

# Leber Hereditary Optic Neuropathy (LHON): Online Medical Education Can Significantly Improve Physicians' Diagnostic Competence and Confidence, and Improve Therapy Knowledge

Presented at the  
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Research in Vision  
and Ophthalmology)  
Annual Meeting  
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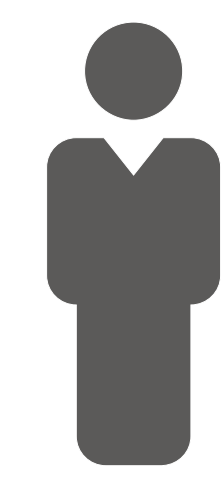
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## BACKGROUND



LHON is a rare, maternally inherited disease, which typically presents in young adults, mostly males, as bilateral, painless, subacute visual failure, sometimes with neurologic manifestations. Diagnosis is based on a consistent clinical history and/or one of three common mitochondrial DNA pathogenic variants identified on molecular genetic testing. Management is mainly supportive; idebenone is approved in Europe under exceptional circumstances.<sup>1</sup> Gene-specific therapies in development have shown promising results in preserving vision. We aimed to determine if online medical education could improve knowledge and competence for patient assessment, confidence for genetic testing and improve therapy knowledge.

## METHODS



Ophthalmologists  
(n = 1,033-1,276)

Neurologists  
(n = 332-445)

A clinical practice assessment followed by 4 accredited online video- and text-based educational activities of 15-75 minutes duration available on an independent membership-based platform

7141 test completers; CME launched Dec 2020; data are reported through April 2022

**Clinical Practice Assessment**  
25 questions and answers  
[medscape.org/viewarticle/942884](https://medscape.org/viewarticle/942884)

**First Response Interviews**  
3 x 10 min video  
[medscape.org/viewarticle/949772](https://medscape.org/viewarticle/949772)

**Clinical Anthology**  
3 x 2000 word articles  
[medscape.org/viewarticle/956821](https://medscape.org/viewarticle/956821)

**Test & Teach Patient Cases**  
2 x cases, 5000 words  
[medscape.org/viewarticle/951195](https://medscape.org/viewarticle/951195)

**Medscape Clinic**  
15 min video consultation  
[medscape.org/viewarticle/965725](https://medscape.org/viewarticle/965725)

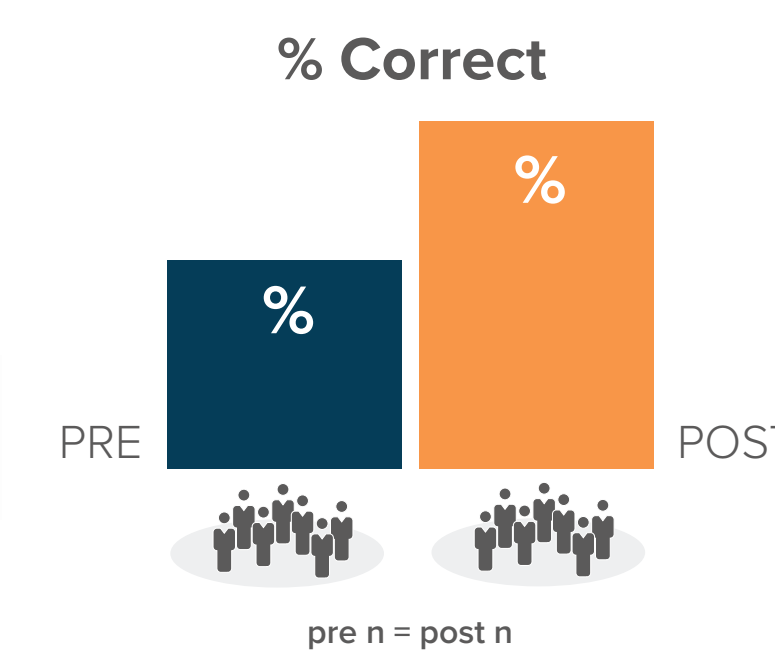
### How to Read the Linked Learner Assessment

#### OUTCOMES COMPLETERS

Each individual completed BOTH the pre and post-education questions  
SAME individuals pre and post-education



