Tic Disorders

Outline

- The Basics
- Epidemiology
- Etiology
- Risk Factors
- Diagnosis
- Comorbidity
- Treatment

Tic Disorders

The Basics: Definition of a Tic

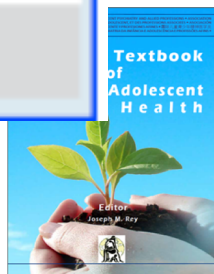
Motor movement or vocalization that is:

- Involuntary
- Sudden
- Rapid
- Recurrent/Repetitive
- Non-rhythmic
- Short bursts or series
- Various muscle groups
- Simple or complex
- Transient or chronic
- Premonitory urge

Tic Disorders: Multiple Types

Table H.2.1 Classification of tic disorders according to ICD-10 and DSM-IV

ICD- 10		DSM - IV	
F95.0	Transient tic disorder	307.21	Transient tic disorder
F95.1	Chronic motor or vocal tic disorder	307.22	Chronic motor or vocal tic disorder
F95.2	Combined vocal and multiple motor tic disorder (Gilles-de-la-Tourette syndrome)	307.23	Tourette's disorder
F95.8	Other tic disorder	307.20	Tic disorder NOS (not otherwise specified)
F95.9	Unspecified		



Tic Disorders

The Basics: Motor Tics

- Range
- Simple & sudden
  - Eye blink
  - Grimace
- Complex behavioral patterns
  - Crouching or hopping
  - Copropraxia
  - Echopraxia
  - Self harm

Tic Disorders

The Basics: Vocal/Phonic Tics

- Involuntary utterances
- Sounds, noises, sentences, or words
  - Simple
  - Complex
    - Coprolalia
    - Echolalia
    - Palilalia

Tic Disorders

Common Motor and Vocal Tics

Motor Tics	Vocal Tics
• Eye blinking	• Coughing
• Rolling of eyes	• Throat clearing
• Grimacing	• Sniffing
• Shaking of head	• Whistling
• Twitching of shoulders	• Grunting
• Twitching of torso and pelvis	• Animal sounds
• Twitching of abdomen	• Uttering of syllables
• Movements of the hands and arms	• Uttering of words
• Movements of the feet and legs	• Shouting

Examples of a Variety of Tics

Tic Disorders

The Basics: Transient* Tic Disorder

- Symptoms less than 12 months
- Mostly school age
- Usually no specific treatment

*“Provisional” in DSM-5

Tic Disorders

The Basics: Tourette Syndrome

- Several motor tics
- At least 1 vocal tic
- Not at the same time
- Almost every day > 1 year
- Onset usually < 18 years

In 1893 a former female mental patient shot Tourette in the head, claiming he had hypnotized her against her will.

LE PAYS ILLUSTRÉ

JOURNAL HEBDOMADAIRE

LITTÉRATURE, ACTUALITÉS, MUSIQUE, BEAUX-ARTS, MODES

ABONNEMENTS

RÉDACTION & ADMINISTRATION :

PARIS — 24, rue Chauchat, 24 — PARIS

ANNONCES

UN DRAME DE L'HYPNOTISME

Georges Albert Édouard Brutus Gilles de la Tourette(1857-1904), French neurologist, described the
symptoms of the syndrome that bears his name in nine patients in 1884, which he
termed “maladie des tics". Gilles de la Tourette had a colourful and eventful life.
He was shot in the head in his consulting rooms by a paranoid young woman who had been a patient at the Salpêtrière Hospital claiming she had been hypnotised by him against her will causing her to lose her sanity.
The trial sparked intense public debate over whether hypnosis could be used to induce criminal behavior in otherwise law-abiding citizens.

He died in a psychiatric hospital in Lausanne, Switzerland, where he had been interned probably
because of a bipolar illness and syphilis.

