

# Implementing AHRQ Effective Health Care Reviews

*Helping Clinicians Make Better Treatment Choices*

## Therapies for Children with Autism Spectrum Disorders

Practice Pointers by COREY D. FOGLEMAN, MD, *Lancaster General Hospital Family Medicine Residency Program, Lancaster, Pennsylvania*

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This clinical content conforms to AAFP criteria for evidence-based continuing medical education (EB CME). See CME Quiz on page 871.

The Agency for Healthcare Research and Quality (AHRQ) conducts the Effective Health Care Program as part of its mission to organize knowledge and make it available to inform decisions about health care. A key clinical question based on the AHRQ Effective Health Care Program review is presented, followed by an evidence-based answer and an interpretation that will help guide clinicians in making treatment decisions. For the full review, clinician summary, and consumer summary, go to <http://www.effectivehealthcare.ahrq.gov/autism1.cfm>.

A collection of Implementing AHRQ Effective Health Care Reviews published in *AFP* is available at <http://www.aafp.org/afp/ahrq>.

### Key Clinical Issue

What are the effectiveness, benefits, and harms of therapies used to address core and associated symptoms of autism spectrum disorders (ASDs) in children two to 12 years of age?

### Evidence-Based Answer

Medical intervention with risperidone (Risperdal) or aripiprazole (Abilify) has shown benefit for reducing challenging behaviors in some children with ASDs. However, adverse effects, including weight gain, sedation, and extrapyramidal effects, are significant. Multiple randomized controlled trials of secretin demonstrated no benefit. There is insufficient evidence regarding benefits or adverse effects of other medical treatments, including selective serotonin reuptake inhibitors and stimulant medications. Some behavioral interventions are associated with positive outcomes in certain children, but it is not clear which children are most likely to respond to specific interventions. There is insufficient evidence regarding the effectiveness of specific educational interventions, although some children improve in well-established and intensive programs. (Strength of Recommendation: B, based on inconsistent or limited-quality patient-oriented evidence.)

### Practice Pointers

ASDs are characterized by immaturity of social interaction, communication, and/or behavior, and include autism, Asperger syndrome, and pervasive developmental delay not otherwise specified.<sup>1</sup> Associated symptoms include repetitive behaviors, attention deficits, anxiety, and inadequate functional

independence. In the United States, one in 88 children has an ASD.<sup>1</sup> These disorders are thought to have epigenetic etiologies, and can be associated with intellectual disability in up to 75 percent of patients.<sup>2,3</sup> The American Academy of Pediatrics recommends developmental surveillance at every well-child visit and ASD-specific screening at 18 and 24 months of age using validated instruments, such as the Modified Checklist for Autism in Toddlers.<sup>2</sup>

The Agency for Healthcare Research and Quality review examined 159 studies published since 2000 on the effects of treatments for ASDs, classified as behavioral, medical, educational, and allied health interventions.<sup>4</sup> The Lovaas model of applied behavior analysis is the only behavioral intervention to show significant improvement. First described in 1987, this intervention provides instruction 40 hours per week for three years. The therapy is first delivered one-on-one in the child's home, then one-on-one in a treatment center, and finally in an integrated setting with other children.<sup>5</sup> One trial randomized 28 patients three years of age to either a parent training group in which the children received intervention for three to nine months from a parent who received intense training with a Lovaas-style manual, or an intensive treatment group in which the child underwent individual treatment an average of 24.5 hours per week for one year. Average IQ scores in the intensive treatment group improved from 51 to 66 over five years, whereas the scores in the parent training group did not change.<sup>6</sup>

The positive outcomes associated with this intervention have been replicated in other small communities, and on a wide scale in

## Clinical Bottom Line: Autism Spectrum Disorders in Children

### Behavioral interventions

Early, intensive behavioral and developmental interventions, such as the Lovaas model of applied behavior analysis, improve cognitive, language, and adaptive outcomes in certain subgroups of children. ●●○

The evidence is insufficient to understand the effectiveness, benefits, or adverse events of other behavioral interventions. ○○○

### Medical interventions

#### Benefits

Aripiprazole (●●●) and risperidone (●○○) reduce challenging and repetitive behaviors compared with placebo.

Secretin does not improve language, cognition, behavior, communication, autism symptom severity, or socialization. ●●●

The evidence is insufficient to understand the effectiveness and benefits of other medical interventions, including selective serotonin reuptake inhibitors and stimulant medications. ○○○

#### Harms

Aripiprazole and risperidone are associated with significant weight gain, sedation, and extrapyramidal effects. ●●●

The evidence is insufficient to understand the adverse events of other medical interventions, including selective serotonin reuptake inhibitors and stimulant medications. ○○○

### Educational interventions

The evidence is insufficient to understand the effectiveness, benefits, or adverse events of any educational intervention. ○○○

### Allied health and complementary and alternative medicine interventions

The evidence is insufficient to understand the effectiveness, benefits, or adverse events of any allied health or complementary and alternative medicine intervention. ○○○

### Strength of evidence scale

High: ●●● There are consistent results from good-quality studies. Further research is very unlikely to change the conclusions.

Moderate: ●●○ Findings are supported, but further research could change the conclusions.

Low: ●○○ There are very few studies, or existing studies are flawed.

Insufficient: ○○○ Research is either unavailable or does not permit estimation of a treatment effect.

*Adapted from the Agency for Healthcare Research and Quality, Effective Health Care Program. Comparative effectiveness of therapies for children with autism spectrum disorders. Clinician summary. <http://www.effectivehealthcare.ahrq.gov/ehc/products/106/708/autism-clinicianfinal.pdf>. Accessed January 31, 2012.*

Ontario, Canada.<sup>7</sup> However, it is more effective when initiated before four years of age. It should be noted that even patients who showed improvement remained impaired; that the most significant improvements were in a pervasive developmental delay subgroup; and that the cost of the intervention can be as much as \$60,000 per year.<sup>4,7</sup> Based on the positive outcomes of the Lovaas model, the American Occupational Therapy Association treatment guidelines recommend that therapy services be intense (i.e., one-on-one and daily), comprehensive, and focused on active engagement.<sup>8</sup>

Educational interventions include the TEACCH (Treatment and Education of Autistic and related Communication-

handicapped Children) program and computer-based programs. The TEACCH program is an integrated program developed at the University of North Carolina in which patients are evaluated in a structured setting where some intervention is provided.<sup>9</sup> Additional intervention is provided in a classroom setting. Prospective cohort studies since 2000 suggest that the TEACCH program improves gross motor and cognitive skills, but one randomized controlled trial showed that it performed less effectively than home-based therapy.<sup>4</sup> Computer-based programs failed to show clear results.<sup>4</sup>

Other interventions (e.g., animal therapy techniques and massage for social skills and language development; social skills

interventions targeting older, higher functioning children; medication, such as fluoxetine [Prozac], for anxiety and repetitive behavior) showed some potential for benefit. However, these interventions were not adequately studied or improved only short-term outcomes.<sup>4</sup>

Practically speaking, family physicians should keep in mind that ASDs have varied core and associated symptoms that appear to be amenable, at least in part, to intervention. Therefore, it seems prudent to offer treatment for cognitive, behavioral, and social deficits as early as possible.

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