

Sampling of Peer-Reviewed Publications Supporting Treatment for PANDAS and PANS

Compiled by Maryland PANDAS/PANS Support

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Key Finding	Publication Citation
<p>Genetic variations associated with immune dysfunction and susceptibility to infection are associated with increased incidence of PANDAS.</p>	<p>Çelik, G. G., Taş, D. A., Tahiroglu, A. Y., Erken, E., Seydaoğlu, G., Ray, P. Ç., & Avcı, A. (2018). Mannose-Binding Lectin 2 Gene Polymorphism in PANDAS Patients. <i>Noro psikiyatri arsivi</i>, 56(2), 99–105. doi:10.29399/npa.22811</p>
<p>In PANDAS and PANS patients, testing showed strong association with autoantibody levels, supporting the idea of an immune-mediated process associated with patients’ neuropsychiatric symptoms.</p>	<p>Smimasaki, C., Frye, R., Trifiletti, R., Cooperstock, M.... Appleman, J. (2020). Evaluation of the Cunningham Panel™ in pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection (PANDAS) and pediatric acute-onset neuropsychiatric syndrome (PANS): Changes in antineuronal antibody titers parallel changes in patient symptoms. <i>Journal of Neuroimmunology</i> 339(2020) 577138.</p>
<p>Impact of PANDAS and PANS is significant; over 75% of patients reported at least one “incapacitating” or “severe” episode, and fewer than 25% could function in school without accommodation.</p>	<p>Calaprice, D., Tona, J., Parker-Athill, E.C. & Murphy, T.K. (2017). A survey of Pediatric Acute Onset Neuropsychiatric Syndrome characteristics and course. <i>Journal of Child and Adolescent Psychopharmacology</i> 27(7): 607-618. doi: https://doi.org/10.1089/cap.2016.0105.</p>
<p>Families/caregivers of children with PANS report higher caregiver burden than caregivers of patients with Alzheimer’s disease. Rapid intervention and treatment helps decrease caregiver burden.</p>	<p>Frankovich, J., Leibold, C. M., Farmer, C., Sainani, K., Kamalani, G., Farhadian, B., ... Thienemann, M. (2018). The burden of caring for a child or adolescent with Pediatric Acute-Onset Neuropsychiatric Syndrome (PANS): An observational longitudinal study. <i>The Journal Of Clinical Psychiatry</i>, 80(1). https://doi.org/10.4088/JCP.17m12091.</p>
<p>Research shows early treatment and preventative therapy can significantly improve outcomes for children with PANDAS/PANS.</p>	<p>Brown, K. D., Farmer, ..., & Frankovich, J. (2017). Effect of early and prophylactic nonsteroidal anti-inflammatory drugs on flare duration in pediatric acute-onset neuropsychiatric syndrome: An observational study of patients followed by an academic community-based pediatric acute-onset neuropsychiatric syndrome clinic’ <i>Journal of Child and Adolescent Psychopharmacology</i>, 27(7), 619-628. doi: 10.1089/cap.2016.0193.</p>

<p>Outcomes are best when treatment is aggressive; 89% of patients reported at least some improvement with IVIG treatment.</p>	<p>Calaprice, D., Tona, J. & Murphy, T.K. (2017). Treatment of Pediatric Acute-Onset Neuropsychiatric Disorder in a large survey population. <i>Journal of Child and Adolescent Psychopharmacology</i>, August 2017, online ahead of print. doi: https://doi.org/10.1089/cap.2017.0101.</p>
<p>Treatment of PANDAS/PANS, as recommended by a consortium of experts from various specialities across medicine, should involve a three-pronged approach: psychiatric treatment; antimicrobial therapy for identified illness; and immune-modulating and anti-inflammatory therapy.</p>	<p>Swedo, S. E., Frankovich, J., & Murphy, T. K. (2017). Overview of treatment of pediatric acute-onset neuropsychiatric syndrome. <i>Journal Of Child And Adolescent Psychopharmacology</i>, 27(7), 562-565.</p>
<p>Immunomodulatory therapies such as steroids, intravenous immunoglobulin, plasmapheresis and immunosuppressive drugs are recommended for severe disease by a consortium of specialists representing a variety of research institutions, hospitals and clinical practices.</p>	<p>Frankovich, J. & members of the PANS Consortium. (2017). Clinical management of pediatric acute-onset neuropsychiatric syndrome: Part II: Use of immunomodulatory therapies. <i>Journal of Child and Adolescent Psychopharmacology</i> 17(7), September 2017, 574-593. https://doi.org/10.1089/cap.2016.0148.</p>
<p>Plasmapheresis produced significant symptom improvement in a cohort of severely ill patients with PANDAS/PANS, with 78% reporting long-term improvement.</p>	<p>Latimer, M.E., L'Etoile, N., Seidlitz, J., & Swedo, S. (2015). Therapeutic plasma apheresis as a treatment for 35 severely ill children and adolescents with Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections. <i>Journal of Child and Adolescent Psychopharmacology</i> 25(1). http://doi.org/10.1089/cap.2014.0080.</p>
<p>In a cohort of patients with PANDAS, most of whom had received at least one treatment with intravenous immunoglobulin, 88% reported few or no symptoms at long-term follow-up.</p>	<p>Leon, J., Hommer, R., Grant, P., Farmer, C.,.... & Swedo, S. (2018). Longitudinal outcomes of children with pediatric autoimmune neuropsychiatric disorder associated with streptococcal infections (PANDAS). <i>European Child & Adolescent Psychiatry</i> 27(5), 637-643.</p>
<p>Use of plasma exchange and intravenous immunoglobulin produced significant symptom improvement in children with symptoms associated with PANDAS/PANS (pediatric OCD and tics), with most participants reporting near-complete resolution.</p>	<p>Perlmutter, S., Leitman, S., Garvey, M., Hamburger, S., et al. (1999). Therapeutic plasma exchange and intravenous immunoglobulin for obsessive-compulsive disorder and tic disorders in childhood. <i>Lancet</i> 354: 1153-1158.</p>

<p>Open-label use of intravenous immunoglobulin led to symptom improvements in a cohort of patients with PANDAS.</p>	<p>Williams, K. A., Swedo, S. E., ...& Leckman, J. F. (2016). New research: Randomized, controlled trial of Intravenous Immunoglobulin for Pediatric Autoimmune Neuropsychiatric Disorders Associated With Streptococcal Infections. <i>Journal of The American Academy of Child and Adolescent Psychiatry</i>, 55, 860-867. doi:10.1016/j.jaac.2016.06.017.</p>
<p>Therapeutic apheresis (plasmapheresis) is recommended by the American Society for Apheresis as a second-line therapy for PANDAS, backed by “moderate evidence” and appropriate for most patients for whom first-line therapy has not been successful.</p>	<p>Schwartz, J., Padmanabhan, A., Aqui, N., Balogun, R. A., Connelly-Smith, L., Delaney, M., ... Shaz, B. H. (2016). Guidelines on the Use of Therapeutic Apheresis in Clinical Practice-Evidence-Based Approach from the Writing Committee of the American Society for Apheresis: The Seventh Special Issue. <i>Journal Of Clinical Apheresis</i>, 31(3), 149–162. https://doi.org/10.1002/jca.21470</p>