Patient (commonly <18 years) is brought for consultation due to symptoms suggestive of tic disorder

2 EVALUATION
Is tic disorder primary or secondary?
Primary

3 CLASSIFY THE TIC DISORDER
Transient Tic Disorder
Chronic Tic Disorder or Tourette's Syndrome (TS)

4 ASSESSMENT OF COMORBIDITY
Is there a comorbid condition present?
Yes

ASSESSMENT OF COMORBIDITY
Is there a comorbid condition present?

Transient Tic Disorder
Mild
Moderate-Severe
Non-pharmacological therapy
- Educate the patient, family, teachers & other people who interact w/ the patient
- Monitor the patient for worsening of symptoms

MANAGEMENT OF MODERATE-SEVERE TIC DISORDERS
See next page

Chronic Tic Disorder or Tourette's Syndrome (TS)
Mild
Moderate-Severe
Non-pharmacological therapy
- Educate the patient, family, teachers & other people who interact w/ the patient
- Supportive counseling
- Behavioral treatment
- Exposure & response prevention
- Continue to monitor the patient for worsening of symptoms

MANAGEMENT OF TS W/ COMORBID CONDITIONS
See next page

TREAT UNDERLYING CAUSE
MANAGEMENT OF MODERATE-SEVERE TIC DISORDER

CONSIDER EXPERT REFERRAL

A Non-pharmacological therapy
- Educate the patient, family, teachers & other people who interact w/ the patient
- Supportive counseling
- Behavioral treatment
- Deep brain stimulation

B Pharmacological therapy
- Clonidine
- Guanfacine
- Haloperidol
- Pimozide
- Sulpiride
- Tiapride
- Tetrabenazine
- Risperidone
- Botulinum toxin

MANAGEMENT OF TOURETTE’S SYNDROME W/ COMORBID CONDITIONS

CONSIDER EXPERT REFERRAL

A Non-pharmacological therapy
- Educate the patient, family, teachers & other people who interact w/ the patient
- Supportive counseling
- Behavioral treatment

B Pharmacological therapy
Attention-Deficit/Hyperactive Disorder (ADHD)¹
1st-line agent:
- Stimulants
Any one of the following:
- Atomoxetine
- Clonidine + Methylphenidate (stimulant)
- Clonidine or Guanfacine

Obsessive-Compulsive Disorder (OCD)¹
1st-line agent:
- SSRI
Any one of the following:
- Clomipramine
- Risperidone

¹Please see ADHD & OCD management charts for detailed information concerning medications used for treatment.

Not all products are available or approved for above use in all countries. Specific prescribing information may be found in the latest MIMS.
Tics
- Sudden, rapid, non-rhythmic, repetitive, motor movements or vocalizations
- Mean age of onset is approximately 5 years old with peak severity occurring between 10-12 years of age and declining in many children during adolescence
- There is a strong genetic component showing a 10- to 100-fold increase in the rates of tics & Tourette syndrome among 1st-degree relatives of Tourette syndrome patients
- May be classified based on:
  - Type
    - Motor: Fragments of normal motor movements appearing out of context & arise in the voluntary musculature involving discrete muscles or group of muscles
    - Vocal or phonic: Noise produced by movement of air through the nose, mouth or pharynx
  - Sensory: These are premonitory sensations that precede tics characterized as unpleasant somatosensory sensations & often relieved by execution of the tic
  - Cognitive: These are repetitive thoughts that occur as a response to excessive urge to act upon provocative visual, auditory, tactile or inner stimuli, often called as impulses
  - Complexity - simple or complex
  - Isolated (same anatomical location) or multiple locations
  - Location, number, frequency
  - Duration
    - Clonic: Tics are <100 milliseconds
    - Dystonic: Tics are >300 milliseconds, characterized by abnormal posture
    - Tonic: Tics are >300 milliseconds, characterized by isometric contraction

Simple Tics
- Simple motor tics are restricted to a single or a few muscle groups & last less than a fraction of a second
  - Eg eye blinking, nose wrinkling, neck jerking, shoulder shrugging, facial grimacing, abdominal tensing
- Simple vocal tics are elementary sounds
  - Eg throat clearing, grunting, sniffing

