Treatment of Attention-Deficit/Hyperactivity Disorder in Adolescents - A Systematic Review

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Importance
Although attention-deficit/hyperactivity disorder (ADHD) is highly prevalent in adolescents and often persists into adulthood, most studies about treatment were performed in children. Less is known about ADHD treatment in adolescents.

Objective
To review the evidence for pharmacological and psychosocial treatment of ADHD in adolescents.

Evidence Review
The databases of CINAHL Plus, MEDLINE, PsycINFO, ERIC, and the Cochrane Database of Systematic Reviews were searched for articles published between January 1, 1999, and January 31, 2016, on ADHD treatment in adolescents. Additional studies were identified by hand-searching reference lists of retrieved articles. Study quality was rated using McMaster University Effective Public Health Practice Project criteria. The evidence level for treatment recommendations was based on Oxford Centre for Evidence-Based Medicine criteria.

Findings
Sixteen randomized clinical trials and 1 meta-analysis, involving 2668 participants, of pharmacological and psychosocial treatments for ADHD in adolescents aged 12 years to 18 years were included. Evidence of efficacy was stronger for the extended-release methylphenidate and amphetamine class stimulant medications (level 1B based on Oxford Centre for Evidence-Based Medicine criteria) and atomoxetine than for the extended-release α2-adrenergic agonists guanfacine or clonidine (no studies). For the primary efficacy measure of total symptom score on the ADHD Rating Scale (score range, 0 [least symptomatic] to 54 [most symptomatic]), both stimulant and nonstimulant medications led to clinically significant reductions of 14.93 to 24.60 absolute points. The psychosocial treatments combining behavioral, cognitive behavioral, and skills training techniques demonstrated small- to medium-sized improvements (range for mean SD difference in Cohen d, 0.30-0.69) for parent-rated ADHD symptoms, co-occurring emotional or behavioral symptoms, and interpersonal functioning. Psychosocial treatments were associated with more robust (Cohen d range, 0.51-5.15) improvements in academic and organizational skills, such as homework completion and planner use.

Conclusions and Relevance
Evidence supports the use of extended-release methylphenidate and amphetamine formulations, atomoxetine, and extended-release guanfacine to improve symptoms of ADHD in adolescents. Psychosocial treatments incorporating behavior contingency management, motivational enhancement, and academic, organizational, and social skills training techniques were associated with inconsistent effects on ADHD symptoms and greater benefit for academic and organizational skills. Additional treatment studies in adolescents, including combined pharmacological and psychosocial treatments, are needed.