



The Great Plains Laboratory, LLC

**STREPTOCOCCUS  
ANTIBODIES PROFILE**

## Streptococcus Antibodies Profile

### What are PANDAS?

Group A Beta hemolytic streptococci (GABHS) infections can cause several immune-mediated diseases. Rheumatic fever (RF), primarily a childhood disease, is a classic example of a complication resulting from a GABHS infection. RF is an inflammatory disease of the heart, joints, and central nervous system that occurs two to three weeks after a GABHS infection. Antibodies that formed against the GABHS organisms cross-react with normal human tissues, causing heart valve damage, inflamed joints, and neurological disorders. Sydenham's Chorea, characterized by uncontrolled movements of the face, hands, and feet, is a common neurological disorder seen in rheumatic fever caused by the cross reactivity of antibodies with brain tissue. These movements are strikingly similar to motor tics, and many patients also display phonic tics, obsessive-compulsive disorder (OCD) symptoms, and attention-deficit/hyperactivity disorder (AD(H)D). This observation, along with reports of sudden-onset tics and psychiatric disorders following an outbreak of GABHS in Rhode Island in the early 1990's, lead to a new diagnostic subcategory of Tourette's Syndrome called pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections, or PANDAS. PANDAS display episodic symptoms of Tourette's Syndrome following streptococcal infections. There is often a recovery period as the GABHS antibodies reduce to normal. Helping the brain recover with nutrients may reduce vulnerability to further damage by the streptococcus antibodies.

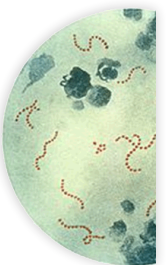
### Antibody Reactivity

During a streptococcal infection, the immune system elicits the production of antibodies. These antibodies attach to the streptococcus cell wall, identifying the organism as foreign. This organism is then destroyed. Antibodies attach to the cell wall by recognizing a certain molecule that is on the surface of the streptococcus organism. In some cases, these antibodies also react with molecules found on neuronal cells of the basal ganglia. When antibodies target normal human tissue cells for destruction, they are called autoantibodies. PANDAS are thought to be caused by autoantibodies targeting the basal ganglia, an area of the brain associated with movement and behavior.

### Tourette's Syndrome: A Cross Sectional Study to Examine the PANDAS Hypothesis

*AJ Church, R C Dale, AJ Lees, G Giovannoni, M M Robertson*

A study of 100 patients with Tourette's Syndrome was conducted to investigate the hypothesis that Tourette's Syndrome may be associated with group A Beta hemolytic streptococcal infection and Anti-basal ganglia antibodies (ABGA). A recent streptococcal infection was defined using an antistreptolysin O titer (ASOT), and ABGA's were detected using western immunoblotting and indirect immunofluorescence. The results showed ASOT was elevated in 64% of children with Tourette's Syndrome compared with 15% of the controls. Additionally, 20% of children and 27% of adults with Tourette's Syndrome had ABGAs compared with only 2-4% of the controls. These results suggest a casuistic association of group A Beta hemolytic streptococcal infection with Tourette's Syndrome.



## Clinical Symptoms & Diagnosis of PANDAS

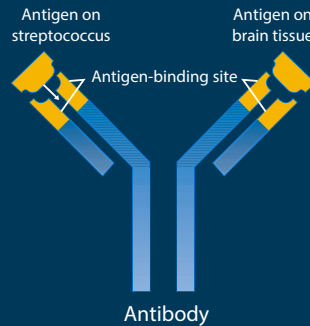
1. Presence of obsessive-compulsive disorder and/or tic disorder
2. Pediatric onset of symptoms
3. Fluctuating symptom severity
4. Association with group A Beta hemolytic streptococcal infections
5. Association with neurological abnormalities (i.e. Involuntary movements and/or hyperactivity)

## General Description of Streptococcus Antibodies Profile

This profile screens for the two most common antibodies against streptococcus, DNase antibodies in serum (ADB) and antistreptolysin O titer (ASO). These antibodies may cross-react with brain tissue causing abnormal behaviors. Both of these tests are performed to identify a previous infection of group A Beta hemolytic Streptococcus.

### Cross Reactivity

When an antibody reacts with more than one antigen, it is termed "cross-reactive." In PANDAS, the antibody developed to recognize and destroy a streptococcus antigen may cross-react with an antigen found on brain tissue.



### Recommended for Patients With

- AD(H)D
- Alzheimer's Disease
- Anxiety or Excessive Stress
- Asthma with Repetitive Cough
- Autism Spectrum Disorder
- Depression
- Frequent Bed Wetting
- Joint Pains
- Kidney Disease
- Migraines & Spasms
- Mood Swings
- Movement Disorders
- Obsessive-Compulsive Disorder
- Parkinson's Disease
- Rheumatic Fever
- Scarlet Fever
- Sleep Disorders
- Sydenham's Chorea
- Tic Disorder / Tourette's Syndrome

## Sample Report

Streptococcal Antibodies Panel				
Test	Patient Value / Units		Reference Range / Units	
Anti-Streptococcal Dnase B	<	75 U/mL	<	200.00 U/mL
Anti-Streptolysin O		30 IU/mL	<	200.00 IU/mL

Normal amount of streptococcal antibodies.

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