**Supplementary Materials**

**Clinical Case Vignettes**

**CASE 1**

**Introduction**

As part of a survey to assess current practices, attitudes, and barriers regarding the treatment of patients with Tourette syndrome (TS), the following case of an 8-year-old girl with untreated attention-deficit/hyperactivity disorder (ADHD) and motor tics was presented to 300 physicians (57 pediatric neurologists, 81 general neurologists, 42 pediatric psychiatrists, and 120 general psychiatrists). Throughout this case, the physicians were asked questions concerning the diagnosis, therapy selection, and monitoring parameters for this treatment-naïve patient with TS.

**Patient history and presentation**

*An 8-year-old girl with a history of untreated ADHD presents to your office because of flurries of exaggerated eye blinking many times a day for the past month. Further history reveals sniffing many times a day for the past year that did not improve with an antihistamine. School performance is good and social and physical development are normal. On examination, you observe the reported eye blinking and several instances of rolling the eyes to the left and right, which the parents say began 3 years ago. The remainder of the exam is normal.*

Based on the patient’s history, presentation, and initial examination, the physicians were requested to answer the following questions regarding their approach to diagnosing TS:

1. Which of the following would you order for this patient? (select all that apply)

* Brain imaging (eg, magnetic resonance imaging [MRI] or computed tomography [CT])
* Electroencephalography (EEG)
* Electromyography (EMG)
* Genetic testing
* Lab testing
* Referral to another specialist
* Other
* I would rely on clinical findings only

2. Which criteria would you use to establish a diagnosis in this patient? (select all that apply)

* Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5)
* International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM)
* Tourette Syndrome Study Group criteria
* I would not use standardized criteria in my diagnosis
* I would refer to another specialist to establish the diagnosis
* Other

**Initial management of Tourette syndrome**

*Further history and follow-up confirm a diagnosis of TS. The patient says the tics can sometimes be slightly bothersome. Her teacher says she is doing well in class, and she is not being teased. The sniffing annoys her parents, but they are no longer worried about the tics.*

With a confirmed diagnosis of TS, the physicians were asked to provide information concerning the initial management of the disease and how they determine when pharmacologic treatment would be appropriate:

3. How would you initially manage this patient’s tics? (select all that apply)

* Non-pharmacologic treatment (eg, behavioral therapy or habit reversal therapy)
* Pharmacologic treatment
* I would not begin treatment for the patient’s tics at this time
* I would refer to another specialist to begin treatment

3a. Which of the following would prompt you to begin pharmacologic treatment for this patient’s tics? (select all that apply)

* Impairment of activities of daily living due to tics
* Social or emotional problems resulting from tics (eg, anxiety, embarrassment, bullying)
* Impairment of academic performance due to tics
* Physical discomfort associated with tics
* Patient non-adherence to behavioral therapy recommendations
* Patient request
* I would refer the patient to another specialist to begin treatment for pharmacologic treatment
* Other

**Worsening symptoms and pharmacologic management**

*One year later, the patient is referred to a psychologist for Comprehensive Behavioral Intervention for Tics (CBIT) because of her tics becoming more bothersome. Her tics improve about 50% over 10 weeks of treatment, and she is satisfied. Three years after that, at the age of 12, a head-shaking tic develops. The patient reports associated neck pain, which is a 5 in severity on a 0–10 scale. Furthermore, some of her classmates have been teasing her about the sniffing. She feels that much of her attention during the school day is devoted to suppressing her tics, to the point that focusing on her schoolwork is difficult.*

*Her parents express concern that her ADHD has worsened. She loses her homework and gym clothes, makes careless mistakes on exams, and her grades are down from A’s to C’s.*

*After discussion with the patient and the parents, you decide to start medication for the tics.*

The following questions were posed to the physicians to provide insights into what they consider when selecting pharmacologic treatments for patients with worsening TS symptoms:

4. What medication would you begin for the patient’s tics? (select only one)

* Adrenergic agonist (eg, clonidine, guanfacine)
* Atypical antipsychotic (eg, aripiprazole, risperidone)
* Typical antipsychotic (eg, haloperidol, pimozide)
* Topiramate
* Benzodiazepine (eg, clonazepam)
* Baclofen
* Methylphenidate
* Vesicular monoamine transporter 2 (VMAT2) inhibitor (eg, tetrabenazine)
* Pergolide
* Other

