Field of doctoral studies:
Doctoral supervisor:

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Comparative value of classical and alternative echocardiographic parameters in establishing prognosis in acute heart failure. Implications in therapy selection and response monitoring*
Contents / Main aspects to be considered. The explosive development of echocardiographic techniques has brought to light new parameters that assess ventricular performance in acute heart failure (AHF). The prognostic value of these parameters is largely unknown. The comparative evaluation of classical and modern parameters on a homogeneous cohort of AHF patients is proposed. The study aims also to validate original parameters that can discriminate early between patients at high risk and those at low risk of major adverse events. The methodology involves comprehensive clinical and laboratory examinations, along with serial echocardiographic assessment, using high performance equipment. The follow-up period and the proposed cohort allow for the discrimination of the prognostic value of the proposed parameters.

Recommended bibliography:

1. Theresa A McDonagh et al, ESC Scientific Document Group , 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: Developed by the Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC) With the special contribution of the Heart Failure Association (HFA) of the ESC, European Heart Journal, Volume 42, Issue 36, 21 September 2021, Pages 3599–3726, https://doi.org/10.1093/eurheartj/ehab368
2. Theresa A McDonagh et al, ESC Scientific Document Group , 2023 Focused Update of the 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: Developed by the task force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC) With the special contribution of the Heart Failure Association (HFA) of the ESC, European Heart Journal, Volume 44, Issue 37, 1 October 2023, Pages 3627–3639, https://doi.org/10.1093/eurheartj/ehad195
3. Barry, Timothy et al. "The Role of Artificial Intelligence in Echocardiography." Journal of imaging vol. 9,2 50. 20 Feb. 2023, doi:10.3390/jimaging9020050
4. Albani, Stefano et al., Echocardiographic Biventricular Coupling Index to Predict Precapillary Pulmonary Hypertension.Journal of the American Society of

Echocardiography, Volume 35, Issue 7, 715 - 726

5. Reddy, Yogesh N V et al. "The haemodynamic basis of lung congestion during exercise in heart failure with preserved ejection fraction." European heart journal vol. 40,45 (2019): 3721-3730. doi:10.1093/eurheartj/ehz713

6. Chen, JS., Pei, Y., Li, Ce. et al. Prognostic value of heart failure echocardiography index in HF patients with preserved, mid-ranged and reduced ejection fraction. BMC Cardiovasc Disord 20, 351 (2020). https://doi.org/10.1186/s12872-020-01635-6

7. Fletcher, A., et al. "Machine Learning Augmented Echocardiography for Diastolic Function Assessment." Frontiers in Cardiovascular Medicine, vol. 8, Frontiers Media, 2021.

8. Potter, Elizabeth, and Thomas H Marwick. "Assessment of Left Ventricular Function by Echocardiography: The Case for Routinely Adding Global Longitudinal Strain to Ejection Fraction." JACC. Cardiovascular imaging vol. 11,2 Pt 1 (2018): 260-274. doi:10.1016/j.jcmg.2017.11.017

9. Husebye, Trygve et al. "Systolic mitral annulus velocity is a sensitive index for changes in left ventricular systolic function during inotropic therapy in patients with acute heart failure." European heart journal. Acute cardiovascular care vol. 7,4 (2018): 321-329. doi:10.1177/2048872616687114

10. Manca, Paolo et al. "Transient versus persistent improved ejection fraction in non-ischaemic dilated cardiomyopathy." European journal of heart failure vol. 24,7 (2022): 1171-1179. doi:10.1002/ejhf.2512

Prerequisites / Remarks: *to be adapted/ completed/ deleted*

X Scientific Doctorate (full-time only)
☐ Professional Doctorate – in the fields of Music and Science of sport and physical   education (full-time or part-time)

☐ without tuition fee (state budget funded)
☐ with tuition fee or with funding from other sources than the state budget

TOPIC 2: Classic and alternative scores versus phenotypes for assessing short and medium-term prognosis in acute heart failure

Contents / Main aspects to be considered
Acute heart failure represents one of the most common causes of hospitalization, associated with high resource consumption and high medium-term mortality. Numerous prognostic scoring systems have been proposed, using clinical parameters, laboratory data and biomarkers, and, to a lesser extent, echocardiographic parameters. A comprehensive score should be easy to apply and should encompass the entire spectrum of usual assessments for this category of patients. The following parameters are proposed to be taken into consideration: etiology, level of congestion, mechanical ventilation, NTproBNP, troponin level, ECG findings, renal dysfunction, electrolyte imbalances and echocardiographic parameters. These parameters will be collected from a homogeneous cohort of patients for derivation and then validated on another homogeneous cohort of patients. Therapeutic particularities will also be followed according to the resulting phenotypes.

