



Provider Agreement in Assessment of Glaucoma Disease Progression in the Mayo Clinic Glaucoma Team Model

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American Society of Cataract and Refractive Surgery
May 5-9, 2017

All Authors Have No Financial Interests to Disclose

Background

- Glaucoma physician-led team care models have been evolving to meet the anticipated deficit of ophthalmologists.^{1,2}
- One such example is the **Mayo Clinic Care Model for glaucoma patients**, introduced in 2007.³
 - Glaucoma specialists first establish a diagnosis and treatment plan based on AAO Preferred Practice Guidelines.⁴
 - Follow-up visits are scheduled with an optometrist and glaucoma specialist at specific intervals according to the risk profile of the patient.
- Limited data in US on consistency in identifying glaucoma progression between glaucoma specialists and optometrists involved in team care models.

Purpose

Determine consistency of recognizing glaucoma progression among glaucoma specialists and optometrists within a glaucoma team model.

We determine:

1. The agreement between optometrists and glaucoma-trained ophthalmologists on glaucoma progression
2. The agreement among optometrists only
3. The agreement among glaucoma specialists only
4. Interpretation of testing used to evaluate disease progression

Methods

- 75 patients (150 eyes) were prospectively enrolled from the glaucoma team at the Mayo Clinic.
- Masked Providers in the study included:
 - 2 fellowship trained glaucoma physicians (glaucoma specialists)
 - 2 optometrists

Patient Inclusion Criteria	Patient Exclusion Criteria
18 years of age or older	Glaucoma suspect
Glaucoma diagnosis (other ocular pathologies acceptable)	Unable to complete necessary images
At least two sets of digital stereo disc photographs, OCT images, and Visual Fields	Diagnosed with ocular hypertension

Methods (continued)

Non-visit ophthalmic data was provided to each masked provider.

Each masked provider determined whether there was **progression** or **no-progression** of glaucoma in each eye.

Outcome measure

Agreement among and between providers was calculated based on each provider's decision of progression or no-progression of disease.

Results

Comparing Agreement Regarding Glaucoma Disease Progression (No Progression v. Progression) Between Various Groups of Providers

Complete Agreement among all 4 providers	64%	$\kappa=0.46$
Agreement between OPT 1 v. OPT 2	77%	$\kappa=0.47$
Agreement between GS 1 v. GS 2	89%	$\kappa=0.61$

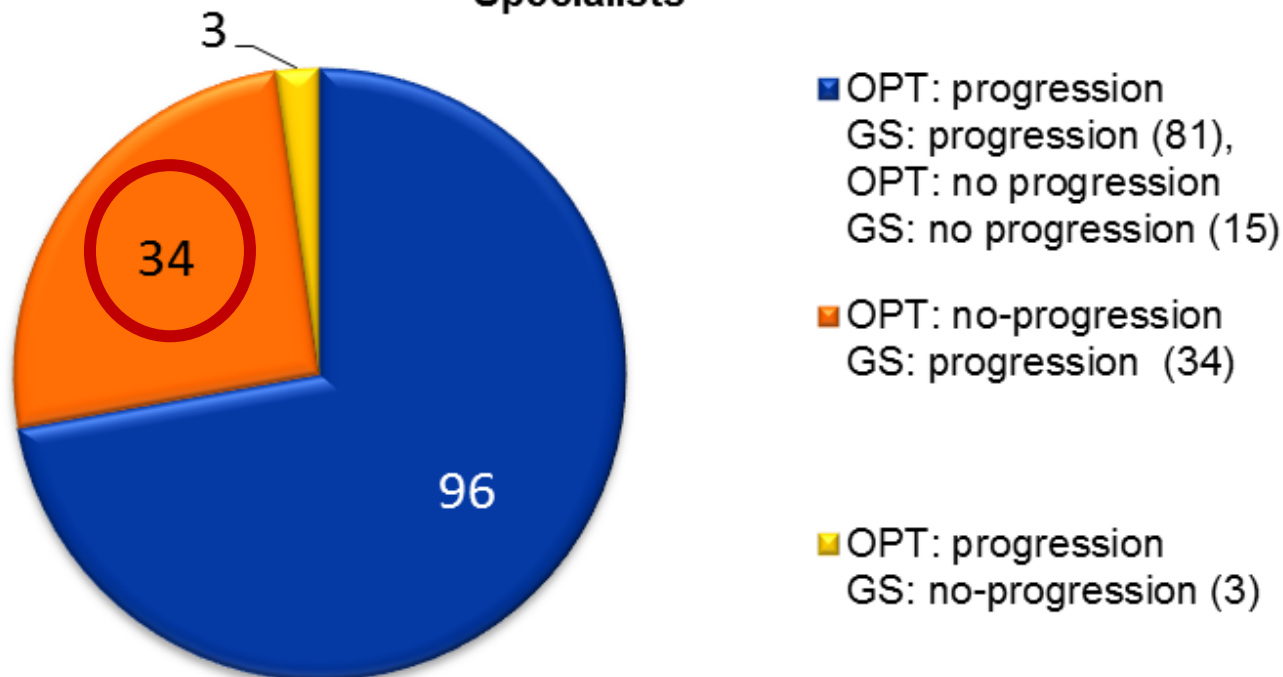
GS: Glaucoma Specialist; OPT: optometrist

