type: Optional
Period: Semester 1
Credits: 24.0
Language of instruction: English

Faculty: VUmc School of Medical Sciences

Coördinator: Mrs. prof. dr. J. van der Velden, mrs. dr. I. Vergroesen

Examinator: Mrs. prof. dr. J. van der Velden, mrs. dr. I. Vergroesen

Mode of delivery: Face-to-face

Learning activities and teaching methods: Interactive lectures, practicals (visits to laboratories and clinical settings), working groups, writing assignments

Level: 300

Target audience Bachelor’s students of VUmc School of Medical Sciences and external (and international) students with a (bio)medical background.

Course content Cardiovascular failure is the most common cause of hospitalization in Western societies and, despite advances in treatments, the prognosis of patients with heart failure remains poor. Progressive deterioration in vascular and myocardial function is a crucial feature of chronic heart failure and is the result of many different pathological processes affecting the vessels and muscle of the heart. As a result of changes in lifestyle-leading to obesity, hypertension, and diabetes-cardiac and vascular problems now frequently arise at a relatively young age. As life expectancy has increased, this aging population has become characterized by chronic cardiovascular disease, causing reduced quality of life and increased healthcare costs.

During this minor basic (preclinical) and clinical scientists will highlight the recent advancements in understanding causes of cardiovascular disease, which not only involve the heart and vasculature, but also the complex interactions between other organ systems (lungs, kidneys). A brief overview
Learning outcomes
1. To understand clinical presentation of heart failure with reduced and preserved ejection fraction
2. To understand pathomechanisms of heart failure with reduced and preserved ejection fraction
3. To understand pathomechanisms of arrhythmias
4. To understand interaction of diabetes and cardiovascular syndromes
5. To understand ischemia and its cause and effects
6. To understand clinical presentation and pathomechanisms of genetic cardiomyopathies
7. To understand mutual cross-talk between the heart and kidney
8. To understand interaction between the lungs and the right heart
9. To have an overview of current diagnosis and treatment options and future challenges related to objectives 1-8

Assessment methods and criteria
For each of the 9 learning objectives an assignment will be formulated.
Method of assessment (min. 5 independent exams)
2 CAT’s with open questions in English, 1 individual discussion paper, 1 presentation of the protocol, 1 written protocol in a group of 4 students and presence at workgroups and guest lectures.
Presentations of students in workgroups will get feedback from the teachers.
Assignments will be used for working groups to practice scientific debating in English.

Assignment examples:
Pro-con debate on clinical significance of vascular calcification
Difference between HFPeF and HFReF
Causes and therapeutical options in AF
Measurements of arterial stiffness in human and identify factors that modify this.
Concepts of atherosclerosis (inflammation, crystallopathy etc)
Team-based learning meeting covering type 4 cardiorenal syndrome
Presentation on several individual pathway that are involved in type 4 cardiorenal syndrome.

Recommended or required reading and other learning resources/tools
This minor is supported by a corresponding CANVAS course, which contains all of the required information of this minor including an overview of the required articles and assignments. The CANVAS course will also be used to post announcements relevant to the minor. You will automatically have access to the CANVAS course.

Prerequisites
Knowledge on basic functions of heart and vessels is recommended. The knowledge of anatomy of the heart, basic electrophysiology (ECG) and flow patterns in the heart are considered basic knowledge.