

1 **Clinical Practice Guideline:** **Autism Spectrum Disorder (ASD) – Outpatient**
2 **Rehabilitation Services (Speech, Physical, and**
3 **Occupational Therapy)**

4
5 **Date of Implementation:** **April 18, 2013**

6
7 **Product:** **Specialty**

- | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>8</p> <p>9</p> <p>10 Related Policies:</p> <p>11 CPG 135: Physical Therapy Medical Policy/Guideline</p> <p>12 CPG 149: Sensory Integrative (SI) Therapy</p> <p>13 CPG 155: Occupational Therapy Medical Policy/Guideline</p> <p>14 CPG 166: Speech-Language Pathology/Speech Therapy Guidelines</p> <p>15 CPG 270: Cognitive Rehabilitation</p> <p>16 CPG 287: Stuttering Devices and Altered Auditory Feedback (AAF)</p> <p>17 Devices</p> <p>18 CPG 288: Augmentative and Alternative Communication (AAC) and</p> <p>19 Speech Generating Devices (SGD)</p> <p>20 CPG 289: Voice Therapy</p> <p>21 CPG 290: Auditory Integration Therapy – Facilitated Communication</p> <p>22 CPG 291: Oral Sensorimotor Therapy and Myofunctional Therapy</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

23 **GUIDELINES**

24 **American Specialty Health – Specialty (ASH) considers certain procedures and**
25 **services medically necessary for assessment and treatment of autism and other**
26 **pervasive developmental disorders (PDD) when the member meets any of the criteria**
27 **listed below:**

- 28 • Any loss of any language or social skills at any age; or
- 29 • No 2-word spontaneous (not just echolalic) phrases by 24 months; or
- 30 • No babbling by 12 months; or
- 31 • No gesturing (e.g., pointing, waving bye-bye) by 12 months; or
- 32 • No single words by 16 months.

33 **The following services may be included in the assessment and treatment of the**
34 **member's condition when the above criteria are met:**

- 35 • Evaluation by a speech and language pathologist (SLP); with speech therapy per
- 36 evaluation results;
- 37 • Occupational and/or physical therapy when motor deficits, motor planning or
- 38 sensory dysfunction are present;
- 39 • Autism-specific developmental screening (CPT code 96110, e.g., Checklist for
- 40 Autism in Toddlers [CHAT], Pervasive Developmental Disorder Screening Test-
- 41 II) and CPT codes 96112, and 96113, (e.g., Autism Behavior Checklist [ABC],
- 42 Childhood Autism Rating Scale [CARS]).

1 **ASH considers a speech generating device for autism spectrum disorder (ASD) as**
 2 **medically necessary when ALL of the following criteria are met:**

- 3 • The member has a permanent and severe expressive speech impairment;
- 4 • A speech evaluation, conducted by a SLP, has documented the severity of the
 5 member’s disability specific to their primary language;
- 6 • Other forms of treatment have failed, are contraindicated or are otherwise not
 7 appropriate;
- 8 • Speaking needs cannot be met using natural communication methods;
- 9 • A speech generating device is available in the individual’s primary language;
- 10 • The device is being requested for the purpose of speech generation only.

11
 12 Multi-purpose, general consumer electronic devices such as personal digital assistants
 13 (PDAs), computers, tablet devices (e.g., iPads), smart phones, electronic mail devices and
 14 pagers, are not medical in nature and thus are considered not medically necessary.

15
 16 **ASH considers the following procedures and services unproven because the peer-**
 17 **reviewed medical literature does not support the use of these procedures and services**
 18 **in the assessment and treatment of autism and other pervasive developmental**
 19 **disorders (this list may not be all-inclusive):**

20
 21 **Assessment:**

- 22 • Allergy testing (including food allergy for gluten, casein, candida, and other molds;
 23 allergen specific IgG and IgE)
- 24 • Amino acid tests (except for phenylketonuria)
- 25 • Blood metabolite testing (e.g., NPDX ASD test)
- 26 • Celiac antibodies testing
- 27 • Electronystagmography (in the absence of dizziness, vertigo, or balance disorder)
- 28 • Erythrocyte glutathione peroxidase studies
- 29 • Event-related brain potentials
- 30 • Genetic panels of autism
- 31 • Glutamatergic candidate genes testing
- 32 • Hair analysis
- 33 • Heavy metal testing
- 34 • Homocysteine testing
- 35 • Immunologic or neurochemical abnormality testing
- 36 • Intestinal permeability studies
- 37 • Magnetoencephalography/magnetic source imaging
- 38 • Micronutrient tests such as vitamin levels
- 39 • Mitochondrial disorders (lactate and pyruvate) testing
- 40 • Neuroimaging studies such as CT, fMRI, MRI, MRS

- 1 • Nutritional testing
- 2 • Provocative chelation tests for mercury
- 3 • Stool analysis
- 4 • Thyroid function tests
- 5 • Tympanometry (with no hearing loss)
- 6 • Urinary peptide tests

7

8 Treatment

- 9 • Acupuncture
- 10 • Anti-fungal medications
- 11 • Anti-viral medications
- 12 • Art therapy
- 13 • Auditory integration training (auditory integration therapy)
- 14 • BioMat
- 15 • Chelation therapy
- 16 • Craniosacral therapy
- 17 • Dietary and nutritional interventions (elimination diets (e.g., gluten and milk
18 elimination, supplements, vitamins, minerals))
- 19 • DIR®/Floortime therapy Facilitated communication
- 20 • Herbal remedies
- 21 • Hippotherapy (equestrian therapy)
- 22 • Holding therapy
- 23 • Immune globulin infusion
- 24 • Manipulative therapies
- 25 • Massage therapy
- 26 • Neurofeedback/EEG biofeedback
- 27 • Oxytocin
- 28 • Recreational therapy
- 29 • Secretin infusion
- 30 • Social skills training
- 31 • Systemic hyperbaric oxygen therapy
- 32 • Theory of Mind cognitive model
- 33 • Tomatis sound therapy
- 34 • Transcranial stimulation
- 35 • Vision therapy
- 36 • Weighted blankets/vests/mattress technology

37

38 **ASH typically considers services that are considered primarily educational or**
 39 **training in nature or related to improving academic or work performance not**
 40 **medically necessary; including the following services for the assessment and/or**

1 **treatment of ASD because they are primarily educational and training in nature (this**
 2 **list may not be all-inclusive):**

- 3 • Education and achievement testing, including Intelligence Quotient (IQ) testing
- 4 • Educational interventions (e.g., classroom environmental manipulation, academic
- 5 skills training)

6
 7 ASH typically considers neuropsychological testing for the assessment and/or treatment of
 8 ASD not medically necessary because such testing is considered educational in nature
 9 and/or not medically necessary.

10
 11 The U.S. Preventive Services Task Force (USPSTF) published a recommendation
 12 statement for screening for ASD in young children. For children aged 18 to 30 months,
 13 there is insufficient evidence to assess the balance of benefits and harms of screening for
 14 ASD in those with no concerns raised by parents or clinicians (USPSTF, 2016). This
 15 recommendation is currently under review.

16
 17 In addition, coverage of intensive behavioral interventions and/or treatment of ASD may
 18 be governed by state and/or federal mandates. Please refer to the applicable benefit plan
 19 document to determine terms, conditions, and limitations of coverage. Services provided
 20 by a psychiatrist, psychologist or other behavioral health professionals may be subject to
 21 the provisions of the applicable behavioral health benefit.

22
 23 Assessment and treatment for comorbid behavioral health and/or medical diagnoses and
 24 associated symptoms and/or conditions may be covered under applicable medical and
 25 behavioral health benefit plans.

26 27 **DESCRIPTION/BACKGROUND**

28 Autism Spectrum Disorder (ASD) is a developmental disability characterized by
 29 impairments in reciprocal social communication and social interaction, and restricted,
 30 repetitive patterns of behavior, interests, or activities. Deficits often occur across multiple
 31 contexts and may result in challenges spanning several areas of functioning. Symptoms
 32 associated with ASD must be present in the early developmental period but may not be
 33 identified until later. The presentation, impact, and severity of characteristics associated
 34 with ASD may vary greatly amongst individuals who meet criteria for the diagnosis.

35
 36 The precise etiology of ASD is unknown, although there appears to be a high heritability
 37 linked with it. In 15-20% of individuals with autism, the etiology can be identified;
 38 however, the cause remains unknown for many. This is a field of active research.

39
 40 Associations between ASD and a number of health conditions have been proposed. Several
 41 other disorders are correlated with ASD, including, but not limited to:

- 42 • Epilepsy or seizure disorder

- 1 • Tuberous sclerosis
- 2 • Fragile X syndrome
- 3 • Intellectual disability

4
5 Children with autism need a thorough and complete evaluation and specialized language
6 services, behavioral, and educational programs. Early identification/diagnosis and proper
7 treatments can help youth with autism tremendously. Child and adolescent psychiatrists
8 are trained to diagnose autism, and to help families design and implement an appropriate
9 treatment plan. They can also help families cope with the stress which may be associated
10 with having a child with autism.

11
12 Although there is no cure for autism, appropriate specialized treatment provided early in
13 life can have a positive impact on the child's development and produce an overall reduction
14 in disruptive behaviors and symptoms.