Tic Disorders

Epidemiology

- 4-12% of all children
- 3-4% chronic tic disorder
- 1% Tourette's
- Children & adolescents 10 x > adults
- Boys 3-4 x > girls
- Familial predisposition

Cultural Differences

- Worldwide Prevalence 1%
- Different from country to country
  - Classification systems
  - Medical priorities
  - Ethnicities and epigenetics
  - Racial genetics
- Similarities: demography, family history, clinical features, associated conditions, comorbidity, treatment outcome

Tic Disorders

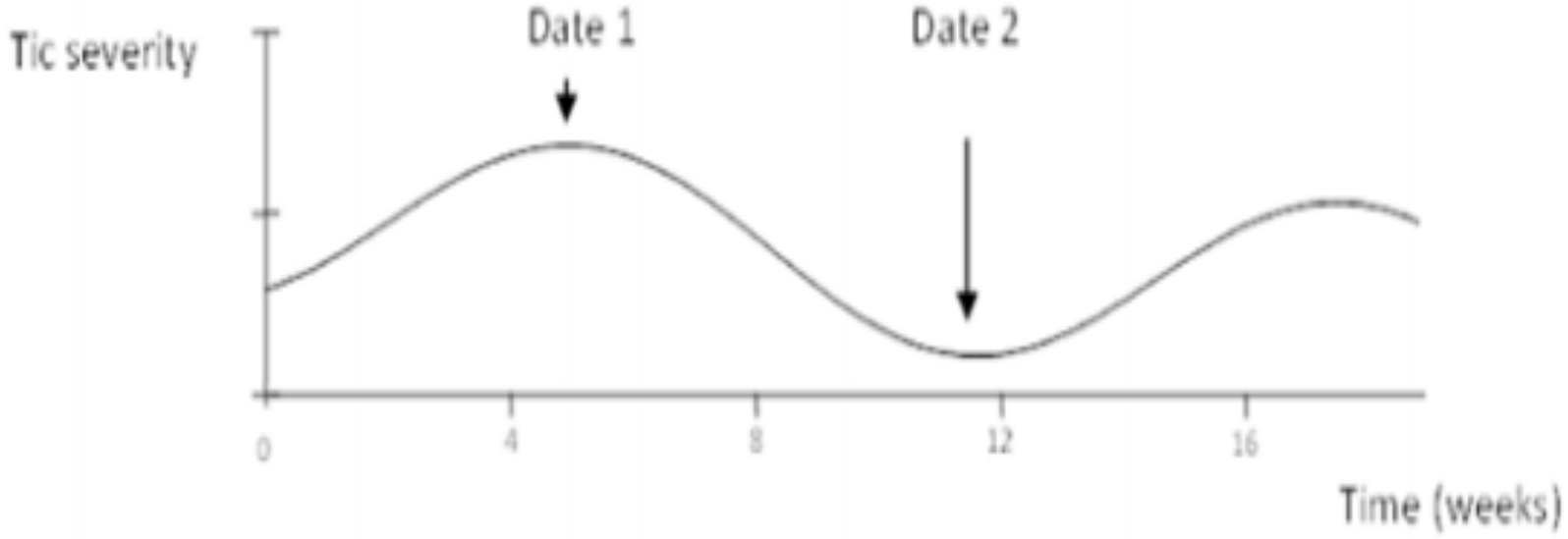
Age at Onset and Usual Course

- Onset: 2-15 years
- Peak: 6-8 years
- Motor tic of face first
- Shoulders, torso, extremities after
- Vocal tics 2-4 years later
- Fluctuations every 6-12 weeks in location, complexity, type, intensity, frequency

Tic Disorders

Fluctuations in Course

Figure H.2.1 Evaluation of treatment efficacy in Tourette's syndrome in light of the natural waxing and waning



Fluctuations in Course: Natural Evolution

- Older children
  - Better control of tics
  - Suppression for minutes to hours
  - Increased intensity after school day
- Worsening of symptoms during adolescence
- Remission during young adulthood
- Children and adolescents 10 x > chance of having tics than adults

Tic Disorders

Fluctuations in Course

Poor Prognosis:

- Familial history
- Existence of vocal or complex tics
- Comorbid hyperkinetic disorder
- Obsessive Compulsive Symptoms
- Aggressive behavior vs self or others

Spontaneous Remission:

