

European Society for the Study of Tourette Syndrome

ESSTS

TS-school Brussels | training course on Tourette Syndrome

Tuesday 6 June 2023

Royal Museum for Central Africa

Assessment of tics and differential diagnosis

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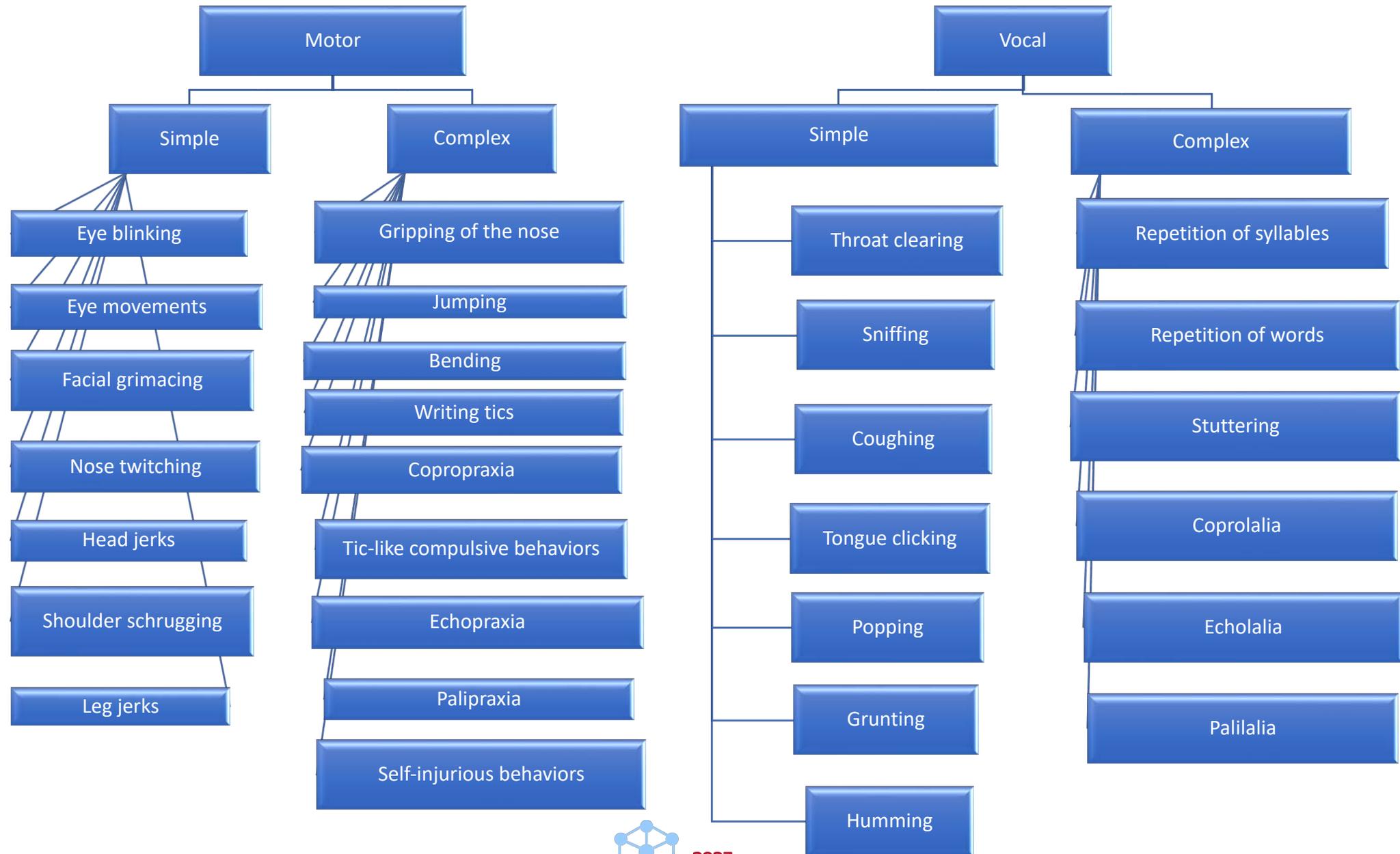
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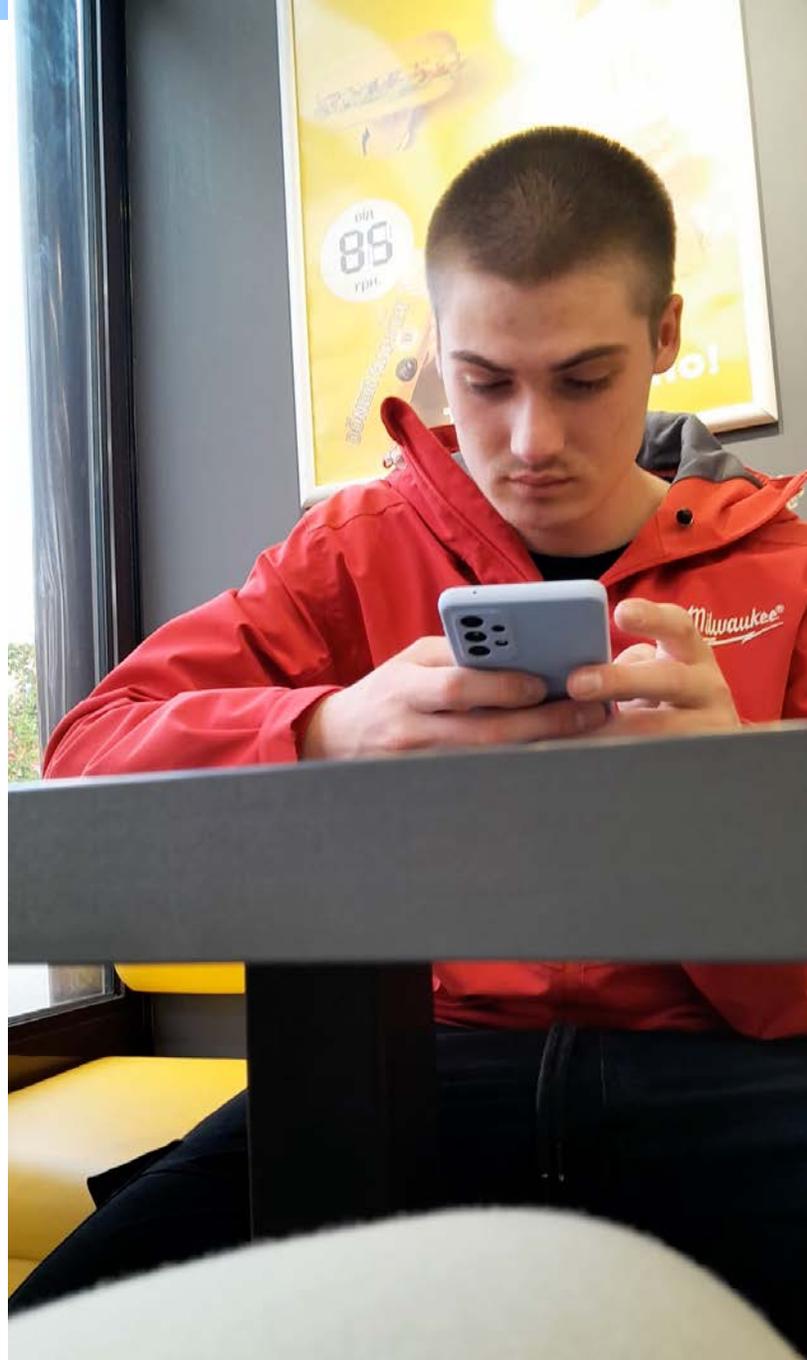


