

University of Groningen

ASO Author Reflections: Real-World Effectiveness of Prehabilitation Before Colorectal Cancer Surgery

Heil, Thea C.; Verdaasdonk, Emiel G. G.; Maas, Huub A. A. M.; van Munster, Barbara C.; Rikkert, Marcel G. M. Olde; de Wilt, Johannes H. W.; Melis, Rene J. F.

Published in:
Annals of Surgical Oncology

DOI:
[10.1245/s10434-022-12672-0](https://doi.org/10.1245/s10434-022-12672-0)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2023

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Heil, T. C., Verdaasdonk, E. G. G., Maas, H. A. A. M., van Munster, B. C., Rikkert, M. G. M. O., de Wilt, J. H. W., & Melis, R. J. F. (2023). ASO Author Reflections: Real-World Effectiveness of Prehabilitation Before Colorectal Cancer Surgery: The Value of an Emulated Target Trial Design. *Annals of Surgical Oncology*, 255–256. <https://doi.org/10.1245/s10434-022-12672-0>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: <https://www.rug.nl/library/open-access/self-archiving-pure/taverne-amendment>.

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.



ASO Author Reflections: Real-World Effectiveness of Prehabilitation Before Colorectal Cancer Surgery: The Value of an Emulated Target Trial Design

Thea C. Heil, MD¹, Emiel G. G. Verdaasdonk, MD, PhD², Huub A. A. M. Maas, MD, PhD³, Barbara C. van Munster, MD⁴, Marcel G. M. Olde Rikkert, MD¹, Johannes H. W. de Wilt, MD⁵, and René J. F. Melis, PhD¹

¹Department of Geriatric Medicine, Radboud University Medical Center, Nijmegen, The Netherlands; ²Department of Surgery, Jeroen Bosch Hospital, 's-Hertogenbosch, The Netherlands; ³Department of Geriatric Medicine, Elisabeth-Tweesteden Hospital, Tilburg, The Netherlands; ⁴Department of Internal Medicine, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands; ⁵Department of Surgery, Radboud University Medical Center, Nijmegen, The Netherlands

PAST

While the prehabilitation concept appears promising, there is conflicting scientific evidence for the effectiveness.¹ Several RCTs have been performed showing different effects of multimodal prehabilitation, ranging from meaningful changes in postoperative functional walking capacity and significantly improved postoperative clinical outcomes to no effect on postoperative outcomes.^{2, 3} Because these RCTs are usually performed under ideal circumstances, including only a selected group of patients, this can compromise external validity.²⁻⁴ Studies based on observational, real-world data could be of added value to better understand for whom prehabilitation may be of benefit. The purpose of this study was to evaluate the effect of a multimodal prehabilitation program compared with usual care on perioperative outcomes in patients undergoing elective colorectal surgery with a higher postoperative complication risk, using an emulated target trial (ETT) design.

PRESENT

This is the first, single-center ETT to assess the impact of a prehabilitation intervention on perioperative complications in patients aged ≥ 65 years or < 65 years and ASA III/IV, undergoing colorectal cancer surgery.⁵ The ETT included 251 patients: 128 in the usual care group and 123 patients in the prehabilitation group. In the intention-to-treat analysis, the number needed to treat to reduce one or more complications in one person was 4.2 (95% confidence interval [CI] 2.6–10). Compared with patients in the usual care group, patients undergoing prehabilitation had a 55% lower comprehensive complication score (95% CI –71% to –32%). There was a 33% reduction (95% CI –44% to –18%) in LOS from 7 to 5 days. Prehabilitation had no effect on the already limited number of readmissions. Additional to previous RCTs that showed positive evidence on the effectiveness of prehabilitation, this study provides the first preliminary evidence that prehabilitation does not only improve outcomes in a controlled study setting but also in daily clinical practice.

FUTURE

The methodology used (ETT) in this study could be an example for further multicenter studies. However, to be able to use (large) clinical registration databases in future ETTs on the effect of prehabilitation and other complex interventions, these databases should incorporate more

© The Author(s) 2022

First Received: 27 September 2022

Accepted: 4 October 2022

T. C. Heil, MD

e-mail: Thea.Zonneveld-Heil@radboudumc.nl

Published online: 17 October 2022

clinical predictor variables (e.g., frailty score), further specification of clinical outcomes (e.g., CCS-score), and patient-reported outcome measures (e.g., quality of life).

DISCLOSURE None.

OPEN ACCESS This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

REFERENCES

1. Lambert JE, Hayes LD, Keegan TJ, Subar DA, Gaffney CJ. The impact of prehabilitation on patient outcomes in hepatobiliary,

- colorectal, and upper gastrointestinal cancer surgery: A PRISMA-accordant meta-analysis. *Ann Surg.* 2021;274(1):70–7.
2. Barberan-Garcia A, Ubre M, Roca J, Lacy AM, Burgos F, Risco R, et al. Personalised prehabilitation in high-risk patients undergoing elective major abdominal surgery: A randomized blinded controlled Trial. *Ann Surg.* 2018;267(1):50–6.
3. Carli F, Bousquet-Dion G, Awasthi R, Elsherbini N, Liberman S, Boutros M, et al. Effect of multimodal prehabilitation vs. postoperative rehabilitation on 30-day postoperative complications for frail patients undergoing resection of colorectal cancer: A randomized clinical trial. *JAMA Surg.* 2020;155(3):233–42.
4. Gillis C, Buhler K, Bresee L, Carli F, Gramlich L, Culos-Reed N, et al. Effects of nutritional prehabilitation, with and without exercise, on outcomes of patients who undergo colorectal surgery: A systematic review and meta-analysis. *Gastroenterology.* 2018;155(2):391–410.e4.
5. Heil TC, Verdaasdonk EGG, Maas HAAM, van Munster BC, Rikkert MGMO, de Wilt JHW, Melis RJF. Improved postoperative outcomes after prehabilitation for colorectal cancer surgery in older patients: An emulated target trial. *Ann Surg Oncol.* 2022;5:1–11. <https://doi.org/10.1245/s10434-022-12623-9>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.