APPLIED BEHAVIOR ANALYSIS FOR AUTISM SPECTRUM DISORDER

Policy Number: BH727BCPABA_012018 Effective Date: January 10, 2018

Table of Contents

BENEFIT CONSIDERATIONS ...................................... 1
COVERAGE RATIONALE ............................................. 2
UTILIZATION MANAGEMENT CRITERIA ....................... 2
DESCRIPTION OF SERVICES ...................................... 7
CLINICAL EVIDENCE .................................................. 7
U.S. FOOD AND DRUG ADMINISTRATION .................... 12
CENTERS FOR MEDICARE AND MEDICAID SERVICES ... 12
APPENDIX………………………………………………………………………13
APPLICABLE CODES ................................................ 14
REFERENCES .......................................................... 14
HISTORY/REVISION INFORMATION ............................. 15

BENEFIT CONSIDERATIONS

Before using this policy, please check the member-specific benefit plan document and any federal or state mandates, if applicable.

This Behavioral Clinical Policy is provided for informational purposes. It does not constitute medical advice.

Refer to the following for fully insured policies in Maryland

Use the following criteria as specified in the Code of Maryland Regulations (MD COMAR 31.10.39.03. April 3, 2014)

A. The utilization review criteria of a carrier or private review agent acting on behalf of a carrier to determine medical necessity or appropriateness may not be more restrictive for habilitative services for the treatment of autism and autism spectrum disorder than the criteria listed in this regulation.

B. The carrier's criteria for habilitative services shall include criteria for behavioral health treatment, psychological care, and therapeutic care.

C. Utilization review criteria of a carrier or private review agent acting on behalf of a carrier may require:
   1. A comprehensive evaluation of a child by the child's primary care provider or specialty physician identifying the need for habilitative services for the treatment of autism or autism spectrum disorder
   2. A prescription from a child's primary care provider or specialty physician that includes specific treatment goals
   3. An annual review by the prescribing primary care provider or specialty physician, in consultation with the habilitative services provider, that includes:
      i. Documentation of benefit to the child;
      ii. Identification of new or continuing treatment goals
      iii. Development of a new or continuing treatment plan

D. A carrier or private review agent acting on behalf of a carrier may not deny coverage based solely on the number of hours of habilitative services prescribed, for:
   1. Less than or equal to 25 hours per week in the case of a child who is at least 18 months of age and who has not reached the child's sixth birthday, or
   2. Less than or equal to 10 hours per week in the case of a child who has reached the child's sixtieth birthday and who has not reached the child's ninetieth birthday
   3. Notwithstanding §D(1) and (2) of this regulation, a carrier may authorize additional hours of
habilitative services that are medically necessary and appropriate for the treatment of autism or autism spectrum disorder.

E. A carrier may limit payment for habilitative services to payment for services provided by individuals who are licensed, certified, or otherwise authorized under the Health Occupations Article or similar licensing, certification, or authorization requirements of another state or U.S. territory where the habilitative services are provided.

F. Location of services.

1. A carrier may not deny payment for habilitative services if a treatment goal identifies the location of the habilitative services as the child’s educational setting
2. Nothing in §F(1) of this regulation shall be construed to require a carrier to provide services to a child under an individualized education program or any obligation imposed on a public school by the Individuals With Disabilities Education Act, 20 U.S.C. 1400 et seq., as amended from time to time.

G. A carrier or a private review agent acting on behalf of a carrier may not deny payment for applied behavior analysis on the basis that it is experimental or investigational

COVERAGE RATIONALE

Applied Behavior Analysis (ABA) is proven for the treatment of autism spectrum disorder in children when the following conditions are met:

- The intervention is a systematic approach, based on the principles of comprehensive applied behavior analysis
- The intervention targets the core deficits of an autism spectrum disorder, as outlined by the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5®)
- The intervention is delivered in a home or community setting
- The intervention is rendered directly by a Board-certified Behavior Analyst (BCBA), a licensed mental health clinician with additional documented training in applied behavior analysis, or a paraprofessional under the direct supervision of such professionals
- The intervention is delivered with an appropriate level of intensity (e.g., per Behavior Analyst Certification Board® practice guidelines) and includes ongoing measurement of efficacy: the use of measurement tools and analysis of progress should be continuous, and treatment decisions based on objective analysis of assessment results


Applied Behavior Analysis is unproven for any of the following:

- Programs or interventions that do not meet all of the above proven conditions
- Programs that are initiated once the individual is a developmental adolescent or young adult or adult
- Programs that are not delivered by or under the supervision of an ABA-trained professional
- Programs that target mental disorders other than autism spectrum disorders as defined in the DSM-5®

School-based ABA services or services that are otherwise covered under the Individuals with Disabilities Education Act (IDEA) are not covered.

According to a number of recent systematic reviews and meta-analyses, early intervention based on applied behavior analysis is associated with positive outcomes for children with autism spectrum disorder. Currently, there is insufficient evidence to determine which children are most likely to benefit (or not benefit) from specific interventions. Recent progress has been made in systematizing intervention approaches and measuring treatment fidelity. Intervention research for adolescent and young adult populations and for primary diagnoses other than autism spectrum disorder remains very limited.

UTILIZATION MANAGEMENT CRITERIA

Prior authorization is required for applied behavior analysis (ABA).

