

Improving Diagnosis and Treatment Decision-making in Tourette Syndrome in an Evolving Therapeutic Landscape using a Web-based Continuing Medical Education Platform

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This activity was supported by an independent medical education grant from Emalex Biosciences, Inc.



INTRODUCTION

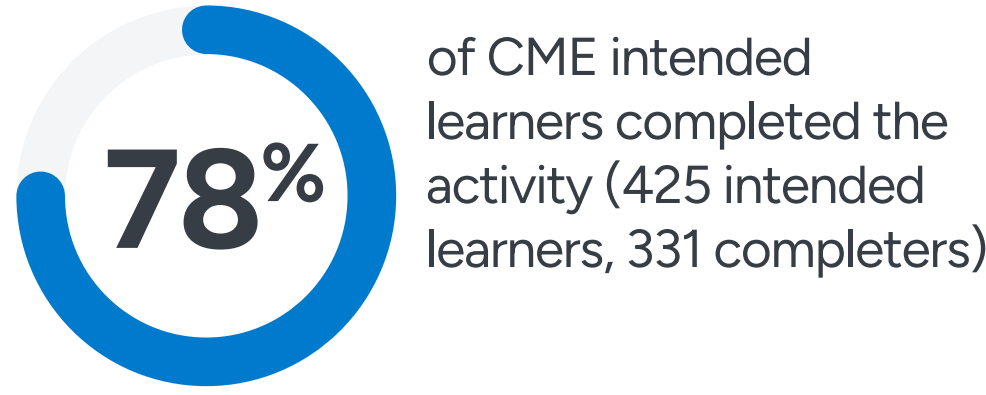
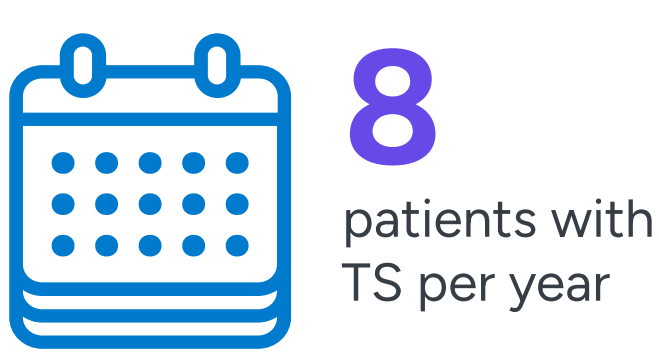
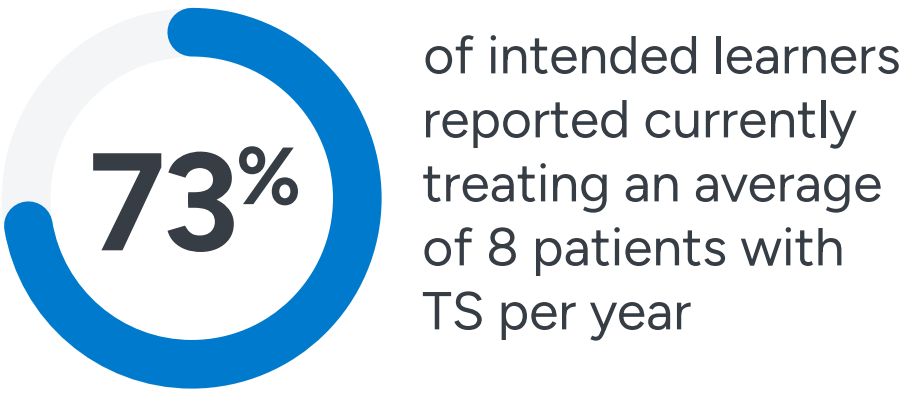
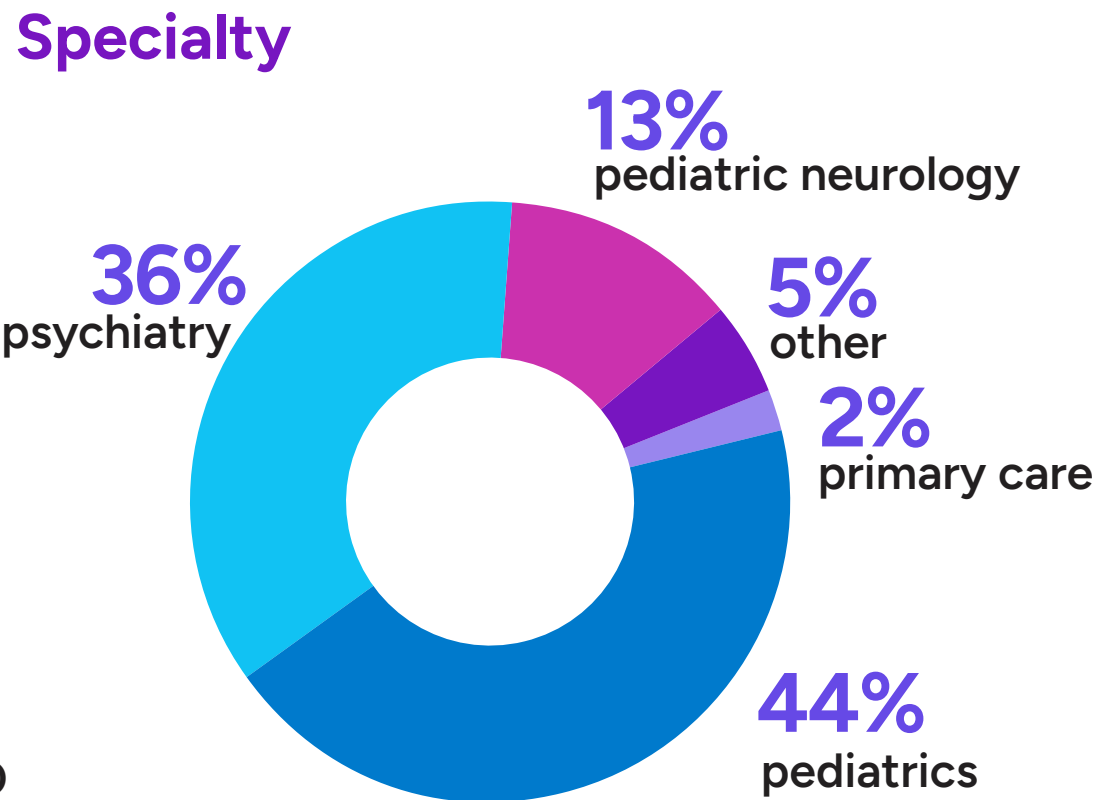
