

University of Groningen

## Population based glaucoma screening

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**RIJKSUNIVERSITEIT GRONINGEN**

# **Population based glaucoma screening**

## **Proefschrift**

ter verkrijging van het doctoraat in de  
Medische Wetenschappen  
aan de Rijksuniversiteit Groningen  
op gezag van de  
Rector Magnificus, dr. F. Zwarts,  
in het openbaar te verdedigen op  
woensdag 6 januari 2010  
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door

Remco Stoutenbeek

geboren op 28 maart 1978  
te Deventer

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# Stellingen

behorende bij het proefschrift

## Population based glaucoma screening

1. Het adagium "voorkomen is beter dan genezen" staat bij de invoer van een screeningsprogramma juist ter discussie. *(dit proefschrift)*
2. Bevolkingsonderzoek naar glaucoom is op dit moment economisch niet haalbaar in Nederland. *(dit proefschrift)*
3. Glaucoomscreening via opticiens lijkt een veelbelovend alternatief. *(dit proefschrift)*
4. De participatiegraad van glaucoomscreening via de opticien is potentieel hoger dan bij een bevolkingsonderzoek. *(dit proefschrift)*
5. De wet van de verminderde meeropbrengst is een economisch principe met brede toepasbaarheid en geldt zeker voor glaucoomscreening. *(dit proefschrift)*
6. Lengthbias heeft een negatieve impact op de kosten-effectiviteit van glaucoomscreening. *(dit proefschrift)*
7. Het aantal fout-positieven bij een screeningstest voor glaucoom is bijna twee keer zo hoog per individu als per oog. *(dit proefschrift)*
8. Stilstand is vooruitgang bij de behandeling van glaucoom.
9. Bij invoering van nieuwe ICT projecten zoals het elektronisch voorschrijf systeem en het elektronisch patiëntendossier kun je beter als laatste aan boord stappen.
10. Marktwerking in de door schaarste gekenmerkte gezondheidszorg heeft niet geleid tot de beoogde kostenbeheersing, maar dreigt wel de zorg te verschromen.
11. You cannot depend on your eyes when your imagination is out of focus. *(Mark Twain / Samuel Langhorne Clemens; 1835 - 1910)*



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## PUBLICATIONS

- Chapter 3 Stoutenbeek R, Heeg GP, Jansonius NM.  
Frequency doubling perimetry screening mode compared to the full-threshold mode.  
Ophthalmic Physiol Opt. 2004;24:493-7.
- Chapter 4 Heeg GP, Stoutenbeek R, Jansonius NM.  
Strategies for improving the diagnostic specificity of the frequency doubling perimeter.  
Acta Ophthalmol Scand. 2005 Feb;83(1):53-6.
- Chapter 5 Stoutenbeek R, Jansonius NM.  
Glaucoma screening during regular optician visits: can the population at risk of developing glaucoma be reached?  
Br J Ophthalmol. 2006;90:1242-4. Epub 2006 Jul 19.
- Chapter 6 Stoutenbeek R, de Voogd S, Wolfs RCW, Hofman A, de Jong PTVM, Jansonius NM.  
The additional yield of a periodic screening programme for open-angle glaucoma: a population-based comparison of incident glaucoma cases detected in regular ophthalmic care with cases detected during screening.  
Br J Ophthalmol. 2008 Sep;92(9):1222-6.
- Chapter 7 Stoutenbeek R, Hooymans JMM, Jansonius NM.  
Supra-threshold perimetry compared to standard automated perimetry in glaucoma.  
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