In addition to using the following Utilization Management criteria below, please see:

For services provided in the state of Indiana, please see the Behavioral Clinical Policy (Indiana): Applied Behavior Analysis for Autism Spectrum Disorder

**Diagnostic Evaluation**

The diagnosis of autism spectrum disorder (ASD) must be validated by a documented comprehensive assessment demonstrating the presence of the following diagnostic criteria based on the DSM-5®:

Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following examples, currently or by history:

- Deficits in social-emotional reciprocity, ranging from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
- Deficits in nonverbal communicative behaviors used for social interaction, ranging from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and non-verbal communication.
- Deficits in developing, maintaining, and understanding relationships, ranging from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

**Specify current severity. See Appendix A.**

Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following examples, currently or by history:

- Stereotyped or repetitive motor movements, use of objects or speech (e.g., simple motor stereotypes, lining up toys or flipping objects, echolalia, idiosyncratic phrases).
- Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day).
- Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).
- Hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

**Specify current severity. See Appendix A.**

Symptoms must be present in the early developmental period (but may not become fully manifested until social demands exceed limited capacities, or may be masked by learned strategies in later life).

Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make comorbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

The autism evaluation should include (Volkmar et al., 2014; Meyers and Johnson, 2007, reaffirmed 2014):

- The use of a standard parent- or clinician-rated screening instrument, such as:
  - Autism Behavior Checklist [ABC]
  - Childhood Autism Rating Scale [CARS]
  - Checklist for Autism in Toddlers [CHAT; M-CHAT]
  - Communication and Symbolic Behavior Scales Developmental Profile Infant-Toddler Checklist [CSBS-DP-IT-Checklist]
  - Autism Screening Questionnaire [ASQ]
  - Autism Quotient [AQ]
  - Childhood Autism Screening Test [CAST]
- The use of a standard psychiatric assessment, such as:
  - Autism Diagnostic Interview-Revised [ADI]
• Autism Diagnostic Observation Schedule [ADOS]
  • Diagnostic Interview for Social and Communication Disorders [DISCO].
• Interviews with the child and family, and assessment of the parents’ knowledge of autism spectrum disorder, coping skills, and available resources and supports
• Review of past records (e.g., past and current behavioral interventions) and historical information (e.g., family history and relevant psychosocial issues);
• Systematic attention to the areas relevant to differential diagnosis, including (American Psychiatric Association, 2013):
  o Rett syndrome
  o Selective mutism
  o Language disorders and social (pragmatic) communication disorder
  o Intellectual disability (intellectual developmental disorder) without autism spectrum disorder
  o Stereotypic movement disorder
  o Attention-deficit/hyperactivity disorder
  o Schizophrenia
• Attention to possible comorbid diagnoses
• Observation of broad areas of social interaction and restricted, repetitive behaviors
• A medical assessment, including physical examination, hearing screen, and examination for signs of other genetic abnormalities;
• Psychological assessment, such as:
  o Measurements of cognitive ability and adaptive skills
  o Use of standard tests of intelligence
  o Identification of areas of strength and weakness useful for designing intervention programs
• Communication assessment, such as measurement of receptive and expressive vocabulary and language use

When members of multiple disciplines are involved in assessment (e.g., occupational therapy, physical therapy), coordination among the various professionals is required

Treatment Planning
Once an ASD diagnosis has been established:
• A standardized functional assessment is used to maximize the effectiveness and efficiency of behavioral support interventions (Myers and Johnson, reaffirmed 2014). The assessment may incorporate information such as interviews with caregivers, structured rating scales, direct observation data, and attention to coexisting medical conditions (Behavior Analyst Certification Board, 2014)
• Targets include areas such as the following:
  o Communication skills
  o Language skills
  o Social interaction skills
  o Restricted, repetitive patterns of behavior, interests, or activities
  o Self-injurious, violent, destructive or other maladaptive behavior
• A credentialed provider with ABA expertise is identified to provide treatment. Examples include (e.g., Behavior Analyst Certification Board, 2014):
  o A Master- or Doctoral-level provider that is a Board Certified Behavior Analyst (BCBA)
  o A licensed behavioral health clinician who has attested to having sufficient expertise and has been credentialed to provide ABA services
  o A Board Certified Assistant Behavior Analyst (BCaBA) or non-licensed individual under the direct supervision of a BCBA or licensed behavioral health clinician who takes responsibility for the member’s care that does either of the following:
    ▪ Assist in the initial or concurrent assessment of the member’s deficits or adaptive behaviors
    ▪ Implement a treatment plan that has been developed by a BCBA or licensed behavioral health clinician
  o Paraprofessional interventions must be directly supervised with the child present at least 1 hour per month, up to 8 hours per month, not to exceed 1 hour for every 10 hours of direct care provided
• Outcome-oriented interventions targeting specific baseline behaviors are identified in a treatment plan describing the frequency, intensity, duration and progress that will be continuously updated.
  o Treatment planning a minimum of 1 hour per month up to 8 hours per month (not to exceed 1 hour for every 10 hours of direct service).
  o The treatment plan must address how the parents/guardians will be trained in management skills that can be generalized to the home.
    ▪ Parent/guardian training is an expectation. In the rare circumstance that parent/guardian is unable the documentation must reflect the reason and identify an alternate plan to provide management skills in the home.
- The treatment goals and objectives must be comprehensive and clearly stated.
  - The treatment plan is in sync with the child’s Individual Family Service Plan (IFSP) / Individualized Education Plan (IEP).
- All components of the child’s care are tracked and updated throughout the duration of services.

**Treatment**

ABA intervention must include the following elements:

- Mitigate the core features of ASD
- Target specific deficits related to imitation, attention, motivation, compliance and initiation of interaction, and the specific behaviors that are to be incrementally taught and positively reinforced
- Tie to objective and quantifiable treatment goals that have projected timeframes for completion
- Include the child’s parents in parent training and the acquisition of skills in behavior modification to promote management of skills within the home
- Train family members and other caregivers to manage problem behavior and interact with the child in a therapeutic manner
- As indicated, include psychotherapy (e.g., cognitive behavioral therapy) for higher functioning children to treat conditions such as anxiety and anger management
- Have an appropriate level of intensity and duration driven by factors such as:
  - Treatment goals
  - Changes in the targeted behavior(s) / response to treatment
  - The demonstration and maintenance of management skills by the parents and caregivers;
  - Whether specific issues are being treated in a less intensive group format (e.g., social skills groups)
  - The child’s ability to participate in ABA given attendance at school, daycare or other treatment settings
  - The impact of co-occurring behavioral or medical conditions on skill attainment

Treatment methodologies utilized as part of intensive behavior therapies should be considered established by the National Autism Centers Standards Projects.

