Comparative study of new imaging technologies for the diagnosis of glaucoma

**Design and conduct of a multicentre diagnostic study**

**BACKGROUND**
In the UK, around 45% of new glaucoma referrals are discharged from secondary care after their first visit. The aim of the GATE study is to compare the diagnostic accuracy of:

- Heidelberg Retina Tomograph (HRT–III)
- Scanning laser polarimetry (GDx ECC)
- Optical coherence tomography (Spectralis – OCT)

as triage tests in secondary care for glaucoma diagnosis.

**METHODS**

**DESIGN:** Diagnostic accuracy study, comparing 3 imaging techniques for the diagnosis of glaucoma.

**POPULATION:** Adult patients, newly referred from community to hospital eye services with glaucoma or suspected glaucoma, including ocular hypertension.

**REFERENCE STANDARD:** A comprehensive clinical examination by an experienced consultant ophthalmologist, including fundus examination and visual field tests.

**SAMPLE SIZE:** 954, each imaged using all three technologies.

**SETTING:** NHS secondary care, UK.

**OUTCOMES:** Diagnostic performance measures, economic outcomes.

**DATA COLLECTION:** Imaging and clinical data are uploaded at site via a secure web-based data collection system.

**CONTACT DETAILS**

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**In the UK, around 45% of new glaucoma referrals are discharged from secondary care after their first visit. The aim of the GATE study is to compare the diagnostic accuracy of: Heidelberg Retina Tomograph (HRT–III), Scanning laser polarimetry (GDx ECC), and Optical coherence tomography (Spectralis – OCT) as triage tests in secondary care for glaucoma diagnosis.**

Recruitment commenced in April 2011. At end May 2012, 646 participants have been recruited to the study. GATE is an ongoing research study and will be completed in August 2013. The results will be published in full in Health Technology Assessment.

**CHALLENGES**

- Centre set-up
- Study processes
- Reference standard

**SOLUTIONS**

- Obtaining authorisations
- Availability of equipment
- Differing care pathways

- Single visit
- Split visit

- Imaging protocol
- Remote monitoring and web based data collection
- Random test order before recruitment

- Consensus
- Clear definitions
- Training
- Blinded to imaging results

**PROBLEMS and SOLUTIONS**

**CONCLUSIONS**
There are challenges in setting up and running a multicentre diagnostic accuracy study. We have demonstrated that these can be overcome given adequate resource and planning.

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Further details about the study can be found at www3.abdn.ac.uk/hsru/gate

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