# What Is PANS/PANDAS?

**PANS**

- Pediatric Acute-onset Neuropsychiatric Syndrome

**PANDAS**

- Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections

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## PANS Criteria

- Sudden & acute onset of OCD or severely restricted food intake
- Concurrent severe & abrupt onset of symptoms from at least 2 of the neuropsychiatric categories below:
  1. Anxiety, Separation Anxiety
  2. Emotional Lability, Depression
  3. Aggression, Irritability, Oppositional Behavior
  4. Behavioral/Developmental Regression
  5. Deterioration of learning abilities related to ADHD
  6. Sensory & Motor Abnormalities
  7. Somatic Signs: sleep disturbances, enuresis, urinary frequency
- Symptoms not better explained by a known medical or neurologic disorder. It is a “diagnosis of exclusion”.
- There is no age requirement, typically symptoms start during grade school but post-pubertal cases are not excluded.

## Additional Notes on PANS:

- Children with PANS
  - Are extremely ill
  - Can have Motor & Phonic tics (whooping, wringing hands)
  - Can have episodes of extreme anxiety or aggression.
  - Can have visual or auditory hallucinations identical to the psychotic symptoms seen in conditions such as schizophrenia, bipolar disorder, and lupus cerebritis.
  - Can have a decline in handwriting and math skills.

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PANS/PANDAS is a misdirected immune response, often with an encephalitic onset, which negatively affects neurologic functioning, resulting in a rapid, acute onset of OCD, restricted food intake or tics along with other neuropsychiatric conditions. Some children suffer debilitating flares while others function enough to continue to go to school but not remotely at the same functioning level.

PANS/PANDAS symptoms may relapse and remit. During subsequent flares, symptoms can worsen and new symptoms may manifest. Initial triggers and secondary triggers may vary. Children are often misdiagnosed as having a psychiatric illness thus prescribed only psychotropic medications rather than treated correctly.

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Children can recover completely if treated quickly & properly; if not, neuropsychiatric symptoms can exacerbate & become chronic.

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PANS is a clinical diagnosis based on history and physical examination. PANS encompasses the whole group of acute onset cases of OCD or eating restrictions, concurrent with acute behavioral decline of at least 2 of 7 neuropsychiatric categories. PANS diagnosis does not require a known trigger, however it is often following contraction of/or exposure to a variety of agents including: Streptococcus pyogenes, Borrelia burgdorferi, varicella, herpes simplex, common cold, influenza Mycoplasma pneumoniae as well as other non-infectious agents such as environmental factors.

PANDAS, a subset of PANS, describes cases with a documented association with group A Streptococcus (GAS) infections. PANDAS is based on 5 criteria including acute abrupt onset of OCD and/or severe tics which are often accompanied by comorbid symptoms seen in PANS. Not all patients present with stremic throat. Onset can occur 4-6 months post strep infection if antibiotics did not eliminate the bacteria.
PANDAS Criteria
✧ Significant OCD and/or debilitating/incapacitating tic symptoms
✧ Pediatric Onset – Symptoms have an evident onset between 3 years of age and puberty but post pubertal onset is possible. Pediatric onset specified as it is time of peak exposure and cross-species immunity of GAS infections.
✧ Acute onset and episodic course: Defined as either a dramatic onset of OCD or tic symptoms or by relapsing-remitting symptoms that erupt with an acute change. Between episodes, symptoms may lessen but not return to pre-syndrome levels.
✧ Associated with Streptococcal-A (GABHS) infection. Note: not all patients will have pharyngitis; strep may be in locations other than throat or patient may be a carrier without active infection. Secondary triggers can be due to exposure to strep or other pathogens.
✧ Neurologic abnormalities (motoric hyperactivity, choreiform movement) during symptom exacerbations

Additional Notes on PANDAS:
✧ In conjunction to OCD and/or tics, patients often concurrently experience the comorbid neuropsychiatric symptoms seen in PANS with the same acute and dramatic onset.

DIAGNOSIS
PANS/PANDAS is a clinical diagnosis and one of exclusion, based on history and examination, not simply laboratory tests. History must show abrupt onset of OCD and concurrent neuropsychiatric symptoms. Other syndromes must be excluded i.e. general OCD, tic disorders, Sydenham chorea, general anxiety, etc. Lab tests can show if there has been a preceding infection. Patient need not present with an illness and some patients need only be exposed to a pathogen to be affected.

Basic Testing
• Strep throat culture, 48 hour culture or perianal culture
• Bloodwork: streptozyme, ASO, Anti dNase B, Lyme Disease and co-infections, Mycoplasma Pneumonaie, Influenza, Epstein Barr, Herpes Simplex, Coxsackie

Further Testing
• Cunningham Panel – autoimmune autoantibody levels: Dopamine D1 receptor, Dopamine D2L receptor, Lysoganglioside GM1, Tubulin, & CaM Kinase II.
• ANA, Heavy Metals, IgG (subclass 1, 2, 3, 4), IgM, IgA, CD4

TREATMENT
Infections must be treated fully; symptoms often begin to improve within one week of antibiotic treatment. However, further interventions are often required to fully heal the underlying causes and alleviate all the symptoms. If treated promptly and thoroughly, symptoms can remit completely. If left untreated and symptoms persist, permanent neurological injury can occur. Set protocol has not been established but often comprised of one or more of the following treatments:

Treatment Basics
• Consider B-Lactam Antibiotics
• Consider 5-15 days of Prednisone
• Consider IVIG or PEX
• Consider continued full dose or prophylactic dose of antibiotics
• CBT and/or counseling for residual OCD
• Other Treatment Options: Antifungals, Anti-Inflammatories, Antihistamines (H1 & H2 Blockers), extremely low dose SSRIs, Tonsillectomy and Adenoidectomy, Dietary Changes, Supplements

SOURCES
• JCAP PANS Consensus: http://bit.ly/1NRholc
• NIMH: http://1.usa.gov/14Z4huf
• PANDAS Physicians Network: PANDASppn.org
• PANDAS Network: PANDASNetwork.org
• Moleculera: MoleculeraLabs.com