Complex Tics
- Complex motor tics involve larger muscle groups, usually last longer, & appear purposeful & goal-directed
  - Eg Copropraxia (repetitive obscene movements), echopraxia (mimicking others), self-injurious behavior, hand gestures, jumping, pressing, stomping, facial contortions, repeatedly smelling an object
- Complex vocal tics occur when sounds are elaborate or have a semantic content
  - Eg Palilalia (repeating one's own words), echolalia (repeating another's words or phrases), coprolalia (use of obscene words)

Primary Causes of Tic Disorders
Inherited Tic Disorders
- Tourette syndrome (TS)
- Huntington's disease
- Primary dystonia
- Neuroacanthosis

Sporadic Tics
- Transient motor or phonic tics (<1 year duration)
- Chronic motor or phonic tics (>1 year duration)
- Adult-onset (recurrent tics)
- Tourette syndrome

Secondary Causes of Tic Disorders
Primary Neurologic Disorders
- Head trauma
- Stroke
- Encephalitis
- Carbon monoxide poisoning
- Neurosyphilis
- Sydenham's chorea
- Hypoglycemia
- Down syndrome
- Tuberous sclerosis
- Fragile X syndrome
- Klinefelter's syndrome
- Chromosomal disorders
- XYY karyotype
- Duchenne's disease
- Hallervorden-Spatz disease
- Creutzfeldt-Jakob disease
Secondary Causes of Tic Disorders (Cont’d)

Primary Neuropsychiatric Disorders
- Mental retardation
- Schizophrenia
- Asperger’s syndrome/autism

Drugs Which May Induce or Worsen Tics
- Stimulants (e.g., Methylphenidate, Amphetamines, Pemoline)
- Cocaine
- Antipsychotics
- Antidepressants
- Anticonvulsants
- Antihistamines
- Lithium
- Opioids & opioid withdrawal
- Levodopa

Other movement disorders that need to be ruled out:
- Eg, myoclonic movements, torsion dystonia, chorea, stereotypies

CLASSIFICATION OF TIC DISORDERS

There are 3 types of tic disorders based on DSM-5 criteria:

**Tourette’s Disorder**
- Presence of both multiple motor tics & at least 1 vocal tic during the course of the illness, although they may not occur at the same time
- The tics may increase & decrease in frequency but have continued for >1 year since the first tic occurred
- Tics started before 18 years of age
- Symptoms are not due to effects of any substance (e.g., cocaine) or caused by any other medical condition (e.g., Huntington’s disease or postviral encephalitis)

**Persistent (Chronic) Motor or Vocal Tic Disorder**
- Presence of either one or more motor or vocal tics during the course of the illness
- The tics may increase & decrease in frequency but have continued for >1 year since the first tic occurred
- Tics started before 18 years of age
- Symptoms are not due to effects of any substance (e.g., cocaine) or caused by any other medical condition (e.g., Huntington’s disease or postviral encephalitis)
- The patient has not been diagnosed w/ Tourette’s disorder
- Specify if the disorder has motor tics only or vocal tics only

**Provisional Tic Disorder**
- Presence of one or more motor &/or vocal tics
- The tics persisted for <1 year since the first tic occurred
- Tics started before 18 years of age
- Symptoms are not due to effects of any substance (e.g., cocaine) or caused by any other medical condition (e.g., Huntington’s disease or postviral encephalitis)
- The patient has not been diagnosed w/ Tourette’s disorder or persistent (chronic) motor or vocal tic disorder

COMMON COMORBID CONDITIONS FOUND IN PATIENTS W/ TS

- Attention-deficit/hyperactivity disorder (ADHD)
- Obsessive-compulsive disorder (OCD)
- Learning, developmental & disruptive behavioral disorders

1Please see ADHD & OCD management charts for detailed information concerning medications used for treatment.

