



Universiteit
Leiden
The Netherlands

Primary complications after cardiac surgery: towards better understanding, prediction, and prevention

Paassen, J. van

Citation

Paassen, J. van. (2025, April 3). *Primary complications after cardiac surgery: towards better understanding, prediction, and prevention*. Retrieved from <https://hdl.handle.net/1887/4210113>

Version: Publisher's Version
License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)
Downloaded from: <https://hdl.handle.net/1887/4210113>

Note: To cite this publication please use the final published version (if applicable).

Pulmonary complications after cardiac surgery

Towards better understanding, prediction, and prevention

Proefschrift

Colophon

Cover illustration

Anatomy of the Respiratory System - Leonardo da Vinci (1452-1519)

© In the public domain due to copyright expiration.

The work is part of the Royal Collection Trust and reprinted with permission.

"The Royal Library", Windsor Castle, Windsor SL4 1NJ, United Kingdom

© His Majesty King Charles III 2025

ISBN

978-94-0000-000-0

Copywriting

© Judith van Paassen, 2025

No part of this book may be reproduced, stored in a retrieval system
or transmitted in any form or by any means, without permission of the author,
or, when appropriate, of the publishers of the publications.

Funding

Flow cytometric analyses – research grant stichting Sanquin

ProADM assays – department of infectious diseases LUMC

Viral assays – department of Medical Microbiology LUMC

NVIC research grant

Print

Proefschriftspecialist

ter verkrijging van
de graad van doctor aan de Universiteit Leiden,
op gezag van rector magnificus prof. dr. ir. H. Bijl,
volgens besluit van het college voor promoties
te verdedigen op
donderdag 3 april 2025
klokke 14.30 uur

door door Judith van Paassen
geboren te Lochem
in 1976

Promotie commissie

Promotoren: Prof. dr. M.S. Arbous

Prof. dr. J.J. Zwaginga

Prof. dr. Evert de Jonge

Overige Leden: Prof . dr. J. Braun (secretaris)

Prof. dr. P.S. Hiemstra

Prof. dr. N. Juffermans, Erasmus Universitair Medisch Centrum

Prof. dr. F. Paulus, Amsterdam Universitair Medisch Centrum

Dr. L.P.G. Derde, Universitair Medisch Centrum Utrecht

“... pulmonary problems remain the most significant cause
of morbidity following cardiopulmonary bypass nowadays...”

*Pennock JL, Pierce WS, Waldhausen JA.
Surg Gynecol obstet. 1977; 145(6):917-27*

In almost fifty years not much has changed.

CONTENTS

General introduction and outline of the thesis	9
PART ONE Understanding lung injury after cardiac surgery	23
Chapter 1 MUC5AC concentrations in lung lavage fluids are associated with acute lung injury after cardiac surgery <i>Respir Res.</i> 2024 Mar 7;25(1):117	25
Chapter 2 Influenza season and ARDS after cardiac surgery <i>N Engl J Med.</i> 2018 Feb 22;378(8):772-773	41
Chapter 3 Viruses in the respiratory tract in patients undergoing elective cardiac surgery <i>Austin J Pulm Respir Med.</i> 2023; (10)1: 1094	61
PART TWO Predicting lung injury after cardiac surgery	79
Chapter 4 Leukocyte and platelet activation in cardiac surgery patients with and without lung injury: A prospective cohort study <i>Interdiscip Cardiovasc Thorac Surg.</i> 2023 May 4;36(5)	81
Chapter 5 Perioperative proadrenomedullin adds to EuroSCORE to predict ARDS and clinical outcome in cardiac surgery ICU patients: a prospective cohort study <i>Biomark Med.</i> 2019 Sep;13(13):1081-1091	103
PART THREE Preventing lung injury after cardiac surgery	123
Chapter 6 Physician's preference-based instrumental variable analysis: is it valid and useful in a moderate-sized study? <i>Epidemiology.</i> 2014 Nov;25(6):923-7	125
Chapter 7 The efficacy and safety of prophylactic corticosteroids for the prevention of adverse outcomes in patients undergoing heart surgery using cardiopulmonary bypass: a systematic review and meta-analysis of randomized controlled trials <i>Eur J Cardiothorac Surg.</i> 2020 Apr 1;57(4):620-627	139
Chapter 8 Corticosteroid use in COVID-19 patients: a systematic review and meta-analysis on clinical outcomes <i>Crit Care.</i> 2020 Dec 14;24(1):696	159
Summary, general discussion and future perspective	189
Samenvatting, algemene discussie en toekomstvisie	203
Words from the author	215
List of publications	217
Curriculum Vitae	221
Dankwoord	223