Kappa (κ):
0.00-0.20= poor,
0.21-0.40= fair,
0.41-0.60= moderate,
0.61-0.80= substantial,
0.81-1.00= almost perfect

Results (continued)

Optometrists perceived “no glaucoma progression” in comparison to the glaucoma specialist assessment of “progression” for **34 of 133 eyes (25%)**.

Optometrist Assessment of Disease Progression compared to Assessment Agreed Upon by Glaucoma Specialists



Results (continued)

Use of OCT to determine progression varied widely between provider groups. When used, the provider groups agreed on OCT results the least (in terms of simple % agreement).

Frequency of Test Utilization by Each Group of Providers to Identify Disease Progression

	IOP	Disc Photos	OCT	VF	Disc Hemorrhage
OPT	109	13	94	99	29
GS	135	27	187	133	29

Agreement Among All Providers on Disease Progression Based on Each Specific Test

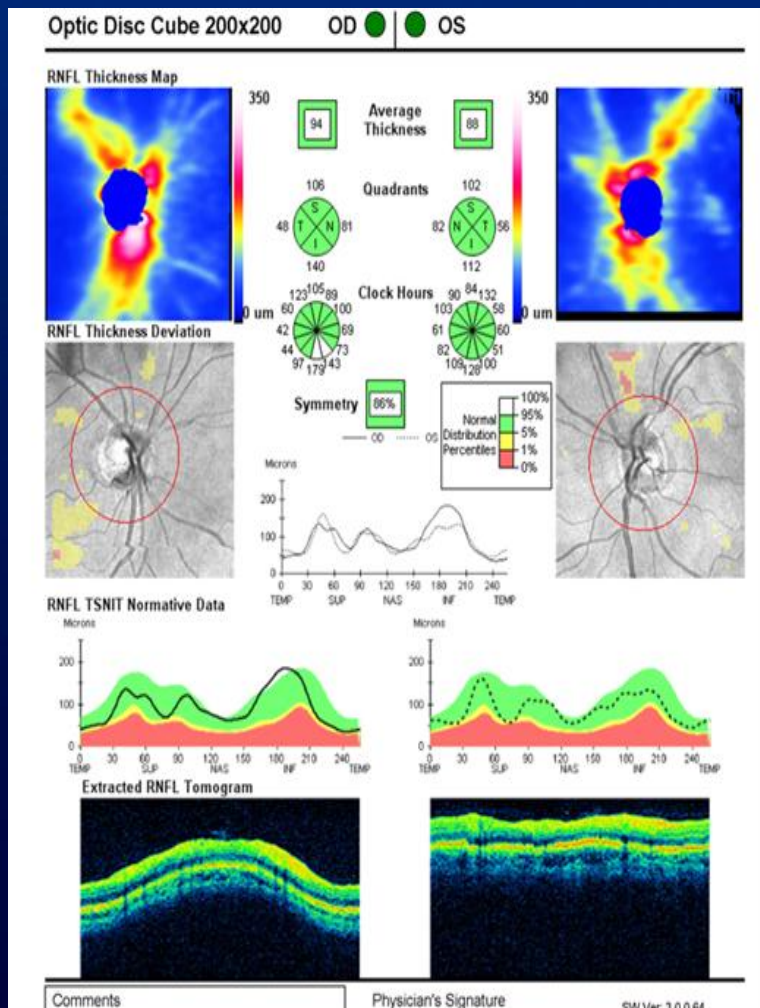
	Agreement (%)	Kappa
IOP	67	0.63
Disc Photos	76	0*
OCT	44	0.33
Visual Field	57	0.50
Disc Hemorrhage	91	0.72