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### A. Non-Pharmacological Therapy

**Education**
- Educate the people who interact with the patient regarding variability of tics, natural history, treatment of the disorder, prognosis & possible coexisting problems
- Refer to local support groups, if available
- Physician, parents & teachers should work together to provide the best possible school environment for children w/ tic disorders

**Supportive Counseling**
- Attention to self-esteem, family issues, social coping & school adjustment may have ameliorative effects on anxiety & depression if present
  - May help decrease acute & chronic stress which can exacerbate tics
- Encourage parents to build on child’s strengths

**Possible Preventive Factors**
- Good sleep & personal hygiene
- Informed & supportive school & home environment
- Regular physical exercise
- Encouragement of special talents (e.g., athletic skills, musical abilities, etc.)

**Behavioral Treatment**
- Individualized, specifically based on the needs of the patient
- May be a treatment option for patients who prefer non-pharmacological treatment or patients intolerant or unresponsive to pharmacological therapy
- Most disabling symptoms should be targeted first
- Interventions which have been used in the treatment of tics:
  - Cognitive therapy
    - Recommended as 1st-line treatment for patients w/ tic disorders & OCD
  - Habit reversal training consists of tic-awareness training & competing-response training
    - May be effective in improving tics & controlling symptoms in Tourette syndrome based on findings from unblinded trials & a controlled trial w/ blinded outcome assessment
  - Massed negative practice
  - Assertiveness training
  - Relaxation therapy
  - Awareness training (including self-monitoring)
- Comprehensive Behavioral Intervention for Tics (CBIT) composed of habit reversal training, relaxation training & functional interventions addressing situations which sustain or worsen tics is a recommended treatment option for patients w/ tics

**Deep Brain Stimulation**
- An invasive neurosurgical procedure reserved for severe refractory cases of Tourette syndrome
- Considered to be an experimental option for intractable cases
- The largest published trial showed a mean reduction of 29% in the YGTSS

**Exposure & Response Prevention**
- Patients who have in a prolonged period of time w/ unpleasant premonitory sensations (exposure) & resisting the tic (response prevention), the patients may learn to tolerate the unpleasant sensation (habituation)
  - Habituation will lessen the urge or need to give into the tic, resulting in the reduction of tic behavior

### B. Pharmacological Therapy

- May be considered if symptoms interfere w/ normal functioning
- Successful treatment of comorbid disorder usually decreases tic severity
- There is no cure for Tourette syndrome; aim of pharmacological therapy is to reduce the frequency & severity of tics
- Goals should be to relieve tic-related discomfort/embarrassment & to allow the patient to function as normally as possible
- Choice of treatment depends on the following factors: severity of symptoms, address the most problematic symptom(s), patient’s sense of urgency for treatment, & patient’s aversion to risk of likely or unlikely adverse effects

**Alpha-Adrenergic Agents**

- **Clonidine**
  - May be preferred over antipsychotic medications because of decreased risk of acute & long-term side effects
  - Useful for children who are hyperactive, impulsive & disinhibited
  - Has been shown to improve tics & attention-deficit/hyperactivity disorder

- **Guanfacine**
  - Found to be less sedating & less hypotensive than Clonidine
  - Has been shown to improve tics & attention-deficit/hyperactivity disorder
  - Ensures more patient compliance as it can be given once at bedtime or 2x daily as compared w/ 3-4x daily doses of Clonidine

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Neuroleptics

- Neuroleptics are considered the most effective drugs

Conventional/Typical Antipsychotics

• Haloperidol
  - Side effects tend to limit use & there are other agents that may be better tolerated
  - Many case reports & placebo-controlled studies have shown effectiveness
• Pimozide
  - Shown to be effective in Tourette syndrome
  - May be more effective than Haloperidol but studies comparing the 2 agents have been conflicting

Selective Dopamine D₂ Receptor Antagonists

• Sulpiride
  - A small number of uncontrolled studies have shown Sulpiride to be effective in treating tics in 59% of patients
  - Improves aggressive obsessive-compulsive behavior & mood
• Tiapride
  - Small number of studies have shown that it reduces tics without affecting cognitive impairment
• Tetrabenazine
  - Depletes dopamine by inhibiting vesicular monoamine transporter type 2
  - As effective as the typical neuroleptics but does not cause tardive dyskinesia
  - Studies have shown to be effective in hyperkinetic movement disorders

