


# What you need to know about Tourette syndrome and tic disorders

A Primer

Julian Fletcher BA  
Program Coordinator  
Tourette OCD Alberta Network  
University of Calgary



## Objectives of this Primer


- To define and characterize tics
  - To discuss tics in relation to Tourette syndrome
  - To describe co-occurring disorders
  - To outline the recommended treatment for tic disorders
- 

A horizontal band of dark blue watercolor paint, with some lighter blue and white areas visible at the top and bottom edges, suggesting a torn paper or watercolor effect. The text "What are tics?" is centered within this blue band.

What are tics?

How is a tic defined?

A sudden, rapid recurrent and non rhythmic **motor** movement or **vocalization**



These are seen as normal motor movements or vocalizations that are out of their normal or usual context

# Tics are distinguished by type

**Motor (simple) – physical movement**  
**blinking**



**Vocal (simple) - audible noise**  
**coughing**



# Simple Motor Tics

- Sudden, brief, meaningless movements
  - Eye blinking
  - Eye movements
  - Grimacing
  - Nose twitching
  - Mouth movements
  - Head jerks
  - Shoulder shrugs
  - Abdominal tensing

# Simple Vocal Tics

- Sudden, meaningless sounds or noises
  - Throat clearing
  - Coughing
  - Sniffing
  - Screeching
  - Barking
  - Grunting

They are also distinguished by complexity

## Motor (complex) – running hands through hair



## Vocal (complex) - inappropriate/aggressive words





# Complex Motor Tics

Slower, longer, more  
“purposeful” movements

Rarely seen in absence  
of simple motor tics

Touching objects or self

Gestures with hands

Holding and twisting  
limbs

Obscene gestures

# Complex Vocal Tics

Syllables, words, phrases or statements

Odd patterns of speech

Repetition of another person's spoken words

Obscene, inappropriate and aggressive words or statements

# Chararacteristics of tics

---

Suppressibility

Distractibility

Suggestibility

Variability

- Character of tics
- Frequency of tics – waxing and waning

Exacerbation with stress or excitement

Premonitory urge

# The causes of tics

Research suggests there are a number of factors that contribute to tics and how they express themselves



