Tic Disorders
in Children and Adolescents Ages 6 to 17 Years Old

Level 0

Comprehensive assessment. Assess course (age of onset, types of tics, tic frequency, alleviating and aggravating factors), duration, and severity. Careful assessment that attends to issues of social (bullying), educational (reading impairment), physical impairment (pain due to tics) as well as complicating comorbidity. Review for most common comorbid presentations: ADHD, separation anxiety, OCD, ASD. Health status: Infections (especially group A streptococcus, Mycoplasma, Influenza, Cytomegalovirus), endocrine disorders, autoimmune disorders and genetic disorders associated with OCD/tics; Secondary to substances or medications: stimulants, SSRIs lamotrigine. Family history (for OCD, tics, autoimmunity).

- If tics are not causing impairment or pain, educate but no treatment is necessary.
- Specialty referral as appropriate—child psychiatry, developmental pediatrics or neurology or, for therapy: habit reversal therapy (HRT) or comprehensive behavioral intervention for tics (CBIT).

→ **Level 1**

Mild-moderate impairment, secondary to tics, use HRT or CBIT if possible (check *www.tourette.org* for trained therapists).

→ **Level 2**

- **2a.** If ADHD is present, consider alpha-2 agonist (clonidine or guanfacine).
- **2b.** If no-comorbid ADHD, aripiprazole or risperidone in low doses.

→ **Level 3**

Trial of medication not already used at Level 1 or Level 2 such as haloperidol, pimozide (there are dosing, drug interaction safety, and QTc concerns with this agent), topiramate, or fluphenazine.

→ **Level 4**

Antipsychotic in combination with SSRI, clonazepam, alpha-2 agonists, or topiramate depending on target symptoms. Severity of illness should drive the use of one or two agents. For dangerous tics (e.g., whiplash tic) refer to physiatry or neurology for consideration of Botulinum toxin A treatment.

Table 14.

Medications Used in the Treatment of Tics: Level of Evidence and Dosing Recommendations			
Level of Evidence	**Drug Name**	**Starting Dose (mg)**	**Usual Dose (mg/day)**
A	Clonidine[1]	0.025–0.05 mg	0.05–0.40 mg/day
	Guanfacine[1]	0.5–1.0 mg	1.0–4.0 mg/day
	Risperidone	0.125–0.50 mg	0.75–3.0 mg/day
	*Aripiprazole	1.0–2.5 mg	2–5 mg/day
	*Haloperidol	0.25–0.5 mg	1–4 mg/day
	*Pimozide[2, 3]	0.5–1.0 mg	2–8 mg/day
B	Ziprasidone[2]	20 mg	20–40 mg/day
	Olanzapine	2.5–5.0 mg	2.5–12.5 mg/day
	Quetiapine	25 mg	25–200 mg/day
	Fluphenazine	0.5–1.0 mg	1.5–10 mg/day
C	Topiramate	12.5 mg	12.5–150 mg/day

**FDA approval for Tourette's syndrome*

[1]Likely most efficacious when used in ADHD+tics

[2]EKG monitoring

[3]CYP2D6 testing for doses above 0.05mg/kg/day (or 4mg)

Hierarchical approach in pharmacotherapy for tics

- Mild tics: No medication treatment
- Moderate tics: Alpha-2 agonists, Atypical neuroleptics (e.g., aripiprazole, risperidone)
- Severe tics: Atypical neuroleptics, Typical neuroleptics (e.g., pimozide, haloperidol, fluphenazine)

Patient characteristics best suited for tic behavioral therapy

- No severe ADHD
- No substance abuse
- No severe oppositionality
- Stable family environment
- No severe anxiety or mood disturbance
- Age ≥ 9 years (but some success with motivated younger patients)

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Tic disorders and ADHD

- Treat the ADHD conservatively
- Tics are not universally worse on stimulant (Bloch et al. 2009; Pringsheim and Steeves 2011; Cohen et al 2015)
- Alpha-2 agonists show better improvement in tic severity if ADHD is comorbid (Bloch et al. 2009)

SSRIs and Dopamine-2 Blockers in patients with tics and OCD

- In many patients with tics and OCD, combination pharmacotherapy is required (e.g., D2 blockers and SSRIs).
- There are almost no combination therapy trials in children with OCD/tics.
- Most data exist for risperidone and aripiprazole (low doses, i.e., much lower than those used in psychotic or bipolar disorders).

Resources

- Children
  - Matthew and the Tics – A Story for Young Children, available at: *https://www.tourette.org/resource/matthew-tics-story-young-children/.*
  - Teens and Tourette's syndrome, available at: *https://www.tourette.org/about-tourette/overview/living-tourette-syndrome/teens-13-19/*
- Parents/caregivers
  - Managing Tourette Syndrome: A Behavioral Intervention Workbook, Parent Workbook (Woods, et al. 2008)
  - A Family's Guide to Tourette Syndrome (edited by Walkup, et al. 2012)
- Clinicians
  - Treating Tourette Syndrome and Tic Disorders: A Guide for Practitioners (edited by Woods, Piacentini and Walkup, 2007)
  - Managing Tourette Syndrome: A Behavioral Intervention for Children and Adults, Therapist Guide (Woods, et al. 2008)
- Relevant websites
  - Tourette Association of America, *https://www.tourette.org/*
  - American Academy of Child and Adolescent Psychiatry (AACAP) Tic Practice Parameters: *http://www.jaacap.com/article/S0890-8567(13)00695-3/pdf*
  - Association for Behavioral and Cognitive Therapies, *http://www.abct.org/Home/*
  - Pediatric Autoimmune Neuropsychiatric Disorders (PANDAS) Network, *http://www.pandasnetwork.org/*
  - Developmental-Behavioral Pediatrics, *www.dbpeds.org*
  - Teaching the Tiger – A Handbook for Educators, *http://www.hopepress.com*

Note: Above resources and website links were updated at the time of publication.