15 16 17 Formal Assessment

18 According to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-
19 IV, 2013), published by the American Psychiatric Association, diagnostic criteria include:

20 **Diagnostic criteria for Autism Spectrum Disorder from: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)**

- A. Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive; see text of DSM-5)
1. Deficits in social-emotional reciprocity, ranging, for example, 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.
 2. Deficits in nonverbal communicative behaviors used for social interaction, ranging for example, 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 lack of facial expressions and nonverbal communication.
 3. Deficits in developing, maintaining, and understanding relationships, ranging for example, 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:

Severity is based on social communication impairments and restricted, repetitive patterns of behavior.

**Diagnostic criteria for Autism Spectrum Disorder from:
Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)**

- B. Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text of DSM-5):
1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).
 2. 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).
 3. 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).
 4. Hyper- or hypo reactivity 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:

Severity is based on social communication impairments and restricted, repetitive patterns of behavior.

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

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

E. These disorders 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 diagnosis of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

1 The DSM-5 notes that “individuals with a well-established DSM-IV diagnosis of autistic
 2 disorder, Asperger’s disorder, or pervasive developmental disorder not otherwise specific
 3 should be given the diagnosis of autism spectrum disorder. Individuals who have marked
 4 deficits in social communication, but whose symptoms do not otherwise meet criteria for
 5 autism spectrum disorder, should be evaluated for social (pragmatic) communication
 6 disorder.”

7
 8 A comprehensive evaluation that includes a multi-disciplinary team is necessary for
 9 diagnosis and treatment of children with ASD. Professionals include pediatricians,
 10 psychologists, neurologists, speech-language pathologists, physical and/or occupational
 11 therapists, and other professionals who diagnose and treat children with ASD. Early
 12 identification and treatment has been shown to result in improved management of ASD.

13
 14 Additional screening might be needed if a child is at high risk for developmental problems
 15 because of preterm birth or low birth weight or if they have a parent or sibling with an
 16 ASD.

17
 18 American Academy of Pediatrics (AAP): The AAP 2020 Clinical Report on Identification,
 19 Evaluation, and Management of Children With Autism Spectrum Disorder notes the
 20 following:

- 21 • **Metabolic Testing:** The yield of routine metabolic testing for children with ASD is
 22 low and not recommended for regular use. However, large population-based studies
 23 are lacking, so accurate prevalence and diagnostic yield estimates are not available.
 24 There is no evidence at this time for routine testing of hair, blood, or urine for
 25 environmental toxins or heavy metals outside of laboratory screening for lead
 26 exposure.
- 27 • **Electroencephalogram (EEG):** An EEG is not recommended as a routine baseline
 28 evaluation in the absence of clinical concern about seizures, atypical regression, or
 29 other neurologic symptoms on history or examination that would suggest an EEG
 30 is indicated.
- 31 • **Genes, Environmental Exposures, and ASD:** The potential environmental factors
 32 that may be related to increased reported prevalence of ASD is an area of active
 33 study that, as yet, is without firm conclusions.
- 34 • **Genes, Immunologic Exposures, and ASD:** Unless otherwise indicated (e.g.,
 35 history suggestive of autoimmune or immunologic disorder), no immune testing is
 36 recommended in the etiologic workup of a child with ASD (Hyman et al., 2020).

37
 38 American Academy of Pediatrics (AAP): The AAP 2020 Clinical Report on
 39 Identification, Evaluation, and Management of Children With Autism Spectrum
 40 Disorder states that “The scientific literature does not support an association of
 41 vaccination as an environmental factor that increases the risk for ASD. Children with

1 ASD should be vaccinated according to the recommended schedule” (Hyman et al.,
2 2020).

3
4 Centers for Disease Control and Prevention (CDC): The CDC states that diagnosing
5 autism spectrum disorder (ASD) can be difficult because “there is no medical test, like
6 a blood test, to diagnose the disorder” (CDC, 2023).

7
8 The use of tests such as hair analysis for trace elements, celiac antibodies, allergy testing
9 (particularly food allergies for gluten, casein, candida and other molds), immunologic
10 or neurochemical abnormalities, micronutrients (e.g., vitamin levels), intestinal
11 permeability studies, stool analysis, urinary peptides, mitochondrial disorders (e.g.,
12 lactate and pyruvate), thyroid function tests, erythrocyte glutathione peroxidase studies
13 have not been well studied and no strong conclusions can be made regarding clinical
14 utility for such testing (Chaves-Gnecco and Feldman, 2023).

15
16 A study based on evidence that dysregulation of branched-chain amino acids (BCAAs)
17 may contribute to the behavioral characteristics of ASD tested whether dysregulation of
18 amino acids (AAs) was a pervasive phenomenon in individuals with ASD (Smith et al.,
19 2019). Reports within the study resulted from the Children’s Autism Metabolome
20 Project (CAMP), a large-scale effort to define autism biomarkers based on metabolomic
21 analyses of blood samples from young children. Dysregulation of AA metabolism was
22 identified by comparing plasma metabolites from 516 children with ASD with those
23 from 164 age-matched typically developing children recruited into the CAMP. The
24 ASD subjects were stratified into subpopulations based on shared metabolic phenotypes
25 associated with BCAA dysregulation. Groups of AAs with positive correlations were
26 identified that were, as a group, negatively correlated with BCAA levels in ASD.
27 Imbalances between these two groups of AAs identified three ASD-associated amino
28 acid dysregulation metabolotypes. The combination of glutamine, glycine, and ornithine
29 amino acid dysregulation metabolotypes identified a dysregulation in AA/BCAA
30 metabolism that is present in 16.7% of the CAMP subjects with ASD and is detectable
31 with a specificity of 96.3% and a positive predictive value of 93.5% within the ASD
32 subject cohort.

33
34 There is insufficient evidence in the published peer-reviewed medical literature to
35 support provocative chelation tests for mercury in the assessment of ASD. There has
36 been interest in the relationship of heavy metals, in particular mercury and the etiology
37 of ASD. Testing for heavy metals (e.g., arsenic, barium, beryllium, bismuth, antimony,
38 and mercury) is not supported by evidence in the peer-reviewed medical literature.

1 According to the Autism Research Institute, some of the more commonly used autism
2 screening tools are:

- 3 • Modified Checklist for Autism in Toddlers: Revised (M-CHAT), is a popular 20-
4 question test designed for toddlers between 16 and 30 months old.
- 5 • The Ages and Stages Questionnaire: (ASQ) is a general developmental screening
6 tool that examines developmental challenges at specific ages.
- 7 • Screening Tool for Autism in Toddlers and Young Children: (STAT) is an
8 interactive screening tool comprising of twelve activities that assess play,
9 communication, and imitation.
- 10 • Parents' Evaluation of Developmental Status: (PEDS) is a general developmental
11 parent interview designed to identify delays in motor, language, self-help, and
12 more.

13 If the results of an autism screening indicate a child shows some signs of autism, a
14 pediatrician will likely refer the family to a specialist for a more formal evaluation.

15
16 The American Academy of Neurology (AAN) and Child Neurology Society (CNS) have
17 developed evidenced-based guidelines for the screening and diagnosis of autism. These
18 parameters include the following developmental and assessment screening instruments that
19 may be used in the evaluation process:

- 20 • The Ages and Stages Questionnaire
- 21 • The BRIGNACE® screens
- 22 • The Child Development Inventories
- 23 • The Parents' Evaluation of Developmental Status

24
25 The AAN/CNS guidelines also state that screening for autism should be performed on all
26 children failing routine developmental monitoring procedures and may include these tools:

- 27 • Checklist for Autism in Toddlers (CHAT): This test is used for children 18 months
28 of age.
- 29 • Autism Screening Questionnaire: This test is used for children four years of age
30 and older.

31
32 A comprehensive list of screening tools can be found at
33 <http://www.cdc.gov/ncbddd/autism/hcp-screening.html>.

34 **Treatments**

35
36 There are no medical interventions that are effective in achieving a cure for autism;
37 however, the condition may be managed through a combination of behavioral, dietary,
38 pharmacological, and educational interventions. The American Academy of Child &
39 Adolescent Psychiatry (AACAP) practice parameters note that treatments proposed should
40 be based on solid, high-quality empirical evidence. According to AACAP guidelines,
41 educational services (e.g., including special education, some forms of behavior
42 modification and other services) play a central and integral role in ASD treatment.

1 Psychosocial interventions should include parent training with behavior modification
 2 techniques and referral to support groups. It's highlighted in the literature that there is no
 3 one-size-fits-all approach for individuals with ASD. While many methods lack extensive
 4 research, some have more compelling evidence suggesting their usefulness. However,
 5 study designs often limit the generalizability of findings.

6
 7 Research suggests that early intervention is most successful when it involves multiple
 8 disciplines; including but not limited to behavioral therapy, physical and occupational
 9 therapy, and speech-language therapy. To be most effective, those health care professionals
 10 providing the intervention should be highly trained in treating ASD. The therapy must be
 11 guided by specific and well-defined learning objectives, and the child's progress in meeting
 12 these objectives should be regularly evaluated and recorded. The intervention should focus
 13 on the core areas affected by autism. These include social skills, language and
 14 communication, imitation, play skills, daily living and motor skills. The program should
 15 provide the child with opportunities to interact with typically developing peers (if possible)
 16 and must actively engage parents in the intervention, both with decision making and
 17 treatment delivery (Hyman et al., 2020).