SUMMARY STATISTICS FOR PARTICIPANTS WHO PROVIDE COMPLETE DATA

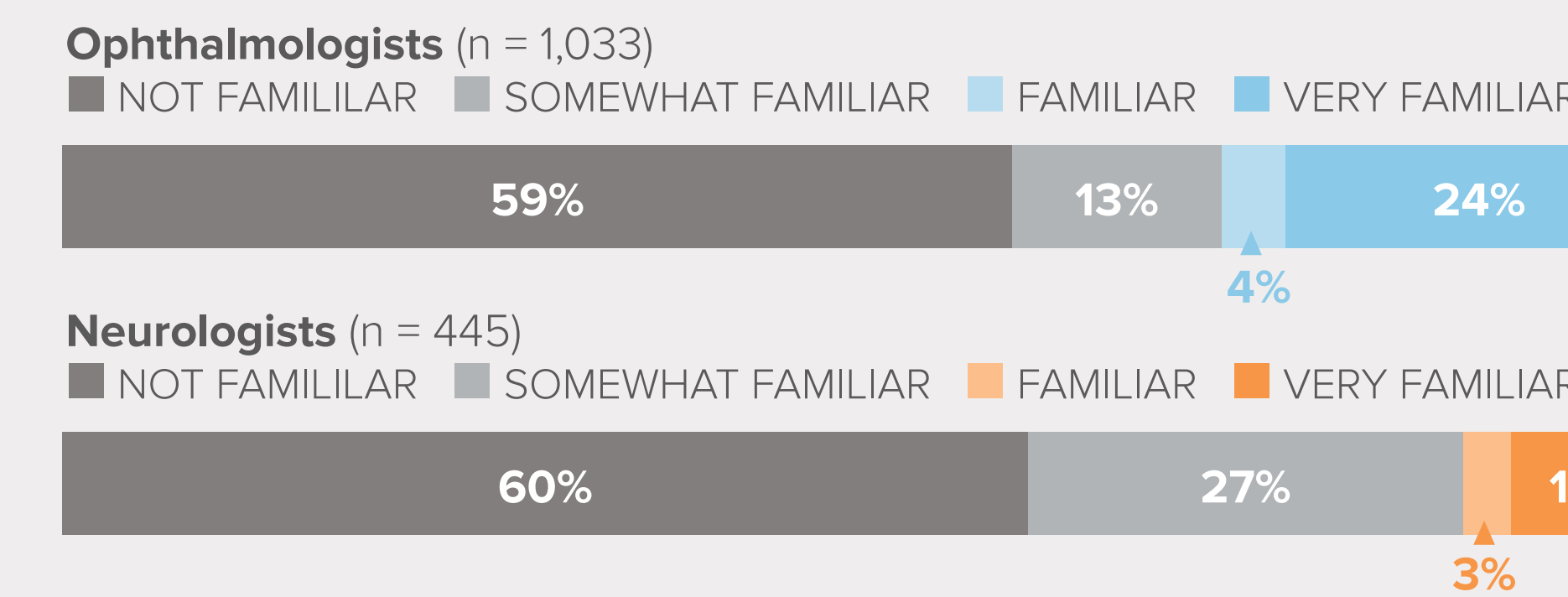


## RESULTS

### CLINICAL PRACTICE ASSESSMENT - RESULTS

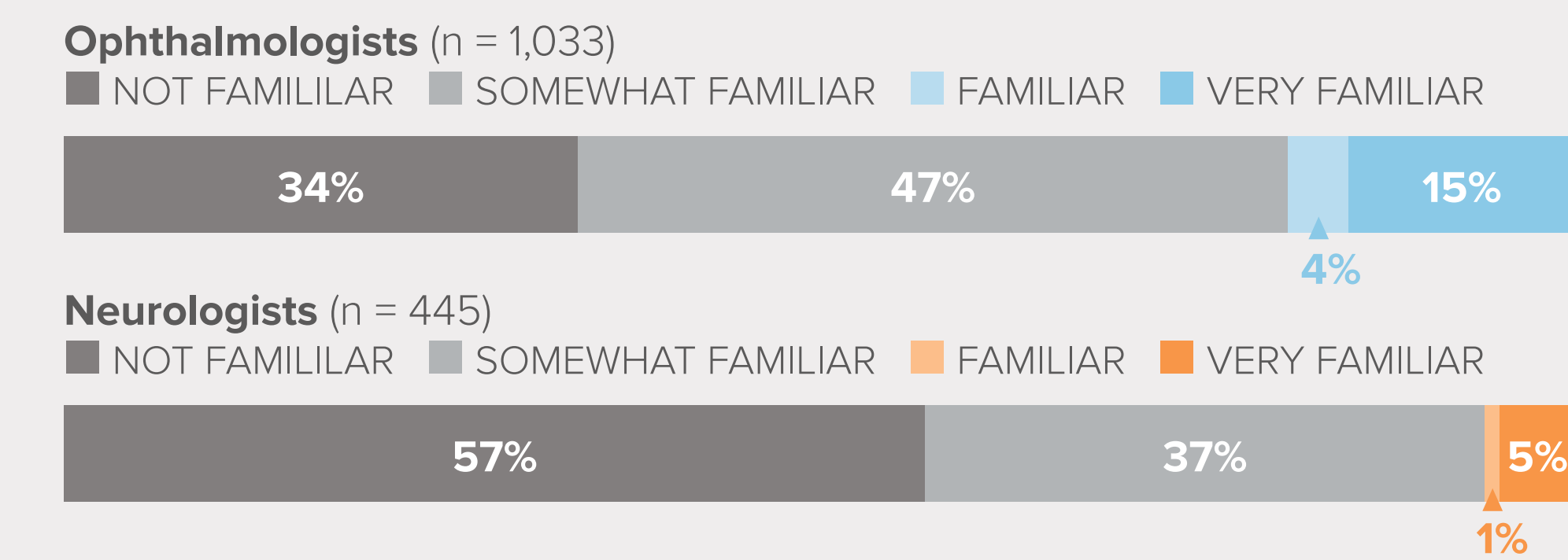
