

Tourette's Disorder

DSM-5-TR 307.23 | ICD-10-CM F95.2

Multiple motor tics plus at least one vocal tic persisting more than a year; typically waxing and waning from early childhood.

PREVALENCE

~0.3-0.9% of children

TYPICAL ONSET

Age 4-6; peak severity 10-12

SEX RATIO

3-4:1 male:female

COURSE

Most improve by adulthood

CLINICAL PICTURE

- Simple motor tics such as eye blinking, head jerks, and shoulder shrugs usually appear first and progress rostral to caudal.
- Vocal tics range from sniffing, throat clearing, and grunting to words and phrases; coprolalia occurs in only about 10% of patients.
- Premonitory urges, an uncomfortable buildup relieved by performing the tic, are reported by most patients older than about age 10.
- Tics are briefly suppressible, worsen with stress, fatigue, illness, and excitement, and often rebound after periods of suppression.
- Waxing and waning severity over weeks to months, with a shifting tic repertoire, is characteristic and should be expected.
- Impairment more often stems from comorbid **ADHD** and **OCD**, social stigma, and musculoskeletal pain than from the tics themselves.

DIAGNOSTIC CRITERIA AT A GLANCE

- Requires two or more motor tics and at least one vocal tic, though these need not occur concurrently at any single time.
- Tics must persist for more than one year since first onset, with any duration of tic-free intervals permitted within that year.
- Onset must occur before age 18; later onset suggests functional tic-like behavior or a secondary tic disorder.
- Tics must not be attributable to a substance such as stimulants or cocaine, or to another medical condition such as Huntington disease.
- Persistent motor or vocal tic disorder requires only one modality, and provisional tic disorder lasts less than one year.

NEUROBIOLOGY & PHYSIOLOGY

- Dysfunction of cortico-striato-thalamo-cortical circuits, with disinhibition of motor and sensorimotor loops, generates involuntary tics.
- Reduced striatal GABAergic and cholinergic interneuron density is the most consistently replicated postmortem neuropathological finding.
- Dopaminergic hyperinnervation and heightened phasic dopamine release account for the therapeutic response to D2 receptor blockade.
- Heritability is high at roughly **60-80%**; rare variants in *NRXN1*, *CELSR3*, and histamine decarboxylase have been implicated.
- Reduced supplementary motor area inhibition correlates with premonitory urge intensity on functional and stimulation studies.
- Streptococcal-associated abrupt onset (PANDAS/PANS) remains controversial and does not warrant routine antibody testing.

PSYCHOLOGICAL MECHANISMS

- Tics function as negatively reinforced responses that terminate aversive premonitory urges, progressively strengthening the habit loop.
- Suppression is possible but effortful; sustained inhibition raises internal tension and typically produces later rebound in tic frequency.
- Environmental contingencies such as adult attention, task escape, and family accommodation shape tic frequency and expression.
- Anticipatory anxiety about being observed ticcing drives social withdrawal, school avoidance, and secondary depressive symptoms.
- Habituation to the premonitory urge, rather than willful suppression alone, is the mechanism targeted by behavioral therapy.

DIFFERENTIAL & COMORBIDITY

- Differentiate from stereotypies, which are rhythmic, fixed, and urge-free, and from myoclonus, chorea, dystonia, and akathisia.
- Functional tic-like behaviors show abrupt adolescent onset, complex phrases, absent rostrocaudal progression, and social media exposure.
- ADHD** co-occurs in about 50-60% and **OCD** in 30-50%; both usually cause more functional impairment than the tics do.
- Anxiety, learning disorders, rage attacks, self-injurious tics, and sleep disturbance frequently complicate management.
- Consider Wilson disease, Huntington disease, autoimmune encephalitis, and stimulant or neuroleptic effects when onset is atypical or adult.

Treatment EVIDENCE-BASED MANAGEMENT

PHARMACOLOGIC

- Alpha-2 agonists are first line for mild to moderate tics: **guanfacine 1-4 mg/day** or **clonidine 0.05-0.4 mg/day** in divided doses.
- Aripiprazole 2-20 mg/day** has the most favorable benefit-to-harm profile among antipsychotics and carries FDA approval for tics.
- Haloperidol** and **pimozide** are effective but limited by extrapyramidal effects, QTc prolongation, sedation, and tardive risk.
- VMAT2 inhibitors such as **tetrabenazine** avoid tardive dyskinesia risk; monitor for depression, sedation, and parkinsonism.
- Botulinum toxin injection helps focal disabling tics, and stimulants for comorbid **ADHD** rarely worsen tics in controlled trials.

PSYCHOTHERAPY

- CBIT** is first line, typically 8 sessions over 10 weeks combining awareness training, competing response, and function-based strategies.
- Habit reversal training** yields moderate effect sizes with benefit durable at 6-month follow-up in both children and adults.
- Exposure and response prevention targeting the premonitory urge is an evidence-supported alternative to **CBIT** in specialty settings.
- ERP** for comorbid **OCD** and parent management training for disruptive behavior are often higher yield than tic-directed treatment.
- Psychoeducation reframing tics as involuntary reduces punitive responses at home and school and lowers patient distress substantially.

ADJUNCT & SUPPORTIVE

- The **Yale Global Tic Severity Scale** quantifies severity and tracks treatment response across visits and medication trials.
- School accommodations include permitted tic breaks, separate testing rooms, reduced handwriting demands, and peer education.
- Deep brain stimulation of thalamic or globus pallidus targets is reserved for severe, treatment-refractory adult cases.
- Treat sleep disruption and assess for cervical injury, headache, or pain caused by forceful head and neck tics.
- Advocacy groups and peer support reduce stigma, and most families need explicit reassurance that severity usually declines after adolescence.

CLINICAL PEARLS

- Treat the comorbidity first; ADHD and OCD usually impair more than the tics do.
- Abrupt adolescent onset with complex phrases suggests functional tic-like behavior.
- Tics wax and wane, so judge any treatment over months rather than weeks.

References

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.).

<https://doi.org/10.1176/appi.books.9780890425787>

Murphy, T. K., Lewin, A. B., Storch, E. A., & Stock, S. (2013). Practice parameter for the assessment and treatment of children and adolescents with tic disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(12), 1341-1359.

<https://doi.org/10.1016/j.jaac.2013.09.015>

National Institute of Neurological Disorders and Stroke. (n.d.). *Tourette syndrome*. U.S. Department of Health and Human Services.

<https://www.ninds.nih.gov/health-information/disorders/tourette-syndrome>

Piacentini, J., Woods, D. W., Scahill, L., Wilhelm, S., Peterson, A. L., Chang, S., Ginsburg, G. S., Deckersbach, T., Dziura, J., Levi-Pearl, S., & Walkup, J. T. (2010). Behavior therapy for children with Tourette disorder: A randomized controlled trial. *JAMA*, 303(19), 1929-1937.

<https://doi.org/10.1001/jama.2010.607>

Pringsheim, T., Okun, M. S., Muller-Vahl, K., Martino, D., Jankovic, J., Cavanna, A. E., Woods, D. W., Robinson, M., Jarvie, E., Roessner, V., Oskoui, M., Holler-Managan, Y., & Piacentini, J. (2019). Practice guideline recommendations summary: Treatment of tics in people with Tourette syndrome and chronic tic disorders. *Neurology*, 92(19), 896-906. <https://doi.org/10.1212/WNL.0000000000007466>

Sadock, B. J., Sadock, V. A., & Ruiz, P. (2021). *Kaplan & Sadock's synopsis of psychiatry* (12th ed.). Wolters Kluwer.

NOTE

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