18
 19 Non-biological interventions used for symptoms of ASD are popular and have also been
 20 increasingly studied. There has been conflicting evidence regarding the effect of music
 21 therapy, yoga, massage, and equine-assisted therapy on the symptoms of ASD in children,
 22 but evidence does not support these therapies for treatment of the core deficits of ASD at
 23 this time. Existing studies are insufficient to support dance therapy, drama therapy, and
 24 chiropractic therapy. Medical interventions used for nonstandard purposes also are
 25 sometimes prescribed for symptoms of ASD. Clinical trials do not support the use of
 26 antifungal agents, immunotherapy, or hyperbaric oxygen treatment, and concern for safety,
 27 in addition to lack of supporting data, cautions against chelation therapy for children with
 28 ASD (Hyman et al., 2020).

30 **Specific Strategies**

31 **Behavioral Treatments**

32 This behavioral treatment information is included as informational only. Behavioral
 33 treatments referred to in this section are not applicable to the rehabilitation providers (i.e.,
 34 PT, OT, SLP, AT) to which this policy applies. Applied Behavior Analysis (ABA) is a
 35 treatment approach for people with ASD that has become widely accepted among health
 36 care professionals. It encourages positive behaviors and discourages negative behaviors
 37 with a goal of improving various skills. ABA methods are used to increase and maintain
 38 desirable adaptive behaviors, reduce interfering maladaptive behaviors or narrow the
 39 conditions under which they occur, teach new skills, and generalize behaviors to new
 40 environments or situations. ABA-based intervention effectiveness has been documented in
 41 single-subject studies and in some controlled studies that use early intensive behavioral
 42 intervention programs in university or community settings (AAP). Study design limitations

1 reduce the ability to definitively confirm use of ABA as a treatment intervention for
 2 children with ASD; however, it is widely accepted in its use. Results of the research suggest
 3 that children who receive this early intensive behavioral treatment show gains in IQ,
 4 language, academic performance, adaptive behaviors, and in some social behavior as well
 5 relative to control groups. Health care practitioners who provide this treatment must be
 6 board certified in this specialty area. Different types of ABA include:

- 7 • Discrete trial training (DTT) – uses a series of trials to teach steps of a behavior.
 8 Positive reinforcement is used to reward correct answers and behaviors.
- 9 • Early intensive behavioral intervention (EIBI) – used for very young children.
- 10 • Pivotal response training – aims to increase motivation to learn, communication
 11 initiation and ability to monitor their behavior. Positive changes are expected to
 12 have effects on other behaviors.
- 13 • Verbal behavior intervention (VBI) – focuses on teaching verbal skills.

14
 15 Other types of treatment include:

- 16 • Developmental, Individual Differences, Relationship-Based Approach (DIR®;
 17 also called "Floortime"). Floortime focuses on emotional and relational
 18 development (feelings, relationships with caregivers). It also focuses on how the
 19 child deals with sights, sounds, and smells.
- 20 • Treatment and Education of Autistic and related Communication-handicapped
 21 Children (TEACCH). TEACCH uses visual cues to teach skills. For example,
 22 picture cards can help teach a child how to get dressed by breaking information
 23 down into small steps.
- 24 • The Early Start Denver Model (ESDM) is an intensive intervention that uses a
 25 developmental approach. The program encompasses a developmental curriculum
 26 that defines the skills to be taught at any given time and a set of teaching procedures
 27 used to deliver this content. This early intervention program integrates a
 28 relationship-focused developmental model with the well-validated teaching
 29 practices of ABA.

30
 31 These comprehensive programs for the management of autism spectrum disorders are
 32 distinguished by theoretical orientation, with some programs being behaviorally oriented
 33 and others being developmentally oriented. Behavioral approaches use certain techniques
 34 or strategies, collectively referred to as applied behavioral analysis (ABA), in a systematic
 35 manner to produce observable and socially significant changes in a child's behavior and
 36 skills. Most developmental approaches do not rely on a specific set of strategies or
 37 techniques to modify behaviors or teach new skills. Instead, developmental programs
 38 organize a child's environment to encourage or facilitate communicative and social
 39 interactions.

1 **Rehabilitation Services**

2 Therapeutic interventions covered by this guideline should be part of a multi-component
3 ASD treatment program including occupational and physical therapy. Occupational and
4 physical therapy may be necessary to address specific fine or gross motor deficits or a
5 comorbid physical impairment when there is potential for functional improvements.

7 **Occupational Therapy**

8 Occupational therapy (OT) teaches skills that help the individual live as independently as
9 possible. Within the context of autistic spectrum disorders, OT is provided to promote
10 development of self-care and play skills, fine motor skills (e.g., dressing, eating, bathing,
11 writing, personal hygiene) and relating to others. They also focus on sensory motor skills
12 that include balance (vestibular system), awareness of body position (proprioceptive
13 system), and touch (tactile system). Occupational therapists can also assist in classroom
14 modifications to improve attention and organization. Sensory dysfunction will also be
15 addressed by occupational therapists to improve deficits in neurologic processing and
16 integration of sensory information to allow better environmental interactions through
17 adaptations. These sensory-focused treatments may be helpful as part of an overall
18 therapeutic program. However, specific methods called Sensory Integrative Therapy (SIT)
19 have limited supportive evidence due to the lack of quality studies. For additional
20 information, see the *Occupational Therapy Medical Policy/Guideline (CPG 155 – S)*
21 clinical practice guideline.

23 **Physical Therapy**

24 Physical therapy teaches motor skills and motor planning. Gross motor skills, muscle
25 weakness, and gait will also be addressed. Physical therapy for children with autistic
26 spectrum disorders focuses on developing strength, coordination, and movement. Physical
27 therapists work on improving gross motor skills, such as running, reaching, and lifting.
28 Physical therapists work on improving function of the body’s larger muscles through
29 physical activities including exercise and massage. For additional information, see the
30 *Physical Therapy Medical Policy/Guideline (CPG 135 – S)* clinical practice guideline.

31
32 Two types of therapy that have been proposed to benefit ASD include:

- 33 • **CranioSacral Therapy:** CranioSacral therapy is a form of manual treatment that
34 involves using gentle pressure on the plates of the patient’s skull. It is considered a
35 complementary and alternative medicine (CAM) intervention. There is a lack of
36 evidence to support the efficacy of this treatment for ASD and it would be
37 considered unproven.
- 38 • **Equestrian Therapy:** Equestrian therapy, also referred to as therapeutic riding or
39 hippotherapy is proposed to offer a person with a disability, including ASD, a
40 means of physical activity that aids in improving balance, posture, coordination,
41 the development of a positive attitude and a sense of accomplishment. McDaniel
42 Peters and Wood (2017) completed a review of the literature and notes that it offers

1 proof of concept that equine-assisted interventions can benefit children and
 2 adolescent with autism. Authors support continued investigation with improved
 3 methodology. Thus, there is insufficient published evidence regarding the effects
 4 of this therapy in children with ASD. Anecdotal evidence states otherwise, with
 5 promising stories of improved behaviors of children with ASD. Dimolareva and
 6 Dunn (2020) assessed the effectiveness of Animal-Assisted Interventions (AIs)
 7 on social interaction, communication, and global Autism symptoms. A total of
 8 1,447 studies were returned, of which 16 ($n = 489$) met the inclusion criteria. The
 9 meta-analyses indicated small effect sizes related to improvements in social
 10 interaction and communication and reduction in ASD symptoms. Additionally,
 11 there was little evidence for a relationship between dosage and effect size. In
 12 conclusion, AIs appear to offer small improvements in social interaction and
 13 communication for children with autism, which may be comparable to activities
 14 used in active control conditions.

16 **Speech Therapy**

17 Speech therapy helps to improve communication skills. Communication deficits are often
 18 present with ASD; however, speech-language pathology treatment may be considered
 19 behavioral. Often children with ASD communicate in ineffective ways that are reflected in
 20 their behavior. The communication problems of ASD and pervasive developmental
 21 disorders (PDD) vary, depending upon the intellectual and social development of the
 22 individual. Some patients may be unable to speak, whereas others may have rich
 23 vocabularies and are able to talk about topics of interest in great depth. Although there is a
 24 variation, many individuals with ASD will have minimal or no problem with
 25 pronunciation; however, most will have difficulty effectively using language. For
 26 additional information, see the *Speech-Language Pathology/Speech Therapy Guidelines*
 27 (*CPG 166 – S*) clinical practice guideline.

29 Patterns of language use and behaviors that are often found in children with ASD include:

- 30 • Repetitive or rigid language; includes saying things out of context in conversation
 31 or echolalia, where words are repeated over and over, or verbose in limited areas of
 32 interest.
- 33 • Difficulty with pragmatics of language—the system that combines language
 34 components in functional and socially appropriate communication, they often do
 35 not respond to others.
- 36 • Poor nonverbal conversation skills: Children may not use gestures, such as pointing
 37 at objects and may avoid eye contact and misread social cues.