- 50-70% chronic simple or multiple tics
- 3-40% Tourette's Syndrome

Fluctuations in Course: Environmental and Psychosocial Effects

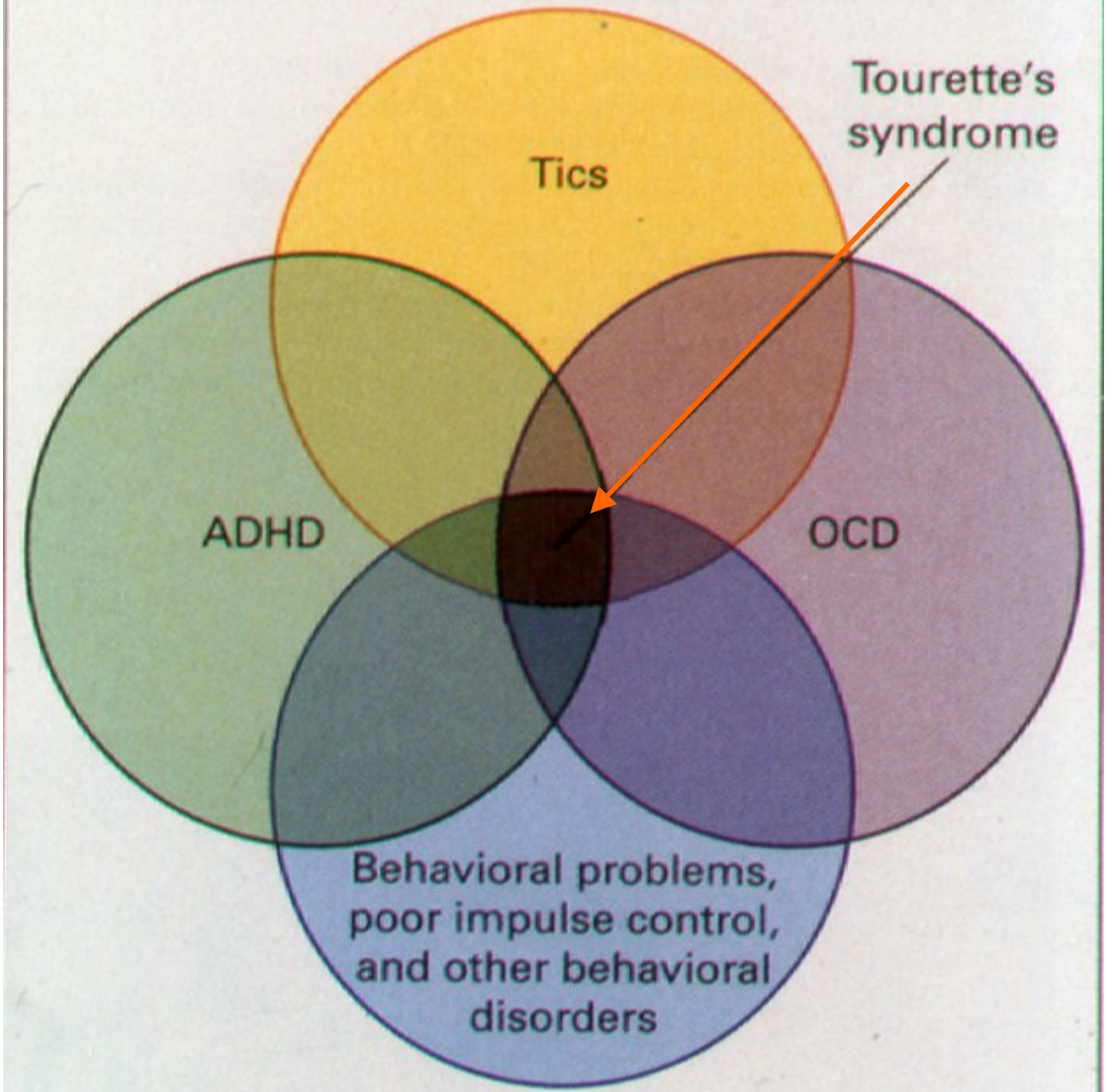
Can decrease during:

- Distraction
- High concentration job
- Cannabis use
- Alcohol use
- Intentional movements

Can increase during:

- Stress
- Fear
- Emotional trauma
- Social pressure
- Joy
- Tension


IN DEPTH
with
GRAHAM
BENSINGER


Tourette's syndrome
Tics
ADHD
OCD
Behavioral problems, poor impulse control, and other behavioral disorders

Tic Disorders

Etiology

- Multifactorial: genetic, neurobiological, psychological, environmental
- Dysregulation in cortico-striato-thalamo-cortical circuits
- Deviations in dopaminergic and serotonergic systems
- Increased dopamine activity in basal ganglia→ deficient subcortical inhibition→

  impaired autonomic control of movement

Risk Factors

- 50% heritability
- Possible pre, peri, and post-natal risk factors:
  - Premature birth
  - Hypoxia
  - Low birth weight
  - Nicotine and caffeine use
- Rare secondary causes:
  - Tumors, poisonings, infection, head trauma

