

Health state utilities associated with geographic atrophy secondary to dry age-related macular degeneration

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KEY TAKEAWAYS

- In this cross-sectional, quantitative vignette-based study, health states representing early GA were associated with higher preference-based utility values than health states associated with advanced GA
- The results from this general population utility study provide robust inputs for cost-effectiveness analyses of GA interventions, supporting health technology assessment and evidence-based resource allocation

INTRODUCTION

- GA is an advanced form of AMD with an impact on visual function that may not be detected clinically until significant disease progression and foveal involvement has occurred (**Figure 1**)¹⁻⁵
- As new treatments emerge to slow GA progression, cost-utility analyses requiring health state utilities (i.e., preference weights indicating QoL) will be needed to assess their value
- Generic preference-based measures such as EQ-5D have been shown to have limited sensitivity to severity of visual conditions
- Therefore, the current study was conducted with vignette-based methods to estimate utilities of various severity levels of GA

OBJECTIVE

- To estimate health state utilities specifically associated with GA for use in subsequent economic modeling

METHODS

- This is a cross-sectional, quantitative vignette-based utility study
 - Data were collected in 1:1 in-person interviews with adults from the general population in the UK (England and Scotland)
- Seven health state vignettes were developed based on literature review,⁶⁻¹² input from clinical experts and interviews with people with GA and caregivers of people with GA (**Table 1, Figure 2**)
 - Vignettes described varying GA severity levels — indicated by GA lesion area (or size) and distance of lesion to the foveal center. Each health state also described QoL impact and included an image illustrating the visual impairment associated with the lesion

Table 1. Seven health state vignettes

		Lesion Size			
		A. Small <7.5 mm ²	B. Medium 7.5–12 mm ²	C. Large >12–17.5 mm ²	D. Blind >17.5 mm ²
Minimum distance to foveal center	1. Far (>0.25 mm to foveal center point)	A1. Small and far	B1. Medium and far	C1. Large and far	N/A
	2. Near (≤0.25 mm to foveal center point)	A2. Small and near	B2. Medium and near	C2. Large and near	D. Blind

Images in table are graphical representations of GA lesions.

Figure 1. GA disease progression over time

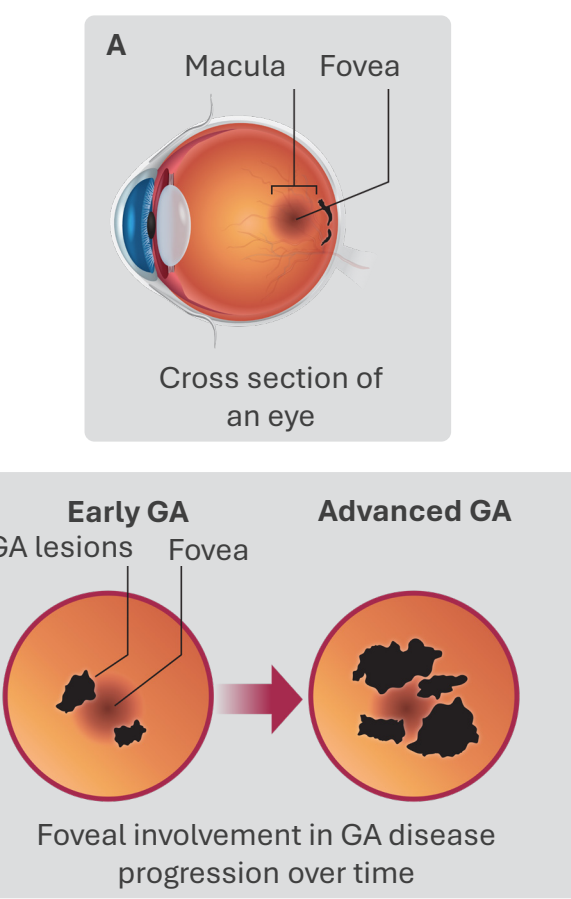


Figure 2. Example of a health state vignette: GA with lesion of medium size near the foveal center

