

Directions: Listen to the following lecture on Tourette syndrome. Take notes as you listen. Then, use your notes to answer the questions.

## Tourette Syndrome

1           Tourette syndrome (TS) is a neurological disorder characterized by sudden  
2 motor and vocal outbursts and behavioral disorders such as obsessions, compulsions  
3 and hyperactivity. TS affects about one in every 2,500 people. This condition occurs  
4 three times more in males than in females. The disorder has been a largely  
5 misunderstood condition; it has been incorrectly diagnosed as epilepsy, schizophrenia,  
6 and other mental disorders. It was formerly thought to be the result of emotional  
7 problems caused by inattentive parents who did not raise their children properly. The  
8 condition was first identified as a physiological disorder in 1885 by the French  
9 neurologist Gilles de la Tourette. Although the causes of TS are still not fully  
10 understood, by examining the associated symptoms, researchers have made  
11 substantial progress in understanding and treating the condition.

12           After conducting a great deal of research, scientists have been able to classify  
13 TS as a genetic disorder. About 90 percent of children with TS have a family history  
14 of it or related disorders, such as other conditions involving tics or spasms. Some  
15 people are genetic carriers of TS without actually having symptoms themselves; these  
16 are almost always females. About 99 percent of males who carry the genetic tendency  
17 toward the disorder develop symptoms. The biological basis for TS is an imbalance in  
18 the brain's neurotransmitters, which are chemicals that transport messages between  
19 nerve cells. The main neurotransmitter affected in people with TS is dopamine, which  
20 controls movement. Research has shown that two other neurotransmitters,  
21 norepinephrine and serotonin, also play a role in the condition. Additionally,  
22 abnormalities in the size and functioning of certain parts of the brain have been  
23 noticed in those afflicted with TS.

24           Symptoms of TS usually appear before the age of eighteen. Children with TS  
25 develop their first uncontrollable outbursts at the age of six or seven, but show other  
26 signs of the disorder, including sleep problems and language difficulties, in early  
27 childhood, often by the age of two or three. TS usually starts with a single repeated  
28 movement, often in the head area, which is most frequently accompanied by repeated  
29 blinking. As the disorder progresses, the spasms gradually move downward to include  
30 the torso and lower extremities. Vocal outbursts usually begin at about the age of  
31 nine; these are almost always uncontrollable. The spasms are suppressed under certain  
32 conditions, usually during sleep and when an individual is engaged in an activity that  
33 requires intense concentration. In some cases, children with TS can even manage to  
34 keep their behavior under control voluntarily in situations where they fear  
35 embarrassment, although this takes an immense effort; afterwards, however, the  
36 suppressed reactions emerge with even greater force than usual. The symptoms of TS  
37 increase through childhood and peak during adolescence, after which their intensity  
38 usually decreases. An estimated 20 to 30 percent of all children with TS outgrow the  
39 condition entirely by adulthood.

40           Although there is no medical cure for TS, medications can relieve many of its  
41 symptoms. Currently, the medications of choice for the suppression of tics are  
42 antihypertensives, notably Catapres, which reduces spasms by 60 percent in most  
43 patients and only has minor side effects. Related drugs that have proven effective in  
44 tic suppression are Tenex, another antihypertensive, and Klonopin, an antianxiety  
45 medication. In addition to drugs used for the suppression of tics, additional

46 medications are used to treat other behavioral symptoms associated with TS.  
47 Antidepressants, such as Prozac and Anafranil, are effective in treating obsessive-  
48 compulsive symptoms. Attention-deficit hyperactivity disorder, or ADHD, is  
49 commonly treated with Ritalin or other stimulants. Combining these different types of  
50 medications can be a difficult balancing act, and their effects need to be carefully  
51 monitored by both a parent and a physician. Although medications are considered the  
52 first line of treatment for TS, relaxation techniques, including self-hypnosis, can also  
53 be very helpful in reducing symptoms of the disorder, which worsen with tension.  
54 Additionally, physical activity is an excellent way for children with TS to reduce  
55 tension and work off their extra energy.