What are tics?



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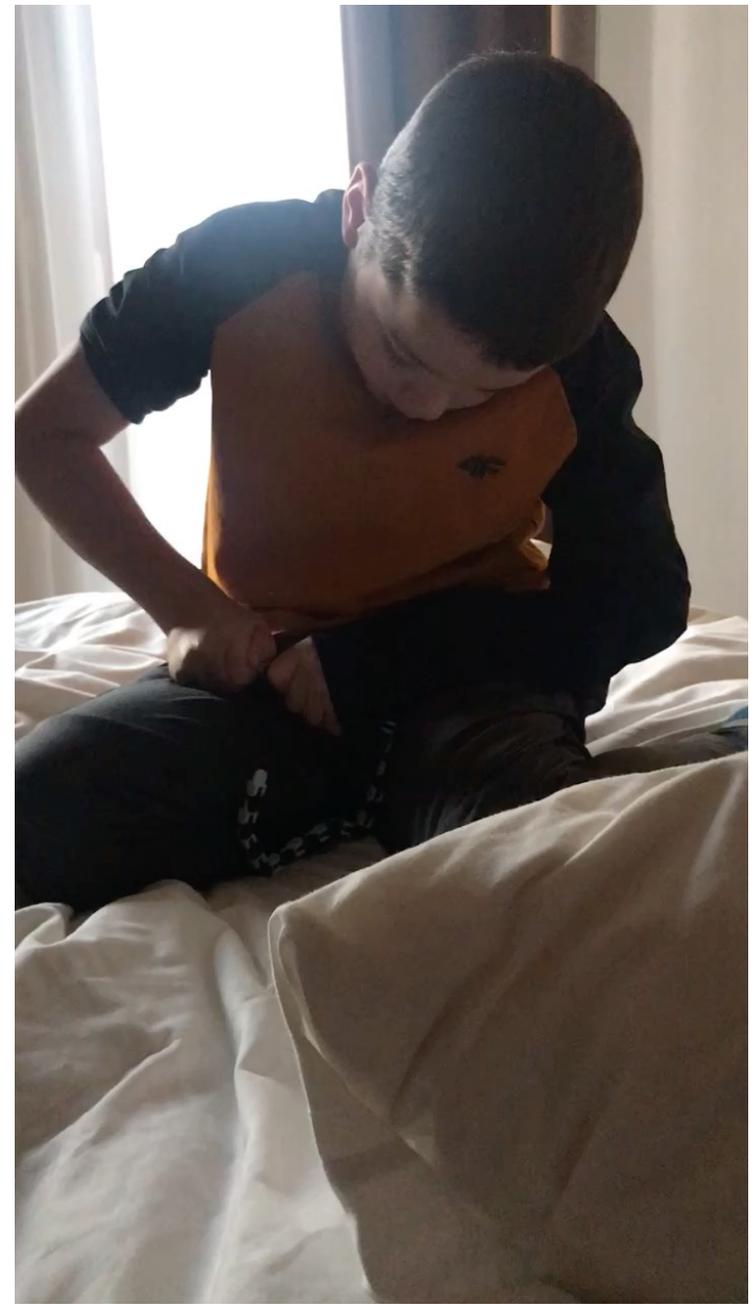