Parent/Caregiver support is expected to be a component of the ABA program, as they will need to provide additional hours of behavioral interventions. Parents or caregivers must be involved and engaged in the training and follow through on treatment recommendations beyond that provided by licensed or certified practitioners. Parent support groups are considered not medically necessary.

Services are intensive and may be provided daily, but ordinarily will not exceed 8 hours per day or 40 hours per week inclusive of other interventions. These hours of service also take into account other non-behavioral services such as school, speech, and occupational therapies, generally covered by other entities.

**Coordination of Care**

If applicable, documentation of communication and coordination with other service providers and agencies, (i.e. day care, preschool, school, early intervention services providers) and/or other allied health care providers (i.e. occupational therapy, speech therapy, physical therapy and any other applicable providers) to reduce the likelihood of unnecessary duplication of services. Documentation should include the following:

- Types of therapy provided
- Number of therapies per week
- Behaviors/deficits targeted
- Progress related to the treatment/services being provided
- Measureable criteria for completing treatment with projected plan for continued care after discharge from ABA therapy
- Total number of days per week and hours per day of direct services to child and parents or caregivers to include duration and location of requested ABA therapy
- Dates of service requested
- Licensure, certification and credentials of the professionals providing ABA services to the child
- Evidence that parents and/or caregivers have remained engaged in the treatment plan, following all appropriate treatment recommendations
  - Detailed description of interventions with the parent(s) or caregiver(s), including:
    - Parental or caregiver education, training, coaching and support
    - Overall parent or caregiver goals including a brief summary of progress. As part of the summary of progress the information should also include percentage of planned sessions attended
    - Plan for transitioning ABA interventions identified for the child to the parents or caregivers
**Continued treatment**

With each medical necessity review for continued ABA treatment, an updated treatment plan and progress reports will be required for review, including all of the following documentation:

- There is a reasonable expectation on the part of the treating clinician that the child’s behavior and skill deficits will continue to improve to a clinically meaningful extent, in at least two settings (home, school, community) with ABA services
- Therapy is not making the symptoms or behaviors persistently worse
- Progress is assessed and documented for each targeted symptom and behavior, including progress toward defined goals, and including the same modes of measurement that were utilized for baseline measurements of specific symptoms and behaviors.
- The treatment plan and progress report should reflect improvement from baseline in skill deficits and problematic behaviors using validated assessments of adaptive functioning.
- When there has been inadequate progress with targeted symptoms or behaviors, or no demonstrable progress within a six month period, or specific goals have not been achieved within the estimated timeframes, there should be an assessment of the reasons for inadequate progress or not meeting the goals, and treatment interventions should be modified or changed in order to attempt to achieve adequate progress. Documentation of such an assessment and subsequent treatment plan change(s) must include:
  - Increased time and/or frequency working on targets
  - Change in treatment techniques
  - Increased parent/caregiver training
  - Identification and resolution of barriers to treatment effectiveness
  - Any newly identified co-existing disorder (e.g., anxiety, psychotic disorder, mood disorder)
  - Goals reconsidered (e.g., modified or removed)

When goals have been achieved, either new goals should be identified that are based on targeted symptoms and behaviors that are preventing the child from adequately participating in age-appropriate home, school or community activities, or that are presenting a safety risk to self, others, or property; or, the treatment plan should be revised to include a transition to less intensive interventions.

Treatment methodologies utilized as part of intensive behavior therapies should be considered established by the National Autism Centers Standards Projects.

**Discharge**

When any of the following criteria are met the child will be considered discharged and any further ABA services will be considered not medically necessary:

- Documentation that the child demonstrates improvement from baseline in targeted skill deficits and behaviors to the extent that goals are achieved or maximum benefit has been reached
- Documentation that there has been no clinically significant progress or measurable improvement for a period of at least 3 months in the child’s behaviors or skill deficits in any of the following measures:
  - Adaptive functioning
  - Communication skills
  - Language skills
  - Social skills
- The treatment is making the skill deficits and/or behaviors persistently worse
- The child is unlikely to continue to benefit or maintain long term gains from continued ABA therapy
- Parents and/or caregivers have refused treatment recommendations or are unable to participate in the treatment program and/or do not follow through on treatment recommendations to an extent that compromises the effectiveness of the services.

**Documentation Requirements**

ABA providers are required to have a separate record for each member that contains the following documentation:

- Comprehensive assessment establishing the autism diagnosis
- All necessary demographic information
- Complete developmental history and educational assessment
- Functional behavioral assessment including assessment of targeted risk behaviors
- Behavioral/medical health treatment history including but not limited to:
  - known conditions
  - dates and providers of previous treatment
  - current treating clinicians
  - current therapeutic interventions and responses
• Individualized treatment plan and all revisions to the treatment plan, including objective and measurable goals, as well as parent training
• Daily progress notes including:
  o place of service
  o start and stop time
  o who rendered the service
  o the specific service (e.g., parenting training, supervision, direct service)
  o who attended the session
  o interventions that occurred during the session
  o barriers to progress
  o response to interventions
• All documentation must be legible
• All documentation related to coordination of care
• All documentation related to supervision of paraprofessionals
• If applicable, a copy of the child’s Individualized Education Plan (IEP)
• If applicable, progress notes related to Early Intervention Plan or Pre-school/Special Education Program or allied health services
• Certification and credentials of the professionals providing the ABA therapy

