

# Retrospective Real-World Analysis of Patients with Geographic Atrophy (GA) Secondary to Age-Related Macular Degeneration Followed up for 3 Years

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## Disclosures

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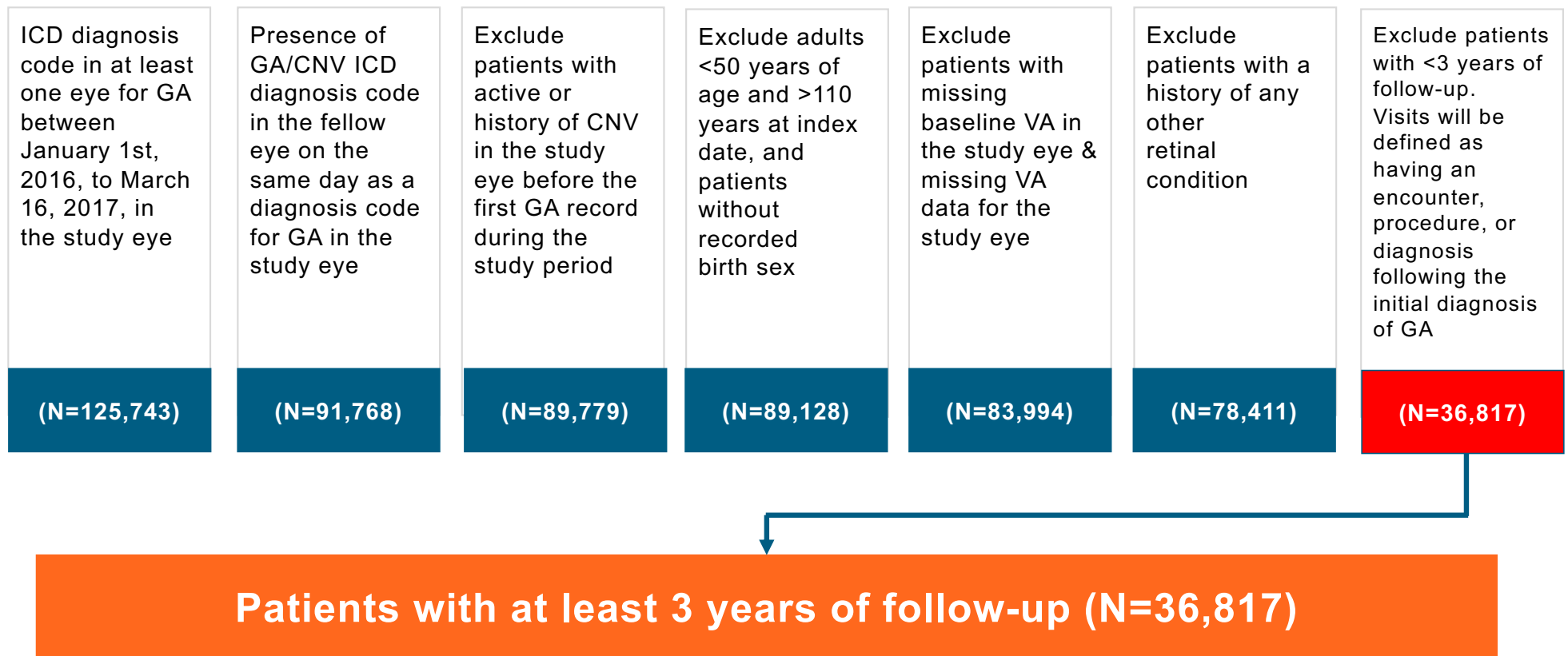
- Ehsan Rahimy has the following financial interests or relationships to disclose:
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## Introduction

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- Longer-term outcomes regarding the progression of GA in patients with age-related macular degeneration (AMD) are lacking
- Here we report data from a retrospective analysis of clinical data from the American Academy of Ophthalmology IRIS<sup>®</sup> (Intelligent Research in Sight) Registry evaluating disease progression of patients with GA in one eye and either GA or choroidal neovascularization (CNV) in the other eye, over 3 years

# Patient disposition



CNV=choroidal neovascularization; GA=geographic atrophy; ICD=International Statistical Classification of Diseases and Related Health Problems; N=number; VA=visual acuity.