#### Lack of familiarity with LHON

How familiar are you with LHON right now?



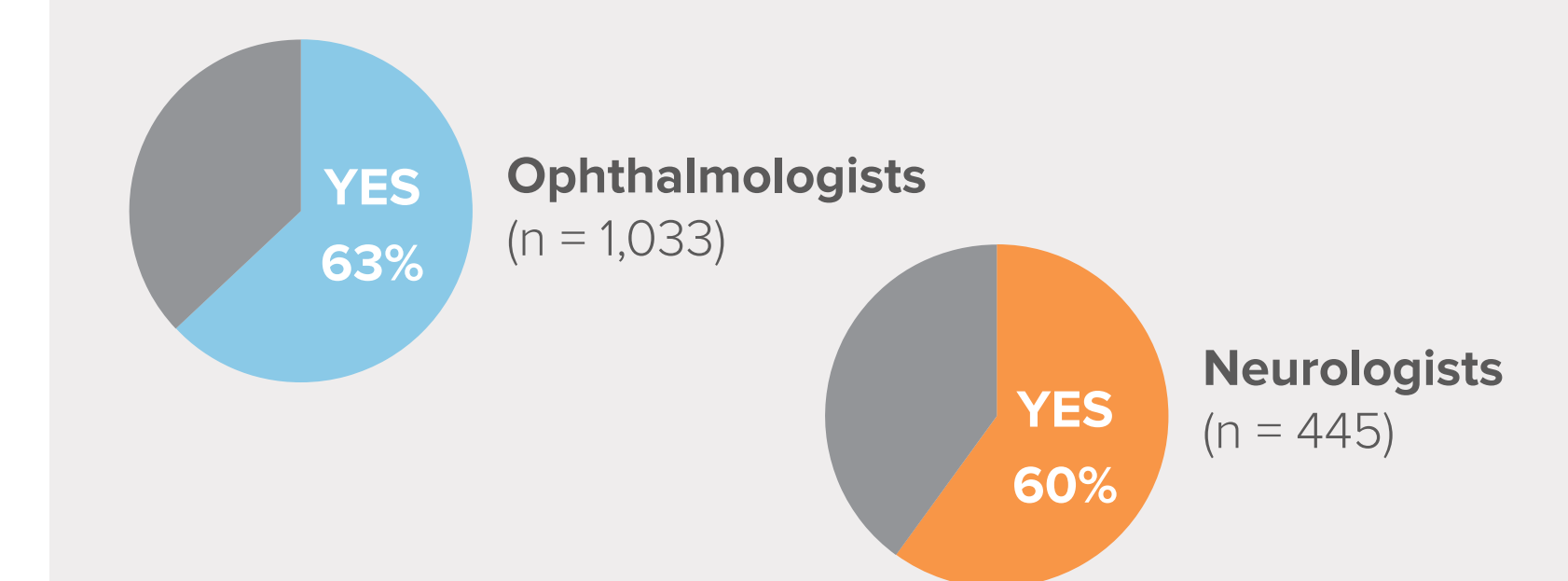
#### Lack of familiarity with LHON therapies

How familiar are you with current & emerging LHON therapies?