**Since providers did not rely heavily on Disc Photos for determining progression, despite high agreement among providers when test was used, the expected agreement for kappa calculation is very high.*

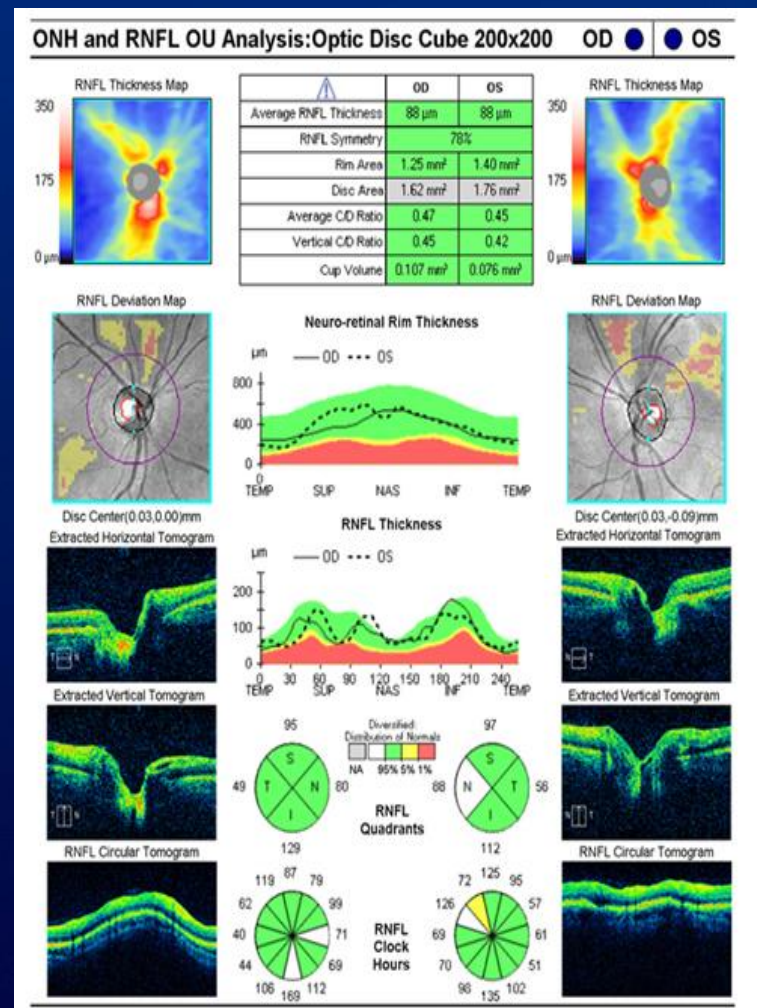
Reasons for Discrepancy between Provider Groups

- IOP not within “stable” range, but all other testing stable
- Variation in definition of glaucoma progression
- Disc hemorrhage with stable IOP/testing
- Interpretation on OCT
- Interpretation of VF testing in presence of other ocular pathology.