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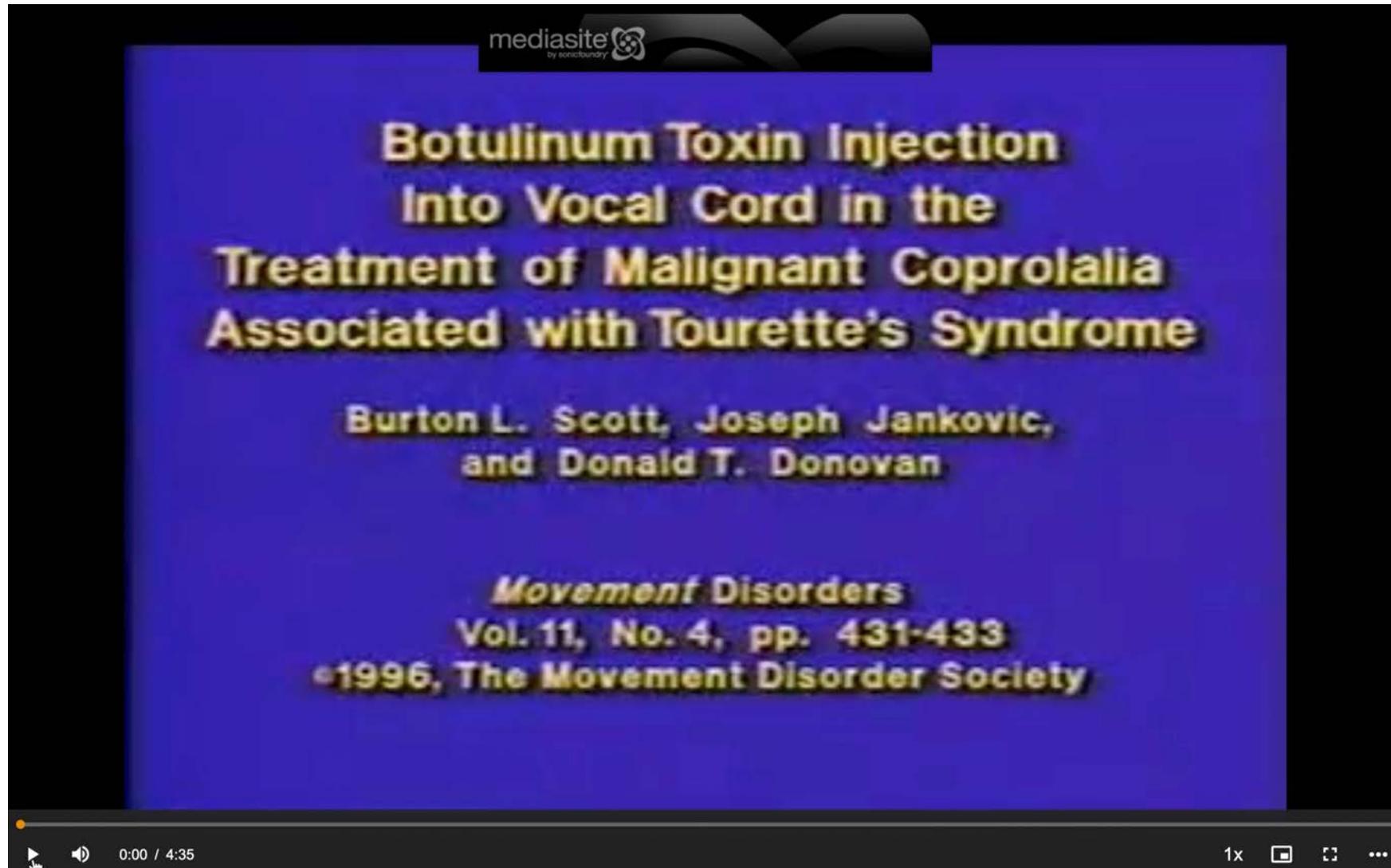


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Examples of complex motor tics



Examples of complex vocal tics



mediasite
by eonclouby

**Botulinum Toxin Injection
Into Vocal Cord in the
Treatment of Malignant Coprolalia
Associated with Tourette's Syndrome**

**Burton L. Scott, Joseph Jankovic,
and Donald T. Donovan**

Movement Disorders
Vol. 11, No. 4, pp. 431-433
©1996, The Movement Disorder Society

0:00 / 4:35 1x

ESSTS Combination of tics



Movement Disorders; 1:1, 1986. 17-26

Type of tic	Typical features
Motor	Arise in the voluntary musculature and involve discrete muscles or muscle groups
Vocal	Consist of any noise produced by movement of air through the nose, mouth or pharynx
Stimulus-bound	Occur in response to internal or external stimuli (visual, phonic, tactile or mental)
Blocking	Motor or vocal tics that interrupt the voluntary action without alteration of consciousness (dysfluency of speech or gait)
Simple	Are restricted to one muscle or a single muscle group (e.g. eye blinking, nose twitching, tongue protrusion), simple, meaningless sounds (e.g. grunting, throat clearing, coughing, sniffing and barking)
Complex	Involvement of more muscle groups (e.g. repetitive touching of objects or people, repetitive obscene movements (copropraxia), mimicking others (echopraxia) complex vocal tics are words or phrases, expressing obscenities (coprolalia), repeating others (echolalia) or repeating oneself (palilalia))
Clonic	Last less than 100 ms
Dystonic	Last more than 300 ms Repetitively abnormal posture of a kind that one may see in dystonia
Tonic	Last more than 300 ms Relatively long duration of the contraction (in e.g. back muscles) without exhibiting abnormal postures

Patient # 1

The Yale Global Tic Severity Scale - Revised

MOTOR TIC SYMPTOM CHECKLIST

*Check motor tics that were present over the **past week**. When multiple tics within the same category are present (e.g., other simple motor tics), please count them **separately** on Tic Number Dimension.*

• **Simple Motor Tics** (Rapid, Darting, "Meaningless"):

- Eye blinking
 - Eye movements
 - Nose movements
 - Mouth movements
 - Facial grimace
 - Head jerks/movements
 - Shoulder shrugs
 - Arm movements
 - Hand movements
 - Abdominal tensing
 - Leg, foot, or toe movements
 - Other simple motor tics (list and describe):
-
-

Complex motor tics

- **Complex Motor Tics** (Slower, "Purposeful"):

- o Eye movements
 - o Mouth movements
 - o Facial movements or expressions
 - o Head gestures or movements
 - o Shoulder movements
 - o Arm movements
 - o Hand movements
 - o Writing tics
 - o Dystonic postures
 - o Bending or gyrating
 - o Rotating
 - o Leg or foot or toe movements
 - o Blocking
 - o Tic related compulsive behaviors (touching, tapping, grooming, evening-up)
 - o Copropraxia
 - o Self-abusive behavior
 - o Paroxysms of tics (displays), duration ___ seconds
 - o Disinhibited behavior (describe):*
-
- o Other (list and describe):
-

PHONIC TIC SYMPTOM CHECKLIST

Check phonic tics that were present over the ***past week***. When multiple tics within the same category are present (e.g., other simple phonic tics), please count them ***separately*** on Tic Number Dimension

• **Simple Phonic Symptoms** (Fast, "Meaningless" Sounds):

