ATTENTION-DEFICIT/HYPERACTIVITY DISORDER PROTOCOL

designs for health®

CLINICAL PROTOCOL TO SUPPORT ATTENTION AND FOCUS*

Attention-deficit/hyperactivity disorder (ADHD) is a chronic condition marked by an ongoing pattern of inattention and/or hyperactivity–impulsivity that interferes with function or development.[1] Signs and symptoms in ADHD can manifest as difficulty with sustaining focus, disorganization, and constant movement and fidgeting, or hasty action. Some individuals with ADHD only exhibit and experience one of the behaviors, whereas others have both inattention and hyperactivity–impulsivity.[1]

Diagnosis of ADHD requires a comprehensive evaluation by a licensed clinician with expertise in ADHD. Diagnosis requires that symptoms have been chronic or long-lasting and have resulted in an impairment to the patient's daily functions. Developmental delays are also part of the diagnostic criteria. Differential diagnosis is required to eliminate the possibility of other cognitive, psychiatric, or neurological pathologies that may cause a similar clinical presentation.

Most children with ADHD receive a diagnosis during the elementary school years. For an adolescent or adult to receive a diagnosis of ADHD, the symptoms need to have been present before age 12.[1]

The etiology of ADHD is still not well understood, with several factors being potential contributors to its development, including prenatal exposures, genetic polymorphisms that impact dopaminergic and noradrenergic function, low birth weight, and brain injury.[1,2]

Interventions used to address the symptoms of ADHD and improve function include medication, psychotherapy, education, or some combination of these options. Stimulants and medications that act as dopamine and norepinephrine agonists are often applied, whereas cognitive behavioral therapy and stress management techniques may also be used in treatment.

This clinical protocol is designed to support patients with ADHD through lifestyle techniques, diet, and specific nutrients known to be beneficial for cognitive function.*

Diagnostic Biomarkers and Clinical Indicators of ADHD

- Serum 25(OH)-vitamin D3[3]
  - Optimal: 40-60 ng/mL
  - Sufficient: 30-40 ng/mL
  - Insufficient: 21-29 ng/mL
  - Deficient: <20 ng/mL
- Erythrocyte Magnesium (Mg)[4]
  - Adult: 1.3-2.1 mEq/L or 0.65-1.05 mmol/L (SI units)
  - Child: 1.4-1.7 mEq/L
- Serum ferritin[5]
  - Male: 12-300 ng/mL
  - Female: 10-150 ng/mL
- Serum Zinc (Zn)[6]
  - 0.66-1.10 mcg/mL
- GenomicInsight® — Cognition Report

Lifestyle Intervention

- Encourage patients to maintain routines and a daily schedule
- Recommend stress management practices such as meditation and yoga
- Support patient's by partnering or referring to a qualified provider who specializes in ADHD behavioral therapies
- Encourage regular physical activity
- Reduce heavy metal exposure due to potential neurotoxic effects

Therapeutic Diet and Nutritional Considerations

- Trial a restricted or elimination/reintroduction diet to identify any potential food triggers or dietary antigens
- Recommend avoidance of food dyes and additives, as these may exacerbate ADHD symptoms[7,8]
- Advise reduction in sugary foods and sweetened beverages to maintain stable blood glucose levels[9]
- Optimize vitamin D levels through sunlight exposure and dietary intake, as an inverse association between serum 25(OH)D3 and young patients with ADHD has been observed[10]
- Recommend high dietary intake of docosahexaenoic acid (DHA), as serum DHA levels have been found to be low in patients with ADHD[11]
- Guide patients to achieve adequate intake (AI) of omega-3 fatty acids through dietary intake:
  - Salmon
  - Herring
  - Sardines
  - Mackerel
  - Trout
  - Walnuts
  - Flaxseed oil
  - Chia seeds
  - Flaxseed, whole
- Support dietary magnesium, iron, and zinc intake as serum levels of each mineral appear to be low in ADHD patients[12-14]
  - Beef
  - Oysters
  - Spinach
  - Kale, Swiss chard
  - Pumpkin seeds
  - Almonds
  - Quinoa
  - Beet greens
  - Tuna, salmon
  - Dark chocolate
  - Avocado

In particular, magnesium bound to L-threonate displays specific benefits to ADHD symptomatology.[15]

Supplement Protocol

Primary Support:

Neurolink™

Dose	2 to 6 capsules per day on an empty stomach (before meals)
Duration	Ongoing as needed
Formula Highlights	Neurolink™ is an encapsulated formula used to support neurological, cognitive, and neurotransmitter (serotonin, dopamine, GABA, etc.) function through the inclusion of neurotransmitter precursors and supportive nutrients.*

OmegAvail™ Ultra DHA

Dose	2 softgels per day
Duration	Ongoing as needed
Formula Highlights	OmegAvail™ Ultra is a highly concentrated DHA formulation. Each softgel provides 500 mg DHA + 110 mg EPA to help support optimum DHA status.

PS 150

Dose	2 capsules per day for adults; phosphatidylserine powder: ⅛ to ¼ tsp for children
Duration	Ongoing as needed
Formula Highlights	PS 150 features 150 mg of non-soy, sunflower-sourced phosphatidylserine (PS) per capsule. There are no foods rich in PS, so supplementation is essential to increase the body's levels of this brain-supportive nutrient.*

NeuroMag™

Dose	2 capsules per day: 1 capsule with breakfast; 1 capsule with dinner
Duration	Ongoing as needed
Formula Highlights	Several studies indicate that synaptic connections in the brain hippocampus, a critical region for learning and memory, decline during the normal process of aging. NeuroMag™, which uses the unique, patented, chelated mineral Magtein®, contains magnesium that is chelated to threonic acid (magnesium L-threonate). It is superior to other forms of magnesium at getting through the blood brain barrier because it is able to transport magnesium ions across lipid membranes, including those of brain cells. Researchers at MIT concluded that elevating brain magnesium content via supplementation with magnesium L-threonate may be a useful strategy to support cognitive abilities and decrease common age-related memory decline.*

For a list of references cited in this document, please visit:
https://www.designsforhealth.com/protocol-references/protocol-adhd-references.pdf

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Health-care practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage. Any product containing botanical substances has the potential for causing individual sensitivities, appropriate monitoring, including liver function tests (LFT) is recommended.

For considerations regarding herb-drug and nutrient-drug interactions, please refer to reliable, evidence-based resources such as the Natural Medicine Database or Stargrove MB, Treasure J, McKee DLHer. *Herb, Nutrient, and Drug Interactions: Clinical Implications and Therapeutic Strategies*. St. Louis, MO: Mosby-Elsevier; 2008.