5. Please rank the importance of the following factors in choosing between pharmacologic treatments for this patient:

**\_\_** Clinical efficacy

\_\_ Drug-drug interactions

\_\_ Food and Drug Administration (FDA) approval for this indication

\_\_ Mechanism of action

\_\_ My personal experience with the agent

\_\_ Safety and tolerability profile

6. With treatment, what percentage reduction in the severity of this patient’s tics do you expect? (select only one)

* 0%–25%
* 26%–50%
* 51%–75%
* 76%–100%
* Unsure

**Monitoring patients for safety and efficacy**

After selecting a pharmacologic treatment, the physicians were questioned on how they would monitor the patient:

7. Please rate the importance of the following factors to you in determining the effectiveness of this patient’s treatment at follow-up:

\_\_ Patient or caregiver subjective report of symptom control

\_\_ My observation of the patient

\_\_ Standardized scale or questionnaire

\_\_ Academic performance

7a. Which standardized tools do you use to evaluate control of TS in your practice? (select all that apply)

* I do not use standardized tools to evaluate Tourette syndrome control
* Tourette Syndrome Severity Scale (TSSS)
* Motor tic, Obsessions and compulsions, Vocal tic Evaluation Survey (MOVES)
* Yale Global Tic Severity Scale (YGTSS)
* Patient Tic Questionnaire (PTQ)
* Child Tourette Syndrome Impairment Scale
* Premonitory Urge for Tics Scale (PUTS)
* Other

**CASE 2**

**Introduction**

The second case presented to the physicians involved a 16-year-old boy with confirmed TS who was experiencing motor tics and changes in mood despite treatment with an antipsychotic. Throughout this case, the physicians were asked to characterize their approach to the management of mood symptoms and side effects in this patient with TS.

**Patient history and presentation**

*A 16-year-old boy with a diagnosis of TS presents for follow-up. Six weeks ago, you started him on aripiprazole 10 mg/day for treatment of tics after behavior therapy provided inadequate benefit. He reports that his tics have not improved, which is consistent with your observation.*

*Today he also reports feeling sad most of the time, with much lower interest in music and sports than usual, along with low energy, mild insomnia, and subjectively impaired concentration without suicidal ideation.*

Physicians were prompted to describe the patient’s risk of suicide and note potential treatments:

8. How would you manage the patient’s mood symptoms at this time? (select only one)

* Begin an antidepressant and psychotherapy
* Begin psychotherapy
* Refer to another specialist for management
* Begin an antidepressant medication
* Monitoring only
* Other

9. How would you rate this patient’s risk of suicidality compared to a similar patient who does not
have TS?

10. What change would you make to the patient’s medication for tics at this time? (select only one)

* Discontinue aripiprazole and start a different medication
* Increase dose of aripiprazole
* Discontinue aripiprazole without starting a new medication
* Refer to another specialist for management
* Increase dose of aripiprazole and add another medication
* Other

10a. If you chose to increase the dose of aripiprazole and add another medication, which pharmacologic treatment would you add for this patient? (select only one)

* Adrenergic agonist
* Atypical antipsychotic
* Typical antipsychotic
* Benzodiazepine
* VMAT2 inhibitor
* Baclofen
* Pergolide
* Topiramate
* Other

10b. If you chose to discontinue aripiprazole and start a different medication, which pharmacologic treatment would you recommend for this patient? (select only one)

* Adrenergic agonist
* Typical antipsychotic
* VMAT2 inhibitor
* Topiramate
* Benzodiazepine
* Baclofen
* Atypical antipsychotic
* Pergolide
* Other

11. How concerned are you that social stigma related to each of the following factors may affect this patient’s treatment compliance or outcome?

\_\_ Having a diagnosis of Tourette syndrome

\_\_ Taking an antipsychotic medication

**Side effect management**

*Aripiprazole is increased to 20 mg/day and the patient’s tics improve noticeably. His depression improves with cognitive behavioral therapy and mirtazapine. However, he reports vague discomfort that improves when he stands or paces and is worse while seated. During the visit, he has difficulty sitting still and gets up from his chair a few times.*

12. How would you manage the patient now? (select only one)

* Reduce the dose of aripiprazole
* Continue aripiprazole and add propranolol
* Discontinue aripiprazole and begin guanfacine
* Discontinue aripiprazole and begin ziprasidone
* Discontinue pharmacologic therapy
* Other