56           People with TS suffer greatly in society as their physical and vocal actions are  
57 often uncontrollable. As explained, due to an imbalance of neurotransmitters in the  
58 brain, TS sufferers exhibit symptoms such as repeated physical movements and  
59 sudden vocal outbursts. No cure has been found for TS yet, but doctors have several  
60 types of medication that can help relieve its symptoms.

### Comprehension Questions

1. What is Tourette syndrome?
2. Tourette syndrome occurs most frequently in males.
3. When did Gilles de la Tourette first identify the disorder?
4. What type of disorder did he classify it as?
5. People who are carriers of Tourette syndrome always have symptoms.
6. Who is more likely to display symptoms?
7. Only about one percent of male carriers do not have symptoms.
8. Which of the following is the neurotransmitter controlling movement?
9. Which of the following does not play a role in Tourette syndrome?
10. When do children with Tourette syndrome often develop their first uncontrollable outbursts?
11. When do vocal outbursts usually begin?
12. Which of the following is not a symptom of Tourette syndrome?
13. Children with Tourette syndrome can never control their behavior voluntarily.
14. Which of the following is not a situation during which spasms may be suppressed?
15. Medications can cure Tourette syndrome.
16. Which of the following medications does not suppress tics?
17. Ritalin treats ADHD.
18. Medication is not the only line of treatment for Tourette syndrome.

### Questions & Answers

1. What is Tourette syndrome?
  - a) a neurological disorder
  - b) a physiological disorder
  - c) a psychological disorder
  - d) a mental disorder
2. Tourette syndrome occurs most frequently in males.
  - a) true
  - b) false
3. When did Gilles de la Tourette first identify the disorder?
  - a) 1895
  - b) 1995
  - c) 1885
  - d) 1985
4. What type of disorder did he classify it as?
  - a) neurological
  - b) physiological
  - c) psychological
  - d) mental
5. People who are carriers of Tourette syndrome always have symptoms.
  - a) true

- b) false
6. **Who is more likely to display symptoms?**  
a) a male carrier of TS  
b) a female carrier of TS  
c) both a and b  
d) neither a nor b
7. **Only about one percent of male carriers do not have symptoms.**  
a) true  
b) false
8. **Which of the following is the neurotransmitter controlling movement?**  
a) Norepinephrine  
b) serotonin  
c) dopamine  
d) all of the above
9. **Which of the following does not play a role in Tourette syndrome?**  
a) dopamine  
b) norepinephrine and serotonin  
c) abnormalities in the size of parts of the brain  
d) abnormalities in the shape of parts of the brain
10. **When do children with Tourette syndrome often develop their first uncontrollable outbursts?**  
a) by age 18  
b) before age 18  
c) at age 6 or 7  
d) by age 2 or 3
11. **When do vocal outbursts usually begin?**  
a) at age 6 or 7  
b) at age 9  
c) in early childhood  
d) in adulthood
12. **Which of the following is not a symptom of Tourette syndrome?**  
a) voluntary spasms  
b) sleep difficulties  
c) repeated head movements  
d) language problems
13. **Children with Tourette syndrome can never control their behavior voluntarily.**  
a) true  
b) false
14. **Which of the following is not a situation during which spasms may be suppressed?**  
a) during sleep

- b) in a situation that may cause embarrassment
  - c) during an activity requiring intense concentration
  - d) during an easy activity
15. **Medications can cure Tourette syndrome.**
- a) true
  - b) false
16. **Which of the following medications does not suppress tics?**
- a) Catapres
  - b) Tenex
  - c) Klonopin
  - d) Anafranil
17. **Ritalin treats ADHD.**
- a) true
  - b) false
18. **Medication is not the only line of treatment for Tourette syndrome.**
- a) true
  - b) false