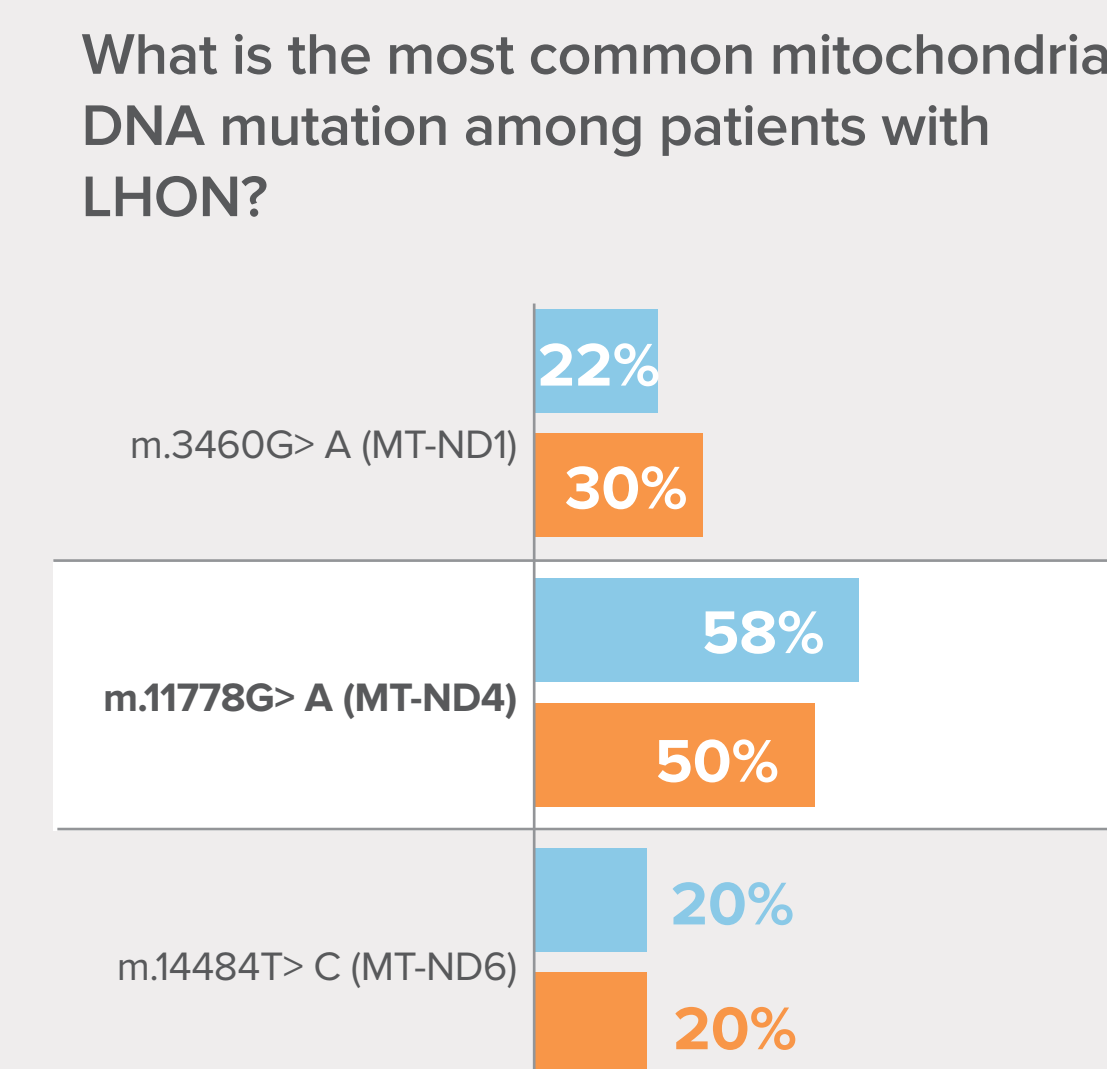
#### Most ophthalmologists order genetic testing

Do you order genetic testing for LHON?