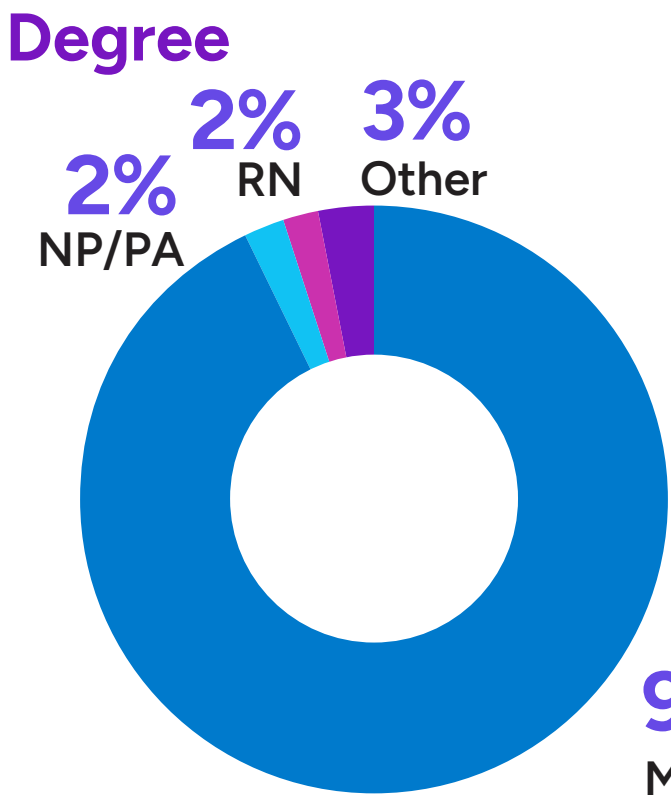
Diagnostic challenges and treatment limitations, particularly in the context of psychiatric and neurodevelopmental comorbidities, contribute to suboptimal outcomes in Tourette syndrome (TS). Advances in TS neurobiology have identified novel therapeutic targets beyond dopamine D2 receptor antagonism. We evaluated the impact of a multi-format continuing medical education (CME) curriculum addressing the diagnosis and evolving management of TS.