Atypical Antipsychotic

• Aripiprazole
  - Indicated for treatment of Tourette’s disorder in pediatric patients 6-18 years
  - Acts as antagonist at D₂ receptors under hyperdopaminergic conditions & displays agonist properties under hypodopaminergic conditions
• Risperidone
  - Extrapyramidal syndrome side effects are usually less compared with conventional antipsychotics
  - Most extensively studied of the atypical antipsychotics in the treatment of Tourette syndrome
  - Several studies show Risperidone is effective for Tourette syndrome
  - Has been advocated as 1st-line agent in patients with tics & obsessive-compulsive disorder symptoms
  - Based on a retrospective chart review, it has been shown to decrease aggressive behavior in patients with Tourette syndrome

Selective Serotonin Reuptake Inhibitors (SSRIs)

• Considered 1st-line agents in patients with significant depression or obsessive-compulsive disorder symptoms
• May improve tics in some patients, may worsen them, or may have no effect on tics in others
• E.g. Fluoxetine

Selective Noradrenaline Reuptake Inhibitor (SNRI)

• Atomoxetine
  - A nonstimulant found to be modestly effective in the treatment of Tourette syndrome-related ADHD

Tricyclic Antidepressant

• Clomipramine
  - Has nonselective reuptake blocking properties that relieve symptoms of obsessive-compulsive disorder

Stimulants

• Considered 1st-line agents in patients with attention-deficit/hyperactivity disorder
• Methylenidate may be better tolerated than Dextroamphetamine in patients with Tourette syndrome
• Methylenidate & Clonidine have additive benefits in Tourette syndrome & attention-deficit/hyperactivity disorder

Botulinum Toxin

• Involves local IM inj of the toxin to the affected muscle site
• Most useful for persistent, focal motor (e.g. eye blinking, neck & shoulder tics), & sometimes vocal tics by temporarily weakening the affected muscles
• Tic & tic urges have been shown to improve
• Effects can be seen in the absence of gross weakness
• Lasts for only 12-16 weeks

Other Agents Reported to Improve Tics

• Topiramate
  - Alternative agent in patients with mild but troublesome tics who are intolerant or unresponsive to other treatment agents
  - More studies are needed to confirm safety & efficacy
• Baclofen, Clonazepam, Fluphenazine, Levetiracetam, Lithium, Naloxone, Nicotine, Olanzapine, Quetiapine, Talipexole, Ziprasidone

1 Please refer to Obsessive-Compulsive Disorder Management Chart for detailed discussion on treatment.
2 Please refer to Attention Deficit/Hyperactivity Disorder Management Chart for detailed discussion on treatment.

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Specific prescribing information may be found in the latest MIMS.
## Dosage Guidelines

### ALPHA-ADRENERGIC AGONISTS

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clonidine</strong></td>
<td>Childn ≥7 yr &amp; Adolescents:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Initial dose:</strong> 0.025-0.05 mg/day PO, increase by 0.025 mg/day to a 3-4 times daily schedule</td>
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</tr>
<tr>
<td></td>
<td><strong>Usual daily dose:</strong> 0.1-0.4 mg/day PO in 3-4 divided doses</td>
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</tr>
<tr>
<td></td>
<td><strong>Max dose:</strong> 0.4 mg/day</td>
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<tr>
<td><strong>Guanfacine</strong></td>
<td>Childn 6-16 yr:</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Initial dose:</strong> 0.5 mg PO at bedtime x 3 days, then 0.5 mg PO 12 hrly x 4 days, then 0.5 mg PO 8 hrly x 7 days</td>
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<tr>
<td></td>
<td><strong>Dose range:</strong> 1.5-3 mg/day PO in 3 divided doses</td>
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<tr>
<td></td>
<td><strong>Max dose:</strong> 4 mg/day</td>
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</tbody>
</table>