DESCRIPTION OF SERVICES

ABA is a scientific discipline among the helping professions that focuses on the analysis, design, implementation, and evaluation of social and other environmental modifications to produce meaningful changes in human behavior. ABA includes the use of direct observation, measurement, and functional analysis of the relations between environment and behavior. ABA uses changes in environmental events, including antecedent stimuli and consequences, to produce practical and significant changes in behavior. These relevant environmental events are usually identified through a variety of specialized assessment methods. ABA is based on the fact that an individual’s behavior is determined by past and current environmental events in conjunction with organic variables such as their genetic endowment and physiological variables. Thus, when applied to ASD, ABA focuses on treating the problems of the disorder by altering the individual’s social and learning environments. (Behavior Analyst Certification Board Inc., 2014).

CLINICAL EVIDENCE

Summary of Clinical Evidence
Conclusions from several recent systematic reviews and meta-analyses suggest that the evidence to support the use of applied behavior analysis for ASD has improved, particularly over the last decade. A number of these studies report medium to large effects of intensive behavioral therapies on improvements in communication and adaptive behavior. The National Autism Center, in a two-phase review of 1164 studies, found the strongest evidence to be for comprehensive behavioral treatment for children (primarily up to age 9), often referred to as ABA programs or early intensive behavioral interventions (EIBI). Similarly, in a 2014 review, the Agency for Health Research and Quality (AHRQ, 2014) found the strongest evidence for ABA-based early intensive behavioral and developmental interventions in children up to age 12.

Many reviews note that few studies have randomly selected their subjects or enrolled large samples. The AHRQ (2014) has called for a greater need to study interventions across settings. Many authors also note that an enhanced understanding of which interventions are most effective for specific children with ASD is necessary, and will need to be included in future research.

While the quantity of research on intensive behavioral therapies for adolescent and adults with ASD has increased in recent years, the evidence remains inconclusive on the efficacy of these interventions in older populations.

Systematic Reviews/Meta-Analyses
Brugha and colleagues (2015) conducted a systematic review of outcome measures used in treatment trials for older adolescents and adults with an autism spectrum disorder (ASD). Included studies were required to have a focus on treating core ASD symptoms and associated conditions of ASD in adolescents and adults (age > 15). Additionally, the evaluation of therapy must have been compared with the same treatment at a different dose or intensity, an alternative intervention and/or placebo or usual care. The study must have also incorporated at least one standardized or quantitative outcomes measure of effectiveness associated with improvement of core/associated or secondary features of ASD. A total of 30 articles (19 of which involved pharmacological treatments) were identified that met inclusion criteria. Selected studies included randomized and placebo-controlled trials, retrospective assessment studies, case series and open label or case-control trials. The review found that use of outcome measures varied with frequent use of non-standardized assessments, and very little use of measures designed specifically for individuals with ASD or of instruments focusing on core ASD deficits, such as communication or social functioning. The authors conclude that
although there are now many well controlled treatment trials for children with ASDs, adult intervention research is very limited. The lack of valid and reliable outcome measures for adults with ASDs compromises attempts at treatment evaluation.

Roth and colleagues (2014) conducted a meta-analysis of published behavioral interventions for adolescents and adults diagnosed with an autism spectrum disorder (ASD). The authors set objectives of (a) identification of the overall effects of the behavioral interventions for adolescents and adults with ASD using a “nonoverlap of all pairs” effect size, and (b) assessment of the certainty of evidence, an evaluation system of a study’s design and methodology, to determine the confidence to place in the results of the included studies. A total of 43 articles met inclusionary criteria, yielding data for 110 participants ranging in age from 12 to 45 years. Articles were classified as having suggestive (74.4%), preponderant (9.3%), or conclusive (16.3%) certainty of evidence. The most common reason studies did not receive a conclusive certainty of evidence classification was missing treatment integrity data. Three quality indicators (generalization, maintenance, social validity) of single-case research were also examined. Results suggested that the behavioral interventions in areas of academic skills, adaptive skills, problem behavior, phobic avoidance, social skills, and vocational skills have medium-to-strong effect sizes. Medium-to-high confidence in findings was noted for 81% of the studies; however, three-fourths of the reviewed studies did not include treatment integrity. The authors conclude that the overall evidence is promising for use of behavioral interventions for this adolescent/adult population; however, additional research and dissemination are needed to fill the gap between research and practice.

Walton and Ingersoll (2013) reviewed research examining social skill interventions for youth and adults with an autism spectrum disorder (ASD) and severe to profound intellectual disability (S/PID), and pointed out weaknesses and challenges in this literature. Seventeen studies examining interventions for improving positive social behaviors in adolescents or adults with ASD and S/PID were included in this literature review. After the studies to be included were identified, articles were grouped into several broad treatment categories based on similarity of treatment methods. The review suggests that a variety of interventions from several theoretical perspectives (video modeling, developmental, peer-mediated, behavioral, structured teaching) have been examined for use in this population, with a number of successes reported. These programs have targeted social skills with a number of different interaction partners, including teachers or therapists (developmental and behavioral interventions), peers (behavior and peer-mediated interventions), and direct care staff (structured teaching interventions). The authors conclude that the findings of this review are unable to recommend a specific treatment, and a next step in treatment development would be further manualization and protocol development to enable replication of various findings on a larger scale.

