



Carol Mathews, M.D., is Associate Professor of the Program for Genetics and Epidemiology of Neuropsychiatric Symptoms, Department of Psychiatry at the University of California, San Francisco and is a member of the TSA Medical Advisory Board.

that these differences in severity may be associated with a variety of environmental factors. For example, in one study, the identical twins who had more severe symptoms also had lower birth weights than their co-twins with milder symptoms.

In other words, twin studies suggest that although TS is an inherited condition, there is a great deal of variability in the expression of TS, and this variability is likely due, at least in part, to environmental factors. As far as we know, the prognosis of TS, that is, the way the disorder develops, progresses, or improves over time, is no different in twins than in other people.

I understand that there have been some strides in genetic research over the past few years. Are any of those discoveries in the field of genetic research helpful for family members in managing TS? Also, are there other research advances that families with TS can look forward to in the future?

This is an exciting time for those of us who are studying the genetics of TS and related disorders. There have been many technological and scientific advances in the field, including a more detailed understanding of human genes and the ability to analyze huge amounts of genetic data efficiently and quickly. All of these breakthroughs have aided us greatly in our search for TS susceptibility genes. Although no definite susceptibility gene for TS or tics has yet been identified that is present in sufficiently large numbers of affected individuals.

With the help of TSA, the search is well underway.

Other advances have been seen in the area of brain imaging. This technology has opened up a whole new way of looking at what exactly is going on in the brains of individuals and allowed us to compare that information to find out what specifically is different about brain function in those with TS. Similarly, our understanding of the way TS symptoms manifest themselves in individuals and families has expanded greatly in recent years. Clinical researchers are now beginning to look for patterns of tic or other related symptoms that co-occur. Determining these relationships may lead to furthering our understanding of how TS develops in a given individual or family. When considered together, I fully expect that in the next few years these advances will lead us to the identification of one or more susceptibility genes for TS, as well as for related conditions and symptoms, such as obsessive-compulsive disorder (OCD), chronic motor tics, transient tics, and their relationships to each other.

My father had a very severe case of TS. Recently my 6-year-old son has been having some tics. If my son is diagnosed with TS, will his symptoms be as severe as those my father experienced? I also wonder about having another child and whether that child will have TS as well?

Unfortunately, at the present time, we don't know much

about the factors that influence the severity of TS. However, although there is admittedly little published in this area, currently there isn't any evidence that suggests a direct relationship between TS severity in one family member and tic severity in another. In other words, tic severity is not predictable from family member to family member. That said, it should be noted that when another family member with TS also has these disorders there is increased risk of having conditions that often co-occur with TS, such as OCD or ADHD. We do know that the more distantly-related the family member, the lower the risk. Also, we know a bit more about the risk to a child of having TS when a first degree relative (e.g. a parent) has TS. In these cases, about 30% of children with a parent with TS will have a tic disorder.

According to one study that examined children with a parent with TS compared to children with parents without TS, 10% of those children who had a parent with TS did have TS. Additionally, 3% had chronic tics and 18% had transient or other types of tics. In most of these cases, the tics seen in children of parents with TS were so mild that the parents themselves hadn't noticed them. In addition, the risks of having TS are even lower for someone who has a grandparent with TS as opposed to a parent. In these cases, the risk is still probably higher than the risk to the general population by about 1%. ●

I am the father of identical twin boys with Tourette Syndrome. I met a man in his sixties who doesn't have TS, but his identical twin brother does. What do you know about the prognosis of TS in cases where there are twins?

Most of what we know about TS in twins comes from a few, relatively small studies of TS and tic disorders carried out with siblings. These studies indicate that about 50–70% of identical twin pairs (with the same genetic endowment) will both have TS. In the other 30–50% of identical twin pairs, only one of the twins will express the disorder. Concordance rates (meaning cases where both twins have the same syndrome or symptom) are higher for tic disorders in general. In 70–95% of identical twin pairs where one twin has some type of tic disorder (including TS), the other twin will also have a tic disorder. Also, we've learned that in families where both twins have TS or another chronic tic disorder, one twin's symptoms may be more severe than the other. It is thought

Double Your Gift Without Adding an Extra Cent

More and more companies are meeting their philanthropic obligations by matching the gifts their employees make to charities. Matching funds can double — or even triple — the total of your donation to TSA. Check with your employer's Human Resources or Payroll Department and fill out the matching gift form. It's a great way to support TSA without spending an extra cent.