Current and Investigational Medication Delivery Systems for Treating Attention-Deficit/Hyperactivity Disorder.

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Abstract

OBJECTIVE:
To review currently available formulations and emphasize unmet needs in the pharmacologic management of attention-deficit/hyperactivity disorder (ADHD).

DATA SOURCES:
Publications and clinical trials were identified through PubMed and ClinicalTrials.gov, respectively. A Web-based search identified prescribing information for approved agents for treating ADHD, along with relevant guidelines and diagnostic criteria.

STUDY SELECTION:
The following search terms were used: (1) ADHD or attention-deficit/hyperactivity disorder or ADD or attention deficit hyperactivity disorder and/or (2) amphetamine or methylphenidate or atomoxetine or guanfacine or clonidine. Additional searches were performed using product brand names, and clinical trial was applied as a filter. Relevant studies were only included if published in English-language peer-reviewed journals and if involved agents were currently available (or pursuing approval) in the United States. Reviews of literature prior to 2005 and from 2005 to 2008 have been published previously; therefore, the present search focused on studies published from January 2009 through May 2016. In addition, reference lists of review articles and relevant studies were also examined to help identify additional studies.

DATA EXTRACTION:
A total of 578 publications were identified from the PubMed search, from which 426 publications were initially excluded based on review of the title and abstract. Reasons for exclusion included a focus on comorbid disorders, specific subpopulations, endpoints unrelated to improving ADHD symptomatology (eg, executive function, cognition, substance use), or quality of life measures. A more thorough assessment of the remaining citations, including publications and prescribing information, produced the final 219.

RESULTS:
Pharmacotherapy with stimulant and nonstimulant options is the most common approach for treating ADHD in adults and children. Stimulants are mostly formulated as either tablets or capsules; however, the newer generation includes transdermal patches, oral suspensions (liquids), chewable tablets, and orally disintegrating tablets. Nonstimulants are available in oral capsule (atomoxetine) and tablet (guanfacine and clonidine) formulations.

CONCLUSIONS:
Despite the broad range of treatment options currently available, nonadherence remains a significant problem in ADHD. While evidence is currently lacking, the availability of new formulations may improve adherence.