RESULTS



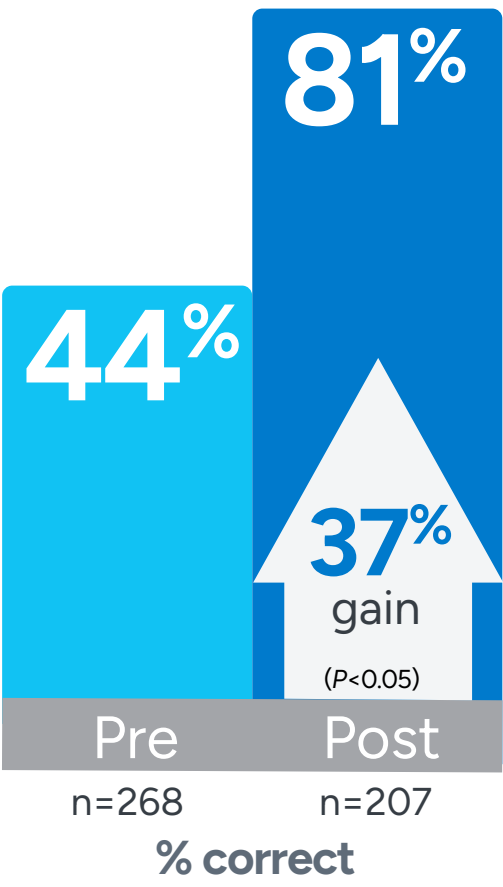
12,463 total participants
1,481 CME

Microlearning:
5,250 NPI-verified pediatricians,
4,297 psychiatrists, and
1,435 pediatric neurologists

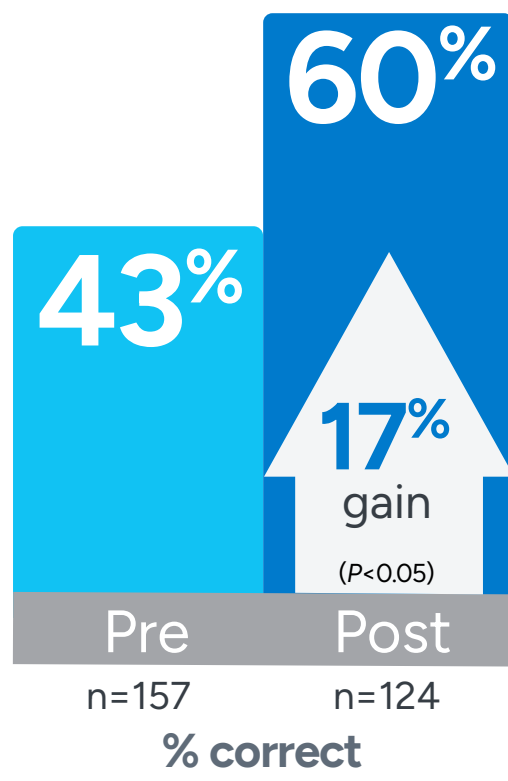


Knowledge/confidence gains

Activity 1
Average score (% correct) on 4-item test linked to learning objectives (intended learners)



Activity 2
Average score (% correct) on 3-item test linked to learning objectives (intended learners)