McDonald and Machalicek (2013) conducted a systematic review of intervention research for adolescents with autism spectrum disorders (ASD) between the years 1980 and 2011. Articles had to include at least one adolescent (age 12-21) with a diagnosis of ASD, and study the implementation of an empirical design to evaluate the effects of an educational, behavioral, or psychosocial intervention and report distinguishable outcome data. A total of 102 included studies were classified into seven categories: (1) social skills; (2) communication skills; (3) challenging behavior; (4) academic skills; (5) vocational skills; (6) independence and self-care; and (7) physical development. Participants were divided into three age groups (12-14 years; 15-17 years; 18-21 years) to compare interventions and domains across age. The studies were set primarily in school settings, followed by clinical, institutional and community settings. Antecedent and behavioral intervention combinations were by far the most common intervention package (22%), followed by teacher implemented antecedent and behavioral intervention (8%), teacher implemented antecedent approaches (7%), behavioral intervention and self-management interventions (5%), and antecedent, behavioral intervention, and technology-based approaches (4%). The remaining 39% of interventions utilized a wide range of combinations. The majority of studies (86%) reported positive findings. Comparative effectiveness, on the other hand, was difficult to determine due to variations in intervention procedures, specific skills targeted, participant characteristics, and other factors. Effectiveness for interventions combinations was also difficult to ascertain without comparison to the interventions singly. The authors conclude that encouraging findings include a range of effective approaches for younger adolescents, with three approaches demonstrating consistent positive findings: antecedent manipulations, behavioral interventions, and technology-based interventions.

Bishop-Fitzpatrick and colleagues (2013) conducted a systematic review of psychosocial interventions for adults with autism spectrum disorders (ASD). The authors examined the evidence base of such interventions for adults with ASD to determine common themes in treatment approaches and evaluate the evidence of their efficacy. A total of 1217 studies were reviewed, though only 13 met inclusion criteria. Over three-quarters of the studies had less than 20 participants. All ABA studies were single case, and reported positive benefits of treatment, although the maintenance of this benefit varied between subjects. The authors conclude that despite evidence of the benefits of psychosocial interventions for adults with ASD, there are significant limitations to the current evidence base. Due to the small number of studies for this population, the authors were unable to conduct a meta-analysis of the adult ASD literature. As a consequence, clear estimates of effect size for different types of psychosocial interventions are not available. It is suggested that new research conducted on psychosocial interventions for adults should use more rigorous and
adequately powered methodology and carefully select outcome measures which are congruent with the intervention type and research questions.

Strauss and colleagues (2013) synthesized six meta-analyses of early intensive behavioral interventions (EIBI) for young children with autism spectrum disorders. The three components of the synthesis were (a) descriptive analysis, (b) effect size analysis, and (c) mediator analysis via partial correlation and linear regressions. The majority of interventions followed the behavioral manual developed by Lovaas and colleagues. In the majority of interventions, children in the comparison groups followed a less specific eclectic school-based approach or a less intensive treatment-as-usual (TAU) at the center of reference. The mean duration of ABA programs without parent inclusion was 37 months, while programs favoring parent inclusion in skill generalization had duration of approximately 20 months. The following outcomes were measured with standardized instruments and complete pre-post data reported: full-scale IQ (19 studies), receptive and expressive language totals (11 studies), and adaptive behavior composites (15 studies). Change in IQ was the primary outcome across studies. Results suggest that EIBI leads generally to positive medium-to-large effects for the three outcome measures. Analysis by type of delivery format revealed that EIBI programs that include parents in treatment provision are more effective. The authors note that a self-contained meta-analysis is needed based on updated literature research that is extended to parent inclusion as study selection criteria. Randomization to group assignment was implemented twice in the included studies, and the allocation to treatment or control groups upon therapist availability or parental preference raises internal validity concerns. The literature also lacked comparisons between EIBI and approaches other than eclectic. It is acknowledged that differences may be partly the result of differences in treatment intensity, frequency of supervision, staff and parent training, and as such a dose-response or fidelity effect rather than related to the approach itself. In order to control these variables, the authors suggest sound comparison intervention groups which are comparable in intensity, duration, training, fidelity, and supervision requirements, as well as in child intake characteristics.

Virues-Ortega and colleagues (2013) conducted a meta-analysis of 13 studies, totaling 172 individuals with autism exposed to the Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) therapy program. The authors looked to evaluate the TEACCH program effect over a variety of standardized outcomes and to identify specific characteristics of the sample that could be reliably associated with increased intervention effectiveness. Standardized measures of perceptual, motor, adaptive, verbal, and cognitive skills were identified as treatment outcomes. Six between-group and seven pre-post trials were identified for inclusion. Results indicated that TEACCH effects on perceptual, motor, verbal, and cognitive skills were of small magnitude. Effects over adaptive behavioral repertoires including communication, activities of daily living, and motor functioning were within the negligible to small range. There were moderate to large gains in social behavior and maladaptive behavior. The overall effect of the intervention across all outcomes was moderate and effects seemed to increase with age. The adult population experienced the greatest overall benefit. The authors note that due to the limited number of appropriately designed studies, the evidence base for the TEACCH program has not been established as effective or ineffective. Therefore, the analysis should be considered a preliminary evaluation pointing to the outcomes that demonstrate greater promise.

**AHRQ Reports**

An AHRQ systematic review of behavioral intervention therapies for children (0-12 years) with autism spectrum disorder (ASD) was published in 2011 (Warren et al., 2011). This review included 183 articles, representing 159 unique studies, and accepted any study design except for individual case reports. The review excluded studies with fewer than 10 total participants receiving interventions. Included studies of early intensive behavioral and developmental interventions were conducted primarily in preschool and young children (initially ages 2-7 years); questions remain about how these approaches apply to and benefit younger children (under 2) at risk for ASD. Roughly 40% of studies in this review did not use a comparison group, which presents substantial challenges for assessing effectiveness at a population level or for conducting comparative effectiveness research. Even in studies with a comparison group, sample size was frequently insufficient to draw conclusions, and the authors note that larger multisite trials are needed across all treatment types. The researchers also noted a strong tendency for authors to present data on numerous outcomes without adjusting for multiple comparisons. Duration of treatment and follow-up was generally short, with few studies providing data on long-term outcomes after cessation of treatment. In sum, the authors conclude that while some therapies hold promise and warrant further study, substantial needs exist for continuing improvements in methodologic rigor in the field and for larger, potentially multisite studies of existing interventions. New studies should better characterize children, both phenotypically and genotypically, to move towards personalization of treatments for improved outcomes.