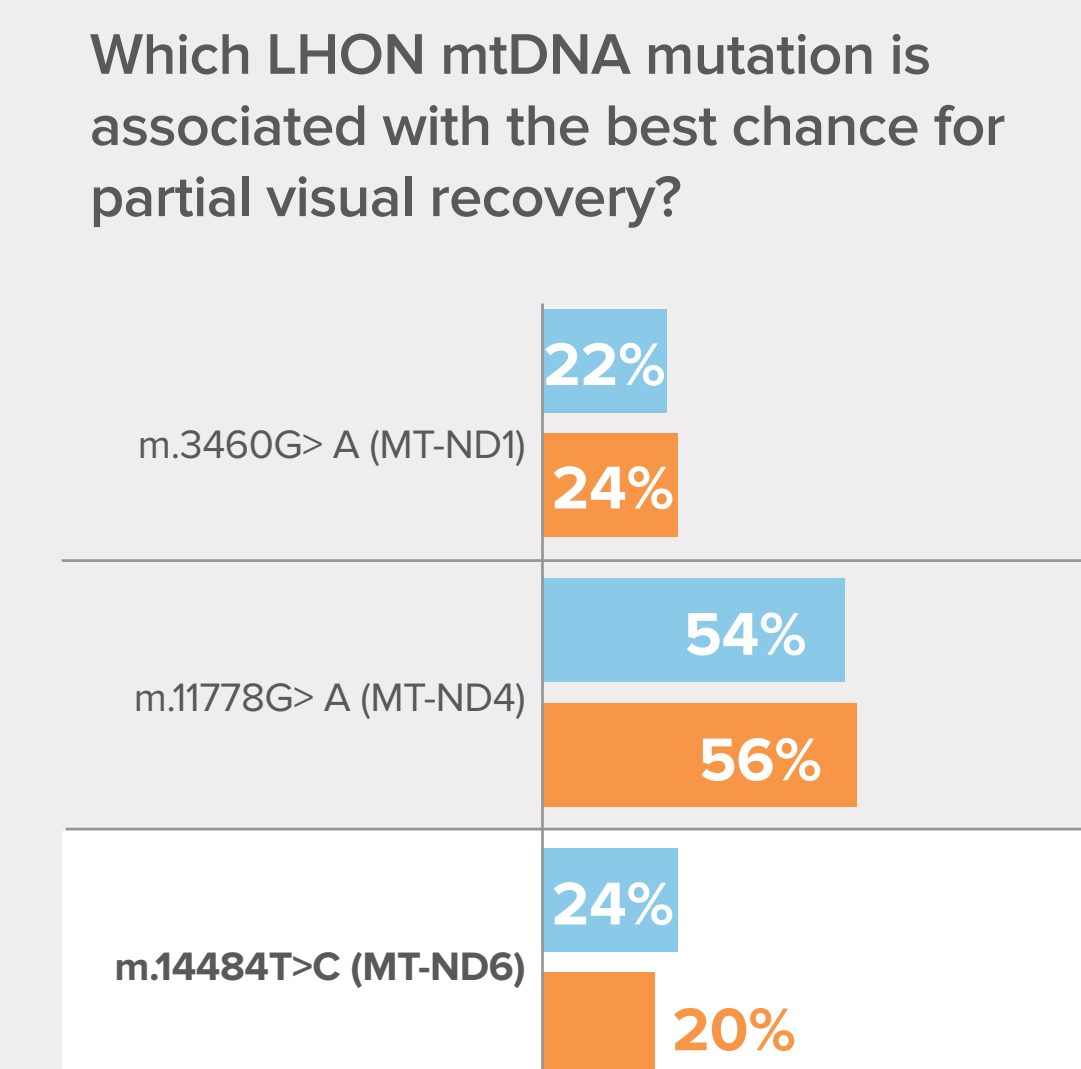


#### Lack of knowledge of common LHON mutations and impact on progression

The most common mitochondrial DNA mutation in LHON patients is m.11778G>A (MT-ND)