Genetic: heritable

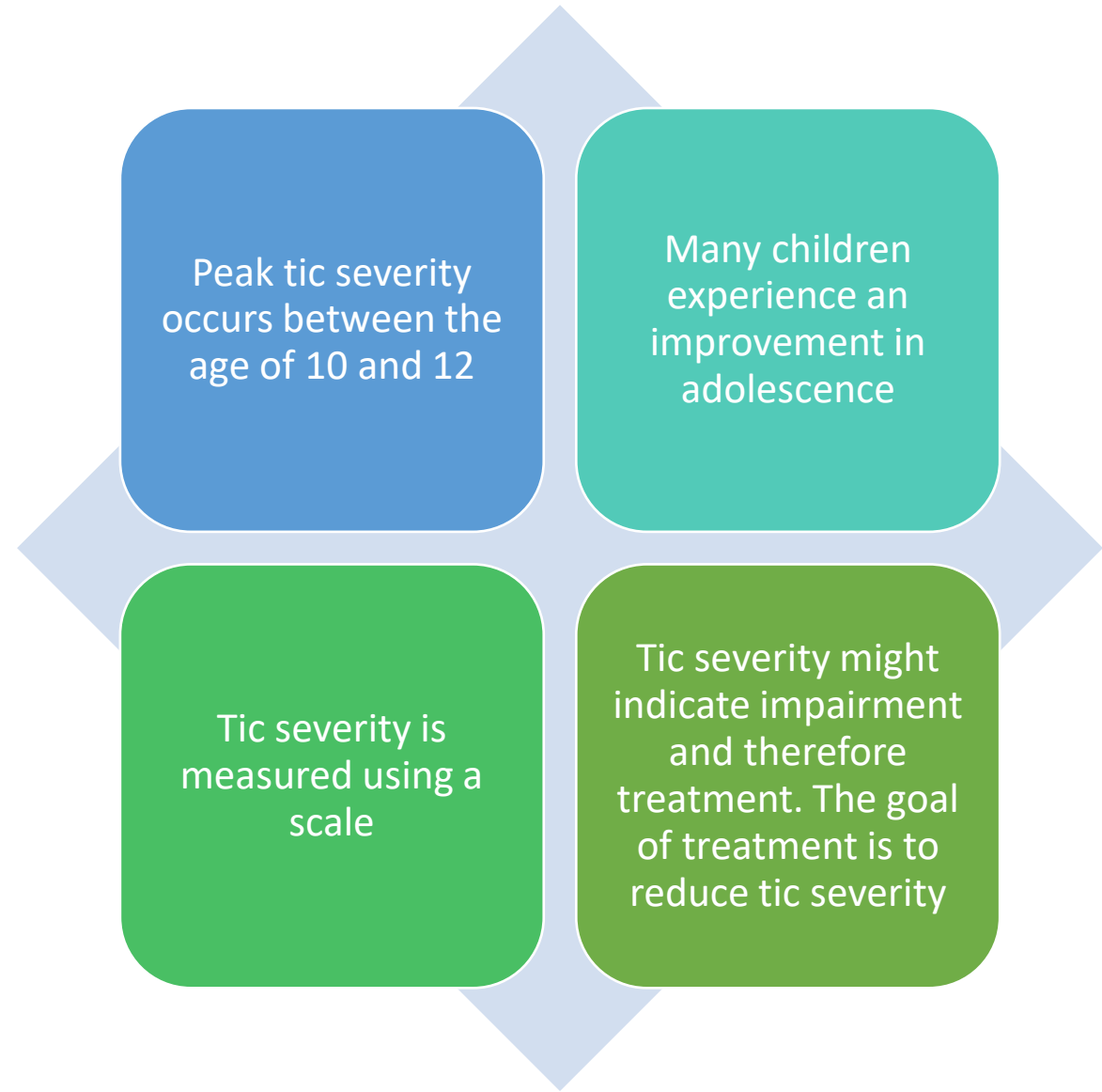


Neurobiological:  
neurochemical/neurotransmitters



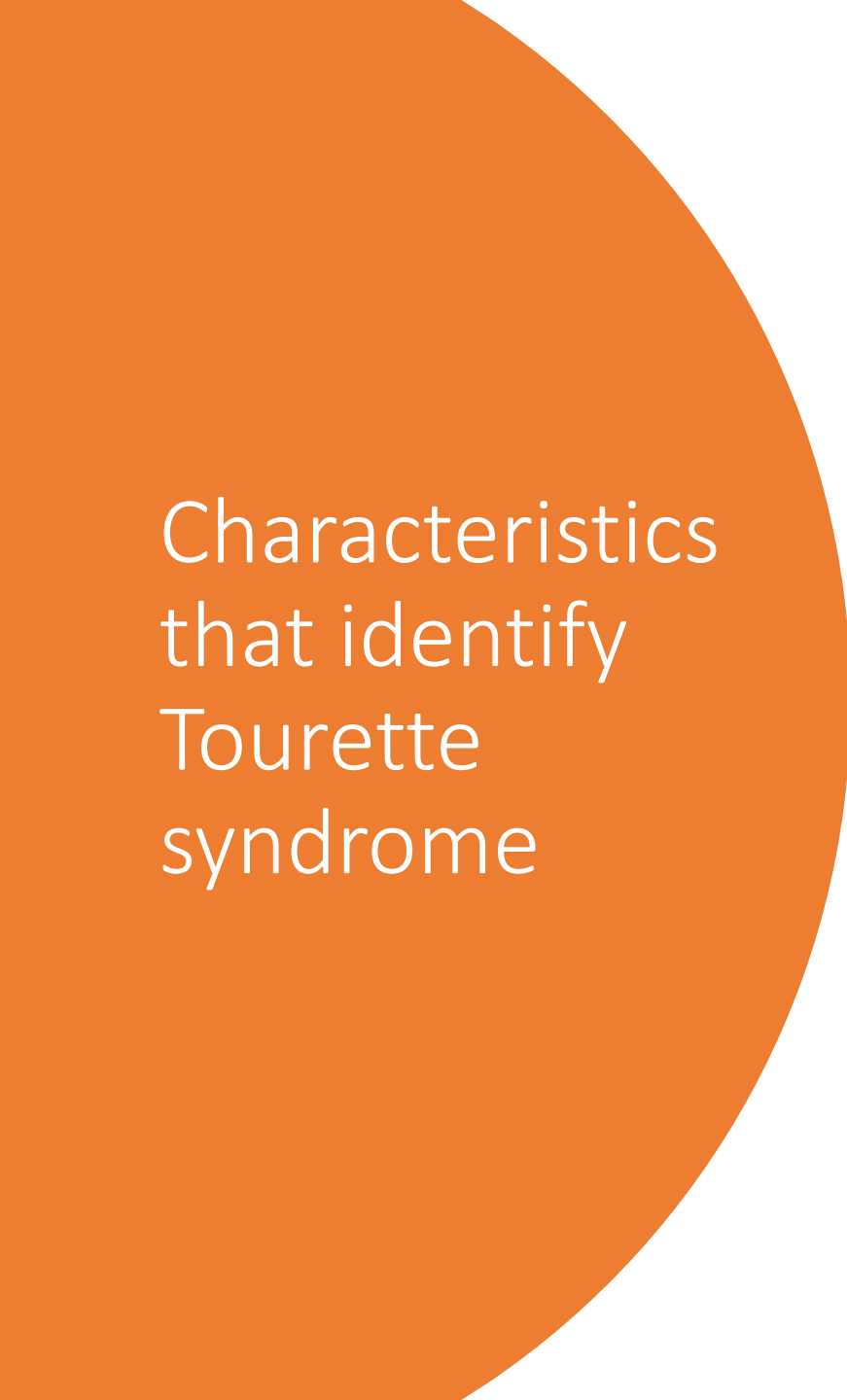
Environmental factors

# Tic Severity




# Tourette Syndrome



A large orange circle on the left side of the slide, partially cut off by the edge.

## Characteristics that identify Tourette syndrome

- Both motor and vocal tics are present for at least one year
  - 1 year since first tic onset - waxing and waning
  - Onset of tics is before the age of 18
  - Tics are not attributable to the effects of a substance or another medical condition.
- 
- A series of four yellow curved dashes in the bottom right corner, arranged in a diagonal line from bottom-left to top-right.

## The natural course of Tourette syndrome

- Mean onset of motor tics at age 6
- Begin with simple tics of face
- Vocal tics appear after motor tics
- Tic severity peaks in pre-adolescence and declines in late adolescence
- High rate of natural remission between age 14 and 17 years of age
- Monitoring of tic-related impairment essential for making treatment decisions



# Common problems associated with tics and Tourette Syndrome

Tics are often the behavioural symptoms that are noticed.

Psychiatric comorbidities include:

- ADHD – 54%
- OCD – 50%
- Anxiety disorders 36%
- Disruptive Behaviour Disorders 30%
- Eating disorders 2%
- Psychotic disorders 1%
- Substance use 6%

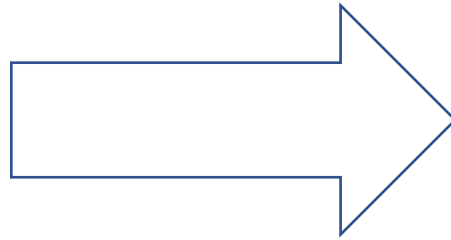
The background of the slide features a warm, orange-hued sunset sky. In the foreground, the silhouettes of a child on the left and an adult on the right are shown with their arms raised in a gesture of joy or triumph. A white rectangular box is positioned in the lower half of the image, containing text and a list. A small orange vertical bar is located on the left side of the white box.