A comparative effectiveness review (Lounds Taylor et al., 2012) by the AHRQ focused on interventions for adolescents and young adults (ages 13-30) with autism spectrum disorder (ASD). The report notes that interventions used to treat ASDs may include a range of behavioral, psychosocial, educational, medical, and complementary approaches focused on the transitional process and improving outcomes for parents/families of individuals with ASDs during adolescence and adulthood. The goal of the review was to examine the effects of available interventions for this population, focusing particularly on the following outcomes: core symptoms of ASD (impairments in social interaction,
communication, and repetitive behavior); medical and mental health comorbidities; functional behaviors and independence; the transition to adulthood; and family outcomes. Studies were grouped into quality levels of “good”, “fair”, or “poor”. A total of 32 studies were included in the qualitative synthesis. Of these studies, 10 were randomized controlled trials. The authors found most studies to be of “poor” quality, five were of “fair” quality (primarily of medical interventions), and none were of “good” quality. The strength of the evidence across all interventions and outcomes was insufficient, as studies were typically of poor quality, addressed disparate interventions and outcomes, and lack replication. The authors conclude that overall, there is a dearth of evidence in all areas of care for adolescents and young adults with ASD, and it is urgent that more rigorous studies be developed and conducted. It is unlikely that large scale implementation of interventions will be considered until a stronger evidence base is developed, despite growing numbers of individuals with need, and some small studies demonstrating initial promise. A fruitful area for consideration may be identifying programs/interventions that are appropriate candidates for developing treatment manuals to encourage standardized replication of promising approaches.

A 2014 report from the AHRQ (Weitlauf et al., 2014) focused on more recent studies of behavioral interventions for autism spectrum disorder (ASD) in children 0-12 years. The review excluded studies with fewer than 10 total participants receiving interventions. The 2014 reviewers note that since the review conducted in 2011, there has been a significant increase in the quantity and quality of studies investigating behavioral interventions. These newer studies strengthened the ability to make conclusions about the effectiveness of behavioral interventions. For example, of the 45 comparative studies of behavioral interventions (29 RCTs) in the 2011 review, the authors considered only two as “good” quality. In contrast, among the new studies described in the more current (2014) review, 19 studies were of “good” quality, and 48 of the 65 included studies were RCTs. The 2014 reviewers found that early intervention based on high-intensity applied behavior analysis over extended timeframes was associated with improvement in cognitive functioning and language skills (with a moderate strength of evidence), relative to community controls in some groups of young children. Other results from the 2014 AHRQ Report are as follows:

- Improvements were most often seen in cognitive abilities and language acquisition, with less robust and consistent improvements seen in adaptive skills, core ASD symptom severity, and social functioning. Many of the reviewed studies did not follow children beyond the late preschool or early school years.
- The identified intervention approaches were found to still vary substantially, and it is continually challenging to predict long-term functional and adaptive outcomes on an individual level. At this time, the evidence is insufficient to adequately identify and target the children who are most likely to benefit (or not benefit) from specific interventions.
- Although researchers are attempting to manualize approaches and operationalize and measure treatment fidelity, manualizing intensive interventions for a heterogeneous patient population is intrinsically challenging. However, recent progress toward this end has shown that children may respond differentially to early intensive approaches.
- Measuring appropriate outcomes is a primary methodologic concern in the ASD literature. Although more studies are reporting primary and secondary outcomes measures, continued improvements in reporting will benefit the field.

The authors of the 2014 AHRQ Review conclude that a growing evidence base suggests that behavioral interventions are associated with positive outcomes for children with ASD. Yet despite improvements in the quality of the included literature, a need remains for studies of interventions across settings and continued improvements in methodologic rigor. Substantial scientific advances are needed to move toward an enhanced understanding of which interventions are most effective for specific children with ASD and to isolate elements or components of interventions most associated with effects.

**Other Reports**

Zwaigenbaum and colleagues (2015) reviewed evidence for autism spectrum disorder (ASD) interventions for children aged < 3 years, based on peer-reviewed articles published up to December 2013. A total of 24 randomized controlled, quasi-experimental, and open-label studies were reviewed by the working group. Because few studies focused exclusively on this age group, studies in which participants included some children aged > 3 years were assessed as long as there was sufficient information to draw inferences about younger children. Compared with early intervention models evaluated for preschool-aged children (aged 3–5 years), programs for children aged < 3 years were more likely to use developmental approaches, more intensively involve parents, and target social communication. These studies varied in sample size and severity of diagnosis, dose (level of intensity/frequency of service delivery), duration, agent (parent, therapist, or a combination), and format of delivery (parent-managed/home-based and/or center-based in a clinic or school) of the intervention. Some interventions were comprehensive, defined as addressing multiple core ASD deficits, while others targeted specific areas of functioning. Based on the review, the working group offered a number of recommendations, including the following:

- Current best practices for interventions for children aged < 3 years with suspected or confirmed ASD should include a combination of developmental and behavioral approaches and begin as early as possible.
- Current best practices for children aged < 3 years with suspected or confirmed ASD should have active involvement of families and/or caregivers as part of the intervention.
Interventions should enhance developmental progress and improve functioning related to both the core and associated features of ASD, including social communication, emotional/behavioral regulation, and adaptive behaviors.