39 When these deficits overlap with an impairment of speech due to a separate neurological
 40 cause, speech therapy may also be medically necessary. If speech is not possible, other
 41 forms of communication will be focused upon. When ASD or some other developmental
 42 disability is suspected, an assessment by speech-language pathologist may be part of the

1 comprehensive evaluation. It has been noted in the literature that there is no single approach
 2 that is best for all individuals with ASD. Given the variable nature of ASD, treatment has
 3 to be variable. Some individuals with ASD need highly structured behavior modification
 4 programs to note improvement, while others do better in-home based programs in real-life
 5 scenarios. According to guidelines from the American Speech-Language-Hearing
 6 Association, individuals with ASD may demonstrate a need for speech-language pathology
 7 services due the pervasive nature of the social communication impairment, regardless of
 8 age, cognitive abilities, or performance on standardized testing of formal language skills.
 9 Although there is a range of assessment and intervention approaches, empirical evidence
 10 is not yet available to predict which specific approaches will be the most effective given
 11 the unique characteristics and challenges of individuals with ASD and their families. There
 12 is no single method that is equally effective for all individuals with ASD, and not all
 13 individuals in current outcome studies have benefited to the same degree.

14
 15 Speech-Language Pathology (SLP) treatment is most likely to be effective when delivered
 16 in close collaboration with teachers, support personnel, families, and peers as opposed to
 17 traditional, pull-out, low-intensity service delivery.

18
 19 A comprehensive speech and language evaluation of the patient and his or her speech and
 20 language potential is required before a full treatment plan is developed. As part of the
 21 evaluation, standardized assessment tests should be used for evaluations to identify and
 22 quantify impairment and may include the following:

- 23 • Receptive-Expressive Emergent Language Scale (REEL): infants (birth to three
 24 years)
- 25 • Test of Language Development (TOLD): school-age children
- 26 • Porch Index of Communication Ability (PICA): adults
- 27 • Boston Diagnostic Aphasia Examination: adults
- 28 • Peabody Picture Vocabulary Test (PPVT): for all ages
 - 29 ○ Preschool Language Scale (PLS) – (birth through 5 years)
 - 30 ○ Social Language Development Test (elementary – ages 6-12) and adolescent
 - 31 ○ The Comprehensive Assessment of Spoken Language (CASL) (ages 3-21
 32 years)

33
 34 A hearing test may also be conducted to determine if the child is experiencing mild hearing
 35 loss as a result of ear infections or allergies or for some other reason. If a hearing loss is
 36 identified, medical management and monitoring is important to minimize any further
 37 effects on language learning. Comorbid psychiatric disorders, environmental deprivation,
 38 mental retardation, and selective mutism should all be considered in cases of language
 39 delay.

1 Ongoing assessment is critical to guide program and goal planning. These include:

- 2 • To determine the individual’s level of social communication skills;
- 3 • To identify learning objectives that are priorities within natural communication
- 4 contexts;
- 5 • To examine the influence of those who are communicating with the individual with
- 6 ASD and subsequent learning environment.

7
8 Assessment strategies should not rely solely on standardized, norm-referenced tools.
9 Information should be gathered across natural social contexts, involving primary
10 caregivers and communication partners (e.g., teachers, parents) in the assessment process.
11 Intervention goals should incorporate the functional use of the individual’s full
12 communication abilities using a multimodal communication system. Decisions regarding
13 the integration of other forms of communication should be individualized based on the
14 specific capabilities and contexts of communication, as well as cultural considerations. In
15 educational settings, augmentative communication devices may be provided as part of the
16 management of ASD. The National Research Council (NRC) notes that “for children with
17 autism who do not acquire functional speech or have difficulty processing and
18 comprehending spoken language, AAC, and assistive technology (AT) can be useful
19 components of an educational program” (NRC, 2001). The review also emphasizes that
20 there is relatively little systematic research to elucidate the characteristics of children and
21 the components of AAC and AT that may interact to produce effective or ineffective
22 intervention. AAC ranges from supporting existing speech or developing independent use
23 of a nonverbal symbol system such as sign language, symbols displayed on a
24 communication board and voice output devices with synthesized and digitized speech. AT
25 is defined as a device or service that is commercial, hand-made, or customized and is used
26 to support or enhance the functional capabilities of an individual with disabilities (NRC,
27 2001).

28
29 **Augmentative and Alternative Communication:** Augmentative and alternative
30 communication (AAC) includes all forms of communication (other than oral speech) that
31 are used for expression. AAC includes:

- 32 • Unaided communication systems which rely on the user’s body to convey
- 33 messages—examples include gestures, body language, and/or sign language.
- 34 • Aided communication systems require the use of tools or equipment in addition to
- 35 the user’s body.
 - 36 ○ Aided communication methods can range from paper and pencil to
 - 37 communication books or boards to devices that produce voice output (speech
 - 38 generating devices or SGD’s) and/or written output.
 - 39 ○ Electronic communication aids allow the user to use picture symbols, letters,
 - 40 and/or words and phrases to create messages.
 - 41 ▪ A Picture Exchange Communication System (PECS) uses picture symbols
 - 42 to teach communication skills with the individual taught to use picture

1 symbols to ask and answer questions and hold a conversation. Language
 2 and communication interventions (PECS and Responsive Education and
 3 Prelinguistic Milieu Training [RPMT]) demonstrate short-term
 4 improvement in word acquisition without effect durability and should be
 5 studied further. The PECS method incorporates ABA and other
 6 developmental principles.

7
 8 The American Academy of Child & Adolescent Psychiatry (AACAP) guidelines regarding
 9 assessment of children, adolescents and adults with ASD note that educational services
 10 (e.g., including special education, some forms of behavior modification and other therapy
 11 services) are the central and integral aspect of the treatment for ASD (Volkmar et al., 2014).

12
 13 Other interventions that have shown little or insufficient evidence of effectiveness in the
 14 treatment of children with autism thus far, are auditory integration training (also referred
 15 to as auditory integration therapy [AIT]), cognitive rehabilitation, facilitated
 16 communication, music therapy, and vision therapy.

17
 18 The Agency for Healthcare Research and Quality’s report on comparative effectiveness of
 19 therapies for children with ASDs has the following conclusions:

- 20 • Early intensive behavioral and developmental interventions such as the
 21 UCLA/Lovaas Model of Applied Behavior Analysis improve cognitive, language,
 22 and adaptive outcomes in certain subgroups of children (Low confidence scale).
- 23 • The evidence is insufficient to understand the effectiveness, benefits, or adverse
 24 events from any other behavioral interventions.
- 25 • The evidence is insufficient to understand the effectiveness, benefits, or adverse
 26 events from any educational intervention.
- 27 • The evidence is insufficient to understand the effectiveness, benefits, or adverse
 28 events from any allied health or complementary and alternative medicine
 29 intervention. The CAM interventions included acupuncture and massage.
 30 Specifically, all studies of sensory integration and music therapy were of poor
 31 quality, and two fair-quality studies of auditory integration showed no
 32 improvement associated with treatment. Occupational and physical therapy were
 33 not considered within the allied health interventions, but rather therapies such as
 34 facilitated communication, music therapy, and leisure/recreation programs were
 35 considered.

36
 37 In 2014, AHRQ published a systematic review that updated the behavioral intervention
 38 portion of the comprehensive review of therapies for children with ASD that was published
 39 in 2011 (Weitlauf et al., 2014). The review focused on behavioral treatments for children
 40 ages two through twelve with age two at risk of a diagnosis of ASD. The study designs
 41 included randomized controlled trials, prospective and retrospective cohort studies, and
 42 nonrandomized controlled trials. Sixty-five unique studies comprising 48 randomized trials

1 and 17 nonrandomized comparative studies (19 good, 39 fair, and 7 poor quality) published
2 since the prior review were included. The quality of studies improved compared with that
3 reported in the earlier review; however, assessment of the strength of evidence (SOE),
4 confidence in the stability of effects of interventions in the face of future research, remains
5 low for many intervention/outcome pairs. Early intervention based on high intensity
6 applied behavior analysis over extended timeframes was associated with improvement in
7 cognitive functioning and language skills (moderate SOE for improvements in both
8 outcomes) relative to community controls in some groups of young children. The
9 magnitude of these effects varied across studies, potentially reflecting poorly understood
10 modifying characteristics related to subgroups of children. Early intensive parent training
11 programs modified parenting behaviors during interactions; however, data were more
12 limited about their ability to improve developmental skills beyond language gains for some
13 children (low SOE for positive effects on language). Social skills interventions varied in
14 scope and intensity and showed some positive effects on social behaviors for older children
15 in small studies (low SOE for positive effects on social skills). Studies of play/interaction-
16 based approaches reported that joint attention interventions may demonstrate positive
17 outcomes in preschool-age children with ASD when targeting joint attention skills
18 (moderate SOE); data on the effects of such interventions in other areas were limited (low
19 SOE for positive effects on play skills, language, social skills). Studies examining the
20 effects of cognitive behavioral therapy on anxiety reported positive results in older children
21 with IQS ≥ 70 (high SOE for improvements in anxiety in this population). Smaller short-
22 term studies of other interventions reported some improvements in areas such as sleep and
23 communication, but data were too sparse to assess their overall effectiveness. Authors
24 concluded that the growing evidence base suggests that behavioral interventions can be
25 associated with positive outcomes for children with ASD. Despite improvements in the
26 quality of the included literature, a need remains for studies of interventions across settings
27 and continued improvements in methodologic rigor. Substantial scientific advances are
28 needed to enhance our understanding of which interventions are most effective for specific
29 children with ASD and to isolate elements or components of interventions most associated
30 with effects.