## Cohorts for analysis

COHORT 1 – GA:GA (n=21,789)		COHORT 2 – GA:CNV (n=14,976)	
Study eye: GA lesion location			
<b>Cohort 1A</b> Extrafoveal GA	<b>Cohort 1B</b> Foveal GA	<b>Cohort 2A</b> Extrafoveal GA	<b>Cohort 2B</b> Foveal GA
<b>(n=10,720)</b>	<b>(n=11,069)</b>	<b>(n=7,263)</b>	<b>(n=7,713)</b>

- Patients excluded if they had a history of CNV or active CNV in the study eye, a history of any other retinal condition, or <36 months of follow-up
- Patients grouped by fellow eye status:
  - Cohort 1, GA:GA
  - Cohort 2, GA:CNV (study eye GA, fellow eye CNV)
- Subgroups were classified by lesion location: extrafoveal or foveal
- Main outcomes were study and fellow eye disease progression including VA over 3 years

## Patient demographics (and treating provider)

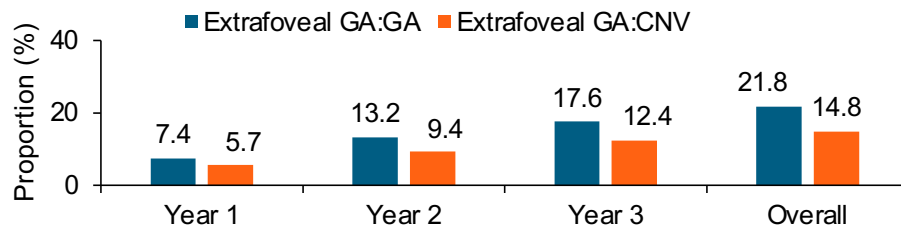
	COHORT 1 – GA:GA (n=21,789)	COHORT 2 – GA:CNV (n=14,976)
<b>Age (years) mean (SD)</b>	80.1 (8.6)	81.8 (7.8)
<b>Sex, n (%)</b>		
Female	14,574 (66.9)	10,011 (66.9)
Male	7,215 (33.1)	4,965 (33.2)
<b>Race, n (%)</b>		
White or Caucasian	19,300 (88.6)	13,641 (91.1)
Black or African American	234 (1.1)	82 (0.6)
Asian	326 (1.5)	122 (0.8)
Other	148 (0.7)	102 (0.7)
Unknown	1,781 (8.2)	1,029 (6.9)
<b>Treating provider, n (%)</b>		
Retina specialist	14,471 (66.4)	13,638 (91.1)
General ophthalmologist	3,240 (14.9)	806 (5.4)
Non-retina specialist	3,083 (14.2)	353 (2.4)
Optometrist	906 (4.2)	111 (0.7)
Unknown	89 (0.4)	68 (0.5)

CNV=choroidal neovascularization; GA=geographic atrophy; n=number; SD=standard deviation.

# Study eye cumulative progression at Years 1, 2 and 3

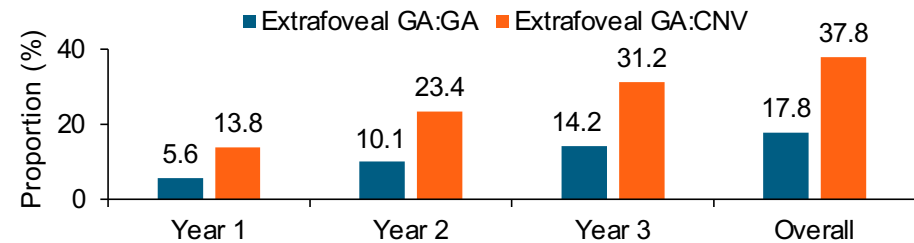
## Extrafoveal GA to foveal GA

Cohort 1A (n=10,720 eyes) and Cohort 2A (n=7,236)