Blind spot	- You have a medium blind spot - The blind spot is close to the centre of the fovea, where vision is clearest
Impact on daily activities	- You always notice the blind spot - Reading is difficult - You can read a little by focusing on the parts of your vision not affected by the blind spot, but reading is difficult and slow because the blind spot is near the centre of your vision You can make reading a little easier with large print, extra light, or a magnifying device, but your blind spot still presents difficulties - Your reading difficulties can make some activities harder, such as reading labels when shopping and using a computer - You can have difficulty with tasks that require detailed vision, like threading a needle, reading numbers from a credit card, or using a hammer - You can get around independently in public, but it is difficult, and you may not always see people or objects in front of you - You have some difficulty recognising faces
Impact on self-care	Your vision does not affect your ability to care for yourself
Impact on driving	You are not confident or comfortable with driving in any situation
Emotional impact	- Your visual condition has an emotional effect on you - You are concerned about the future and the possibility of your vision becoming worse
Image representing visual impairment	

- A pilot study was conducted to ensure the health states and methodology were comprehensible and feasible
 - After health state descriptions were refined based on the pilot study, utilities for each health state were estimated in a larger utility elicitation study
- Prior to reviewing and valuing health states in TTO interviews, each respondent viewed a VR demonstration (with eye movement tracking) that simulated predefined day-to-day scenarios presented in the context of various GA severity levels (**Figure 3**)
 - VR served as a unique way to introduce the respondents to GA and GA of varying severity levels
- During the initial part of the structured interview, participants ranked the health state descriptions presented to them, based on their preferences
- Participants then valued health states in the TTO interview in 10-year time increments (10-year time with 5% trading increments)
 - Participants were presented with a health state and offered a choice between spending 10 years in this health state versus spending various amounts of time in the full health state, in 6-month increments

Figure 3. VR demonstration for participants

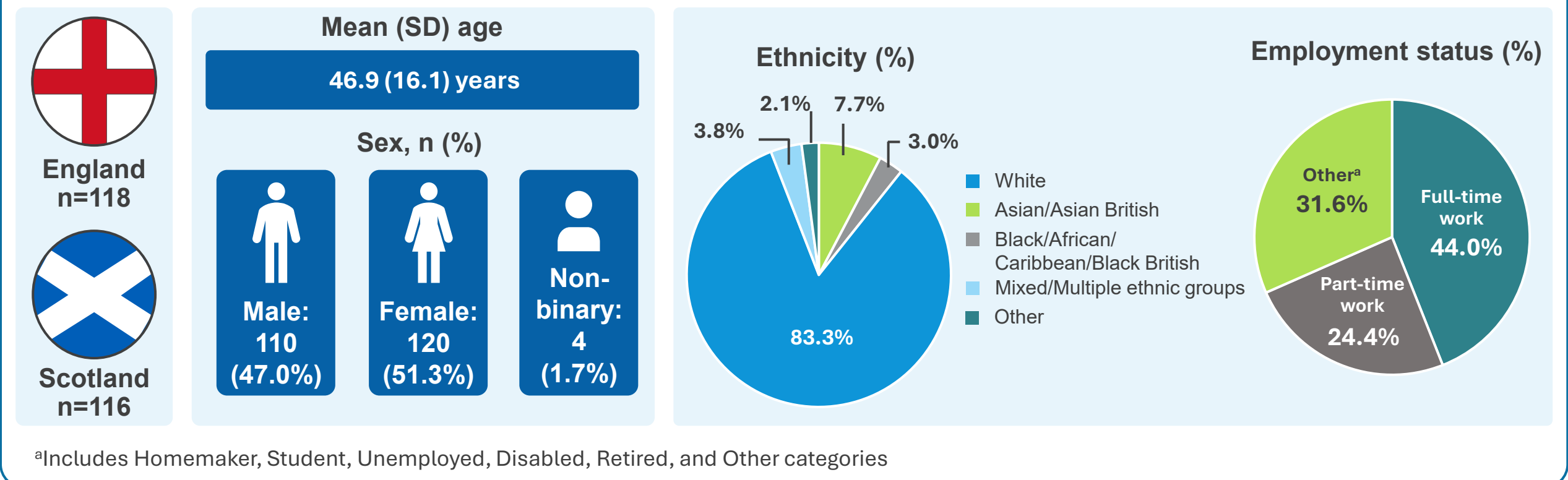


RESULTS

Participant demographics

- A total of 234 participants in the UK (England, n=118; Scotland, n=116) completed their interviews
 - Forty-eight participants (20.5%) reported knowing somebody diagnosed with AMD

