

University of Groningen

## Patient-relevant outcomes of stool testing in pediatric inflammatory bowel disease.

Heida, Anke

**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:*

2017

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

*Citation for published version (APA):*

Heida, A. (2017). Patient-relevant outcomes of stool testing in pediatric inflammatory bowel disease. [Groningen]: Rijksuniversiteit Groningen

**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).

**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.

# PATIENT-RELEVANT OUTCOMES OF STOOL TESTING IN PEDIATRIC INFLAMMATORY BOWEL DISEASE

Anke Heida

The research described in this thesis was performed at the Department of Pediatrics, Beatrix Children's Hospital, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands.

The research described in this thesis was funded by ZonMW, Fonds NutsOhra, Innovatiefonds Zorgverzekeraars, CisBio Bioassays, BÜHLMANN Laboratories AG.

The author gratefully acknowledges the financial support for printing this thesis by:

Groningen University Institute for Drug Exploration (GUIDE)

University Medical Center Groningen (UMCG)

University of Groningen

BÜHLMANN Laboratories AG

CisBio Bioassays

Dr. Falk Pharma Benelux BV

Ferring BV

Tramedico BV

This thesis is printed by: Ridderprint BV, Ridderkerk, The Netherlands

ISBN:

978-94-034-0212-3 (printed)

978-94-034-0211-6 (digital)

© A. Heida, 2017

All rights served. No part of this thesis may be reproduced, distributed, stored in a retrieval system, or transmitted in any form or by any means, without permission of the author.



rijksuniversiteit  
groningen

# **Patient-relevant outcomes of stool testing in pediatric inflammatory bowel disease**

## **Proefschrift**

ter verkrijging van de graad van doctor aan de  
Rijksuniversiteit Groningen  
op gezag van de  
rector magnificus prof. dr. E. Sterken  
en volgens het besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op  
woensdag 13 december 2017 om 16.15 uur

door

**Anke Heida**

geboren op 23 februari 1988  
te Heerenveen

**Promotor**

Prof. dr. H.J. Verkade

**Copromotor**

Dr. P.F. van Rheenen

**Beoordelingscommissie**

Prof. dr. A.A.E. Verhagen

Prof. dr. I.P. Kema

Prof. dr. M.A. Benninga

## **Paranimfen**

Nicoline Kuiken

Eva Koopman



## CONTENTS

<b>Chapter 1</b>	General introduction and outline of this thesis	11
	<b>Part I: Screening</b>	
<b>Chapter 2</b>	Avoid endoscopy in children with suspected inflammatory bowel disease who have normal calprotectin levels.	27
<b>Chapter 3</b>	Reference values of fecal calgranulin C (S100A12) in school age children and adolescents.	37
<b>Chapter 4</b>	Selecting children with suspected inflammatory bowel disease for endoscopy with the calgranulin C of calprotectin stool test: protocol of the CACATU study.	51
<b>Chapter 5</b>	Triaging children with chronic abdominal pain and diarrhea for endoscopy: comparison of diagnostic accuracy of calgranulin C and calprotectin stool test.	67
	<b>Part II: Monitoring</b>	
<b>Chapter 6</b>	Clinical utility of fecal calprotectin monitoring in asymptomatic patients with inflammatory bowel disease: a systematic review and practical guide.	89
<b>Chapter 7</b>	A cross-sectional study on the perceptions and practices of teenagers with inflammatory bowel disease about repeated stool sampling.	111
<b>Chapter 8</b>	Comparing the efficacy of a web-assisted calprotectin-based treatment algorithm (IBD-live) with usual practices in teenagers with inflammatory bowel disease: study protocol for a randomized controlled trial.	121
<b>Chapter 9</b>	Shifting teenagers with inflammatory bowel disease from the consultation room to a telemonitoring programme: a multicentre randomized controlled trial.	143
<b>Chapter 10</b>	Agreement between home-based measurement of stool calprotectin and ELISA results for monitoring inflammatory bowel disease activity.	167



<b>Chapter 11</b>	General discussion and future perspectives	185
<b>Appendices</b>	Nederlandse samenvatting	203
	Dankwoord	213
	Curriculum Vitae	221
	List of publications	227