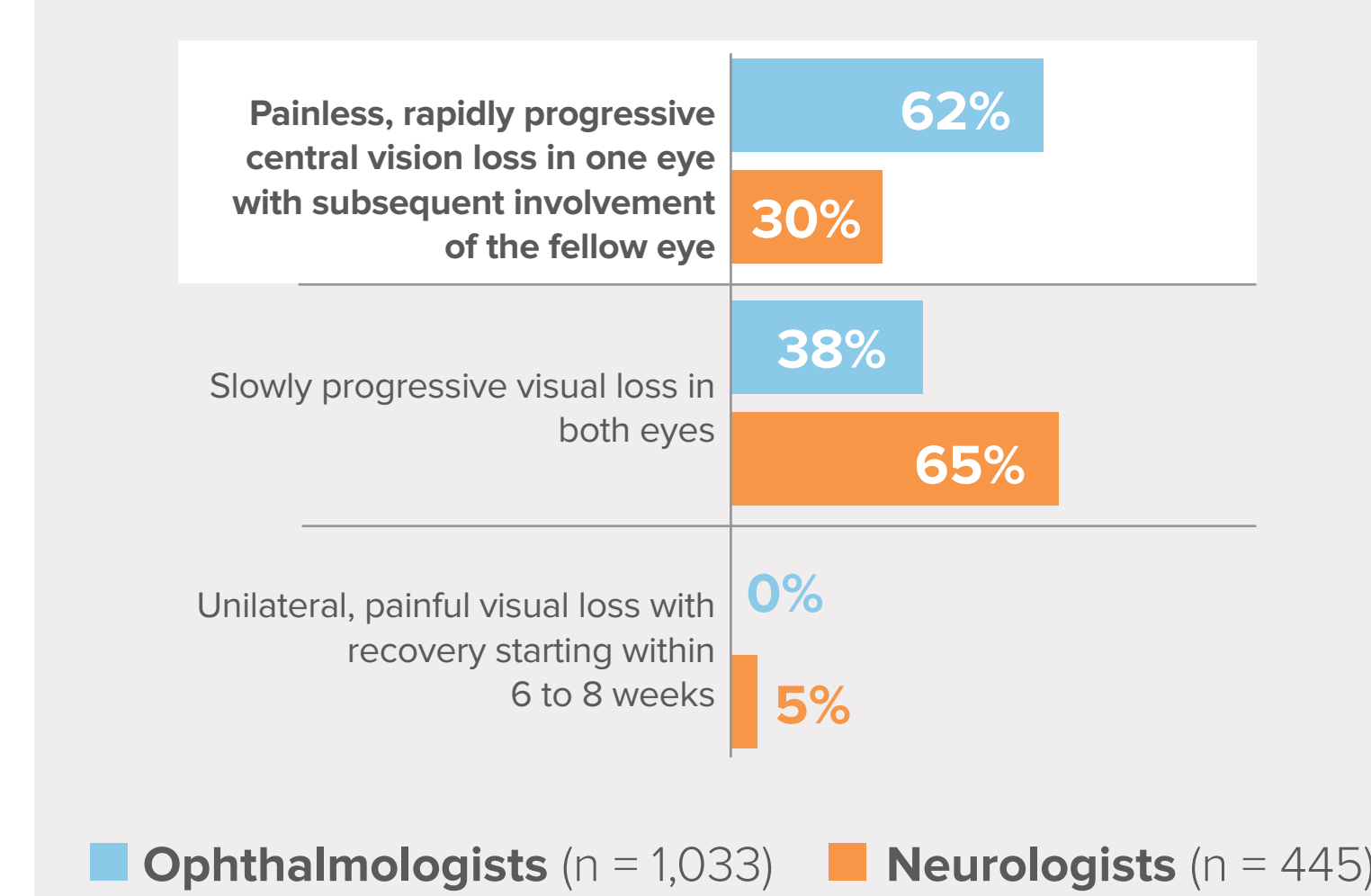


The LHON mutation with the best chance for partial visual discovery is m.1448T>C (MT-ND6) 24% ophthalmologists/20% neurologists correct



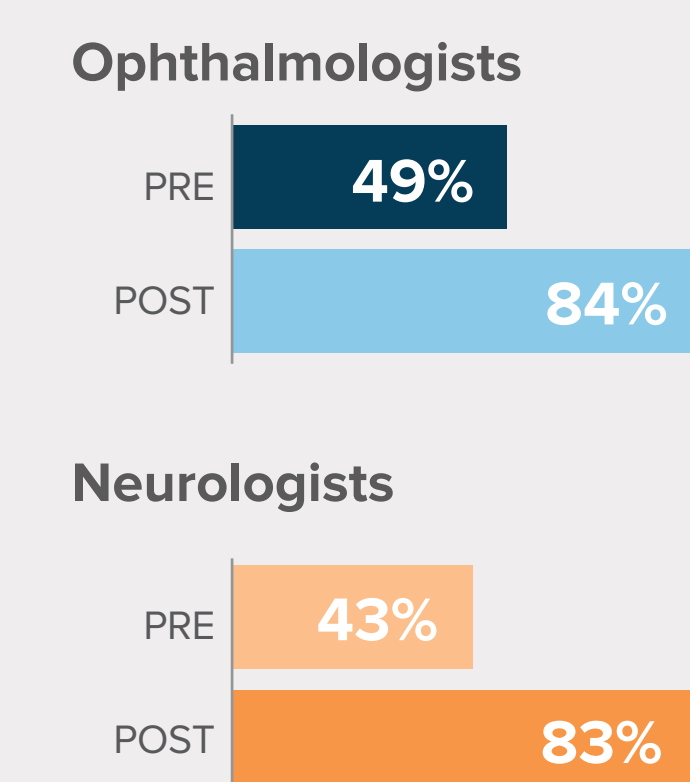
#### Lack of knowledge of typical LHON clinical presentation

What is the usual presentation at the time LHON is diagnosed?