- Coughing
 - Throat clearing
 - Sniffing
 - Snorting
 - Grunting
 - Gulping
 - Whistling
 - Humming
 - Mouth Noises (e.g., clicking, gargling, popping, kissing noises)
 - Burping
 - Hiccups
 - Atypical breathing tics (e.g., forceful exhalation, wheezing, gasping, panting)
 - Chirping or other bird noises (e.g., screeching): _____
 - Barking or other dog noises (e.g., growling): _____
 - Other animal noises (e.g., squealing)
 - Other simple phonic tics (list and describe):
-
-

- **Complex Phonic Symptoms** (Language: Words, Phrases, Statements):

- Syllables (e.g., "ahhh", "woo", "hmmm"):

- Words (e.g., "what", "dang", "Okay"):

- Phrases (e.g., "oh no", "here we go", "I know"):

- Coprolalia (e.g., obscene words):

- Echolalia (e.g., repeating others words or phrases)
- Palalalia (e.g., repeating self)
- Blocking (e.g., halted speech blocked speech, stuttering)
- Speech atypicalities (e.g., slow/fast speech rate, nasal speech, quivering voice, high or low pitch/tone/volume):

- Disinhibited speech (e.g., blurting out words, talking excessively):

- Other complex phonic tics (e.g., list and describe):

Neurology. 2018 May 8;90(19):e1711-e1719.doi: 10.1212/WNL.0000000000005474. Epub 2018 Apr 13.

NUMBER

	Motor	Phonic	
NONE. No tics present.	o	o	0
MINIMAL. Single tic present.	o	o	1
MILD. Multiple discrete tics (2-5).	o	o	2
MODERATE. Multiple discrete tics (>5).	o	o	3
MARKED. Multiple discrete tics plus as least one orchestrated pattern of multiple simultaneous or sequential tics, where it is difficult to distinguish discrete tics.	o	o	4
SEVERE. Multiple discrete tics plus several (>2) orchestrated paroxysms of multiple simultaneous or sequential tics, where it is difficult to distinguish discrete tics.	o	o	5

FREQUENCY

	Motor	Phonic	
NONE. No tics present.	o	o	0
MINIMAL. Specific tics are usually present on a daily basis, but there are long tic-free intervals during the day. Bouts of tics may occur on occasion, but are not sustained for more than a few minutes at a time.	o	o	1
MILD. Specific tics are present on a daily basis. Tic free intervals as long as 3 hours are not uncommon. Bouts of tics occur regularly, but generally limited to a single setting.	o	o	2
MODERATE. Specific tics are present virtually every waking hour of every day. Bouts of tics are common and may not be limited to a single setting.	o	o	3
MARKED. Specific tics are present every waking hour. Bouts of tics are common and may occur in multiple settings.	o	o	4
SEVERE. Specific tics are present virtually all the time. Tic free intervals are difficult to identify and do not last more than 5 to 10 minutes. Bouts of tics are very common and occur in multiple settings.	o	o	5

INTENSITY

	Motor	Phonic	
NONE. No tics present.	o	o	0
MINIMAL. Tics not visible or audible (based solely on patient's private experience), or tics are less forceful than comparable voluntary actions and are typically not noticed because of their intensity.	o	o	1
MILD. Tics are not more forceful than comparable voluntary actions or utterances, and are typically not noticed because of their intensity.	o	o	2
MODERATE. Tics are more forceful than comparable voluntary actions, but are not outside the range of normal expression for comparable voluntary actions or utterances. They may call attention to the individual because of their forceful character.	o	o	3
MARKED. Tics are more forceful than comparable voluntary actions or utterances and typically have an "exaggerated" character. Such tics frequently call attention to the individual because of their forceful and exaggerated character.	o	o	4
SEVERE. Tics are extremely forceful and exaggerated in expression. These tics call attention to the individual and may result in risk of physical injury (accidental, provoked, or self-inflicted) because of their forceful expression.	o	o	5

COMPLEXITY

	Motor	Phonic	
NONE. No tics present.	o	o	0
MINIMAL. If present, all tics are clearly "simple" (sudden, brief, purposeless) in character.	o	o	1
MILD. Some tics are not clearly "simple" in character.	o	o	2
MODERATE. Some tics are clearly "complex" (purposive in appearance) and mimic brief "automatic" behaviors, such as grooming, syllables, or brief meaningful utterances such as "ah huh" or "hi" that could be camouflaged.	o	o	3
MARKED. Some tics are more "complex" (more purposive and sustained in appearance) and may occur in orchestrated bouts that would be difficult to camouflage, but could be rationalized or "explained" as normal behavior or speech (tapping, saying "you bet", "honey", "FF", "sh", or brief echolalia).	o	o	4
SEVERE. Some tics are very "complex" in character and tend to occur in sustained orchestrated bouts that would be difficult to camouflage and could not be easily rationalized as normal behavior or speech because of their duration and/or their unusual, inappropriate, bizarre or obscene character (a lengthy facial contortion, touching genitals, echolalia, speech atypicalities, bouts of copropraxia, self-abusive behavior, coprolalia).	o	o	5

INTERFERENCE

	Motor	Phonic	
NONE. No tics present.	o	o	0
MINIMAL. When tics are present, they do not interrupt the flow of behavior or speech.	o	o	1
MILD. When tics are present, they occasionally interrupt the flow of behavior or speech.	o	o	2
MODERATE. When tics are present, they frequently interrupt the flow of behavior or speech, but do not disrupt intended behavior or speech.	o	o	3
MARKED. When tics are present, they frequently interrupt the flow of behavior or speech, and they occasionally disrupt intended action or communication.	o	o	4
SEVERE. When tics are present, they frequently disrupt intended action or communication.	o	o	5

IMPAIRMENT SCALE

NONE.	o	0
MINIMAL. Tics associated with subtle difficulties in self-esteem, family life, social acceptance, or school or job functioning (infrequent upset or concern about tics vis a vis the future, periodic, slight increase in family tensions because of tics, friends or acquaintances may occasionally notice or comment about tics in an upsetting way).	o	10
MILD. Tics associated with minor difficulties in self-esteem, family life, social acceptance, or school or job functioning.	o	20
MODERATE. Tics associated with some clear problems in self-esteem family life, social acceptance, or school or job functioning (episodes of dysphoria, periodic distress and upheaval in the family, frequent teasing by peers or episodic social avoidance, periodic interference in school or job performance because of tics).	o	30
MARKED. Tics associated with major difficulties in self-esteem, family life, social acceptance, or school or job functioning.	o	40
SEVERE. Tics associated with extreme difficulties in self-esteem, family life, social acceptance, or school or job functioning (severe depression with suicidal ideation, disruption of the family (separation/ divorce, residential placement), disruption of social ties - severely restricted life because of social stigma and social avoidance, removal from school or loss of job).	o	50

Neurology. 2018 May 8;90(19):e1711-e1719.doi: 10.1212/WNL.0000000000005474. Epub 2018 Apr 13.