31
32 Lounds Taylor et al. (2012) systematically reviewed evidence on therapies for adolescents
33 and young adults (ages 13 to 30) with ASD. Authors focused on the outcomes, including
34 harms and adverse effects, of interventions addressing the core symptoms of ASD;
35 common medical and mental health comorbidities occurring with ASD; the attainment of
36 goals toward functional/adult independence; educational and occupational/vocational
37 attainment; quality of life; access to health and other services; and the transitioning process
38 (i.e., process of transitioning to greater independent functioning). They also addressed the
39 effects of interventions on family outcomes including parent distress and satisfaction with
40 interventions. They identified 32 unique studies, most of which were poor quality. Five
41 studies, mostly of medical interventions, were fair quality, and none were good. In the
42 behavioral literature, studies of group- and computer-based interventions reported short-

1 term gains in social skills. Two poor-quality studies of educational interventions reported
 2 some gains in vocabulary and reading. Four small studies investigated disparate
 3 interventions addressing highly specific adaptive/life skills with some positive results in
 4 studies typically of short duration. Studies of vocational interventions, all of poor quality,
 5 reported that on-the job supports may promote employment in the community. Little
 6 evidence supports the use of medical interventions in adolescents and young adults with
 7 ASD; however, antipsychotic medications and serotonin reuptake inhibitors were
 8 associated with improvements in specific challenging behaviors. Similarly, little evidence
 9 supports the use of allied health interventions including facilitated communication.
 10 Authors concluded that there is very little evidence available for specific treatment
 11 approaches in this population; this is especially the case for evidence-based approaches to
 12 support the transition of youth with autism to adulthood. Of the small number of studies
 13 available, most were of poor quality, which may reflect the relative newness of the field.
 14 Five studies, primarily of medical interventions, had fair quality. Behavioral, educational,
 15 and adaptive/life skills studies were typically small and short term and suggested some
 16 potential improvements in social skills and functional behavior. Small studies suggested
 17 that vocational programs may increase employment success for some individuals. Few data
 18 are available to support the use of medical or allied health interventions in the adolescent
 19 and young adult population. The medical studies that have been conducted focused on the
 20 use of medications to address specific challenging behaviors, including irritability and
 21 aggression, for which effectiveness in this age group is largely unknown and inferred from
 22 studies including mostly younger children.

23
 24 National Institute for Health and Clinical Excellence (NICE) published guidelines for the
 25 management and support of children and young people on the autism spectrum. The
 26 recommendations for treatment include:

27
 28 Psychosocial interventions

- 29 • Consider a specific social-communication intervention for the core features of
 30 autism in children and young people that includes play-based strategies with
 31 parents, caregivers and teachers to increase joint attention, engagement and
 32 reciprocal communication in the child or young person. Strategies should:
 - 33 ○ Be adjusted to the child or young person’s developmental level
 - 34 ○ Antipsychotics
 - 35 ○ Antidepressants
 - 36 ○ Anticonvulsants
 - 37 ○ Exclusion diets (such as gluten- or casein-free diets)

38
 39 Interventions that should not be used for autism in children and young people

- 40 • Neurofeedback to manage speech and language problems in children and young
 41 people with autism;

- 1 • Auditory integration training to manage speech and language problems in
- 2 children and young people with autism;
- 3 • Omega-3 fatty acids to manage sleep problems in children and young people with
- 4 autism;
- 5 • The following interventions should not be used to manage autism in any context in
- 6 children and young people:
- 7 ○ Secretin;
- 8 ○ Chelation;
- 9 ○ Hyperbaric oxygen therapy.

10
11 The National Institute for Health and Clinical Excellence (NICE) also published clinical
12 guidelines for the recognition, referral, diagnosis, and management of adults on the
13 autism spectrum. The guidelines include the following recommendations:

14
15 Psychosocial interventions for the core symptoms of autism

- 16 • For adults with autism without a learning disability or with a mild to moderate
- 17 learning disability, who have identified problems with social interaction,
- 18 consider:
- 19 ○ A group-based social learning program focused on improving social
- 20 interaction;
- 21 ○ An individually delivered social learning program for people who find group-
- 22 based activities difficult;
- 23 • Social learning programs to improve social interaction should typically include:
- 24 ○ Modeling;
- 25 ○ Peer feedback (for group-based programs) or individual feedback (for
- 26 individually delivered programs);
- 27 ○ Discussion and decision-making;
- 28 ○ Explicit rules;
- 29 ○ Suggested strategies for dealing with socially difficult situations;
- 30 • Do not provide facilitated communication for adults with autism.

31
32 Psychosocial interventions focused on life skills

- 33 • For adults with autism of all ranges of intellectual ability, who need help with
- 34 activities of daily living, consider a structured and predictable training
- 35 program based on behavioral principles.
- 36 • For adults with autism without a learning disability or with a mild to moderate
- 37 learning disability, who are socially isolated or have restricted social contact,
- 38 consider:
- 39 ○ A group-based structured leisure activity program;
- 40 ○ An individually delivered structured leisure activity program for people who
- 41 find group-based activities difficult.

- 1 • A structured leisure activity program should typically include:
 - 2 ○ A focus on the interests and abilities of the participant(s);
 - 3 ○ Regular meetings for a valued leisure activity;
 - 4 ○ For group-based programs, a facilitator with a broad understanding of autism
 - 5 to help integrate the participants;
 - 6 ○ The provision of structure and support.
- 7 • For adults with autism without a learning disability or with a mild to moderate
- 8 learning disability, who have problems with anger and aggression, offer an anger
- 9 management intervention, adjusted to the needs of adults with autism.
- 10 • Anger management interventions should typically include:
 - 11 ○ Functional analysis of anger and anger-provoking situations;
 - 12 ○ Coping-skills training and behavior rehearsal;
 - 13 ○ Relaxation training;
 - 14 ○ Development of problem-solving skills.
- 15 • For adults with autism without a learning disability or with a mild learning
- 16 disability, who are at risk of victimization, consider anti-victimization
- 17 interventions based on teaching decision-making and problem-solving skills.
- 18 • Anti-victimization interventions should typically include:
 - 19 ○ Identifying and, where possible, modifying and developing decision-making
 - 20 skills in situations associated with abuse;
 - 21 ○ Developing personal safety skills;
- 22 • For adults with autism without a learning disability or with a mild learning
- 23 disability, who are having difficulty obtaining or maintaining employment,
- 24 consider an individual supported employment program.

25
26 Biomedical (pharmacological, physical, and dietary) interventions and the core
27 symptoms of autism

- 28 • Do not use the following:
 - 29 ○ Anticonvulsants for the management of core symptoms of autism in adults;
 - 30 ○ Chelation for the management of core symptoms of autism in adults;
 - 31 ○ The following interventions for the management of core symptoms of autism in
 - 32 adults:
 - 33 ▪ Exclusion diets (e.g., gluten- or casein-free and ketogenic diets);
 - 34 ○ Vitamins, minerals and dietary supplements (e.g., vitamin b6 or iron
 - 35 supplementation) drugs specifically designed to improve cognitive functioning
 - 36 (e.g., cholinesterase inhibitors) for the management of core symptoms of autism
 - 37 or routinely for associated cognitive or behavioral problems in adults;
 - 38 ○ Oxytocin for the management of core symptoms of autism in adults;
 - 39 ○ Secretin for the management of core symptoms of autism in adults;
 - 40 ○ Testosterone regulation for the management of core symptoms of autism in
 - 41 adults;

- 1 ○ Hyperbaric oxygen therapy for the management of core symptoms of autism in
- 2 adults;
- 3 ○ Antipsychotic medication for the management of core symptoms of autism in
- 4 adults;
- 5 ○ Antidepressant medication for the routine management of core symptoms of
- 6 autism in adults.

7

8 Weitlauf et al. (2017) evaluated the effectiveness and safety of interventions targeting

9 sensory challenges in children with ASD in an update of the AHRQ document

10 “Interventions Targeting Sensory Challenges in Children with Autism Spectrum Disorder.”

11 Studies comparing interventions incorporating sensory-focused modalities with alternative

12 treatments or no treatment were included. Studies had to include at least 10 children with

13 ASD ages 2–12 years. Authors identified 24 unique comparative studies (17 newly

14 published studies and 7 studies addressed in the 2011 review of therapies for children with

15 ASD). Populations, intervention approaches, and outcomes assessed varied across studies.

16 Relative to usual care or other interventions, sensory integration–based approaches

17 improved measures related to sensory and motor skills in the short term. Environmental

18 enrichment improved nonverbal cognitive skills in treated children compared with standard

19 care in two small RCTs. Four small RCTs of auditory integration–based approaches

20 reported mixed results. Studies of music therapy used different protocols and addressed

21 different outcomes, precluding synthesis. Massage improved ASD symptom severity and

22 sensory challenges versus a waitlist control condition. Additional RCTs of interventions

23 with sensory-related components (tactile stimulation exercises, weighted blankets)

24 reported few significant differences between treatment groups. Authors concluded that

25 some interventions targeting sensory challenges may produce modest short-term (<6

26 months) improvements, primarily in sensory-related outcomes and outcomes related to

27 ASD symptom severity; however, the evidence base for any category of intervention is

28 small, and durability of effects beyond the immediate intervention period is unclear.