## Quality of Life

- Quality of life is impacted more by comorbidity than tic severity
- In children, the severity of ADHD has greatest impact
- In adults, anxiety and depression have greatest impact
- Improving quality of life is paramount in treatment of tics

# Predictors how Tourettes might develop

The strongest  
predictors of high tic  
scores and OCD and  
ADHD diagnoses in  
adulthood



Corresponding tic, OCD and  
ADHD severity scores in  
childhood

Being female and ADHD  
severity predict future  
emotional disorders

# How common is diagnosed Tourette syndrome in Canada?

- Data from Canadian Community Health Survey 2010/2011
- Population-based survey of Canadians age 12+
- Prevalence of diagnosed Tourettes in adolescents was 3.33 per 1000
  - Male 6.03 per 1000
  - Female 0.48 per 1000
- Prevalence of diagnosed Tourettes in adults was 0.66 per 1000
  - Male 0.89 per 1000
  - Female 0.44 per 1000

How are tics  
assessed?



# Clinical Assessment of People with Tics

Family history

Medication use

Developmental  
history

Past medical  
history

History of tics

Neurological  
exam

Assessment of  
tic severity

# Imperative to screen for comorbidities



ADHD

OCD

Other psychiatric  
conditions

In people with tics clinicians assess for OCD, ADHD and other psychiatric conditions to ensure appropriate treatment is provided for the different conditions.

Disorders  
commonly  
occurring with  
Tourettes

Females	more likely to have depression, anxiety and eating disorders
Males	more likely to have ADHD and disruptive behaviour disorders
Adults and Adolescents	more likely to have OCD, mood, anxiety, eating and substance use disorders
Children	more likely to have ADHD



# ADHD and people with tics

---

**It is vitally important for clinicians to assess the impact on the lives of ADHD symptoms in people with tics**

Individuals with both TS and ADHD are at a much greater risk for a variety of poor outcomes including greater academic and social impairment

Social difficulties – more aggressive and withdrawn - are amplified in a child with TS who also has ADHD

# OCD in people with tics

It is vitally important for clinicians to assess the impact on the lives of OCD symptoms in people with tics

The most common obsessive-compulsive symptoms encountered in TS patients are obsessions concerning a need for symmetry or exactness, repeating rituals, counting compulsions, and ordering/arranging compulsions

Obsessive-compulsive symptoms, when present, in children with TS, appear more likely to persist into adulthood than the tics themselves



# Treatment of tics

# When should tics be treated?

No fixed symptom severity threshold to determine when we should treat

An individual choice

Recommend that the decision be based on disability

- Physical
- Social
- Emotional

Decision is made collaboratively between patient and doctor

---

# The course of treatment

- It is vitally important to understand the typical course of treatment
- Psychoeducation


Treatment is individualized, and the two main treatments are:

Behaviour therapy

Pharmacotherapy

A large orange circle on the left side of the slide, partially cut off by the edge.

# Psychoeducation

- This webinar and Tourette OCD Alberta Network are examples of psychoeducation
  - [touretteocdalbertanetwork.ca](http://touretteocdalbertanetwork.ca)
  - Psychoeducation provides resources and encourages families to accept and cope with challenging conditions
  - Psychoeducation promotes family well-being – normalizes the difficulties families experience
  - Improves quality of life
- 
- A series of yellow dashed lines in the bottom right corner, forming a curved shape.