There are also other scales...

Review | [Open Access](#) | [Published: 18 October 2021](#)

European clinical guidelines for Tourette syndrome and other tic disorders—version 2.0. Part I: assessment

[Natalia Szejko](#), [Sally Robinson](#), [Andreas Hartmann](#), [Christos Ganos](#), [Nanette M. Debes](#), [Liselotte Skov](#), [Martina Haas](#), [Renata Rizzo](#), [Jeremy Stern](#), [Alexander Münchau](#), [Virginie Czernecki](#), [Andrea Dietrich](#), [Tara L. Murphy](#), [Davide Martino](#), [Zsanett Tarnok](#), [Tammy Hedderly](#), [Kirsten R. Müller-Vahl](#) & [Danielle C. Cath](#) 

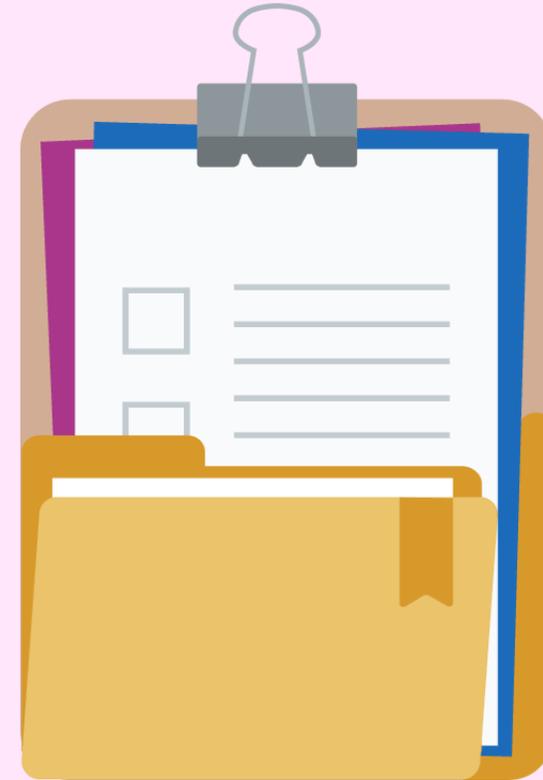
[European Child & Adolescent Psychiatry](#) **31**, 383–402 (2022) | [Cite this article](#)

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Labels	Parent category	Criteria of TS	Criteria of chronic/persistent vocal and/or motor tic disorder	Criteria of chronic tic disorder	Criteria of provisional/transient tic disorder
DSM-IV-TR	Tourette's disorder; chronic motor or vocal tic disorder; transient tic disorder; tic disorder not otherwise specified	Disorders of infancy, childhood, and adolescence	Multiple motor and one or more vocal tics at some point in illness Tics occur daily or periodically, but 1 year since onset, and no tic-free period of more than 3 consecutive months Onset before 18 years Not caused by substance or other condition	One or more motor or vocal tics present at some point, not both motor and vocal symptoms Tics occur daily or periodically, but 1 year since onset, and no tic-free period of more than 3 consecutive months Onset before 18 years Not caused by substance or other condition No history of TS	One or more motor and vocal tics Tics occur daily or periodically, but for 4 weeks and 12 months Onset before 18 years Not caused by substance or other condition No history of TS Specify if single episode or recurrent
ICD-10	Combined vocal and multiple motor tic disorder (de la Tourette); chronic motor or vocal tic disorder; transient tic disorder; other tic disorders; tic disorder, unspecified	Behavioural and emotional disorders with onset usually occurring in childhood and adolescence	Multiple motor and one or more vocal tics, not necessarily occurring at the same time	One or more motor or vocal tics, but not both types Symptoms occur 12 months	One or more motor and/or vocal tics Symptoms occur 12 months
DSM-5	Tourette's disorder; persistent (chronic) motor or vocal tic disorder provisional tic disorder; other specified tic disorder; unspecified tic disorder	Neurodevelopmental disorders	Multiple motor and one or more vocal tics at some point in illness May wax and wane, but have persisted 1 year since onset Onset before 18 years Not caused by substance or other condition	One or more motor or vocal tics present at some point, not both motor and vocal symptoms May wax and wane, but have persisted 1 year since onset Onset before 18 years Not caused by substance or other condition No history of TS Specify if motor tics only, vocal tics only	One or more motor and/or vocal tics Tics present for less than 1 year since onset Onset before 18 years Not caused by substance or other condition No history of TS or persistent tic disorder
ICD-11	Tourette syndrome (combined vocal and motor tic disorder); persistent (chronic) motor or phonic tics; provisional tic disorder; substance-induced tic disorder; tic disorder due to general medical condition	Disorders of nervous system—primary; mental and behavioural disorders—secondary; obsessive-compulsive and related disorders; neurodevelopmental disorders	One or more motor and/or vocal tics occurring over the same period of time Symptoms occur 12 months	One or more motor and one or more vocal tics Symptoms occur 12 months	One or more motor or vocal tics, but not both types Symptoms occur 2 weeks and 12 months

