Effective Health Care Program

Developmental Delays
Autism Spectrum Disorder

Comparative Effectiveness of Therapies for Children With Autism Spectrum Disorder

Key Clinical Issue

What evidence is available regarding the effectiveness, benefits, and harms of therapies used to address the core and associated symptoms seen among children up to age 12 with autism spectrum disorder?

Background Information

Autism spectrum disorder (ASD) is a neurodevelopmental disorder. Approximately 1 in every 68 children in the United States has been diagnosed with ASD. Treatments for ASD focus on improving core deficits in social communication, addressing challenging behaviors, treating commonly associated difficulties (e.g., anxiety, attention difficulties, sensory difficulties), promoting functional independence, and improving quality of life. Individual goals for treatment vary by child, and a combination of therapies is used to achieve these goals. Treatment choice may be influenced by availability, time commitment required for the family, child characteristics such as cognitive skills and age, and costs.

Conclusions

Efforts toward early intervention for ASD have been encouraging. Research evidence on the effectiveness of therapies for ASD has shown promise in some areas, but since this is a young field, these results need to be replicated and expanded. There is good evidence to support the use of cognitive behavioral therapy to treat anxiety in school-aged children without cognitive or language delays. Moderate evidence exists that child-focused early intensive behavioral interventions can improve cognitive and language outcomes in young children. There is some evidence to guide choices among medical interventions for challenging and repetitive behaviors. There is low evidence to support parent-focused and social skills interventions. For many other interventions, the evidence is insufficient to permit an estimate of their benefits or harms. This does not mean that these interventions are not associated with benefits or harms but that further study is required. Evidence suggests that there are undefined subgroups of children for whom early and intensive behavioral interventions may elicit robust gains while others may not demonstrate marked improvement.

Clinical Bottom Line

Behavioral Interventions

- Cognitive behavioral therapy reduces anxiety symptoms in school-aged children with average IQ and language skills. ●●●
- Child-focused early intensive behavioral and developmental interventions such as the UCLA/Lovaas Model and the Early Start Denver Model can improve cognitive and language outcomes for some children. ●●○
- Play- and interaction-based interventions improve joint attention skills in young children, who were also typically receiving early intervention. ●●○
- Parent-focused early intensive behavioral interventions may improve language skills for some children. ●○○
- Social skills interventions may yield short-term improvements in social interactions and emotion recognition for school-aged children with average reasoning and language skills. ●○○

Medical Interventions

Benefits

- Aripiprazole (●●●) and risperidone (●○○) reduce challenging and repetitive behaviors when 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 from all other medical interventions, including 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 from all other medical interventions, including serotonin-reuptake inhibitors and stimulant medications. ○○○

Other Interventions

- The evidence is insufficient to understand the effectiveness, benefits, or adverse events from any educational intervention. ○○○
- The evidence is insufficient to understand the effectiveness, benefits, or adverse events from any allied health or complementary and alternative medicine (CAM) intervention. ○○○

Confidence 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: ○○○	Signifies that evidence is either unavailable or does not permit estimation of an effect.

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Literature Review Methods

The 2011 systematic review of research included 159 articles written in English and published from 2000 through May 2010. In 2014, the review was updated to include an additional 65 studies on behavioral interventions. Studies involved children up to age 12 with ASD or ages 0–2 years at risk for diagnosis of ASD. All forms of treatment and study designs, with the exception of individual case reports, were reviewed. Studies of behavioral, educational, CAM, and allied health interventions with fewer than 10 subjects were excluded, as were studies of medical interventions with fewer than 30 subjects. A list of included and excluded articles is in the full report.

Note Regarding Possible Harms

Other than for risperidone and aripiprazole, there was not enough evidence to estimate the severity and frequency of potential adverse events associated with any of the interventions. According to the United States Food and Drug Administration, there are serious safety issues associated with the use of chelation products. Even when used under medical supervision, these products can cause serious harm, including dehydration, kidney failure, and death.

Gaps in Knowledge

There are no or few studies that describe the following:

- Direct comparisons of the effects of different treatment approaches (e.g., direct comparison of the UCLA/Lovaas Model and the Early Start Denver Model), and their practical effectiveness or feasibility beyond research studies.
- Which children are likely to benefit from particular interventions.
- Generalization of treatment effects to contexts outside of the treatment context (e.g., settings), components of multicomponent therapies that drive effectiveness, and predictors of treatment success.
- Which specific treatment approaches to use in children under 2 years of age who are at high risk of developing ASD based on behavioral, medical, or genetic risk factors.
- Whether there are any harms associated with behavioral, educational, allied health, or CAM interventions.

Future Research Needs

- Continuing improvements in methodological rigor in the field, including:
  - Consistent use of standardized, validated outcome measure(s) for each target of therapy.
  - Thorough descriptions of study participants and interventions.
- Large, publicly funded, multisite studies of existing interventions across all treatment types and studies with extended followup times.
- Research on medical interventions for which no research has been conducted and on atypical antipsychotics that may be less associated with adverse events than are risperidone and aripiprazole.

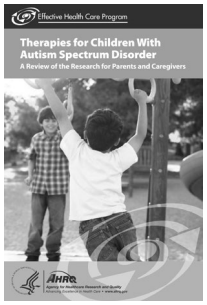
What To Discuss With Your Patients

- Types of therapies and specialists to consider.
- Treatment goals and realistic expectations.
- Timing of interventions.
- Side effects of medications and longevity of side effects.
- Daily routine, impact on the family, and the psychological needs of the child and the family.
- Support groups, local services, and sources of trusted information.
- Experience of the treatment team in working with children with ASD.
- Re-evaluating potential treatments as research evolves.

Resource for Patients

Therapies for Children With Autism Spectrum Disorder, A Review of the Research for Parents and Caregivers is a free companion to this clinician guide. It can help parents and caregivers talk with their health care professionals about treatment options. It provides information about:

- Types of programs and therapies available to children with ASD.
- Available evidence on each program or therapy.
- What to ask when planning therapies and programs for ASD.



Ordering Information

For electronic copies of *Therapies for Children With Autism Spectrum Disorder, A Review of the Research for Parents and Caregivers* (AHRQ Pub. No.14-EHC036-A), this clinician guide, and the full systematic review, visit www.effectivehealthcare.ahrq.gov. To order free print copies, call the AHRQ Publications Clearinghouse at 800-358-9295.

Source

The information in this summary is based on two Comparative Effectiveness Reviews (CERs) prepared by the Vanderbilt Evidence-based Practice Center for the Agency for Healthcare Research and Quality (AHRQ): *Comparative Effectiveness of Therapies for Children With Autism Spectrum Disorders*, CER No. 26, prepared under Contract No. 290-2007-10065-I, April 2011; and *Therapies for Children with Autism Spectrum Disorder: Behavioral Interventions Update*, CER No. 137, prepared under Contract No. 290-2012-00009-I, August 2014. Available at: www.effectivehealthcare.ahrq.gov/autism1.cfm. This summary was prepared by the John M. Eisenberg Center for Clinical Decisions and Communications Science at Baylor College of Medicine, Houston, TX, and updated by AHRQ.

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