Area evaluated	Pre (n)	Post (n)	Δ P<0.01
Multiple-choice knowledge questions			
Diagnostic criteria	58% (268)	95% (207)	+37%
Complexity of current management in the presence of psychiatric comorbidities	32% (268)	56% (207)	+24%
Psychiatric comorbidities as predictor of functional impairment	46% (268)	86% (207)	+40%
Pathophysiology and D2 role	62% (158)	94% (125)	+32%
Clinical trials with ecopipam (efficacy outcome)	34% (158)	70% (125)	+36%
Case-based competence questions			
Diagnosis	41% (268)	86% (207)	+45%
Management decision in the presence of comorbid ADHD	47% (158)	78% (125)	+31%

Strongest improvements in diagnosis, clinical recognition, and pathophysiology (>40%)
Moderate gains in emerging therapies (>30%)
Lowest gains in understanding of treatment limitations (~30%)
• Difficulty selecting and sequencing therapies when ADHD, OCD, anxiety coexist
• Ongoing uncertainty in longitudinal care strategies

METHODOLOGY

Educational Program and Evaluation Details

Intervention:

A two-part online CME curriculum covering diagnostic differentiation, disease burden, limitations of current therapies (Activity 1) and emerging agents (Activity 2) launched in November 2025.

- Intended learners: Pediatricians, pediatric neurologists, pediatric psychiatrists.
- Targeted microlearning distributed to NPI-verified intended learners via IQVIA/LinkedIn.
- Segments of interview with a parent of a child with TS inserted within the content.

Data Collected:

- Demographics
- Pre- and post-activity knowledge/competence MCQ¹
- Intended practice changes: open-ended.
- Cohort analysis of intended learners.
- Statistical test of significance (chi-square) applied to comparisons of individual questions (pre- vs post-activity).

Activity #1: Tourette Syndrome: Not an Uncommon Condition

Learning Objectives:

- Summarize the characteristics of manifestations of TS to differentiate it from other tic disorders
- Discuss the limitations of current management options for TS in the context of comorbidities and risk of adverse effects from drug therapy

Activity #2: Beyond D2 Antagonism to Address Unmet Needs in Tourette Syndrome

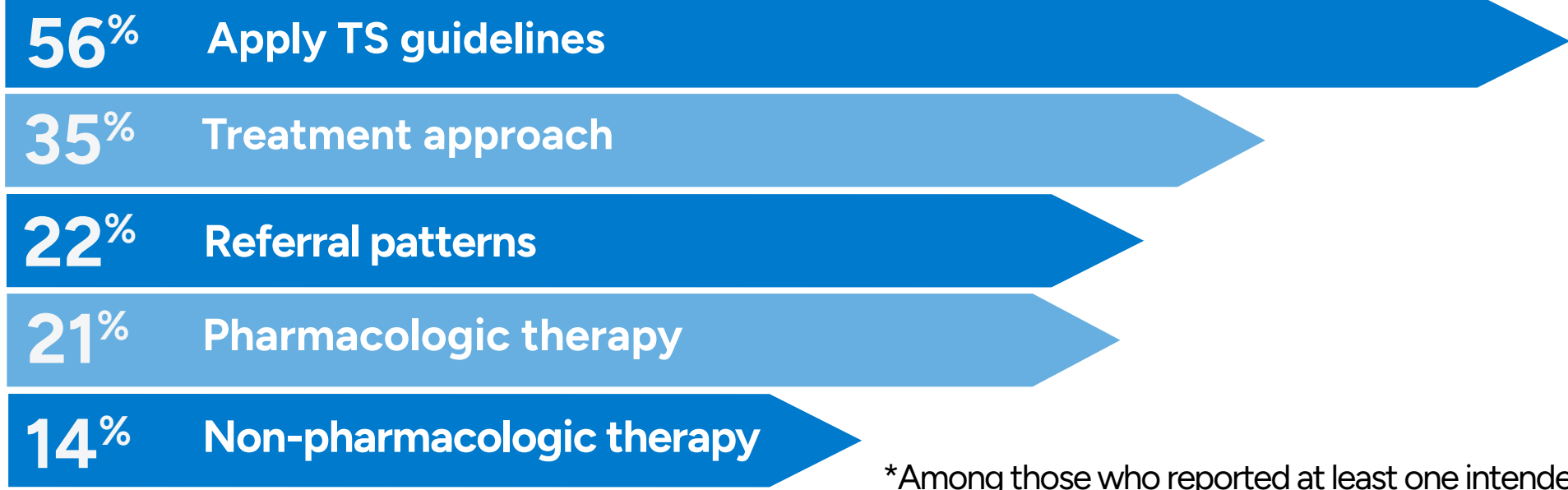
Learning Objectives:

