

Attention Deficit Hyperactivity Disorder: Diagnosis and Treatment in Children and Adolescents

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Structured Abstract

Objectives.

Attention deficit hyperactivity disorder (ADHD) is a common pediatric neurobehavioral disorder often treated in the primary care setting. This systematic review updates and extends two previous Agency for Healthcare Research and Quality (AHRQ) systematic evidence reviews and focuses on the comparative effectiveness of methods to establish the diagnosis of ADHD, updates the comparative effectiveness of pharmacologic and nonpharmacologic treatments, and evaluates different monitoring strategies in the primary care setting for individuals from birth through 17 years of age.

Data sources.

We searched PubMed®, Embase®, PsycINFO®, and the Cochrane Database of Systematic Reviews for relevant English-language studies published from January 1, 2011, through November 7, 2016.

Review methods.

Two investigators screened each abstract and full-text article for inclusion, abstracted the data, and performed quality ratings and evidence grading. Random-effects models were used to compute summary estimates of effects when sufficient data were available for meta-analysis.

Results.

Evidence was contributed from 103 articles describing 90 unique studies. Twenty-one studies related to diagnosis, 69 studies related to treatment, and no studies were identified on monitoring. The Attention and Executive Function Rating Inventory and Childhood Executive Functioning Inventory performed better than the Cambridge Neuropsychological Test Automated Battery for the diagnosis of ADHD for ages 7–17 years (strength of evidence [SOE]=low). Evidence was insufficient on the use of electroencephalography (EEG) or neuroimaging to establish the diagnosis of ADHD for ages 7–17 years. No studies directly assessed the harms to children labeled as having ADHD. Limited additional evidence published since the original 2011 report was available on ADHD medications approved by the Food and Drug Administration (FDA) compared with placebo or compared to different FDA-approved ADHD medications (SOE=insufficient). For atomoxetine and methylphenidate, the most commonly reported adverse events were somnolence and mild gastrointestinal problems. Atomoxetine had slightly higher gastrointestinal effects than methylphenidate (SOE=low). Cognitive behavioral therapy improved ADHD symptoms (SOE=low). Child or parent training improved ADHD symptoms (SOE=moderate) but made no difference in academic performance (SOE=low). Omega-3/6 fatty acid supplementation made no difference in ADHD symptoms (SOE=moderate). Across all treatments, little evidence was reported on the risk of serious adverse events, including cardiovascular risk.

Conclusions.

The 2011 AHRQ systematic review highlighted the benefit of psychostimulants for children 6–12 years of age with ADHD for up to 24 months and found that adding psychosocial/behavioral interventions to psychostimulants is more effective than psychosocial/behavioral interventions alone for children with ADHD and oppositional defiant disorder. This targeted update found insufficient evidence regarding new approaches to the diagnosis (e.g., EEGs, neuroimaging). Little is known about the impact of being labeled as having ADHD. Although cognitive behavioral therapy or child or parent training may decrease symptoms of ADHD, more information is needed regarding the relative benefit of these approaches compared to, or combined with, medication treatment. Omega-3/6 supplementation does not appear to improve ADHD outcomes. No information was identified regarding the optimal strategy for monitoring after diagnosis.