OCT Software Interpretation



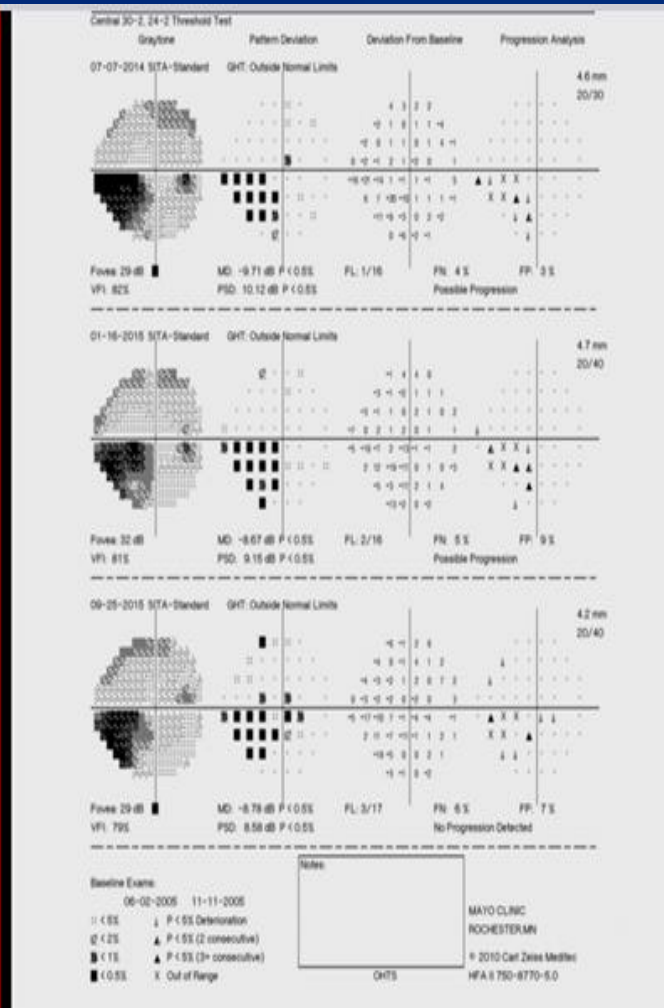
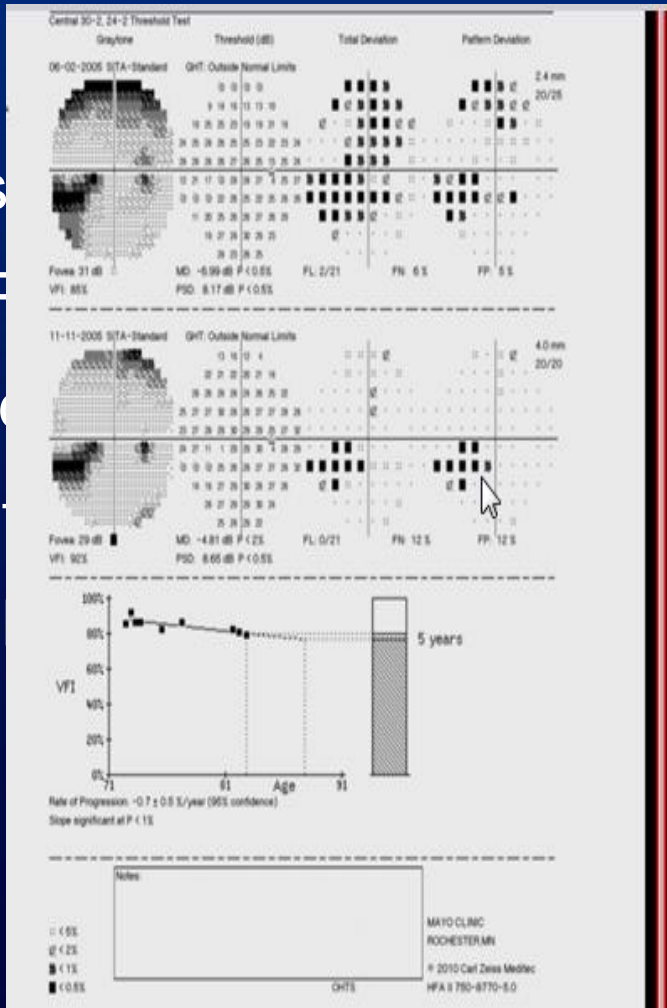
2008 average thickness 94 right



2013 average RNFL thickness 88 right

Case with Glaucoma and Other Ocular Disease

- 85
- His
- IOP
- Mild
- Op
- Op



ation
 sion)

Conclusions

- Our study suggests **moderate agreement** between and within the two groups of glaucoma-trained specialists and optometrists.
- In 25% of patients, glaucoma specialists identified progression when optometrists identified stability. Therefore an **algorithmic tool** for assessment of glaucoma progression may be beneficial.
- **Additional training** in OCT and visual field analysis may be valuable to develop greater consensus within the team model.
- A team approach to glaucoma care that involves optometrists and glaucoma-trained specialists can potentially be an **effective model** for monitoring progression of disease.

References and Support

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