

Identification of novel biomarkers in critically ill patients

Citation for published version (APA):

Koch, A. M. (2023). *Identification of novel biomarkers in critically ill patients*. [Doctoral Thesis, Maastricht University]. Maastricht University. <https://doi.org/10.26481/dis.20230613ak>

Document status and date:

Published: 01/01/2023

DOI:

[10.26481/dis.20230613ak](https://doi.org/10.26481/dis.20230613ak)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

www.umlib.nl/taverne-license

Take down policy

If you believe that this document breaches copyright please contact us at:

repository@maastrichtuniversity.nl

providing details and we will investigate your claim.

Propositions accompanying this doctoral dissertation

Identification of novel biomarkers in critically ill patients

Maastricht University, 13th of June 2023

Alexander Koch

1. Multiple organ dysfunction, the key characteristic of critically ill patients, is a result of a broad spectrum of severe medical conditions, such as acute and chronic cardiac, respiratory and hepatic disorders, infections, bleedings or trauma. *(this thesis)*
2. Individualized or personalized intensive care medicine is based on stratification of patients in different subgroups, for example in terms of diagnostics and prognostication, which can be achieved by the availability of specific biomarkers. *(Van den Berghe et al. 2019. Cell Death & Differentiation)*
3. A biomarker describes a measurable indicator of a patient's clinical condition that can be measured accurately and reproducibly. *(Barichello et al. 2022. Critical Care)*
4. High calprotectin concentrations at ICU admission and the increase during ICU treatment predict long-term mortality risk. *(this thesis)*
5. M30 levels are correlated to disease severity, organ failure and short-term mortality at the ICU, independent of the presence of sepsis. Hepatocyte apoptosis might contribute substantially to high circulating M30 in critically ill patients. *(this thesis)*
6. Visfatin is a prognostic biomarker in ICU patients and linked to the pathogenesis of excessive systemic inflammation, supporting further research on visfatin as a therapeutic target. *(this thesis)*
7. Members of the adipokine family of C1q/TNF-like proteins (CTRP1 and CTRP3) are integrated in the tightly regulated and complex network of adipose tissue-derived endocrine mediators and systemic inflammation during critical illness. *(this thesis)*
8. Copeptin plasma concentrations are significantly elevated in critically ill patients, correlate with disease severity and predict ICU and long-term outcome. *(this thesis)*
9. Increased MR-proANP plasma concentrations indicate organ dysfunction, sepsis, disease severity and mortality risk. *(this thesis)*
10. This is the reality of intensive care: at any point, we are as apt to harm as we are to heal. *(Atul Gawande)*