Future research should prioritize well-defined sampling strategies, rigorous investigative design, fidelity of implementation, and meaningful outcome measurements.

Research is needed to determine the specific active components of effective interventions, including but not limited to the type of treatment provided, the agent implementing the intervention(s) (parent, therapist, teacher, or combination), consistency of service provision across environments and between providers, and duration of treatment and hours per week.

Adopting a common set of research-validated core measures of ASD symptoms (including but not limited to cognitive function, communication, and adaptive behavior) that can be used across multiple sites will facilitate comparisons across studies of children with ASD aged < 3 years.

Wong and colleagues (2013) authored a report describing a process for the identification of evidence-based practices for children, youth, and young adults with autism spectrum disorder (ASD). A national set of reviewers were recruited and trained to evaluate articles from the literature using a standard article evaluation process. To qualify for the review, study participants had to be between birth and 22 years of age, and identified as having an ASD. The focused intervention practice examined in a study had to be behavioral, developmental, and/or educational in nature. The design of the study had to compare an experimental or treatment condition to at least one other condition in which the treatment was not implemented or an alternative intervention condition was implemented. Focused intervention practices had to generate behavioral, developmental, or academic outcomes. Studies had to employ an experimental group design, quasi-experimental design, or single case design. A total of 1,090 intervention articles were evaluated, with a total of 456 intervention articles meeting inclusion criteria. Of these, 48 utilized a group design (mostly randomized controlled trials), and the remaining 408 articles were single case design. The majority of the participants in studies were children between the ages of 6 and 11. Relatively few studies included children below three years of age, and a small number of studies included participants above 12 years of age – with this number declining as participant age increased. Although studies in the literature incorporated a wide range of outcomes, the reviewed research focused primarily on outcomes associated with the core symptoms of ASD: social, communication, and challenging behaviors. Results of the report found a total of twenty-seven practices that met criteria for being evidence-based. These practices consist of interventions that are fundamental applied behavior analysis techniques, assessment and analytic techniques that are the basis for intervention, and combinations of primarily behavioral practices used in a routine and systematic way that fit together as a replicable procedure. No practices were exclusively supported through group design methodologies. The authors note that the review falls short of specifically identifying EBPs for adults with ASD.

The National Autism Center conducted a complex multifaceted review of educational/behavioral treatments for individuals under the age of 22 with a diagnosis of Autistic Disorder, Asperger's Syndrome, or PDD-NOS, and reported results in Phase 1 of the National Standards Project (NSP1). The NSP1 reviewed 775 peer reviewed studies published between 1957 and 2007 that utilized a variety of interventions pertaining to the treatment of autism spectrum disorder (ASD). The NSP1 review occurred across disciplines including psychologists, speech-language pathologists, educators, occupational or physical therapists and behavior analysts. Steps were taken to establish a high level of reliability amongst reviewers, including creating a coding manual, training raters to a specified criterion, and evaluation of the field reviewer's level of inter-observer agreement. Reviewers used a scientific rating scale to consistently evaluate the scientific merit of each study included in the analysis, a large proportion of which were single case studies. Scores were assigned based on five critical dimensions of scientific rigor and used to determine the extent to which the interventions were effective. Studies were then placed into a strength-of-evidence classification system which was broken down into four categories: established, emerging, unestablished or ineffective/harmful. Based on this scoring system, the NSP1 identified 11 established treatments, defined as treatments that produce beneficial outcomes and are known to be effective for individuals on the autism spectrum. The majority of these interventions were developed in the behavioral literature (e.g., applied behavior analysis, behavioral psychology, and positive behavior support). The 11 established treatments were Antecedent Package; Behavioral Package; Comprehensive Behavioral Treatment for Young Children; Joint Attention Intervention; Modeling; Naturalistic Teaching Strategies; Peer Training Package; Pivotal Response Treatment; Schedules; Self-management; and Story-based Intervention Package (National Autism Center 2009).

The National Autism Center Phase 2 (NSP2) report reviewed studies published between 2007 and February of 2012. According to the authors, NSP2 largely reinforced the findings of Phase 1. For children and adolescents under age 22, the authors found additional empirical support for interventions that are behaviorally based. The authors indicated that in spite of the growing population of adults with ASD, there is lesser empirical research to guide intervention for this population (National Autism Center 2015).
American Academy of Pediatrics (AAP): The AAP published clinical guidelines for the management of autism in 2007 that were reaffirmed in 2010 and again in 2014. The guidelines state that children who receive early intensive behavioral treatment have been shown to make substantial, sustained gains in IQ, language, academic performance, and adaptive behavior, as well as some measures of social behavior, and their outcomes have been significantly better than those of children in control groups. There is a growing body of evidence that supports the efficacy of certain interventions in ameliorating symptoms and enhancing functioning, but much remains to be learned. The AAP states that proponents of behavior analytic approaches have been the most active in using scientific methods to evaluate their work, and most studies of comprehensive treatment programs that meet minimal scientific standards involve treatment of preschoolers using behavioral approaches. However, there is still a need for additional research, including large controlled studies with randomization, and assessment of treatment fidelity. Empirical scientific support for developmental models and other interventions is more limited, and well-controlled systematic studies of efficacy are needed (Myers and Johnson, 2007, reaffirmed 2014).

