

# Automated imaging technologies for the diagnosis of glaucoma: a comparative diagnostic study for the evaluation of the diagnostic accuracy, performance as triage tests and cost-effectiveness (GATE study)

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**Declared competing interests of authors:** David Garway-Heath received grants from the National Institute of Health Research during the conduct of the study, personal fees and non-financial support from Heidelberg Engineering UK, personal fees and non-financial support from Carl Zeiss Meditec, Inc., non-financial support from OptoVue Inc. and non-financial support from Topcon outside the submitted work.

Published January 2016

DOI: 10.3310/hta20080

## Plain English summary

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Health Technology Assessment 2016; Vol. 20: No. 8

DOI: 10.3310/hta20080

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## Plain English summary

**G**laucoma is a lifelong eye disease. Treatment is usually effective to slow the progression of glaucoma. About 4000 people are registered with sight impairment each year because of glaucoma. Many healthy subjects are unnecessarily referred from the community to hospital eye services to rule out glaucoma.

New imaging tests that investigate the back of the eye can aid in the diagnosis of glaucoma and are safe and easy to perform. These technologies measure with high accuracy the tissues in the back of the eye that are typically thinned in glaucoma. This study was designed to evaluate the performance of four imaging tests at identifying, among patients referred to hospital, those who have glaucoma or are at risk and those who do not have any eye disease. We compared the imaging test results with an experienced eye doctor's diagnosis. We also evaluated how well a possible care pathway would perform using imaging results combined with measurements of the eye pressure and vision, to identify whether or not the individual needed to see an eye doctor.

In total, 955 individuals were recruited. The best-performing test correctly diagnosed glaucoma in 87 out of every 100 patients tested. If imaging tests with an eye pressure test and a visual acuity test were used to screen out people without eye disease, there would be substantial savings to the health service, but not all patients with disease would be picked up. A relatively small proportion of patients with glaucoma and at risk of glaucoma would be missed (approximately one in seven).



ISSN 1366-5278 (Print)

ISSN 2046-4924 (Online)

Impact factor: 5.027

*Health Technology Assessment* is indexed in MEDLINE, CINAHL, EMBASE, The Cochrane Library and the ISI Science Citation Index.

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## This report

The research reported in this issue of the journal was funded by the HTA programme as project number 09/22/111. The contractual start date was in September 2010. The draft report began editorial review in March 2014 and was accepted for publication in November 2014. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HTA editors and publisher have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the draft document. However, they do not accept liability for damages or losses arising from material published in this report.

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