- Summarize the current understanding of the pathophysiology of TS and the role of central D1 receptors
- Discuss safety and efficacy data on emerging agents for TS

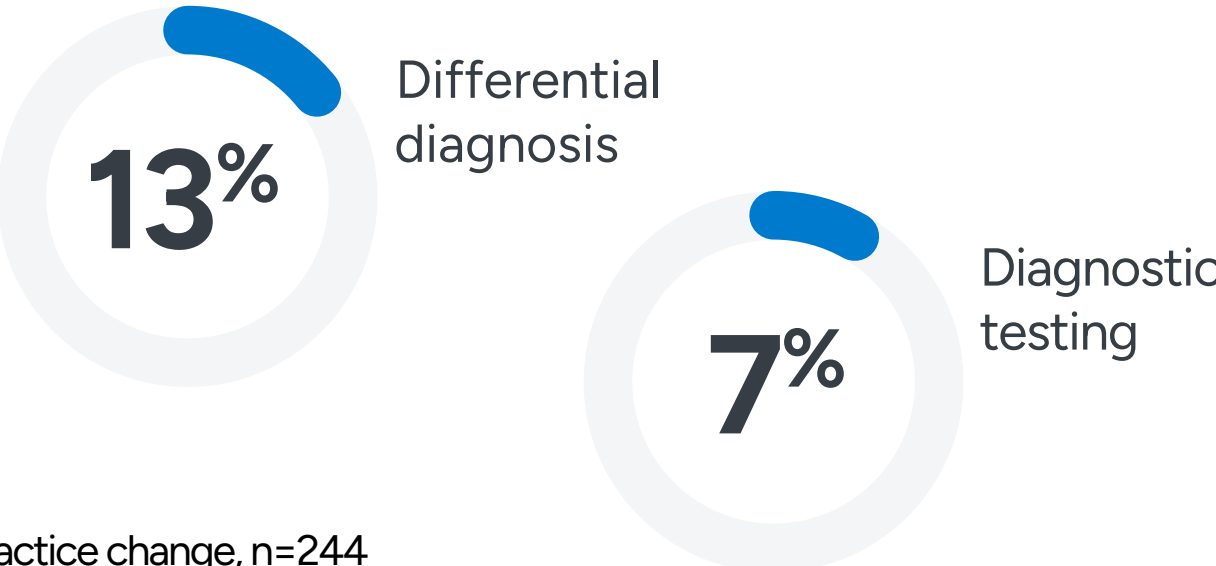
CONCLUSION

This multi-format online CME curriculum on emerging mechanisms and therapies for TS, targeted to pediatricians, pediatric psychiatrists, and neurologists, generated strong clinical engagement and yielded significant educational gains and may facilitate integration of novel therapies.