#### Adverse Reactions
- CV effects (hypotension, Raynaud’s phenomenon, bradycardia or tachycardia, palpitations, impaired AV conduction); CNS effects (sedation, dizziness, headache, irritability, insomnia); GI effects (dry mouth, constipation, anorexia); Other effects (fluid retention, parotid pain)
- Guanfacine tends to be less sedating & hypotensive than Clonidine

#### Special Instructions
- Start w/ a low dose & increase slowly based on patient response
- Taper the dose slowly upon discontinuation to avoid tic flare-ups or rebound hypertension
- Contraindicated in patients receiving anticoagulation therapy
- Use w/ caution in patients w/ cerebrovascular disease, coronary insufficiency, recent MI, conduction disturbances, peripheral vascular disorders, renal or hepatic impairment
- Thorough CV assessment, especially in childn, prior to initiation of therapy
- Monitor BP, heart rate
- Monitor patients for signs of depression, chest pain, or signs of cardiac disease

### ATYPICAL ANTIPSYCHOTIC

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aripiprazole</strong></td>
<td>Childn ≥6 yr &amp; Adolescents:</td>
<td></td>
</tr>
<tr>
<td>&lt;50 kg</td>
<td><strong>Initial dose:</strong> 2 mg PO 24 hrly x 2 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase to target dose of 5 mg PO 24 hrly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dose may further be titrated to 10 mg PO 24 hrly at wkly intervals in patients not achieving optimal control</td>
<td></td>
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<tr>
<td></td>
<td><strong>Max dose:</strong> 10 mg/day</td>
<td></td>
</tr>
<tr>
<td>≥50 kg</td>
<td><strong>Initial dose:</strong> 2 mg PO 24 hrly x 2 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Then increase to 5 mg PO 24 hrly x 5 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase to target dose of 10 mg PO 24 hrly on day 8 of therapy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dose may further be titrated at wkly intervals in 5 mg/day increments up to 20 mg PO 24 hrly in patients not achieving optimal control</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Max dose:</strong> 20 mg/day</td>
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</tbody>
</table>

#### Adverse Reactions
- CNS effects (headache, anxiety, somnolence or insomnia); rare reports of tardive dyskinesia & neuroleptic malignant syndrome
- May cause salivary hypersecretion, orthostatic hypotension, seizure, dysphagia, or suicidal ideation
- Hyperglycemia may occur & in some cases be extreme, resulting in ketoacidosis, hyperosmolar coma, or death

#### Special Instructions
- Use w/ caution in patients w/ seizure disorders, in suicidal patients, & those w/ concomitant illness
- Monitor growth, including wt, ht & BMI in pediatric patients to check for metabolic effects of Aripiprazole

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All dosage recommendations are for non-pregnant & non-breastfeeding women, non-elderly adults w/ normal renal & hepatic function unless otherwise stated.

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Specific prescribing information may be found in the latest MIMS.
### ATYPICAL ANTIPSYCHOTIC (CONT'D)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risperidone</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childn &amp; Adolescents 7-17 yr:</td>
<td><strong>Initial dose:</strong> 0.25-0.5 mg PO 24 hrly at night</td>
<td>Titrate gradually every 4-5 days in 0.25-0.5 mg increments to</td>
</tr>
<tr>
<td></td>
<td><strong>Usual dose range:</strong> 0.25-6 mg PO in 2 divided doses</td>
<td><strong>Usual dose:</strong> 0.25-6 mg PO 24 hrly (Max dose: 6 mg/day)</td>
</tr>
<tr>
<td>Adult:</td>
<td><strong>Initial dose:</strong> 0.25 mg PO 24 hrly</td>
<td>Increase gradually based on response &amp; tolerability up to (Usual dose range: 0.25-6 mg PO 24 hrly)</td>
</tr>
<tr>
<td></td>
<td><strong>Max dose:</strong> 6 mg/day</td>
<td></td>
</tr>
</tbody>
</table>