## Extrafoveal GA to CNV

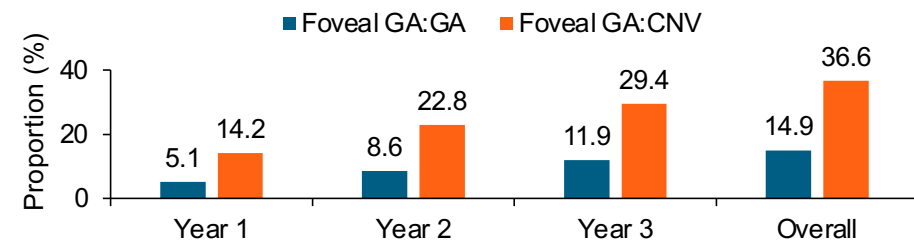
Cohort 1A (n=10,720 eyes) and Cohort 2A (n=7,236)



- Progression to foveal GA is more common among bilateral GA eyes vs GA:CNV study eyes
  - 4.5–7.4% of GA:GA study eyes progressed each year, compared with 2.9–5.7% of GA:CNV study eyes
- Conversion to CNV is more common in GA:CNV study eyes
  - Over 30% of GA:CNV study eyes develop CNV at Year 3, compared with <15% of GA:GA study eyes
  - Progression to CNV is slightly higher among eyes with extrafoveal GA vs foveal GA

## Foveal GA to CNV

Cohort 1B (n=11,069 eyes) and Cohort 2B (n=7,713)



Overall population data included the total proportion of patients who progressed to foveal GA at any point during the follow-up period, which could extend beyond 3 years for select eyes. For this analysis, enrolled eyes with 3+ years of follow-up, but certain eyes may have >3 years of follow-up data.  
 CNV=choroidal neovascularization; GA=geographic atrophy; n=number

## Median time to progression – study eye (1/2)

**Study eye progression of patients with GA in both eyes (Cohort 1), patients with GA in one eye and CNV in the other eye (Cohort 2)**

	COHORT 1A – GA:GA		COHORT 2A – GA:CNV	
	n	Median time to event, wks (IQR <sup>a</sup> )	n	Median time to event, wks (IQR <sup>a</sup> )
<b>Study eye: Progression from extrafoveal GA to foveal GA</b>				
Cases among incident patients	58	98.1 (52.0–144.5)	60	98.0 (33.1–125.7)
Cases among prevalent patients	2,280	79.1 (35.4–139.0)	1,018	71.0 (29.6–134.0)

- Among the study eyes of patients with bilateral GA, median time to progression to foveal GA was ~98 weeks among newly incident cases and ~79 weeks among prevalent GA cases
  - Median time to foveal GA was nominally shorter (71 weeks) among prevalent patients with GA:CNV

Incident eyes defined as GA eyes with either early or intermediate AMD in year 2016 and an index date for GA in year 2017. <sup>a</sup>IQR: 25th percentile–75th percentile. AMD=age-related macular degeneration; CNV=choroidal neovascularization; GA=geographic atrophy; IQR=interquartile range; n=number; wks=weeks.



## Median time to progression – study eye (2/2)

Study eye progression of patients with GA in both eyes (Cohort 1), patients with GA in one eye and CNV in the other eye (Cohort 2)

	COHORT 1 – GA:GA		COHORT 2 – GA:CNV	
	n	Median time to event, wks (IQR <sup>a</sup> )	n	Median time to event, wks (IQR <sup>a</sup> )
<b>Study eye: Progression from extrafoveal GA to CNV</b>				
Cases among incident patients	60	83.6 (44.7–151.1)	161	71.6 (38.0–123.9)
Cases among prevalent patients	1,850	89.0 (40.7–146.1)	2,587	78.6 (32.5–136.2)
<b>Study eye: Progression from foveal GA to CNV</b>				
Cases among incident patients	31	60.0 (49.7–106.9)	128	68.0 (26.0–113.0)
Cases among prevalent patients	1,614	85.7 (36.9–145.4)	2,531	68.4 (29.5–126.1)

