

## Press release

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### Basic information

Name: Kristoffer Kallesøe Berg-Hansen      Email: krisbe@rm.dk Phone: +4560540700

Department of: Clinical Medicine

Main supervisor: Henrik Wiggers

Title of dissertation: Cardiogenic Shock and Chronic Heart Failure: Prognostic Evaluations and Ketone-Based Therapeutic Interventions

Date for defence: September 13<sup>th</sup>, 2024 at (time of day): 14.00 Place: Auditorium G206-145, Aarhus University Hospital, Palle Juul-Jensens Boulevard 99, 8200 Aarhus N

Press release (Danish)

**Cardiogenic Shock and Chronic Heart Failure: Prognostic Evaluations and Ketone-Based Therapeutic Interventions**

Ny forskning undersøger potentialet af global longitudinal strain som risikomarkør samt effekterne af ketonstoftilskud på hjertefunktionen hos patienter med hjertesvigt, herunder kardiogent shock. Dette blev undersøgt i et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Kristoffer Kallesøe Berg-Hansen, der forsvare det d. 13/09.

Hjertesvigt spænder fra stabil kronisk hjertesvigt til den kritiske tilstand kardiogent shock der er kendetegnet med høj dødelighed og få behandlingsmuligheder. Denne ph.d.-afhandling kaster lys over risikostratificeringen samt behandlingen af hjertesvigt. Forskningen har undersøgt global longitudinal strain målt ved transthorakal echokardiografi som en risikomarkør i patienter med kardiogent shock og påvist, at denne værdi er en væsentlig indikator for dødelighed under både indlæggelse og op til et år efter. Desuden har studiet undersøgt effekterne af et ketonstoftilskud med ketonester på hjertets funktion hos patienter med kardiogent shock og stabil kronisk hjertesvigt. Behandling med ketonester viste en betydelig forbedring af hjertefunktionen i begge patientgrupper, med en vedvarende positiv effekt efter 14 dages behandling hos patienterne med kronisk hjertesvigt. Disse resultater peger på nye muligheder for forbedret risikovurdering og behandling af hjertesvigtspatienter.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 13/09 kl. 14 i Auditorium G206-145, Aarhus Universitetshospital, Palle Juul-Jensens Boulevard 99, 8200 Aarhus N. Titlen på projektet er "Cardiogenic Shock and Chronic Heart Failure: Prognostic Evaluations and Ketone-Based Therapeutic Interventions". Yderligere oplysninger: Ph.d.-studerende Kristoffer Kallesøe Berg-Hansen, e-mail: krisbe@rm.dk, tlf. 60540700.

Bedømmelsesudvalg:

Oliver Rider, BA, BMBCh, FRCP, DPhil, Professor ved Oxford Centre for Clinical Magnetic Resonance Research, Department of Cardiovascular Medicine, University of Oxford, UK

Jacob Eifer Møller, MD, PhD, DMSc, Klinisk professor på Afdeling for Hjertesygdomme, Rigshospitalet, Denmark

Jens Otto Lunde Jørgensen, MD, PhD, DMSc, Klinisk lærestolsprofessor på Institut for Klinisk Medicin - Hormon- og Knoglesygdomme (formand for bedømmelsesudvalget)

Press release (English)

**Cardiogenic Shock and Chronic Heart Failure: Prognostic Evaluations and Ketone-Based Therapeutic Interventions**

New research investigates the potential of global longitudinal strain as a risk marker and the effects of ketone body supplementation on cardiac function in patients with heart failure, including those with cardiogenic shock. The project was carried out by Kristoffer Kallesøe Berg-Hansen, who is defending his dissertation on 13/09.

Heart failure ranges from stable chronic heart failure to the critical condition of cardiogenic shock, which is characterized by high mortality and limited treatment options. This Ph.D. dissertation sheds light on the risk stratification and treatment of heart failure. The research has investigated global longitudinal strain measured by transthoracic echocardiography as a risk marker in patients with cardiogenic shock, demonstrating that this metric is a significant predictor of mortality both during hospitalization and up to one year after. Additionally, the study explored the effects of ketone supplementation with ketone ester on cardiac function in patients with cardiogenic shock and stable chronic heart failure. Treatment with ketone ester showed a significant improvement in cardiac function in both patient groups, with a sustained positive effect after 14 days of treatment in patients with chronic heart failure. These findings suggest new opportunities for improved risk assessment and treatment of heart failure patients.

The defence is public and takes place on 13/09 at 2 pm in Auditorium G206-145, Aarhus University Hospital, Palle Juul-Jensens Boulevard 99, 8200 Aarhus N. The title of the project is "Cardiogenic Shock and Chronic Heart Failure: Prognostic Evaluations and Ketone-Based Therapeutic Interventions". For more information, please contact PhD student Kristoffer Kallesøe Berg-Hansen, email: krisbe@rm.dk, Phone +45 6054 0700.

Assessment committee:

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Jacob Eifer Møller, MD, PhD, DMSc, Professor at the Department of Cardiology, Rigshospitalet, Denmark

Jens Otto Lunde Jørgensen, MD, PhD, DMSc, Professor at the Department of Clinical Medicine and the Department of Endocrinology and Diabetes (chairman of the comitee)

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