### 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](http://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.

<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Drug Name</th>
<th>Starting Dose (mg)</th>
<th>Usual Dose (mg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Clonidine⁴</td>
<td>0.025–0.05 mg</td>
<td>0.05–0.40 mg/day</td>
</tr>
<tr>
<td></td>
<td>Guanfacine⁵</td>
<td>0.5–1.0 mg</td>
<td>1.0–4.0 mg/day</td>
</tr>
<tr>
<td></td>
<td>Risperidone</td>
<td>0.125–0.50 mg</td>
<td>0.75–3.0 mg/day</td>
</tr>
<tr>
<td></td>
<td>*Aripiprazole</td>
<td>1.0–2.5 mg</td>
<td>2–5 mg/day</td>
</tr>
<tr>
<td></td>
<td>*Haloperidol</td>
<td>0.25–0.5 mg</td>
<td>1–4 mg/day</td>
</tr>
<tr>
<td></td>
<td>*Pimozide²³</td>
<td>0.5–1.0 mg</td>
<td>2–8 mg/day</td>
</tr>
<tr>
<td>B</td>
<td>Ziprasidone²</td>
<td>20 mg</td>
<td>20–40 mg/day</td>
</tr>
<tr>
<td></td>
<td>Olanzapine</td>
<td>2.5–5.0 mg</td>
<td>2.5–12.5 mg/day</td>
</tr>
<tr>
<td></td>
<td>Quetiapine</td>
<td>25 mg</td>
<td>25–200 mg/day</td>
</tr>
<tr>
<td></td>
<td>Fluphenazine</td>
<td>0.5–1.0 mg</td>
<td>1.5–10 mg/day</td>
</tr>
<tr>
<td>C</td>
<td>Topiramate</td>
<td>12.5 mg</td>
<td>12.5–150 mg/day</td>
</tr>
</tbody>
</table>

*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)

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**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)
Tic Disorders in Children and Adolescents Ages 6 to 17 Years Old (continued)

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
- Parents/caregivers
- Clinicians
- Relevant websites
  - Tourette Association of America, https://www.tourette.org/

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