- Time to progression from extrafoveal GA to CNV appeared to be faster among patients with fellow eye CNV
  - Conversion occurred at a median of 72 weeks vs 84 weeks among newly incident cases, and 79 vs 89 weeks for prevalent cases among GA:CNV vs GA:GA study eyes, respectively

Incident eyes defined as GA eyes with either early or intermediate AMD in year 2016 and an index date for GA in year 2017. <sup>a</sup>IQR: 25th percentile–75th percentile. AMD=age-related macular degeneration; CNV=choroidal neovascularization; GA=geographic atrophy; IQR=interquartile range; n=number; wks=weeks.

## VA for study eye at index

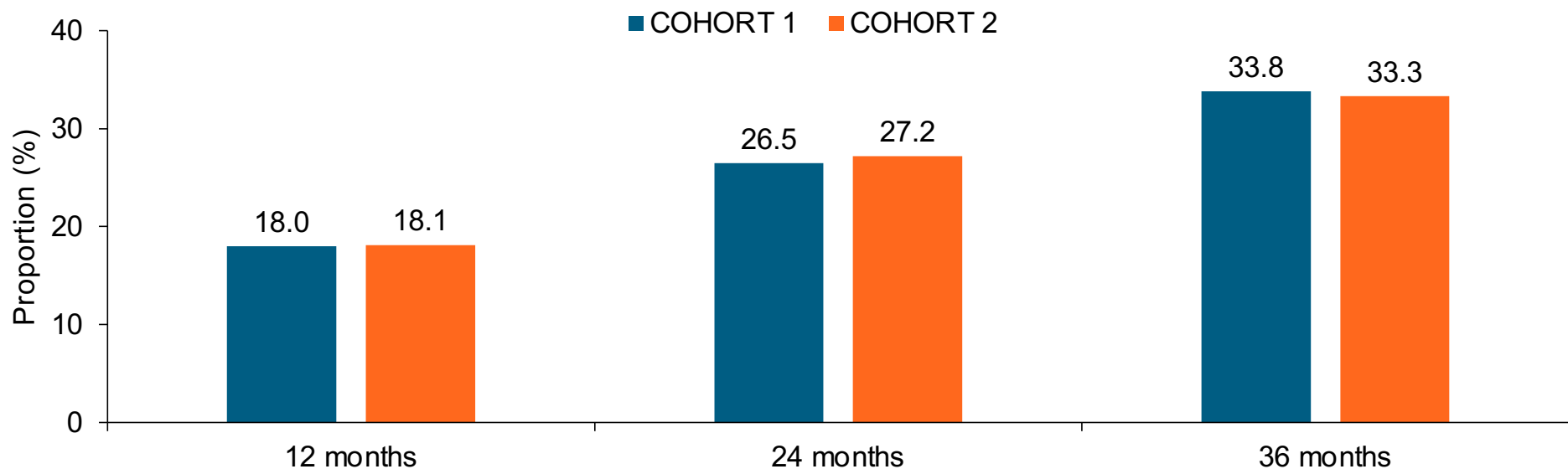
	COHORT 1 – GA:GA (n=20,225)	COHORT 2 – GA:nAMD (n=13,926)
<b>ETDRS Letters, mean (SD)</b>	64.8 (20.0)	56.0 (25.8)
<b>Proportion of patients, n (%)</b>		
20/20 or better	2,742 (13.6)	1,145 (8.2)
<20/20 and ≥20/40	8,956 (44.3)	5,218 (37.5)
<20/40 and ≥20/100	5,460 (27.0)	3,574 (25.7)
<20/100 and ≥20/200	1,563 (7.7)	1,436 (10.3)
<20/200	1,504 (7.4)	2,553 (18.3)

- Among the patient eyes with available VA recordings (n=34,151), overall vision was worse among GA:nAMD study eyes than among GA:GA study eyes
  - 7.4% of GA:GA study eyes (Cohort 1) and 18.3% of GA:nAMD (Cohort 2) study eyes had worse than 20/200 vision at baseline