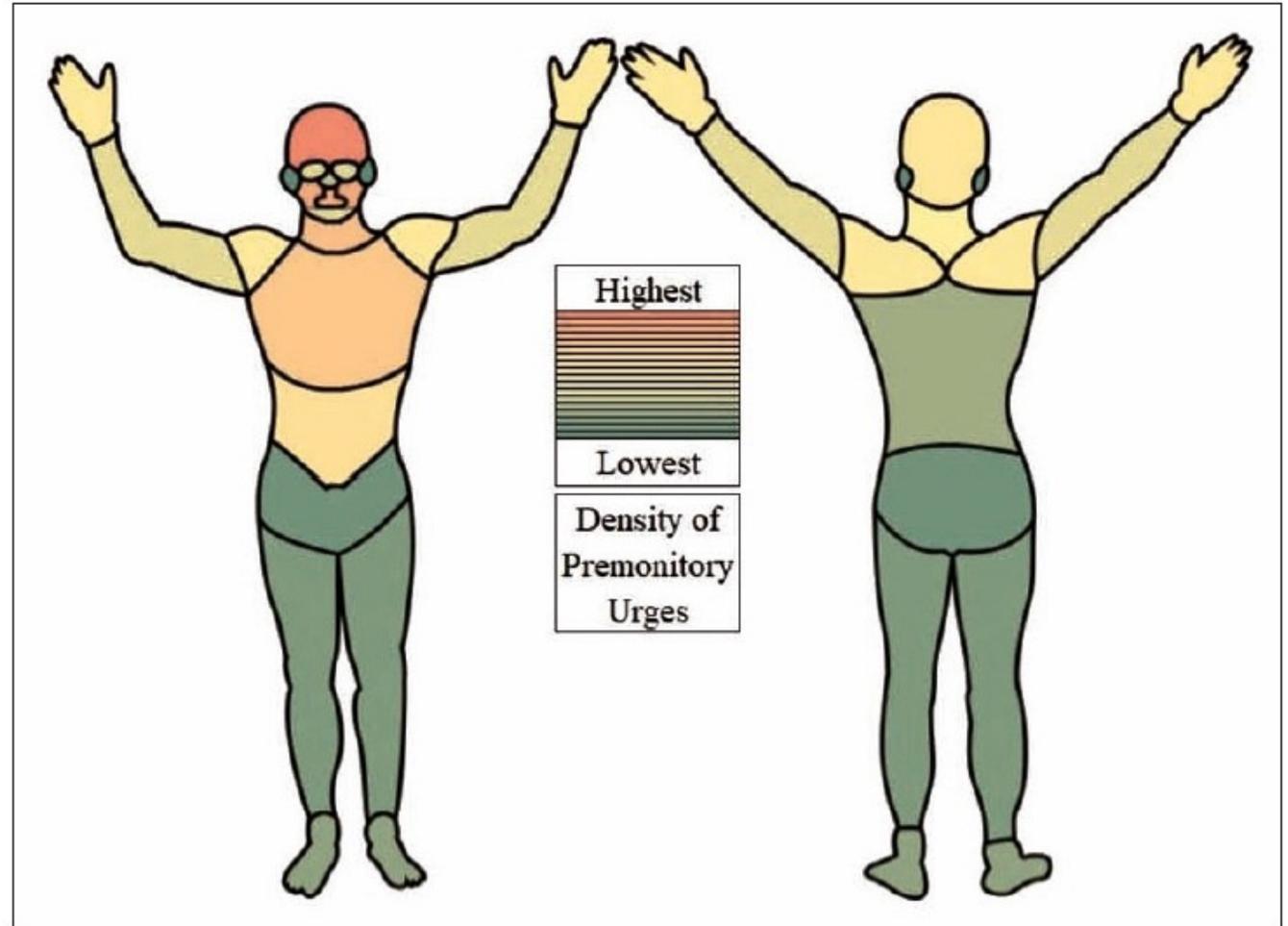
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Clinical history



Typical features for tics

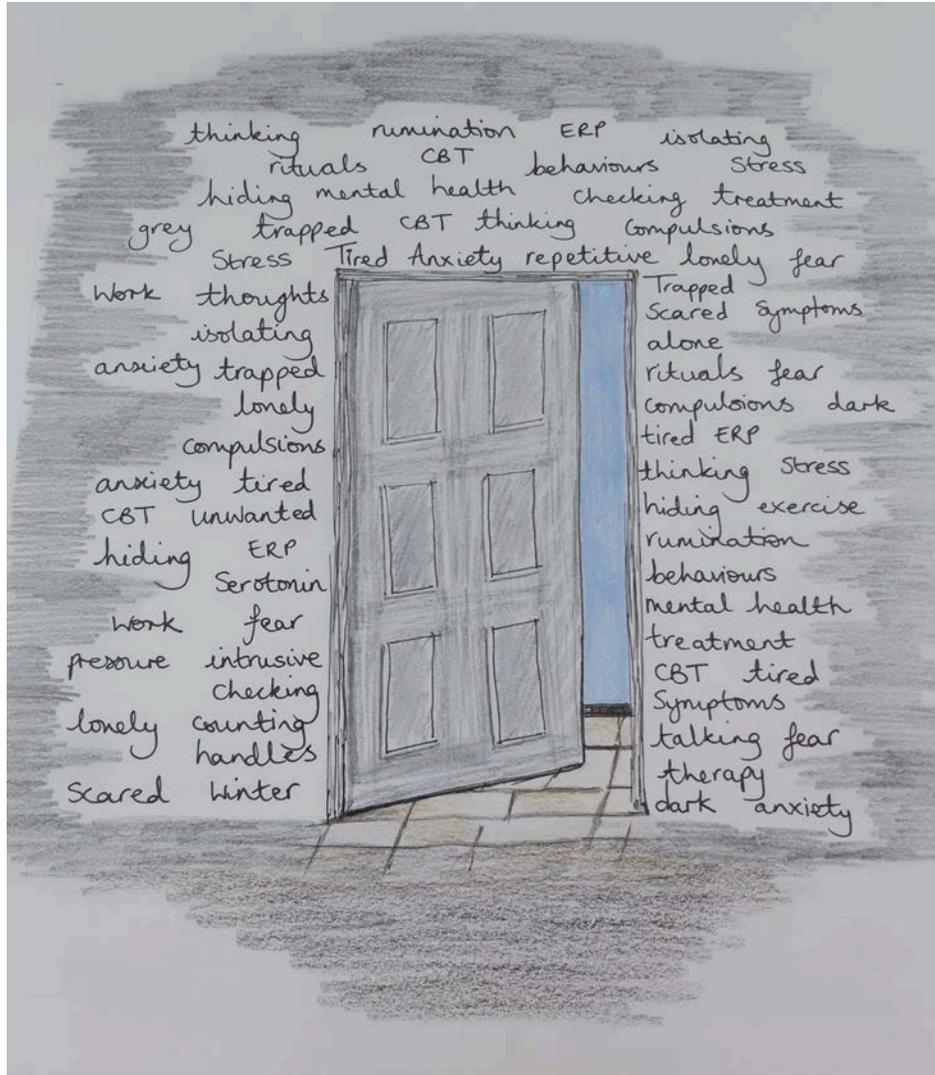
- Premonitory urge
- Distractability
- Suggestibility
- Suppresibility
- Influenced by factors
- Rostrocaudal distribution
- Waxing and waning course
- Onset (age, type)
- Family history
- Profile of comorbidities