Management-related Changes*



Diagnostic-related Changes*

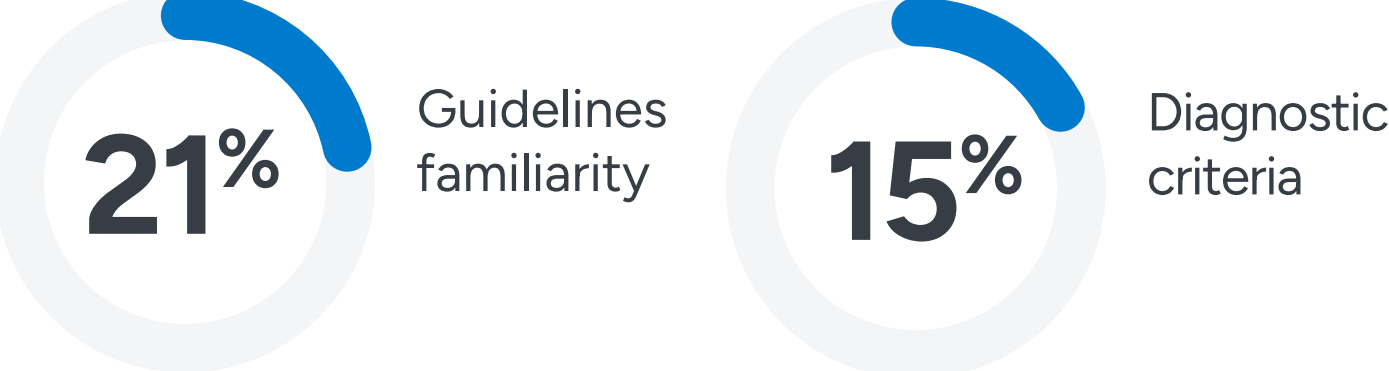


Scenarios most likely to incorporate a selective D1 receptor antagonist for treatment of TS (if approved): (select all that apply, n = 124)	Percentage
For all patients who have not responded adequately to behavioral therapy	41%
After failed D2 antagonist trial	34%
In patients with comorbid ADHD or OCD and moderate to severe tic severity	27%
First-line drug therapy for all patients in conjunction with behavioral therapy	27%
After failed D2 antagonist and antipsychotic trials	23%
In patients with comorbid ADHD or OCD independent of tic severity	10%

Where Do Gaps Persist in TS Management?

Key Gaps in TS Care Identified (n=426, self-reported)

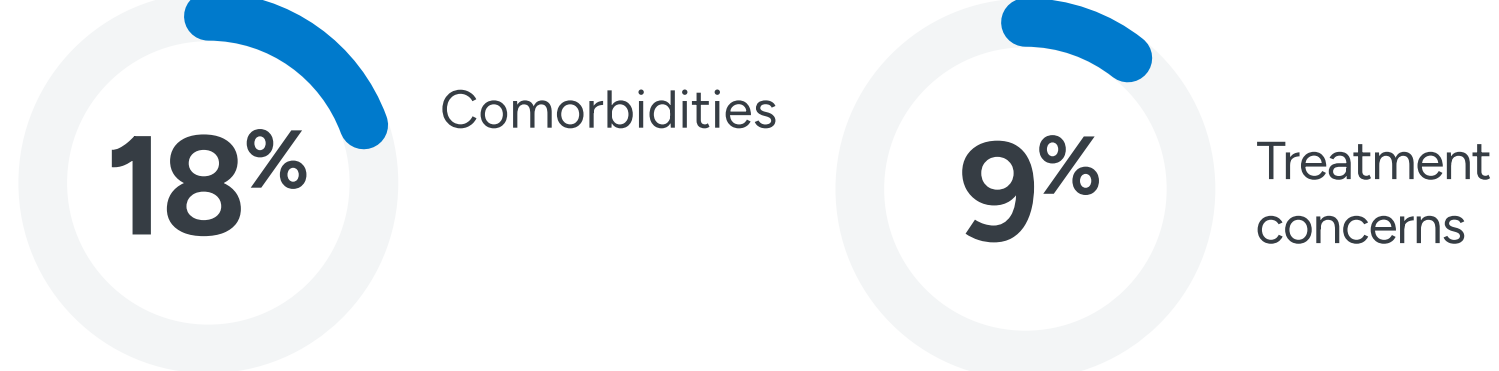
Clinical knowledge gaps



System level barriers



Clinical complexities



Clinician Question topics (n=56)

- Pharmacotherapy and monitoring
- Diagnostic differentiation
- Comorbidity-driven management
- Patient selection for emerging therapies
- Behavioral integration and care models

Management gaps are driven by comorbidity-related complexity, compounded by knowledge and system barriers

Reference:
1. NBME Item-Writing Guide. Constructing written test questions for the health sciences. Nov 2020. https://info.nbme.org/rs/552-QHC-046/images/NBME_Item-Writing-Guide.pdf.