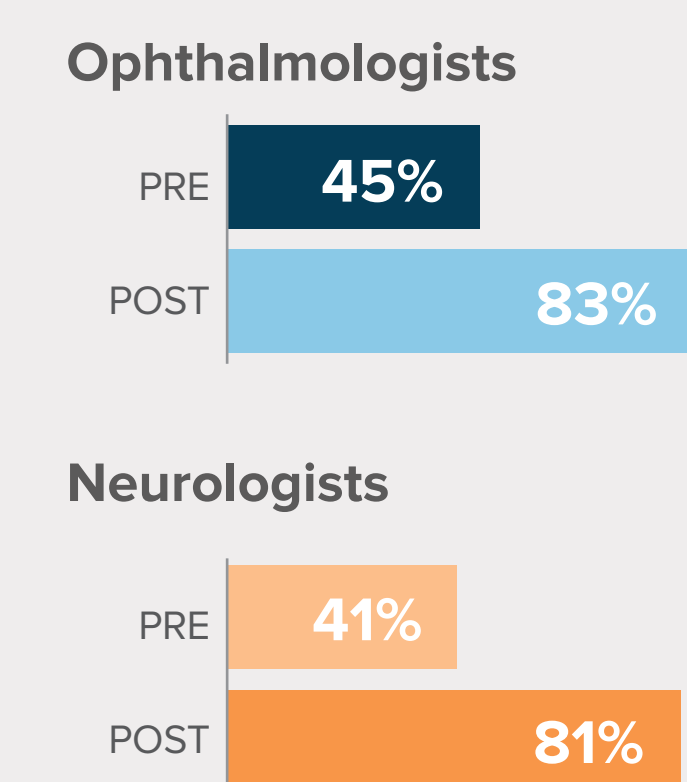
### EDUCATIONAL ACTIVITIES RESULTS

#### Increased competence recognizing LHON



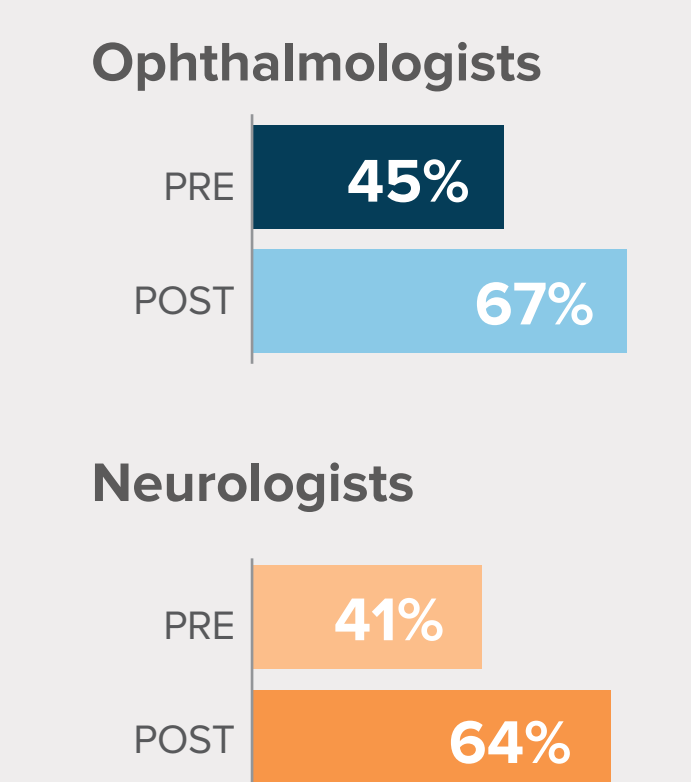
Competence measured as applied knowledge to fictional patient case examples.