Figure 4. Participant demographics (Total N=234)



Clinical characteristics

- The most commonly reported health conditions were anxiety (25.6%), depression (23.5%), hypertension (8.1%), arthritis (7.7%), and diabetes (6.4%)
- Four participants (1.7%) reported a diagnosis of AMD (2 wet AMD, 1 dry AMD, 1 unknown). No participants reported GA associated with their AMD

Health state rankings

- Participants compared and ranked all health states in order of preference (**Table 2**)

Table 2. Ranking of health states by participants

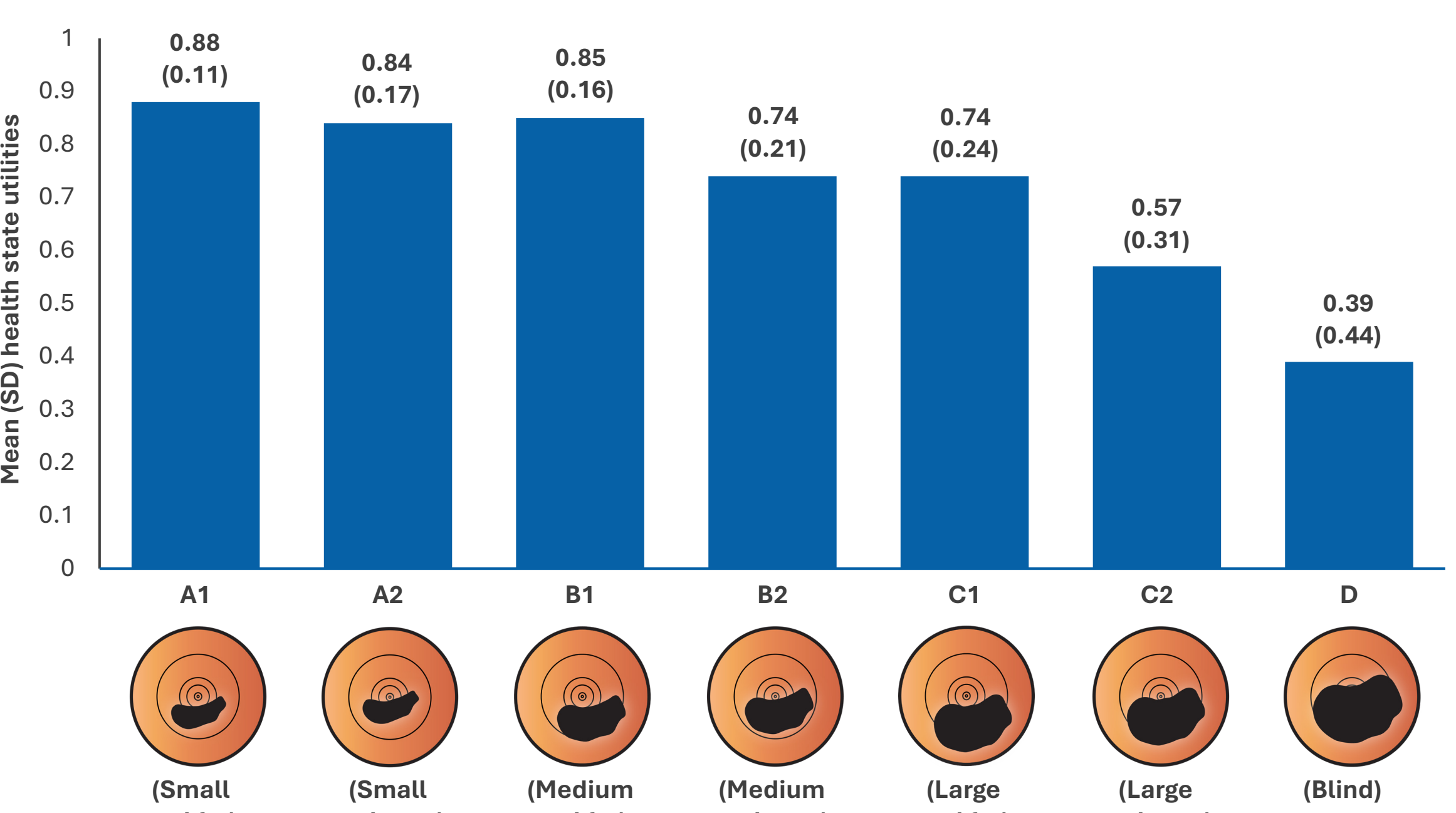
		Most preferred → Least preferred						
Health state rank frequency, n (%)		1	2	3	4	5	6	7
A1 (Small and far)		234 (100.0%)	---	---	---	---	---	---
A2 (Small and near)		---	49 (20.9%)	173 (73.9%)	12 (5.1%)	---	---	---
B1 (Medium and far)		---	185 (79.1%)	49 (20.9%)	---	---	---	---
B2 (Medium and near)		---	---	---	136 (58.1%)	98 (41.9%)	---	---
C1 (Large and far)		---	---	12 (5.1%)	86 (36.8%)	136 (58.1%)	---	---
C2 (Large and near)		---	---	---	---	---	234 (100.0%)	---
D (Blind)		---	---	---	---	---	---	234 (100.0%)