Recommended bibliography:
1. Theresa A McDonagh et al, ESC Scientific Document Group , 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: Developed by the Task Force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC) With the special contribution of the Heart Failure Association (HFA) of the ESC, European Heart Journal, Volume 42, Issue 36, 21 September 2021, Pages 3599-3726, https://doi.org/10.1093/eurheartj/ehab368
2. Theresa A McDonagh et al, ESC Scientific Document Group , 2023 Focused Update of the 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure: Developed by the task force for the diagnosis and treatment of acute and chronic heart failure of the European Society of Cardiology (ESC) With the special contribution of the Heart Failure Association (HFA) of the ESC, European Heart Journal, Volume 44, Issue 37, 1 October 2023, Pages 3627-3639, https://doi.org/10.1093/eurheartj/ehad195
3. Savarese, Gianluigi et al. "The Swedish Heart Failure Registry: a living, ongoing quality assurance and research in heart failure." Upsala journal of medical sciences vol. 124,1 (2019): 65-69. doi:10.1080/03009734.2018.1490831
4. Lim, Nam-Kyoo et al. "Risk prediction for 30-day heart failure-specific readmission or death after discharge: Data from the Korean Acute Heart Failure (KorAHF) registry." Journal of cardiology vol. 73,2 (2019): 108-113. doi:10.1016/j.jjcc.2018.07.009
5. Wussler, Desiree & Michou, Eleni & Belkin, Maria & Kozhuharov, Nikola & Diebold, Matthias & Gualandro, Danielle & Breidthardt, Tobias. (2020). Mortality prediction in acute heart failure: Scores or biomarkers?. Swiss Medical Weekly. 150. 10.4414/smw.2020.20320.
6. Stiell, Ian G et al. "A risk scoring system to identify emergency department patients with heart failure at high risk for serious adverse events." Academic emergency medicine : official journal of the Society for Academic Emergency Medicine vol. 20,1 (2013): 17-26. doi:10.1111/acem.12056
7. Thavendiranathan, Paaladinesh et al. "Use of myocardial strain imaging by echocardiography for the early detection of cardiotoxicity in patients during and after cancer chemotherapy: a systematic review." Journal of the American College of Cardiology vol. 63,25 Pt A (2014): 2751-68. doi:10.1016/j.jacc.2014.01.073
8. Meijs, Claartje et al. "Discovering Distinct Phenotypical Clusters in Heart Failure Across the Ejection Fraction Spectrum: a Systematic Review." Current heart failure reports vol. 20,5 (2023): 333-349. doi:10.1007/s11897-023-00615-z
9. Rosano, Giuseppe M C et al. "Drug Layering in Heart Failure: Phenotype-Guided Initiation." JACC. Heart failure vol. 9,11 (2021): 775-783. doi:10.1016/j.jchf.2021.06.011
10.   Girerd, Nicolas et al. "Integrative Assessment of Congestion in Heart Failure Throughout the Patient Journey."

JACC. Heart failure vol. 6,4 (2018): 273-285. doi:10.1016/j.jchf.2017.09.023
Prerequisites / Remarks: *to be adapted/ completed/ deleted*
X Scientific Doctorate (full-time only) ☐ Professional Doctorate – in the fields of Music and Science of sport and physical education (full-time or part-time)
☐ without tuition fee (state budget funded) ☐ with tuition fee or with funding from other sources than the state budget
Topic 3: The evauation of incidental and symptomatic thromboembolic events in patients with oncologic disease.
Contents / Main aspects to be considered The incidence of thromboembolic disease in patients with oncologic disease and the correlation of imaging aspects with the type of cancer, treatment, and disease staging. Identification of the risk factors and the particularities of the evolution of thromboembolic disease in these patients.

Recommended bibliography:
1. Falanga A. et al. Cancer-associated thrombosis: enhanced awareness and pathophysiologic complexity. Journal of Thrombosis and Haemostasis, 2023.
2. Falanga A., et al. Thrombotic complications in patients with cancer: Advances in pathogenesis, prevention, and treatment-A report from ICTHIC 2021. Res Pract Thromb Haemost. 2022 Jul 1;6(5).
3. Verzeroli C. et al. Utility of the Khorana and the new-Vienna CATS prediction scores in cancer patients of the HYPERCAN cohort. Journal of Thrombosis and Haemostasis, 2023, 21.7: 1869-1881.
4. Abdol R., et al. Cancer-Associated Thrombosis: An Overview of Mechanisms, Risk Factors, and Treatment. Cancers. 2018; 10(10):380.
5. Elyamany G, et al. Cancer-associated thrombosis: an overview. Clin Med Insights Oncol. 2014 Dec 4;8:129-37.
6. Chlapoutakis S., et al. Characteristics and outcomes of cancer patients who develop pulmonary embolism: A cross-sectional study. Oncol Lett. 2022 May;23(5):168
7. Girardi L. et al. Updates in the incidence, pathogenesis, and management of cancer and venous thromboembolism. Arteriosclerosis, Thrombosis, and Vascular Biology, 2023, 43.6: 824-831.
8. Khorana A.A, et al. Cancer-associated venous thromboembolism. Nature reviews Disease primers, 2022, 8.1: 11.
9. Li B, et al. Monitoring circulating platelet activity to predict cancer-associated thrombosis. Cell Rep Methods. 2023 Jun 27;3(7):100513.
10. Wang TF, et al. Approach to Cancer-Associated Thrombosis: Challenging Situations and Knowledge Gaps. Oncologist. 2021(1):e17-e23.
11. Mahajan A, et al. The incidence of cancer- associated thrombosis is increasing over time. Blood Adv. 2022 Jan 11;6(1):307-320.

Prerequisites / Remarks: *to be adapted/ completed/ deleted*
X Scientific Doctorate (full-time only)

☐ Professional Doctorate – in the fields of Music and Science of sport and physical education (full-time or part-time)

☐ without tuition fee (state budget funded)
☐ with tuition fee or with funding from other sources than the state budget

Doctoral supervisor,   Coordinator of the field of doctoral studies,

Prof. Dr. Diana Tint   Prof. Dr. Petru Ifteni

Signature ███   Signature ███