Differential diagnosis

- OCD
- Other movement disorders
 - Functional tic-like behaviors
 - Stereotypies
 - Other: myoclonus, chorea, hemifacial spasm and others
- Somatic conditions (ophthalmological, laryngological)
- PANS/PANDAS
- Hyperactivity in ADHD
- Focal epileptic seizures
- Manierisms

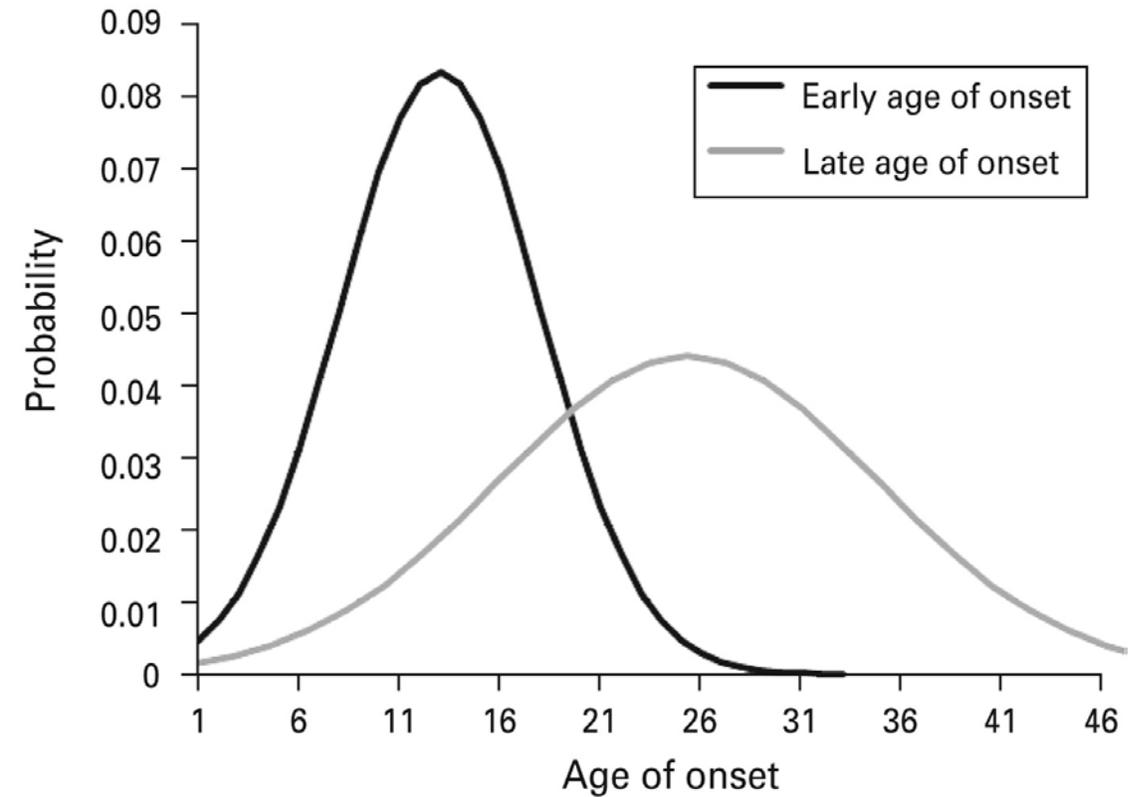
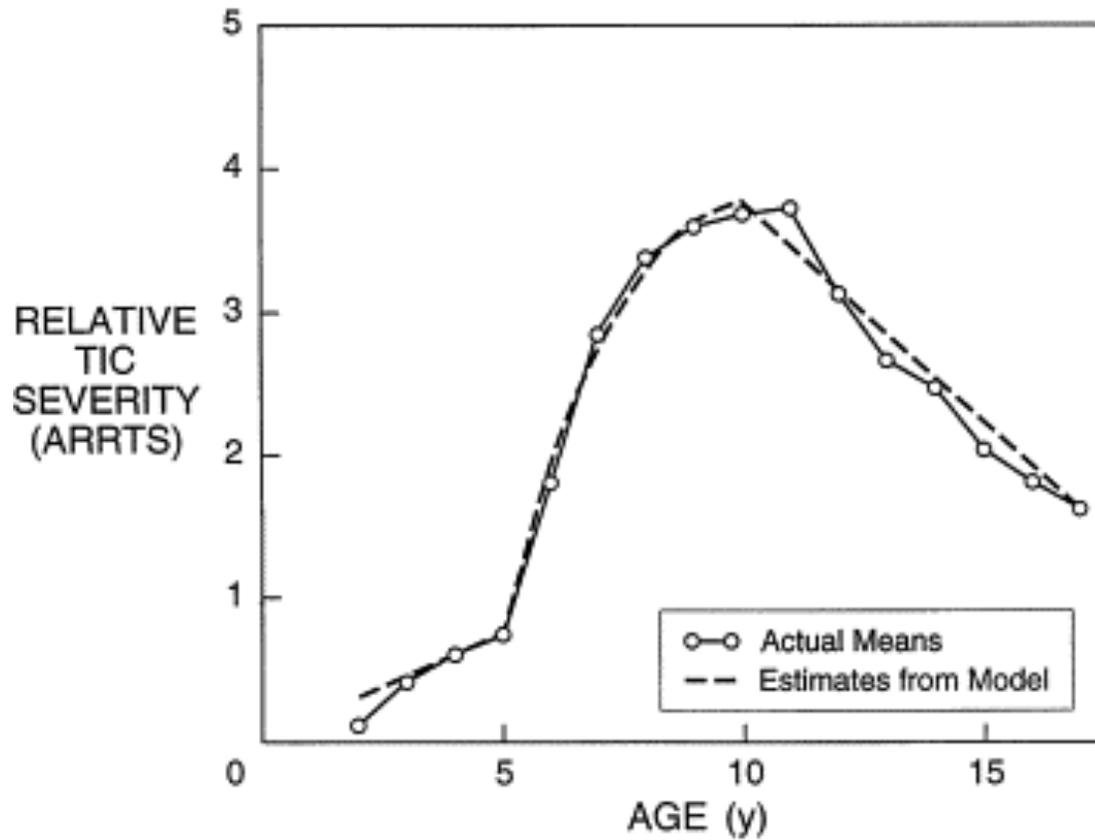
OCS/OCD