# Psychoeducation: in the classroom

- Psychoeducation about TS with fellow students results in positive attitudes towards students with TS
- Psychoeducation about TS with teachers improves knowledge, making classroom more inclusive for a person with TS



# Psychoeducation: Educational Outreach

The Tourette OCD Alberta Network

CUMMING SCHOOL OF MEDICINE

[Children and Adults](#) ▼ [Health Care Professionals](#) ▼ [Educators](#) ▼ [Directory of Health Professionals](#) [About Us](#) [Contact](#)


## Educational Outreach Program for Schools

The prevalence of Tourette Syndrome (TS) is approximately 1% of the student population, indicating that it is highly likely someone in your school will have the disorder. To complicate matters, most students with the diagnosis of TS also have co-occurring disorders such as ADHD and OCD.

We provide customized presentations for:

- Grade specific issues.
- Teacher, parent, and student specific presentations.
- Information on Tourette Syndrome (TS) and Obsessive-Compulsive Disorder (OCD).
- Information of what TS and OCD look like in the classroom.
- Strategies for the classroom.
- Short films to illustrate TS and OCD.
- Empathy exercises to help people of all ages understand what it feels like to live with TS and OCD.

All the presentations have been vetted by a team of neurologists, psychologists, and teachers to come up with the most current information available - and they range in length from 30 minutes to 2 or 3 hours.

A photograph of a young boy with short brown hair, wearing a red long-sleeved shirt. He is seen from the back, pointing his right hand towards a green chalkboard. The chalkboard has some faint, illegible white markings on it.



# Treatment options

The two primary evidence-based treatment options for tic disorders are:

- Cognitive Behavioral Therapy – 1<sup>st</sup> line
- Pharmacotherapy



# Treatment Expectations

Treatment may result in a range of reduction in tic severity

Evidence has shown that a treatment response among youth with tic disorders corresponds with 25%-35% reduction in tic symptom severity

Treatment rarely results in tics completely stopping

# Behavioural Treatments: CBIT

Behaviour based therapies teach people with TS how to manage their tics, with the aim of reducing tic severity.

CBIT – Comprehensive Behavioural Intervention for Tics

Many people with TS use CBIT successfully – evidence shows over 50% experience tic reductions

A management strategy, not a cure

promotes awareness of tics and the urge to tic

Foregrounds competing behaviour when the urge is felt. This component of CBIT is known as HRT

# Behavioural Therapy - caveats

- There are limitations to behavioural therapy, specifically CBIT, with regard to minimum age criteria
- Awareness of when tics are about to happen – awareness of the premonitory urge – requires a relative maturity found in children over 9 years old
- CBIT is not effective for children with severe ADHD or children with severe intellectual deficit
- Paucity of availability of CBIT therapists
- Locating them can be difficult – one of the aims of TS OCD Alberta Network to compile a directory of certified therapists

# Components of Comprehensive Behavioural Intervention for Tics

- CBIT: Tic awareness training, self-monitoring, relaxation techniques, behavioural rewards
- HRT (Habit Reversal Training) - competing response: people learn to do a new behaviour that cannot happen at the same time as the tic
- It does not mean that it is possible for anyone to control them just by behavioral therapy, but 50% do experience tic reduction



# Pharmacotherapy treatments

- Currently no preventative pharmacological therapies for tic disorder
- If tics do not cause significant functional impairment, non-pharmacological treatments are preferred
- Alpha- agonists –
  - clonidine, guanfacine
  - clonidine and guanfacine have demonstrated beneficial effects on both tics and ADHD symptoms
- Anti-psychotics drugs –
  - aripiprazole, risperidone
  - used to reduce tic symptom severity

# Treatment recommendations



- The decision to use medication and the monitoring of its impact require careful assessment of the child's overall development and not only the presence of tic symptoms
- Clinicians should prescribe medications for the treatment of people with tics when the benefits of treatment outweigh the risks





## Summary

- Tourette syndrome is a common neurological disorder
- Tic severity will improve for most children in late adolescence
- Quality of life is impacted more by comorbidity than tic severity
- Behavioural therapies are first line for tics which cause functional impairment
- There are medications which can help decrease tic severity