



Universiteit
Leiden
The Netherlands

Difficult-to-treat asthma : mechanisms and risk factors

Veen, H.P.A.A. van

Citation

Veen, H. P. A. A. van. (2010, September 2). *Difficult-to-treat asthma : mechanisms and risk factors*. Retrieved from <https://hdl.handle.net/1887/15918>

Version: Corrected 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/1887/15918>

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

Difficult-to-treat asthma

mechanisms and risk factors

Ilonka van Veen

ISBN: 978-94-6108-056-1

Cover: "Variation: the beauty of life" (design: Marijke@vormgeeve.nl)

Layout and printed by Gildeprint Drukkerijen - Enschede, the Netherlands

This thesis was supported by an unrestricted educational grant from AstraZeneca

The publication of this thesis was financially supported by: Raad van Bestuur Medisch Spectrum Twente Enschede, AstraZeneca, Chiesi, GlaxoSmithKline, Novartis

Difficult-to-treat asthma

mechanisms and risk factors

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van de Rector Magnificus Prof. Mr. P.F. van der Heijden,
volgens besluit van het College voor Promoties
te verdedigen op
donderdag 2 september 2010
klokke 15.00 uur

door

Helena Petronella Agatha Anthonia van Veen

geboren te Reeuwijk
in 1970

Promotiecommissie

Promotores

Prof. Dr. K.F. Rabe

Prof. Dr. E.H. Bel (AMC, Amsterdam)

Overige leden

Dr. A. ten Brinke (MCL, Leeuwarden)

Prof. Dr. G.F. Joos (Universitair Ziekenhuis Gent, België)

Prof. Dr. P.S. Hiemstra

Prof. Dr. F.R. Rosendaal

Dr. J.K. Sont

Prof. Dr. P.J. Sterk (AMC, Amsterdam)

*Ik geloof
Vraag niet in wat
Maar ik geloof
In deze dag
Ik geloof
Vraag niet in wie
Maar ik geloof
Wat ik hier zie
Ik geloof
In wat ik zie*

(Stef Bos, Zondag in Soweto)

Contents

Chapter 1	General Introduction	9
Chapter 2	Difficult-to-treat asthma	19
Chapter 3	Deficient alpha-1-antitrypsin phenotypes and persistent airflow limitation in severe asthma	49
Chapter 4	Alveolar nitric oxide <i>versus</i> measures of peripheral airway dysfunction in severe asthma	61
Chapter 5	Airway inflammation in obese and non-obese patients with difficult-to-treat asthma	77
Chapter 6	Exhaled nitric oxide predicts lung function decline in difficult-to-treat asthma	91
Chapter 7	Consistency of sputum eosinophilia in patients with difficult-to-treat asthma: a 5-year follow-up study	107
Chapter 8	Summary and General Discussion	121
Chapter 9	Nederlandse Samenvatting	145
	Dankwoord	155
	Curriculum Vitae	157

