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Promotoren:

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Prof. dr. Jan Poelaert



PhD in Medical Sciences
2021-2022

INVITATION to the Public defence of

Joop JONCKHEER

To obtain the academic degree of

'DOCTOR OF MEDICAL SCIENCES'

**Nutritional and metabolic alterations during continuous
venovenous hemofiltration**

The public defence will take place on

Monday, 30 May 2022 at 5 p.m.

In Auditorium Piet Brouwer

Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

and can be followed online, accessible through the following link:

https://gf.vub.ac.be/redirects/PhD_defense_Joop_Jonckheer.php

Summary of the dissertation

Nutrition therapy guided by indirect calorimetry (IC) to define caloric targets is the gold standard in critically ill patients. It is associated with a lower morbidity and mortality. Continuous renal replacement therapy and thus continuous venovenous hemofiltration (CVVH) is frequently used in critically ill patients. We aimed at determining a correct caloric target using the gold standard in patients treated with CVVH.

In our first paper we described the difficulties to define caloric targets in nutrition therapy during continuous renal replacement therapy. The hypothesis was that the resting energy expenditure (REE) would probably change due to this therapy. However, measuring REE with IC was not possible due to an exchange of CO₂. Also, nutrients are exchanged. Therefore in paper 2 we determined in a prospective interventional trial the gas exchange during CVVH. We found that CO₂ was clinically significantly removed in the filter but O₂ remained stable. This enabled the use of IC during CVVH. In paper 3 we measured REE during different settings of CVVH and evaluated the effect of CO₂ removal on REE. There we confirmed the hypothesis that REE changed significantly between the different CVVH settings. We also found that adding the exchanged CO₂ to the measured REE did not result in a clinically significantly different true REE. Finally, in paper 4 we analyzed how non-intentional calories were exchanged during CVVH so our research could enable a correct caloric prescription.

Combining our findings, we made the gold standard for nutrition therapy in ICU patients available for patients treated with CVVH. Future trials should investigate if this approach translates into better patient outcomes.

Curriculum Vitae

Dr. Joop Jonckheer is an intensive care physician working as a Head of Clinics in the UZ University Hospital of Brussels. He graduated from medical school in the class of 2010 from the Vrije Universiteit Brussel. After this training as a pneumologist, which he did in various Belgian hospitals (Hopital Erasme ICU with prof. dr. Jean-louis Vincent, ZNA Middelheim, ZNA Stuivenberg) he returned to UZ Brussel to start his one-year intensive care training in 2016. He worked closely with Professor Elisabeth De Waele, from whom he gained the interest in clinical nutrition in the ICU. In this domain, ground-breaking research has led to various articles about metabolic cart directed nutritional therapy during CRRT (and ESPEN Guidelines in Renal patients) and during ECMO. He already presented at several national and international congresses and received national and international prizes and grants for his oral presentations.

He is the father of 3 magnificent children and has a loving wife who supports him in all aspects of his clinical career.