Refer to **Table 1** for health state descriptions; images in table are graphical representations of GA lesions.

Mean utilities

- Health states with smaller GA lesions and lesions farther from the foveal center had greater mean utilities (**Figure 5**)
 - Mean health state utilities in this study are in a similar range to published utility values for GA, although the methods of these previous studies are not directly comparable¹³⁻¹⁵

Figure 5. Mean health state utilities^a



^aUtilities are on a scale anchored with 0 representing dead and 1 representing full health. Refer to **Table 1** for health state descriptions. Images in figure are graphical representations of GA lesions.

STUDY LIMITATIONS

- Limitations of vignette-based studies should be acknowledged.¹⁶ In this study, utilities were estimated based on general population preferences for the health state vignettes. The extent to which the resulting utilities may differ from those derived from participants completing generic measures is not known

CONCLUSIONS

- In this general population utility study, health states representing early GA (smaller GA area and lesions far from the foveal center) were preferred and had higher mean utilities than those representing advanced GA (larger GA area and lesions near the foveal center)
- The utilities estimated in this study may be useful for cost-effectiveness models of GA treatment to inform health technology assessment decision-making about healthcare resource allocation

Abbreviations: AMD, age-related macular degeneration; EQ-5D, EuroQol 5-dimensions; GA, geographic atrophy; QoL, quality of life; SD, standard deviation; TTO, time trade-off; VR, virtual reality.

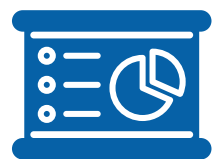
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Funding: This study was funded by Astellas Pharma Inc. Medical writing and editorial support was provided by Aparna Rao, PhD, and Caroline Garnett of Envision Pharma Group, Fairfield, CT, USA, and funded by the study sponsor.

Disclosures: Christiana Dinah received grant support from Apellis, is a consultant for Apellis, Boehringer Ingelheim, Johnson & Johnson, and Roche; attended Speaker's bureau for Apellis, Boehringer Ingelheim, Roche; received meeting support for Apellis, Boehringer Ingelheim, Roche; and is on the Data Safety Monitoring Board or Advisory Board for Apellis, Boehringer Ingelheim, and Roche. Louis Matza and Katie D. Stewart are employees of PPD Evidera Patient-Centered Research, Thermo Fisher Scientific and were contracted by Astellas for conducting work related to this publication. He Guo, Michael Mbagwu, Christian Ridley, Maria Mata Lorenzo, Stephanie H.Y. Lee, and Scott Doyle are employees of Astellas. Priti Patel, Simon Matthews, David Burton, and Laura Cunliffe are employees of Lucid Group Communications Ltd and were contracted by Astellas for conducting work related to this publication.



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