Tics	OCD
Sudden, short	Ritualized
Fragmented movements	Goal-directed behavior
Premonitory urges	Obsessions
Less related to anxiety	Mostly related to anxiety
Ego-syntonic	Ego-dystonic
Onset in primary school	Onset after primary school
Waxing and waning	More stable over time

Lewin et al. Psychiatry Res. 2010 Jul 30; 178(2): 317-322.

Onset of tics vs OCD



Functional tic-like behaviors



Review > [Eur J Neurol.](#) 2023 Apr;30(4):902-910. doi: 10.1111/ene.15672. Epub 2023 Jan 13.

European Society for the Study of Tourette Syndrome 2022 criteria for clinical diagnosis of functional tic- like behaviours: International consensus from experts in tic disorders

Tamara Pringsheim ¹, Christos Ganos ², Christelle Nilles ¹, Andrea E Cavanna ^{3 4 5},
Donald L Gilbert ^{6 7}, Erica Greenberg ⁸, Andreas Hartmann ⁹, Tammy Hedderly ¹⁰,
Isobel Heyman ¹¹, Holan Liang ¹¹, Irene Malaty ¹², Osman Malik ¹³, Nanette Mol Debes ^{14 15},
Kirsten Muller Vahl ¹⁶, Alexander Munchau ¹⁷, Tara Murphy ¹¹, Peter Nagy ¹⁸, Tamsin Owen ¹⁰,
Renata Rizzo ¹⁹, Liselotte Skov ²⁰, Jeremy Stern ²¹, Natalia Szejko ²², Yulia Worbe ²³,
Davide Martino ¹

Affiliations + expand

PMID: 36587367 DOI: [10.1111/ene.15672](#)

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Stereotypes



Somatic conditions

- ▮ Ophthalmological (conjunctivitis or dry eye syndrome)
- ▮ Otolaryngological (allergy)
- ▮ Gastroesophageal reflux
- ▮ Stuttering



PANS/PANDAS



TABLE 1. DIAGNOSTIC CRITERIA FOR PANS AND PANDAS^a

PANS is defined by:	PANDAS is defined by:
<p data-bbox="140 411 820 628">Abrupt, dramatic onset of OCD or severely restricted food intake; symptoms are not better explained by a known neurologic or medical disorder; and the addition of at least two of the "accompanying" symptoms:</p> <ul data-bbox="140 635 820 1085" style="list-style-type: none">• anxiety• emotional lability and/or depression• irritability, aggression and or/severely oppositional behaviors• behavioral (developmental) regression• deterioration in school performance• sensory or motor abnormalities• somatic signs including sleep disturbances, enuresis or urinary frequency <p data-bbox="140 1106 820 1278">The onset of PANS may start with infectious agents other than streptococcus. It also includes onset from environmental triggers or immune dysfunction.</p>	<p data-bbox="820 411 1500 449">Clinical diagnosis of PANDAS includes:</p> <ul data-bbox="820 456 1500 813" style="list-style-type: none">• presence of significant obsessions, compulsions and/or tics• abrupt onset of symptoms or a relapsing-remitting course of symptom severity• prepubertal onset• association with other neuropsychiatric symptoms (includes any of the PANS "accompanying" symptoms)

Neuropsychiatr Dis Treat
. 2023 May 24;19:1221-1250.
doi: 10.2147/NDT.S362202. eCollection 2023.

Multicenter Study > [Neurology](#). 2021 Mar 23;96(12):e1680-e1693.

doi: [10.1212/WNL.00000000000011610](https://doi.org/10.1212/WNL.00000000000011610). Epub 2021 Feb 10.

Association of Group A *Streptococcus* Exposure and Exacerbations of Chronic Tic Disorders: A Multinational Prospective Cohort Study

Daive Martino ¹, Anette Schrag ², Zacharias Anastasiou ², Alan Apter ²,
Noa Benaroya-Milstein ², Maura Buttiglione ², Francesco Cardona ², Roberta Creti ²,
Androulla Efstratiou ², Tammy Hedderly ², Isobel Heyman ², Chaim Huyser ²,
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Our approach to the patient with tic disorders

- ▮ What was the primary reason for referral?
(tics, comorbidities?)
- ▮ History of pregnancy and birth (in children)
- ▮ Developmental milestones (in children)
- ▮ Past medical history
- ▮ Overview of the medication
- ▮ Family history
- ▮ Social history



History of tics

- ||| When was the onset?
- ||| What was the first/were the first tics?
- ||| What tics were present later?
- ||| What was the course of the disease?
- ||| What are the current tics? (YGTSS)
- ||| Other typical features for tics (PU, suppressibility, distractability, suggestibility)
- ||| Factors influencing tics
- ||| Medication for tics, behavioral therapy

- History of comorbidities (especially ADHD, OCD, depression, anxiety, rage attacks, sleeping problems, some scales are useful!)
- Physical examination
 - Height
 - Weight
 - Waist circumference
 - BP and HR in supine and standing position
 - Neurological examination
- Summary: what is the diagnosis, what is the predominant problem?
- Psychoeducation
- Therapy

Thank you for your attention!