## Study eye VA progression over 3 years

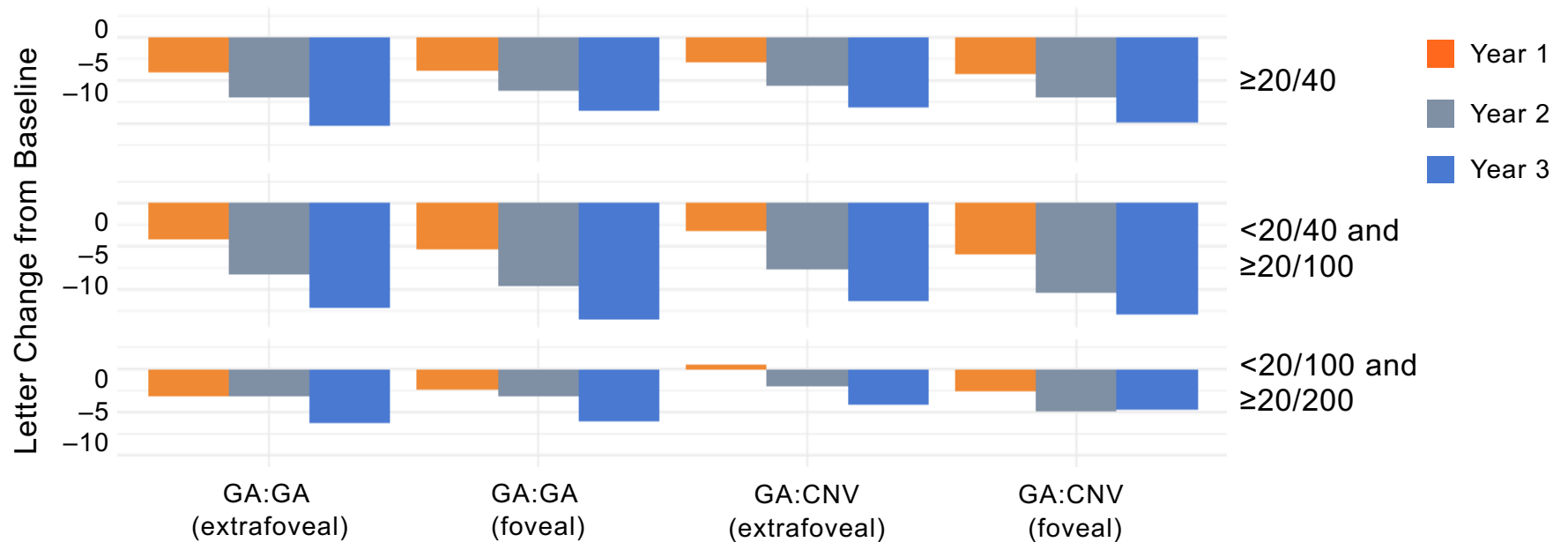
### Progression to severe blindness (20/200 or worse)

Bilateral GA and GA:CNV study eyes, VA: >20/200 and <20/40 at baseline



- Within a year, nearly 20% of study eyes may progress to severe blindness
  - Within 2 years, the rate increased to over a quarter of eyes and within 3 years, over a third of study eyes

## VA change at 12 months, 24 months, and 36 months



- Eyes with greater vision lose more letters in the first 3 years compared with eyes with poor vision at index
- Progression trends continue to occur into Year 3
  - Rate of change between Years 1 and 2 is similar rate of change from Years 2 and 3

A three-line loss in VA = a loss of 15 letters.  
 CNV=choroidal neovascularization; GA=geographic atrophy; VA=visual acuity.

## Conclusions

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- GA caused substantial disease burden in this retrospective study of a large real-world database
- Eyes with GA lost significant vision over a 3-year period, consistent with trends in the previously reported 2-year analysis
- Eyes with good vision at baseline lost more letters over 3 years compared with eyes with poor vision
- Patients with GA are still at significant risk of being “lost-to-follow-up” as evidenced by more than 42,000 patients being excluded from this analysis with less than 3 years of follow-up data