

Online Medical Education Can Significantly Improve Knowledge on Pathophysiology, Diagnosis, and Management of Thyroid Eye Disease and Increase Confidence in Guideline Interpretation

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BACKGROUND & PURPOSE

Thyroid eye disease (TED) has a profound impact on quality of life. Targeted immunotherapies are becoming available, enhancing treatment options for patients with TED. We assessed whether online medical education can increase knowledge of TED's pathogenesis, diagnosis and management and confidence of interpreting guidelines on use of immunotherapy.



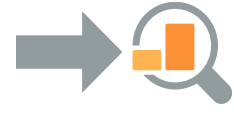
METHODS

An online 30-minute CPD-certified educational activity was presented in a 4 chapters program with accompanying, synchronized slides and whiteboard animation by 4 expert faculty. Chapters: TED pathophysiology, diagnosis, management, conclusions

121 ophthalmologist test completers; CME launched Dec 2024; data are reported to Apr 2025; > 4200 MD learners had accessed the program by then



Ophthalmologists
(n = 121)

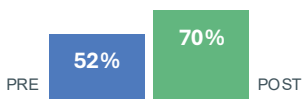


RESULTS

Overall

Ophthalmologists (n = 121)

AGGREGATED RESULTS



CHI-SQUARE TEST

P < .001

COHEN'S d

0.79

Cohen's d with correction for paired samples estimates the effect size of the education on number of correct responses.

EFFECT SIZE	EDUCATIONAL IMPACT
< .20	MODEST
.20 - .49	SMALL
.5 - .79	MODERATE
≥ 0.80	LARGE

TED Pathophysiology: Significantly increased knowledge on the role of insulin-like growth factor-1 receptor (IGF-1R)

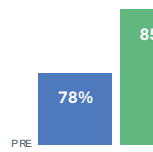
QUESTION 1: What is the result of overexpression of IGF-1R in TED?

CORRECT ANSWER: Increases inflammation, adipogenesis, and extracellular matrix production, causing expansion and fibrosis

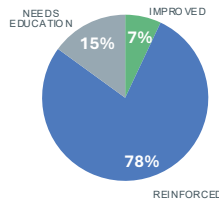
INCORRECT ANSWERS: Reduces inflammation and prevents adipogenesis in orbital tissues, leading to healing in orbital tissues; Promotes apoptosis of orbital fibroblasts, leading to a reduction in tissue volume

Ophthalmologists (n = 121)

AGGREGATED RESULTS



LINKED LEARNING RESULTS



P < .01

TED Pathophysiology: Significantly improved recall of the mechanism of action for immunotherapies

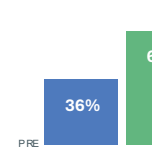
QUESTION 2: In the pathogenesis of TED, which of the following does tocilizumab target?

CORRECT ANSWER: IL-6

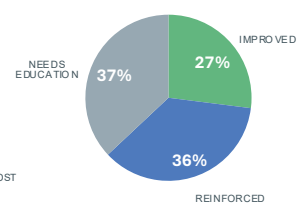
INCORRECT ANSWERS: FoRn-mediated recycling of immunoglobulin G (IgG); IGF-1; Interleukin 11 (IL-11)

Ophthalmologists (n = 121)

AGGREGATED RESULTS



LINKED LEARNING RESULTS



P < .001

TED Diagnosis: Significantly improved knowledge on TED assessment with the Clinical Activity Score (CAS)

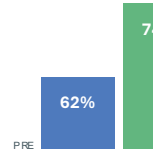
QUESTION 3: A patient is being assessed for TED and presents with swelling and redness in the eyelids, along with inflammation of the canuncle in both eyes. In addition to a thyrotropin receptor antibody (TRAb) level of 1.75 IU/L, you are using CAS to assess disease severity. What is the phasing of TED in this patient?

CORRECT ANSWER: Active TED

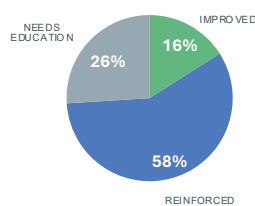
INCORRECT ANSWERS: Inactive TED; Initial TED; Not confirmed for TED

Ophthalmologists (n = 121)

AGGREGATED RESULTS



LINKED LEARNING RESULTS



P < .01

TED Management: Significantly improved recall of clinical data for immunotherapies

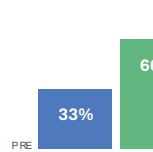
QUESTION 4: Which of the following immunotherapies has been shown to be most effective for reduction of proptosis?

CORRECT ANSWER: Teprotumumab

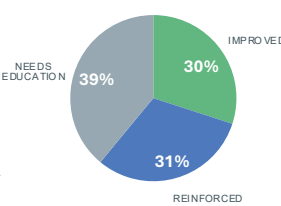
INCORRECT ANSWERS: Rituximab; Tocilizumab; Adalimumab

Ophthalmologists (n = 121)

AGGREGATED RESULTS



LINKED LEARNING RESULTS



P < .001

High therapeutic need beyond corticosteroids

POLLING QUESTION: Approximately what proportion of your patients with active TED are not adequately controlled on corticosteroids?

Ophthalmologists (n = 121)



• Up to a quarter of patients – **47%** of ophthalmologists



• Between a quarter and half of patients – **38%** of ophthalmologists



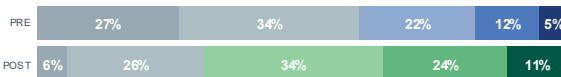
• Between half and ¾ of patients – **8%** of ophthalmologists

TED Management: Significantly improved confidence in understanding the role of immunotherapy in the treatment algorithm

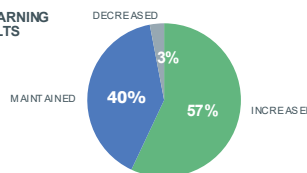
SELF-EFFICACY QUESTION: How confident are you right now in understanding the role of immunotherapy as per current guidelines for TED management? (Select ranking from 1 [Not confident] to 5 [Very confident])

Ophthalmologists (n = 121)

NOT CONFIDENT



LINKED LEARNING RESULTS



P < .001

CONCLUSIONS

- Online medical education is a fast and effective method to improve knowledge on pathophysiology, diagnosis and management of TED and increase confidence of the role of immunotherapy as per guidelines.
- This online expert series was useful to prepare practice for licensed targeted immunotherapy.
- Further education is warranted on differentiating immunotherapies and reviewing clinical data.

ACKNOWLEDGEMENTS

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For more information or questions, please contact Kate Carpenter at kcarpenter@webmd.net



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