**Adverse Reactions**
- CNS effects (somnolence, dizziness, depression, insomnia, pseudoparkinsonism, EPS symptoms, acute dystonic reaction, akathisia, agitation, anxiety, aggressive behavior, fatigue, headache); GI effects (inc appetite, N/V, abdominal pain, constipation); Other effects (galactorrhea, weakness, sexual dysfunction, hyperglycemia)
- Use may be associated w/ neuroleptic malignant syndrome (NMS)

**Special Instructions**
- Start w/ a low dose & increase slowly based on patient response
- Taper the dose slowly upon discontinuation to avoid tic flare-ups
- Use w/ caution in patients w/ CV disease, recent MI, Parkinson's disease, renal or hepatic impairment, epilepsy
- Watch out for suicidal ideation, changes in mental status, orthostatic hypotension
- Monitor for FBS, HbA1c (especially in patients w/ or at risk of DM), lipid profile

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## Conventional Antipsychotics

### Dosage Guidelines

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benzamides</strong></td>
<td></td>
<td></td>
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<tr>
<td>Sulpiride</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Childn:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-12 yr:</td>
<td>50-400 mg PO 12 hrly</td>
<td>Adverse Reactions</td>
</tr>
<tr>
<td>12-18 yr:</td>
<td>100-400 mg PO 12 hrly</td>
<td>• CNS effects (sleep disturbances, agitation, over stimulation, impaired cognition); Other effects (GI disturbances, nasal congestion, wt gain)</td>
</tr>
<tr>
<td><strong>Adult:</strong></td>
<td>200-400 mg PO 12 hrly</td>
<td>• EPS including tardive dyskinesia occur but may be milder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Less likely to cause sedation &amp; hypotension</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Antimuscarinic effects are minimal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use may be associated w/ NMS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Special Instructions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Start w/ a low dose &amp; increase slowly based on patient response</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Taper the dose slowly upon discontinuation to avoid tic flare-ups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Contraindicated in patients w/ Parkinson’s disease, pheochromocytoma, CNS depression, porphyria, prolactin-dependent tumors</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use w/ caution in patients w/ CV disease, epilepsy, myasthenia gravis, severe resp disease, urinary retention, history of jaundice, w/ blood dyscrasias, DM, prostatic hypertrophy, angle closure glaucoma, renal or hepatic impairment, May potentiate mania</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tiapride</th>
<th>Dose range: 100-400 mg/day PO</th>
<th>Adverse Reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• CNS effects (sedation, depression, agitation, parkinsonism, dystonia); GI effects (increase in appetite, wt gain); Endocrine &amp; metabolic effects (hyperprolactinemia &amp; resulting menstrual disorders, rarely galactorrhea)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Use may be associated w/ NMS, blood dyscrasias</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Special Instructions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• See Sulpiride above</td>
</tr>
</tbody>
</table>

All dosage recommendations are for non-pregnant & non-breastfeeding women, non-elderly adults w/ normal renal & hepatic function unless otherwise stated.

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### Conventional Antipsychotics (Cont’d)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haloperidol</td>
<td><strong>Childn 3-12 yr &amp; weighing 15-40 kg:</strong></td>
<td><strong>Adverse Reactions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Initial dose:</strong> 0.25-0.5 mg/day PO in 2-3 divided doses</td>
<td>• Less likely to cause sedation, hypotension &amp; antimuscarinic effects</td>
</tr>
<tr>
<td></td>
<td>Increase by 0.25-0.5 mg every 5-7 days</td>
<td>but extrapyramidal movements are more common</td>
</tr>
<tr>
<td></td>
<td><strong>Usual maintenance dose:</strong> 0.05-0.075 mg/kg/day in 2-3 divided doses</td>
<td>• Wt gain, impaired cognition</td>
</tr>
<tr>
<td></td>
<td><strong>Max dose:</strong> 15 mg/day</td>
<td>• Use may be associated w/ NMS</td>
</tr>
<tr>
<td></td>
<td><strong>Childn weighing &gt;40 kg &amp; Adolescents:</strong></td>
<td><strong>Special Instructions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Initial dose:</strong> 0.25-0.5 mg/day PO in 2-3 divided doses</td>
<td>• Start w/ low dose &amp; increase slowly based on patient response</td>
</tr>
<tr>
<td></td>
<td>Increase gradually by 0.25-0.5 mg increments at 5-7 day intervals</td>
<td>• Taper the dose slowly upon discontinuation to avoid tic flare-ups</td>
</tr>
<tr>
<td></td>
<td><strong>Usual dose:</strong> 1-4 mg/day PO</td>
<td>• Avoid in patients w/ thyrotoxicosis</td>
</tr>
<tr>
<td></td>
<td><strong>Adult:</strong> <strong>Initial dose:</strong> 0.5-5 mg PO 8-12 hrly</td>
<td>• Contraindicated in patients w/ CNS depression, severe liver or CV</td>
</tr>
<tr>
<td></td>
<td>Adjust dose based on response &amp; tolerability</td>
<td>disease, conduction abnormality, narrow-angle glaucoma, bone marrow</td>
</tr>
<tr>
<td></td>
<td><strong>Max dose:</strong> 100 mg/day PO</td>
<td>suppression, parkinsonism, electrolyte imbalance, hypothyroidism</td>
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<td></td>
<td>• Use w/ caution in patients w/ renal or hepatic dysfunction, resp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>disease, history of seizures</td>
</tr>
</tbody>
</table>