Medical Imaging

- Possible decreased volume
  - basal ganglia
  - corpus callosum
- Deviation of glucose metabolism
  - basal ganglia
  - prefrontal cortex
  - somatic sensorimotor cortex
  - insula
  - temporal lobe

Tic Disorders

Diagnosis

- Detailed medical history
- Standardized questionnaires:
  - Child Behavior Checklist
  - Strengths & Difficulties Questionnaire
- Interviews:
  - Yale Global Tic Severity Scale
  - Tourette's Syndrome Severity Scale
- Parental/Self Rating Scales
  - Yale Tourette Syndrome Symptom List-Revised
- Physical & neurological exam
- EEG

Tic Disorders

Differential Diagnosis

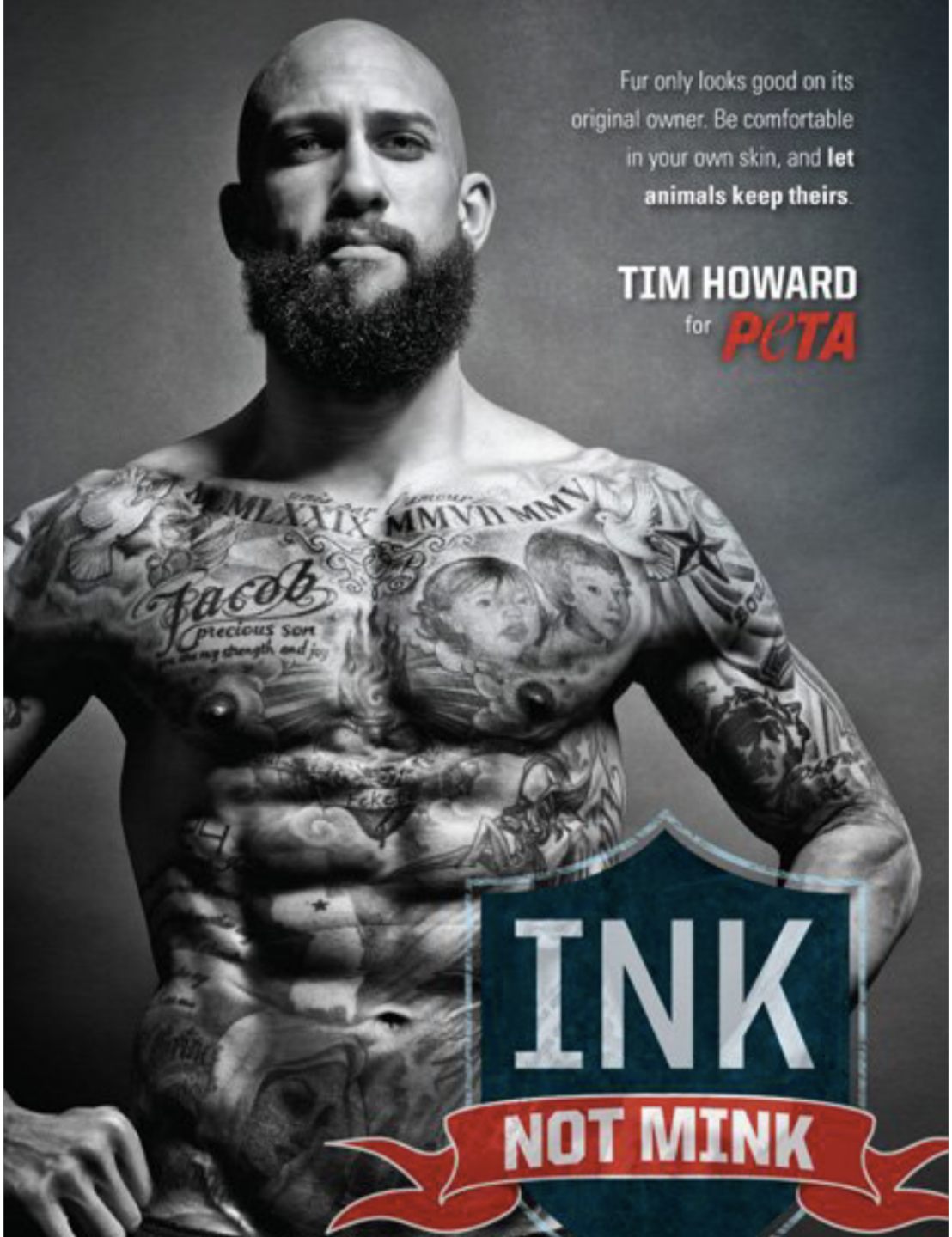
Aspect of tics	Disorder – differential diagnoses
Preoccupation with tic control	Attention problem
Tic repetition	Obsessive-compulsive phenomena
"Exaggerated" tic[1]	Psychogenic origin
Monotonous tic	Stereotypy
Eye rolling	Absence
Rapid shuffling steps	Akathisia, juvenile Parkinson, compulsion
Distortions and similar[2]	Dystonia/ Dyskinesia
Convulsive grimacing	Blepharospasm
"Jerky" tics	Chorea
"Shuddering" tics	Myoclonus
Tics during sleep	Restless legs, epilepsy, parasomnias