29 Sensory integration–based approaches improved outcomes related to sensory challenges

30 (low SOE) and motor skills (low SOE), and massage improved sensory responses (low

31 SOE) and ASD symptoms (low SOE). Environmental enrichment improved nonverbal

32 cognitive skills (low SOE). Auditory integration–based approaches did not improve

33 language outcomes (low SOE). Some positive effects were associated with other

34 approaches studied (music therapy, weighted blankets), but findings in these small studies

35 were not consistent (insufficient SOE). Data on longer term results are lacking, as are data

36 on characteristics that modify outcomes, effectiveness of interventions across

37 environments or contexts, and components of interventions that may drive effects. In sum,

38 while some therapies may hold promise and warrant further study, substantial needs exist

39 for continuing improvements in methodologic rigor in the field.

40

41 Williamson et al. (2017) evaluated the comparative effectiveness and safety of medical

42 interventions (defined broadly as interventions involving the administration of external

1 substances to the body or use of external nonbehavioral procedures to treat symptoms of
 2 ASD) for children with ASD in another AHRQ publication. Comparative studies of
 3 medical interventions that included at least 10 children with ASD were included.
 4 Populations, treatment approaches, and outcomes assessed varied across studies. Relative
 5 to placebo, seven studies addressing risperidone or aripiprazole reported statistically
 6 significant improvements in challenging behavior in the short term (<6 months) but also
 7 clinically significant harms. RCTs addressing methylphenidate ($n=2$), atomoxetine ($n=2$),
 8 and guanfacine ($n=1$) reported significant improvements in hyperactivity, with frequent
 9 harms. Omega-3 fatty acids (4 RCTs) were not associated with changes in challenging
 10 behavior. N-acetylcysteine and tetrahydrobiopterin were not associated with improvements
 11 in social skills and symptom severity, respectively. Despite the number of RCTs with low
 12 or moderate risk of bias addressing nutritional supplements or specialized diets, evidence
 13 is insufficient for all clinical efficacy and harms outcomes because few, small studies
 14 addressed each diet or supplement. Similarly, although 14 RCTs with low or moderate risk
 15 of bias compared risperidone plus an adjunct medication with risperidone plus placebo,
 16 few addressed the same adjunct agents. Studies of hyperbaric oxygen therapy versus sham
 17 treatment using differing protocols reported conflicting results. Fourteen studies addressed
 18 other interventions, most evaluated in only one study, and typically reported some positive
 19 treatment effects on sleep, ASD symptoms, or language. Authors concluded that
 20 risperidone and aripiprazole ameliorated challenging behaviors in the short term, but with
 21 clinically significant side effects (high SOE). Methylphenidate and atomoxetine were also
 22 associated with improvements in hyperactivity in small short-term RCTs (low SOE), with
 23 improvements maintained over 6 months for atomoxetine (low SOE for longer term
 24 effects). Methylphenidate was associated with clinically significant harms (low SOE),
 25 while atomoxetine was associated with clinically moderate harms (low SOE). Omega-3
 26 fatty acid supplementation, N-acetylcysteine, and tetrahydrobiopterin failed to show
 27 benefits (low SOE). Evidence for other interventions and outcomes studied was
 28 insufficient. While the conduct of studies has improved considerably over time (i.e.,
 29 growing number of RCTs and use of standardized measures), data on longer term (≥ 6
 30 months) results and harms of most interventions are lacking. Similarly, more research is
 31 needed to understand characteristics of the child or treatment that modify outcomes,
 32 whether effectiveness of interventions generalizes across different settings such as the
 33 home or school, and how components of interventions may drive effects.

34
 35 Trzmiel et al. (2019) aimed to assess the effectiveness of Equine-Assisted Activities and
 36 Therapies (EAAT) in ASD patients based on a review of the literature. A total of 15 studies
 37 with 390 participants (aged: 3-16 years) were included. The interaction between
 38 psychosocial functioning and EAAT was investigated in most studies. Improvement was
 39 reported in the following domains: socialization, engagement, maladaptive behaviors, and
 40 shorter reaction time in problem-solving situations after EAAT. The meta-analysis
 41 revealed no statistically significant differences for the investigated effects. Authors
 42 concluded that despite the need for further, more standardized research, the results of the

1 studies included in this review allow the conclusion that EAAT may be a useful form of
2 therapy in children with ASD.

3
4 Perryman et al. (2020) summarized the benefits of treatment options for persons with ASD.
5 Focused areas and concurrent treatment identified were related to social anxiety, social
6 pragmatic function and poor mental health, which are common in this group. The research
7 assessed the benefit of group therapy (cognitive behavioral therapy [CBT] intervention) to
8 improve social anxiety symptoms/social functional and secondarily on mood endorsed
9 outcomes. Participants between 16 and 38 responded to pre and post surveys related to the
10 focus areas and concurrent treatments. The results noted statistical significance for decreased
11 social anxiety. The research was limited by study design without a control group or follow
12 up. However, CBT intervention for persons with ASD noted positive reported outcomes
13 which improved overall functioning. Additional, control studies and follow up is warranted
14 to address and assess the long-term functional impact and changes.

15
16 In the updated guideline from the American Academy of Pediatrics (2020), early
17 intervention usually includes applied behavior analysis, which focuses on learning and
18 reinforcing acceptable behaviors while extinguishing problematic behaviors. Authors
19 report that applied behavior analysis improves cognitive skills and behavior but is an
20 intensive process that typically requires many hours per week of patient participation. Early
21 intervention that includes applied behavior analysis improves cognitive functioning and
22 language skills, with better results from more intense therapy. Nearly all children with ASD
23 require school-based assistance through an individualized education program, which often
24 includes educational interventions, speech therapy, and occupational therapy. Up to 30%
25 of children with ASD never acquire verbal speech; some will use augmented and
26 alternative communication that includes a picture exchange communication system or
27 speech-generating devices. About two-thirds of preschool children with ASD require
28 occupational therapy for motor, strength, and adaptive skill. Authors state that other
29 treatments proposed for ASD, including antifungal agents, immunotherapy, or hyperbaric
30 oxygen, do not have evidence of benefit. There is also caution against using chelation
31 therapy because of ineffectiveness and a risk of harm. Given parents and caregivers search
32 for treatments, it is imperative that treatments with little or negative evidence are discussed
33 and often requires shared decision-making with parents or caregivers. This updated AAP
34 guideline continues to recommend universal screening for ASD at the 18- and 24-month
35 visits in contrast to the USPSTF findings of insufficient evidence to recommend for or
36 against screening. The American Academy of Family Physicians continues to endorse the
37 USPSTF recommendation. A recent intervention that achieved 91% screening in a medical
38 system with 26,000 children showed the limitations and advantages of ASD screening
39 (Guthrie et al., 2019). Only 39% of children with autism were identified by screening, yet
40 those who were identified by screening were diagnosed an average of seven months earlier.

1 In the clinical report ‘Identification, Evaluation, and Management of Children with Autism
2 Spectrum Disorder,’ Hyman et al. (2020) notes there is an increasing evidence base to
3 support behavioral and other interventions to address specific skills and symptoms. Shared
4 decision-making calls for collaboration with families in evaluation and choice of
5 interventions. The goals of treatment of children with ASD are to (1) minimize core deficits
6 (social communication and interaction and restricted or repetitive behaviors and interests)
7 and co-occurring associated impairments; (2) maximize functional independence by
8 facilitating learning and acquisition of adaptive skills; and (3) eliminate, minimize, or
9 prevent problem behaviors that may interfere with functional skills. Treatments should be
10 individualized, developmentally appropriate, and intensive, with performance data relevant
11 to treatment goals to evaluate and adjust intervention. All interventions should be based on
12 sound theoretical constructs, rigorous methodologies, and objective scientific evidence of
13 effectiveness. Since the publication of the 2007 AAP clinical reports on autism, substantial
14 published literature has examined the effectiveness of interventions. Interventions for
15 children with ASD are provided through educational practices, developmental therapies,
16 and behavioral interventions. Treatment strategies may vary by the age and strengths and
17 weaknesses of the child. For example, intervention for a toddler with a recent diagnosis of
18 ASD may include behavioral and developmental approaches (individually or in the context
19 of comprehensive approach) and, as he or she progresses, involvement in a specialized or
20 typical preschool program. For older children, intervention is more likely to occur in
21 educational settings, with integration of behavioral and developmental therapies to
22 promote skill development. The report describes the Comprehensive Treatment Model
23 (CTM) which uses a central conceptual framework to address a broad array of symptoms
24 and is designed to address specific skill(s) or symptom(s). This model addresses multiple
25 therapeutic goals over a period of time. Provision of services may occur in individual
26 instruction or class settings (specialized or inclusive), should include parents, and may
27 involve technology-assisted intervention. Applied behavior analysis (ABA),
28 developmental approaches, and/or naturalistic approaches may be used in CTMs.
29 Examples of CTMs include early intensive behavioral intervention, Treatment and
30 Education of Autistic and Related Communication-Handicapped Children (TEACCH), and
31 the Early Start Denver Model (ESDM). Focused intervention practices such as physical
32 and occupational therapy are designed to address a single or limited range of skills, such
33 as increasing social communication or learning a specific task and may be delivered over
34 a short period of time. Focused intervention practices may be behavioral, developmental,
35 and/or educational. According to authors, these focused interventions may be effective for
36 promoting skill development and communication.