All dosage recommendations are for non-pregnant & non-breastfeeding women, non-elderly adults w/ normal renal & hepatic function unless otherwise stated.

Not all products are available or approved for above use in all countries.

Products listed above may not be mentioned in the disease management chart but have been placed here based on indications listed in regional manufacturers' product information.

Specific prescribing information may be found in the latest MIMS.
## Dosage Guidelines

### CONVENTIONAL ANTIPSYCHOTICS (CONT’D)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diphenylbutylpiperidine</strong></td>
<td><strong>Childn ≥2 yr &amp; Adolescents:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Weight-directed dosing:</strong></td>
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<tr>
<td></td>
<td><strong>Initial dose:</strong> 0.05 mg/kg PO at bedtime</td>
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<tr>
<td></td>
<td><strong>Max initial dose:</strong> 1 mg/dose</td>
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<tr>
<td></td>
<td>May increase dose every 3 days, if needed</td>
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<tr>
<td></td>
<td><strong>Max dose:</strong> 10 mg/day or 0.2 mg/kg/day, whichever is less</td>
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</tr>
<tr>
<td></td>
<td><strong>Fixed dosing:</strong> 0.5-1 mg PO 24 hrly</td>
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<tr>
<td></td>
<td><strong>Usual dose:</strong> 2-8 mg/day PO</td>
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</tr>
<tr>
<td><strong>Adult:</strong></td>
<td><strong>Initial dose:</strong> 1-2 mg/day PO in divided doses</td>
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</tr>
<tr>
<td></td>
<td>Increase dosage every other day</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Max dose:</strong> 10 mg/day or 0.2 mg/kg/day, whichever is less</td>
<td></td>
</tr>
</tbody>
</table>

### Adverse Reactions
- CV effects [ventricular arrhythmias, ECG abnormalities (eg prolongation of QT interval & T-wave changes)]; Other effects (drowsiness, behavior changes, impaired motivation, impaired cognition, dysphoria, irritability, depression, wt gain, parkinsonism)
- Less likely to cause sedation, hypotension & antimuscarinic effects
- Rarely gynecomastia, amenorrhea, impotence, hostility, aggression
- More likely to cause EPS (eg akathisia, acute dystonic reactions)
- Use may be associated w/ NMS

### Special Instructions
- ECG should be performed prior to therapy & periodically thereafter, especially during dose adjustment
- Start w/ a low dose & increase slowly based on patient response
- Taper the dose slowly upon discontinuation to avoid tic flare-ups
- Contraindicated in patients w/ CNS depression, cardiac arrhythmias, conduction abnormality, electrolyte imbalance
- Use w/ caution in patients w/ CV disease, narrow-angle glaucoma, myasthenia gravis, Parkinson’s disease, renal or hepatic impairment, seizure disorder

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Please see the end of this section for the reference list.