Jim M. **Smit**

PhD Candidate · Causal Inference · Intensive Care Medicine

Rotterdam, The Netherlands

(+31) 6-4348-3637 | j.smit@erasmusmc.nl | jim-smit.com | jimmsmit | @JimSmit

Education

Erasmus University Medical Center
Rotterdam, Netherlands

PhD. in Machine Learning for Intensive Care Medicine — *Sept. 2021 - Present*

- Focusing on the prediction of individualized causal effects, to further personalize ICU treatments.

KTH Royal institute of Technology
Stockholm, Sweden

Semester Abroad — *Jan. 2019 - June 2019*

- Spend the Spring Semester as an exchange student at the faculty of Computer Science

Delft University of Technology
Delft, Netherlands

MSc. in Biomedical Engineering — *Sept. 2018 - July 2021*

- Thesis: Prediction models for adverse outcomes in COVID-19 patients. [Link to thesis]
- GPA: 8.2 / 10

Delft University of Technology
Delft, Netherlands

BSc. in Clinical Technology — *Sept. 2015 - July 2018*

- GPA: 7.7 / 10

Publications

Published

2023 **Smit JM, Krijthe JH, Kant WMR, et al.**, Causal inference using observational intensive care unit data: a scoping review and recommendations for future practice. *npj Digital Medicine*

2023 **Smit JM, Krijthe JH, van Bommel J.**, The future of artificial intelligence in intensive care: moving from predictive to actionable AI. *Intensive Care Medicine*

2022 **Smit JM, Krijthe JH, Tintu AN, et al.** , Development and validation of an early warning model for hospitalized COVID-19 patients: a multi-center retrospective cohort study. *Intensive Care Medicine Experimental*

2022 **Smit JM, Krijthe JH, Endeman H, et al.** , Dynamic prediction of mortality in COVID-19 patients in the intensive care unit: A retrospective multi-center cohort study. *Intelligence-Based Medicine*

2021 **Smit JM, van Genderen ME, Reinders MJT, et al.**, Demystifying machine learning for mortality prediction. *Critical Care*

In Preperation

Expected 2024 **In Prep**, Smit JM, Krijthe JH, van Bommel J, et al. The Heterogeneous Effect of High PEEP strategies on Survival in Acute Respiratory Distress Syndrome: a data-driven analysis of randomized trials

Expected 2024 **In Prep**, Smit JM, van Bommel J, Gommers D, et al. Switching from Controlled to Assisted Mechanical Ventilation: a Multi-center Retrospective study (SWITCH)

Expected 2024 **In Prep (Pre-print on medRxiv)**, Smit JM, Zee PA Van Der, Stoof SCM, et al. Predicting individualized treatment effects of corticosteroids in community-acquired-pneumonia: a data-driven analysis of randomized controlled trials.

Presentations

Oral Presentations / Invited Talks

2024	**The Predictive Analytics and Comparative Effectiveness Center (PACE) Center Symposium**, Case study: Predicting Individualized Effects of corticosteroids in pneumonia: Risk vs Effect modelling	*Boston, MA, USA*
2024	**PLUG Physiology Symposium**, Switching from controlled to assisted mechanical ventilation: an international, multicenter, retrospective study	*Boston, MA, USA*
2023	**Pneumo Trieste**, Demystifying Artificial Intelligence for outcome prediction in pneumonia	*Trieste, Italy*
2022	**TOPICS in ICU**, AI in the ICU: from prediction to causal inference	*Utrecht, NL*

Conference Posters

2023	**European Society of Intensive Care Medicine (ESICM) LIVES**, JM Smit, PA Van Der Zee, SCM Stoof, et al. Predicting individualized treatment effects of corticosteroids in community-acquired-pneumonia	*Milan, Italy*
2022	**European Society of Intensive Care Medicine (ESICM) LIVES**, Smit, JM, Krijthe, JH, van Bommel, J et al. Causal inference using observational intensive care unit data.	*Paris, France*

Teaching Activity

MSc Thesis: Reliable Offine Policy Evaluation for Individualized Mechanical Ventilation

Computer Science, TU Delft

Daily Supervisor — *Mei 2023 - June 2024*

- In this Thesis, the student explored Reinforcement Learning for ICU mechanical ventilation optimization, using Offline Policy Evaluation to evaluate policies using observational data.
- Link to Thesis

BSc Thesis project: Predicting Individualized effects of high PEEP ventilation

Computer Science, TU Delft

(Co-) Daily supervisor — *April 2024 - July 2024*

- Five students explored individualized effect estimation to personalize the PEEP setting in the mechanical ventilation, using different techniques, and performed an external validation in real-world randomized trial datasets.

BSc Project: Systematic Literature Review

Medicine, Erasmus MC

Supervisor — *Oct 2021 - Dec 2021, Oct 2022 - Dec 2022*

- 2021: Proposed and supervised a review the performance of machine learning models presented in the literature to predict the extubation-readiness in mechanical ventilation.
- 2022: Proposed and supervised a review about the effectiveness of corticosteroids in community-acquired-pneumonia.

Experience

Operation AIR

Delft, NL

Supply-chain manager (Voluntary Work) — *March 2020 - May 2020*

- Operation AIR was a project to manufacture emergency mechanical ventilators for the Dutch healthcare authority.
- My role was to develop a forecasting model for ICU capacity in the Netherlands, and managing the supply chain of the production process.
- Link to website

Clinical Chemistry, Erasmus Medical Center

Rotterdam, NL

Part-time research Intern — *March 2020 - May 2020*

- Explored reference intervals for laboratory test results of specific patient groups using large datasets of laboratory test results.

Momo Medical B.V.

Delft, NL

Full-time R&D Intern — *Sept. 2019 - Dec. 2019*

- Explored Deep learning-based posture change detection algorithms to improve the performance of Momo's first product (BedSense).