37
38 Dandil et al. (2020) assessed the literature for cognitive remediation (CR) interventions in
39 ASD. Thirteen studies were reviewed (4 RCTs, 2 non-randomized control trials, 4 case
40 series, 2 feasibility studies and 1 case study). The authors stated that overall, results
41 suggested CR interventions are potentially effective in improving social cognition and
42 cognitive functioning in ASD. There are several limitations to this publication. The total

1 number of participants was not provided. The article was a narrative synthesis of included
2 studies. The authors stated that several methodological challenges made it difficult to
3 appraise the empirical studies comprehensively. Also, the authors noted that future RCTs
4 are needed with larger sample sizes.

5
6 The American Academy of Neurology 2020 Practice Guideline on Treatment for Insomnia
7 and Disrupted Sleep Behavior in Children and Adolescents with Autism Spectrum
8 Disorder states:

- 9 • Clinicians should counsel children and adolescents with ASD and sleep disturbance
10 (as appropriate) and their parents that there is currently no evidence to support the
11 routine use of weighted blankets or specialized mattress technology for improving
12 disrupted sleep (Level B; Level B corresponds to the helping verb should. Such
13 recommendations are more common, as the requirements are less stringent but are
14 still associated with confidence in the rationale and a favorable benefit–risk
15 profile).

16
17 Clinicians should counsel that there is currently no evidence to support the routine use of
18 weighted blankets or specialized mattress technology for improving disrupted sleep. If
19 asked about weighted blankets, clinicians should counsel that the trial reported no serious
20 adverse events with blanket use and that blankets could be a reasonable nonpharmacologic
21 approach for some individuals (Williams Buckley et al., 2020).

22
23 Wu et al. (2021) compared the relationship of receptive language (RL) and expressive
24 language (EL) abilities with motor functioning in toddlers with ASD aged 24 to 36 months
25 and their peers with typical development (TD). Furthermore, the study compared
26 multidimensional motor functioning in toddlers with ASD with delayed RL and EL
27 development and toddlers with ASD and typical RL and EL development. The predictive
28 powers of the motor skills were examined for the group with delayed RL and EL
29 development. The language abilities of 38 toddlers with ASD and 38 age-matched toddlers
30 with TD were evaluated using the Receptive and Expressive Language Subscales of the
31 Mullen Scale of Early Learning, and their motor skills were assessed using the Peabody
32 Developmental Motor Scales, Second Edition. Significant correlations between language
33 ability and motor functioning were observed in the ASD and TD groups. The ASD group
34 with delayed RL and EL development had lower scores for multidimensional motor
35 functioning than the ASD group with typical RL and EL development and the TD group.
36 Moreover, the risks of delayed EL and RL development could be predicted by the lower
37 motor scores in toddlers with ASD. Authors concluded that the positive correlation
38 between language abilities and motor functioning in toddlers with ASD indicated potential
39 connections between the early onsets of motor and speech-language impairments in these
40 toddlers. The results may have implications for the development of motor-based
41 interventions targeting language development in young children with ASD.

1 Amonkar et al. (2021) conducted a comprehensive quantitative and qualitative review of
2 the evidence to date on the effects of CMT on multiple systems in individuals with ASD.
3 The strongest evidence, both in terms of quantity and quality, exists for music and martial
4 arts-based interventions followed by yoga and theater, with very limited research on dance-
5 based approaches. The review of 72 studies ($N = 1,939$ participants) across participants
6 with ASD ranging from 3 to 65 years of age suggests that at present there is consistent
7 evidence from high quality studies for small-to-large sized improvements in social
8 communication skills following music and martial arts therapies and medium-to-large
9 improvements in motor and cognitive skills following yoga and martial arts training, with
10 insufficient evidence to date for gains in affective, sensory, and functional participation
11 domains following CMT. Although promising, the review serves as a call for more rigorous
12 high-quality research to assess the multisystem effects of CMT in ASD. Chan et al. (2021)
13 quantitatively aggregated data from existing controlled trials to provide an up-to-date
14 inquiry into the effectiveness of physical activity interventions on communication and
15 social functioning in autistic children and adolescents. They included 12 trials involving
16 350 participants (8 trials reported communication outcomes and 11 trials reported social
17 functioning outcomes) and found small to moderate benefits on communication and social
18 functioning. Further analyses showed that the benefit of physical activity interventions is
19 greater in younger participants. Results of this study suggest that physical activity
20 interventions are effective to improve communication and social functioning in autistic
21 children and adolescents, and early participation in the interventions can be more
22 beneficial. Given their affordability, versatility, and efficacy, physical activity
23 interventions could be considered a cost-effective option for autism spectrum disorder
24 management in the future.

25
26 Wang et al. (2021) aimed to summarize the effectiveness and safety of acupuncture in the
27 treatment of ASD through literature analysis and evaluation. The effects of acupuncture
28 treatment for ASD were determined using the following indicators: childhood autism rating
29 scale (CARS), autism behavior check list (ABC), Reynell developmental language scale
30 (RDLS), and functional independence measure of children (WeeFIM). Based on the results
31 of each indicator, this study suggested that acupuncture could effectively treat ASD.
32 However, acupuncture methods and prescriptions at this stage remain heterogeneous, and
33 acupuncture treatment operations require standardization. Studies using rigorous and
34 standard research designs are needed to draw stronger conclusions about the advantages of
35 using acupuncture to treat children and adolescents with ASD.

36
37 Liang et al. (2022) aimed to synthesize available empirical studies concerning the effects
38 of exercise interventions on executive functions (EFs) in children and adolescents with
39 ASD in a systematic review and meta-analysis. In total, 14 articles underwent systematic
40 review, and 7 were selected for meta-analysis. Chronic exercise interventions had a small
41 to moderate positive effect on overall EFs in children and adolescents with ASD.
42 Regarding domain-specific EFs, chronic exercise interventions had a small to moderate

1 positive effect on cognitive flexibility and inhibitory control. However, this review found
2 a non-significant effect size on working memory.

3
4 Daniolou et al. (2022) aimed to investigate the efficacy of early interventions in improving
5 the cognitive ability, language, and adaptive behavior of pre-school children with ASDs
6 through a systematic review of randomized controlled trials (RCTs). In total, 33 RCTs were
7 included in the meta-analysis using the random effects model. The total sample consisted
8 of 2,581 children (age range: 12-132 months). Early interventions led to positive outcomes
9 for cognitive ability, daily living skills, and motor skills, while no positive outcomes were
10 found for the remaining variables. However, when studies without the blinding of outcome
11 assessment were excluded, positive outcomes of early interventions only remained for
12 daily living skills and motor skills. Although early intervention might not have positive
13 impacts on children with ASDs for several outcomes compared to controls, these results
14 should be interpreted with caution considering the great variability in participant and
15 intervention characteristics.

16
17 Geretsegger et al. (2022) reviewed the effects of music therapy, or music therapy added to
18 standard care, for autistic people. The present version of this review on music therapy for
19 autistic people is an update of the previous Cochrane review update published in 2014
20 (following the original Cochrane review published in 2006). All RCTs, quasi-randomized
21 trials and controlled clinical trials comparing music therapy (or music therapy alongside
22 standard care) to placebo therapy, no treatment, or standard care for people with a diagnosis
23 of autism spectrum disorder were considered for inclusion. They included 16 new studies
24 in this update which brought the total number of included studies to 26 (1,165 participants).
25 These studies examined the short- and medium-term effect of music therapy (intervention
26 duration: 3 days to 8 months) for autistic people in individual or group settings. Twenty-
27 one studies included children aged from 2 to 12 years. Five studies included children and
28 adolescents, and/or young adults. Severity levels, language skills, and cognition were
29 widely variable across studies. Measured immediately post-intervention, music therapy
30 compared with placebo therapy or standard care was more likely to positively affect global
31 improvement and to slightly increase quality of life. In addition, music therapy probably
32 results in a large reduction in total autism symptom severity. Authors concluded that
33 findings of this updated review provide evidence that music therapy is probably associated
34 with an increased chance of global improvement for autistic people, likely helps them to
35 improve total autism severity and quality of life, and probably does not increase adverse
36 events immediately after the intervention. The certainty of the evidence was rated as
37 moderate for these 4 outcomes. No clear evidence of a difference was found for social
38 interaction, non-verbal communication, and verbal communication measured immediately
39 post-intervention. For these outcomes, the certainty of the evidence was rated as 'low' or
40 'very low'. Compared with earlier versions of this review, the new studies included in this
41 update helped to increase the certainty and applicability of this review's findings through
42 larger sample sizes, extended age groups, longer periods of intervention and inclusion of

1 follow-up assessments, and by predominantly using validated scales measuring generalized
2 behavior (i.e. behavior outside of the therapy context). The applicability of the findings is
3 still limited to the age groups included in the studies, and no direct conclusions can be
4 drawn about music therapy in autistic individuals above the young adult age. More research
5 using rigorous designs, relevant outcome measures, and longer-term follow-up periods is
6 needed to corroborate these findings and to examine whether the effects of music therapy
7 are enduring.