Tic Disorders

High Comorbidity

Table H.2.4 Psychiatric disorders often associated with tic disorders

Comorbid disorder	% of children with tic disorder affected
Attention deficit hyperactivity disorder (ADHD)	40 – 60
Obsessive-compulsive symptoms	40 - 70
Anxiety disorders	25 – 40
Depressive symptoms	Around 50
Sleeping disorders	12 – 44


Fur only looks good on its original owner. Be comfortable in your own skin, and **let animals keep theirs**.
TIM HOWARD
for PETA
MMLXXIX
MMVII MMV
Jacob
precious son
INK
NOT MINK

Treatment: Psychoeducation

- Patient, caregivers, teachers
- Individual causal factors
- Options for treatment
- Self help groups

Treatment: Psychotherapy

Cognitive Behavioral Methods

- Habit Reversal Training
- Exposure Response Prevention
- Massed (Negative) Practice
- Relaxation Training
- Contingency Management
- Family Therapy

Treatment: Medication

- Most treatment “off label”
- Only when interfering with function or subjective discomfort
- Start slowly
- Only discontinue after a year
- Reduce in late adolescense
- Pre-medication work-up: CBC, LFTs, prolactin, EEG, ECG, physical/neurological exams

Table H.2.5 Medications with some evidence of effectiveness for the treatment of Tourette's syndrome (Roessner et al, 2011)

Medication		Level of evidence	Starting dosage (mg)	Therapeutic range (mg)	Common adverse effects	Investigations at start and during follow up
Alpha-adrenergic agonists	Clonidine	A	0.05	0.1-0.3	• Orthostatic hypotension • Sedation, sleepiness	• Blood pressure • ECG
	Guanfacine	A	0.5-1.0	1.0-4.0		
First generation antipsychotics	Haloperidol	A	0.25-0.5	0.25-15.0	• EPS • Sedation • Increased appetite and weight	• Blood count • ECG • Weight • Transaminases • Neurologic status • Prolactine
	Pimozide	A	0.25-0.5	0.25-15.0		
Second generation antipsychotics	Aripirazole	C	2,50	2.5-30	• Sedation • Akathisia • EPS • Headache • Increased appetite, weight • Orthostatic hypotension	• Blood count • Blood pressure • Weight • ECG • Transaminases • Blood sugar and lipids
	Olanzapine	C	100-150	100-600		
	Quetapine	C	100-150	100-600		
	Risperidone	A	0.25	0.25-6.0		
	Ziprasidone	A	5.0-10.0	5.0-10.0		
Benzamides	Sulpiride	B	50-100 (2mg/kg)	2-10 mg/kg	• Problems with sleep • Agitation • Increased appetite	• Blood count • ECG • Weight, Transaminases
	Tiapride	B	50-100 (2mg/kg)	2-10 mg/kg	• Sedation • Increased appetite	• Prolactine • Electrolytes

EPS: extrapyramidal symptoms. Evidence level: A, >2 randomized controlled trials; B, 1 randomized controlled trial; C, anecdotal (case studies, open trials).

Treatment for Tics & Comorbid Disorders

- ADHD:
  - Psychostimulants, e.g., methylphenidate
  - Atomoxetine or clonidine for mild to moderate tics
  - Addition of risperidone
- Emotional disorders
  - Sulpiride for mild to moderate mood or anxiety symptoms
  - Selective serotonin reuptake inhibitor (SSRI)
  - SSRI & antipsychotic for moderate to severe tics

Alternative Medicine Treatments

- Substantial anecdotal evidence for:
  - Physical exercise
  - Recreational activities in general
- No evidence for:
  - Diet
  - Vitamin or mineral supplementation
  - Hypnosis