American Academy of Child and Adolescent Psychiatry (AACAP): The AACAP published a practice parameter for assessment and treatment of children with autism spectrum disorder (ASD) in 2014. The parameter states that structured educational and behavioral interventions have been shown to be effective for many children with ASD and are associated with better outcomes. The quality of the research literature in this area is variable, with most studies using group controls or single-subject experimental methods. In general, studies using more rigorous randomized group comparisons are sparse, reflecting difficulties in random assignment and control comparisons. Other problems include lack of attention to subject characterization, generalizations of treatment effects, and fidelity of treatment implementation. Despite these problems, various comprehensive treatment approaches have been shown to have efficacy for groups of children, although none of the comprehensive treatment models has clearly emerged as superior. The parameter further states that applied behavior analysis (ABA) techniques have been repeatedly shown to have efficacy for specific problem behaviors, and ABA has been found to be effective when applied to academic tasks, adaptive living skills, communication, social skills, and vocational skills. Because most children with ASDs tend to learn tasks in isolation, an explicit focus on generalization is important (Volkmar, Siegel, Woodbury-Smith, et al., 2014).

U.S. FOOD AND DRUG ADMINISTRATION

Behavioral therapy programs are not subject to regulation by the FDA.

CENTERS FOR MEDICARE AND MEDICAID SERVICES

Medicare does not have a National Coverage Determination (NCD) for applied behavior analysis for autism spectrum disorder.

A Centers for Medicare and Medicaid Services (CMS) Informational Bulletin, published July 7, 2014, titled Clarification of Medicaid Coverage of Services to Children with Autism states that “all children [up to the age of 21], including children with an Autism Spectrum Disorder (ASD), must receive Early and Periodic Screening, Diagnostic and Treatment (EPSDT) screenings designed to identify health and developmental issues, including ASD, as early as possible. . . EPSDT also requires medically necessary diagnostic and treatment services. When a screening examination indicates the need for further evaluation of a child’s health, the child should be appropriately referred for diagnosis and treatment without delay . . . Ultimately, the goal of EPSDT is to assure that children get the health care they need, when they need it – the right care to the right child at the right time in the right setting.”

A follow-up CMS FAQ document, published September 24, 2014, titled Medicaid and CHIP FAQs: Services to Address Autism states that CMS has not mandated ABA services for children under 21 with an Autism Spectrum Disorder (ASD). Instead, the FAQs note that “Applied Behavior Analysis (ABA) is one treatment modality for ASD. CMS is not endorsing or requiring any particular treatment modality for ASD. State Medicaid agencies are responsible for determining what services are medically necessary for eligible individuals. States are expected to adhere to long-standing EPSDT obligations for individuals from birth to age 21, including providing medically necessary services available for the treatment of ASD.”
## APPENDIX A

### Severity Levels for Autism Spectrum Disorder

<table>
<thead>
<tr>
<th>Severity Level</th>
<th>Social Communication</th>
<th>Restricted, Repetitive Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 3 —Requiring very substantial support</strong></td>
<td>Severe deficits in verbal and nonverbal social communication skills causes severe impairments in functioning, very limited initiation of social interactions, and minimal response to social overtures from others. For example, a person with few words of intelligible speech who rarely initiates interaction and, when he or she does, makes unusual approaches to meet needs only and responds to only very direct social approaches.</td>
<td>Inflexibility of behavior, extreme difficulty coping with change, or other restricted/repetitive behaviors markedly interferes with functioning in all spheres. Great distress/difficulty in changing focus or action.</td>
</tr>
<tr>
<td><strong>Level 2 —Requiring substantial support</strong></td>
<td>Marked deficits in verbal and nonverbal social communication skills; social impairments apparent even with supports in place; limited initiation of social interactions; and reduced or abnormal responses to social overtures from others. For example, a person who speaks simple sentences, whose interaction is limited to narrow special interests, and who has markedly odd nonverbal communication.</td>
<td>Inflexibility of behavior, difficulty coping with change, or other restricted/repetitive behaviors appear frequently enough to be obvious to the casual observer and interfere with functioning in a variety of contexts. Distress and/or difficulty changing focus or action.</td>
</tr>
<tr>
<td><strong>Level 1 —Requiring support</strong></td>
<td>Without supports in place, deficits in social communication cause noticeable impairments. Difficulty initiating social interactions, and clear examples of atypical or unsuccessful responses to social overtures of others. May appear to have decreased interest in social interactions. For example, a person who is able to speak in full sentences and engages in communication but whose to-and-fro conversation with others fails, and whose attempts to make friends are odd and typically unsuccessful.</td>
<td>Inflexibility of behavior causes significant interference with functioning in or more contexts. Difficulty switching between activities. Problems of organization and planning hamper independence.</td>
</tr>
</tbody>
</table>

APPLICABLE CODES

The following list(s) of procedure and/or diagnosis codes is provided for reference purposes only and may not be all inclusive. Listing of a code in this policy does not imply that the service described by the code is a covered or non-covered health service. Benefit coverage for health services is determined by the member-specific benefit plan document and applicable laws that may require coverage for a specific service. The inclusion of a code does not imply any right to reimbursement or guarantee claim payment. Other Policies and Coverage Determination Guidelines may apply.

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<th>CPT Code</th>
<th>Description</th>
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<td>H0032</td>
<td>Mental health service plan development, by non-physician</td>
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<td>H2012</td>
<td>Behavioral health day treatment, per hour</td>
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<td>H2014</td>
<td>Skills training and development, per 15 minutes</td>
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<td>H2019</td>
<td>Therapeutic behavioral services, per 15 minutes</td>
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<tr>
<td>H2021 (Pennsylvania only)</td>
<td>Community-based wrap around services, per 15 minutes</td>
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<td>H2027 (Pennsylvania only)</td>
<td>Psychoeducational service, per 15 minutes</td>
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REFERENCES


HISTORY/REVISION INFORMATION

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<td>Behavioral Clinical Policy v.1 revised; reviewed by UMC</td>
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<td>- Utilization Management Criteria section rearranged and expanded for greater clarity:</td>
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<td>- Appendix A added to support the Diagnostic Evaluation subsection</td>
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<td>- Treatment Planning and Treatment subsections separated</td>
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<td>- Discharge criteria detailed</td>
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