#### Increased competence diagnosing LHON

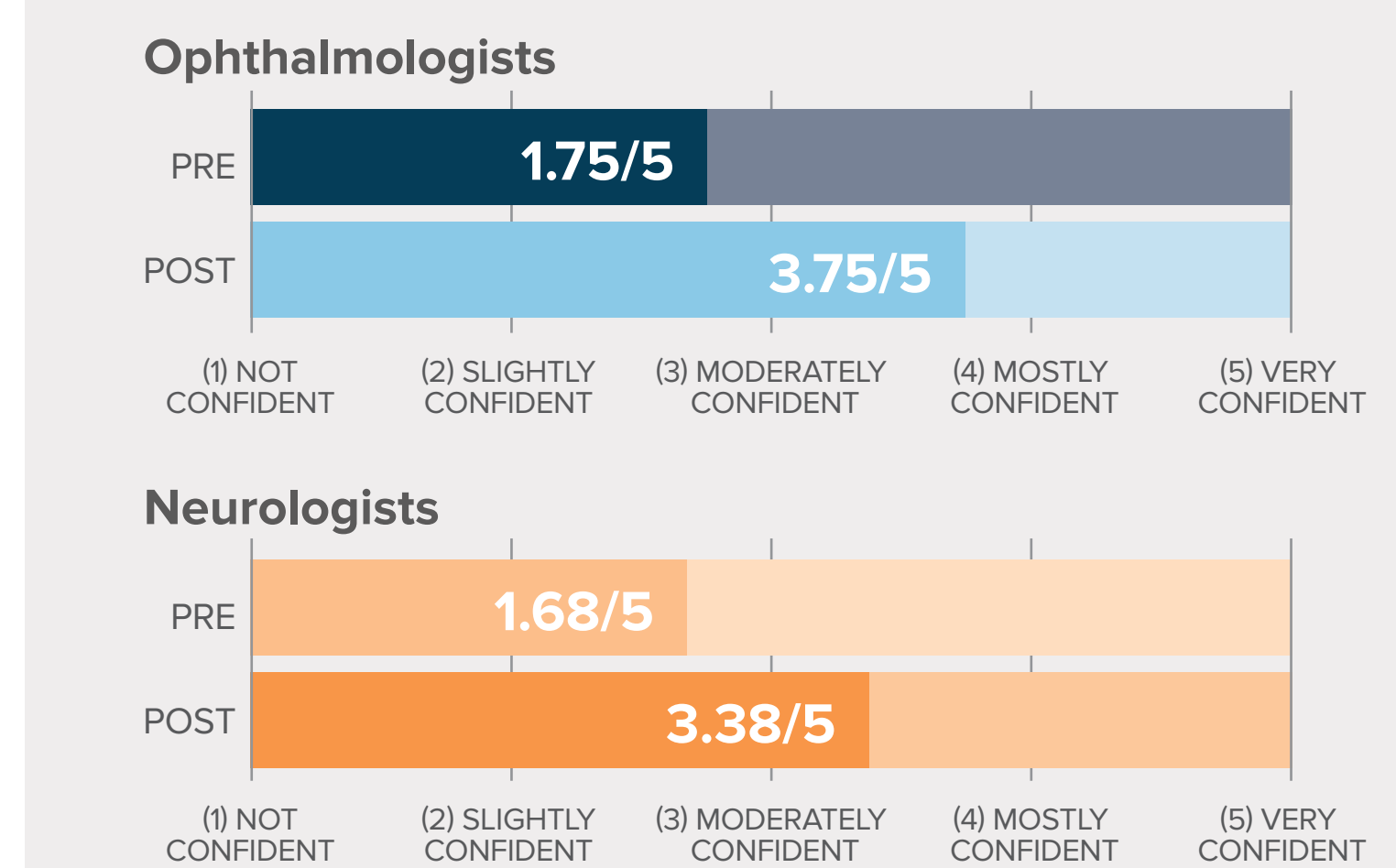


Competence measured as applied knowledge to fictional patient case examples.

#### Improved therapy knowledge/management LHON



#### Higher confidence ordering genetic testing



P < .01 for all Ophthalmologists (n = 1,140-1,276) Neurologists (n = 332-371)  
All Activities were CPD accredited by the Royal College of Family Physicians or the Royal College of Ophthalmologists, United Kingdom (Test & Teach, Clinical Anthology)

## CONCLUSIONS

Online medical education based on clinician knowledge and self-assessment, is effective in

- Improving competence and confidence when assessing suspected LHON patients
- Increasing knowledge on current and emerging LHON therapies

This is valuable to shorten time to a confirmed LHON diagnosis, including the identification of the causative mutations, to allow patients to benefit from specific therapies in development, in particular, gene therapy.

Further education is warranted

- Disseminating latest clinical data for LHON therapies
- Evidence-based patient selection guidance for clinical practice.

### ACKNOWLEDGEMENTS

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For more information contact Karen Reid, Medscape LLC, at [Kreid@webmd.net](mailto:Kreid@webmd.net)

### REFERENCE

1. Yu-Wai-Man P, Chinnery PF. Leber Hereditary Optic Neuropathy. 2000 Oct 26 [Updated 2021 Mar 11]. In: Adam MP, Mirzaz GM, Pagon RA, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2023. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK1174/>



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