Tourette’s Disorder
DSM-V Categorization:  
Neurodevelopmental Motor Disorder: Tic Disorders

- Characterized with an onset in the developmental period, usually early in development

- Symptoms of excess as well as deficits/milestone delays

- Deficits produce impairments including academic, personal, occupational, and social functioning

- Frequent co-occurrence with other disorders
DSM-V Tic Disorders

- Based on the presence of motor and or vocal tics
- Duration of symptoms
- Age at onset
- Absence of any other cause (substance use or medical condition)

Hierarchical rank:
- Tourette’s disorder
- Persistent motor or vocal tic disorder
- Provisional tic disorder
- Specified and unspecified tic disorder
DSM-V Tics

**Tic:** sudden, rapid, recurrent, nonrhythmic motor movement or vocalization (DSM-V)

**Motor Tic**
- Simple motor tics
- Complex motor tics

**Vocal Tic**
- Simple vocal tics
- Complex vocal tics
- **Coprolalia** - obscene inappropriate words or phrases
- **Echolalia** - repeating others’ words
- **Palilalia** - repeating own words

Video
Tics are sudden and usually brief/ rarely more than a second, however multiple tics can occur together in patterns

• **Simple Motor Tics**
  ✓ Eye blinking
  ✓ Nose wrinkling
  ✓ Neck jerking
  ✓ Shoulder shrugging
  ✓ Facial grimacing
  ✓ Tensing abnormally

• **Complex Motor Tics**
  ✓ Hand gestures
  ✓ Jumping
  ✓ Touching
  ✓ Pressing
  ✓ Stomping
  ✓ Facial contortions
  ✓ Smelling repeatedly
  ✓ Squatting
  ✓ Twirling
  ✓ Series of movements
Vocal Tics

• Simple vocal tics
  ✓ Throat clearing
  ✓ Sniffing
  ✓ Grunting
  ✓ Clicking sounds
  ✓ Barking

• Complex Vocal Tics
  ✓ Sudden phrases
  ✓ Single word expressions
  ✓ Changes in pitch
  ✓ Coprolalia (‘S’ or ‘F’ word)
DSM-V TS Development/ Course

- 4-6 average onset
- Severity around 10-12 then a decline in adolescence (small percentage worsen in adulthood)
- Across lifespan tic symptoms manifest/ wax and wane idea
- Muscle groups and vocalizations change over time
- With age comes a premonitory desire [somatic sensation] followed by a feeling of relief after expressing the tic
- Particular pattern of tics, desire to express “just right”
- Vulnerable to co-occurring conditions during “age of risk” and then followed by decline
Meeting DSM-V Diagnostic Criteria for TS

A. Both multiple motor and one or more vocal tics have been present at some time during the illness, although not necessarily concurrently.

B. The tics may wax and wane in frequency but have persisted for more than 1 year since first tic onset.

C. Onset is before age 18 years.

D. The disturbance is not attributable to the physiological effects of a substance or another medical condition.
DSM-V Prevalence/Cultural Influences

- Childhood onset is common, but tics are usually transient
- 3 to 8 per 1,000 school aged children
- Males > females (2:1 to 4:1), no gender differences in kinds of tics
- African Americans and Hispanic Americans < identified cases
- Race, ethnicity, and culture: no varying clinical characteristics, but instead may influence perception and management of disorder (choice of treatment)
Influence of Age

- Tics frequency/occurrence wax and wane but have an associated severity with age.
- Tics usually decline after adolescence (Bloch & Leckman, 2009).

![Graph showing the relationship between age and tic severity.](image)
Age is Critical

Fig. 2. Adulthood tic severity in 82 children with significant childhood tic symptoms. Adulthood tic severity class is defined by Yale Global Tic Severity Total Tic Score (YGTSS): no tics (YGTSS: 0), minimal tics (YGTSS: 1–9), mild tics (YGTSS: 10–19), moderate or greater tics (YGTSS: ≥20). By contrast, all individuals had moderate or greater severity tics in childhood. Less than 5% of individuals reported having worse adulthood tics than in childhood.
CHARACTERISTICS OF TICS

- Mild, moderate or severe- dependent on: frequency, forcefulness, complexity and daily life impairment
- Frequency does not equal impairment: eye blinking 20-30 per minute vs. loud barking several times an hour
- Most individuals experience oscillations in severity over weeks and months (waxing and waning)
- Involuntary but some report “semi-voluntary” based on suppression ability
- Premonitory urges followed by satisfaction after tic is completed
- Individuals may disguise tics as purposeful: arm jerk – comb hair
DSM-V Risk and Prognostic Factors

Temperamental:
- Tics are worsened by anxious, excited and exhausted emotions
- Tics are better when individual experiences calmness and is focused

Environmental:
- Observation of a gesture/sound may result in individual with tic disorder to imitate (can be perceived incorrectly/purposeful)
- Hinders interaction with authority figures

Genetic/Physiological:
- Expression and severity influenced
- Risk alleles and rare genetic variants have been identified
- Obstetrical complications/older paternal age/maternal smoking during pregnancy and lower birth weight associated with tic severity
DSM-V Functional Consequences

- Many individuals **do not experience impairment** with their tics and may even be unaware of their tics
- More severe cases usually result in daily living impairments (not definitive, some severe cases may function just fine)
- **Co-occurring conditions can lead to greater impairment**
- **Less often** tics lead to social isolation, interpersonal conflict, peer victimization, inability to work/attend school, poor quality of life
- **Rare complications include:** physical injury, orthopedic injury and neurological injury
COMORBIDITY

- In addition to tics, many experience co-occurring psychiatric and or neuropsychological difficulties
- Most frequent: ADHD (50%), related learning disorders, OCD (20-60%), anxiety disorders, affective disorders, sensory integration dysfunction and explosive aggressive behaviors
- Not necessarily etiological, many influences possible
Genetic/Physiological Mechanisms

<18 onset of motor/vocal tics

Age

Environment

Temperament

Comorbidity: ADHD/OCD

Tic severity

Secondary Features: Neurological, orthopedic, physical injury
Functional impairment
Problems with teachers, parents and law enforcement
Neurological Influences

• Suggested involvement of the frontal cortex connections to subcortical regions including basal ganglia through the frontal cortico-striatal-thalamo-cortico circuits (Mink, 2001; Singer, 2005; Albin and Mink, 2006)

• Suggested abnormality in brain systems that effect neural transmission from limbic to motor systems deficit in regions involved with motivation and action (Jeffries et al., 2002)

• Involvement with frontal cortex including response inhibition and selective attention (Bornstein et al., 1991; Johannes et al., 2001; Channon et al., 2003)