8
9 Art therapy, or the therapeutic use of art making, has been proposed to address the
10 symptoms of individuals with ASD. The effectiveness of this varied therapy has not been
11 demonstrated in large, well-designed clinical trials in published peer-reviewed scientific
12 literature (Bernier et al., 2022).

13
14 Salehinejad et al. (2022) evaluated the efficacy and safety of transcranial direct current
15 stimulation (tDCS) in major neurodevelopmental disorders (ADHD, autism, and dyslexia)
16 in a systematic review. The authors identified 11 RCTs of tDCS application in children and
17 adolescents with ASD. The authors noted that although preliminary results appear
18 promising, results cannot establish clinical efficacy of tDCS unless proved in large clinical
19 trials with robust experimental design. Large-scale RCTs and translational studies covering
20 the range from basic neurophysiology to application in cognitive-clinical neuroscience are
21 required. Furthermore, stimulation protocols applied in the most studied
22 neurodevelopmental disorders show symptom-specific stimulation protocols that take
23 disorder-specific conditions into account need to be developed.

24
25 Huashuang et al. (2022) assessed the prevalence of adverse events (AEs) related to
26 Transcranial Magnetic Stimulation (TMS) in ASD. A total of 11 studies were included in
27 the meta-analysis. The authors found the overall prevalence of reported AEs of TMS
28 among ASD was 25% (headache: 10%; facial discomfort: 15%; irritability 21%; pain at
29 the application site: 6%; light-headedness or dizziness: 8%).

30
31 Holloway et al. (2023) described current motor learning strategies used to optimize
32 acquisition, retention, transfer, and generalizability of motor tasks in children with ASD.
33 Children with ASD display motor difficulties that may impact social and communication
34 interactions and participation in everyday activities. These difficulties may be related to a
35 difference in the way they learn new skills. Therefore, strategies to support motor learning
36 to optimize skill acquisition and retention may be beneficial. Twenty-two articles met
37 eligibility criteria. Most articles examined strategies that manipulated the instruction of
38 task, with few articles examining feedback or practice. Skill acquisition was the most
39 represented motor learning outcome, with fewer studies examining retention, transfer, or
40 generalizability. Authors concluded that positive results in 95% of the articles suggest that
41 the use of support strategies to optimize motor learning is feasible and beneficial for

1 children with ASD, and that modifications to instruction, feedback, and practice schedules
2 should be considered in motor interventions.

3
4 Linden et al. (2023) reported results from a meta-analysis of 71 randomized controlled
5 trials including 3,243 participants. The primary analysis objective was to compare relative
6 benefits and harms of different interventions to improve mental health of autistic people.
7 The types of interventions (either alone or in combination) reviewed included the
8 following:

- 9 • drugs such as selective serotonin reuptake inhibitors (SSRIs), serotonin and
10 norepinephrine reuptake inhibitors (SNRIs), antipsychotics, antioxidants, other
11 medications such as oxytocin, anti-diuretic hormone (ADH).
- 12 • psychological therapies such as cognitive behavior therapy, mindfulness-based
13 therapy, counselling.
- 14 • behavioral therapies such as social skills training, applied behavioral analysis.
- 15 • miscellaneous interventions such as music therapy, parent psychoeducation,
16 dietary supplements.
- 17 • wait-list (i.e. no additional intervention or placebo intervention until measurement
18 of the outcomes).

19
20 The primary outcomes included anxiety or depression using any validated measure, overall
21 health-related quality of life using any validated measure, and serious adverse events.
22 Sample sizes in the trials varied from 11 to 223 participants. Only 6 trials had sample sizes
23 of 100 or more participants. The follow-up period in the trials ranged from 1 month to 24
24 months. Only 1 trial had a follow-up longer than 12 months. Overall, the reviewed evidence
25 indicated considerable uncertainty about the effects of different interventions for mental
26 health conditions in people with autism. Available evidence suggests that some forms of
27 cognitive behavioral therapy may decrease anxiety and depression scores in children and
28 adults with autism; mindfulness therapy may decrease anxiety and depression scores in
29 adults with autism and previous mental health conditions; and behavioral interventions may
30 provide some benefit for depression in children with autism. The authors noted that few
31 trials specifically studied mental health conditions in people with autism, and those that
32 existed were at high risk of bias. The risk of bias assessment highlighted low study quality,
33 small sample sizes resulting in insufficient statistical power, a lack of blinding of
34 participants and researchers, and few RCTs comparing different interventions (Linden et
35 al., 2023).

36
37 Hirota and King (2023) summarized the evidence on the diagnosis and treatment of ASD.
38 The estimated prevalence of ASD has been increasing in the US, from 1.1% in 2008 to
39 2.3% in 2018, which is likely associated with changes in diagnostic criteria, improved
40 performance of screening and diagnostic tools, and increased public awareness. No
41 biomarkers specific to the diagnosis of ASD have been identified. Common early signs and
42 symptoms of ASD in a child's first 2 years of life include no response to name when called,

1 no or limited use of gestures in communication, and lack of imaginative play. The criterion
2 standard for the diagnosis of ASD is a comprehensive evaluation with a multidisciplinary
3 team of clinicians and is based on semi-structured direct observation of the child's behavior
4 and semi-structured caregiver interview focused on the individual's development and
5 behaviors using standardized measures, such as the Autism Diagnostic Observation
6 Schedule-Second Edition and the Autism Diagnostic Interview. These diagnostic measures
7 have sensitivity of 91% and 80% and specificity of 76% and 72%, respectively. Compared
8 with people without ASD, individuals with ASD have higher rates of depression (20% vs
9 7%), anxiety (11% vs 5%), sleep difficulties (13% vs 5%), and epilepsy (21% with co-
10 occurring intellectual disability vs 0.8%). Intensive behavioral interventions, such as the
11 Early Start Denver Model, are beneficial in children 5 years or younger for improvement
12 in language, play, and social communication (small to medium effect size based on
13 standardized mean difference). Pharmacotherapy is indicated for co-occurring psychiatric
14 conditions, such as emotion dysregulation or attention-deficit/hyperactivity disorder.
15 Risperidone and aripiprazole can improve irritability and aggression (standardized mean
16 difference of 1.1, consistent with a large effect size) compared with placebo.
17 Psychostimulants are effective for attention-deficit/hyperactivity disorder (standardized
18 mean difference of 0.6, consistent with a moderate effect size) compared with placebo.
19 These medications are associated with adverse effects including, most commonly, changes
20 in appetite, weight, and sleep. Authors concluded ASD affects approximately 2.3% of
21 children aged 8 years and approximately 2.2% of adults in the US. First-line therapy
22 consists of behavioral interventions, while co-occurring psychiatric conditions, such as
23 anxiety or aggression, may be treated with specific behavioral therapy or medication.

24
25 Sandbank et al. (2023) summarized the breadth and quality of evidence supporting
26 commonly recommended early childhood autism interventions and their estimated effects
27 on developmental outcomes in an updated systematic review and meta-analysis. Authors
28 concluded that the available evidence on interventions to support young autistic children
29 has approximately doubled in 4 years. Some evidence from randomized controlled trials
30 shows that behavioral interventions improve caregiver perception of challenging behavior
31 and child social emotional functioning, and that technology-based interventions support
32 proximal improvements in specific social communication and social emotional skills.
33 Evidence also shows that developmental interventions improve social communication in
34 interactions with caregivers, and naturalistic developmental behavioral interventions
35 improve core challenges associated with autism, particularly difficulties with social
36 communication. However, potential benefits of these interventions cannot be weighed
37 against the potential for adverse effects owing to inadequate monitoring and reporting.

38
39
40 In summary, rehabilitation therapy, including speech, PT, and OT, should be included in
41 the multi-disciplinary team-based approach for individuals with ASD. Speech-language
42 pathologists focus on language and communication skills; physical therapists emphasize

1 gross motor skills and planning, muscle weakness, and coordination; and occupational
 2 therapists work with individuals with ASD to improve their self-care activities, with
 3 emphasis on fine motor skills. They also seek to improve sensory dysfunction and assist
 4 with environmental modifications for improved behavior and learning.

6 **PRACTITIONER SCOPE AND TRAINING**

7 Practitioners should practice only in the areas in which they are competent based on their
 8 education, training, and experience. Levels of education, experience, and proficiency may
 9 vary among individual practitioners. It is ethically and legally incumbent on a practitioner
 10 to determine where they have the knowledge and skills necessary to perform such services
 11 and whether the services are within their scope of practice.

13 It is best practice for the practitioner to appropriately render services to a member only if
 14 they are trained, equally skilled, and adequately competent to deliver a service compared
 15 to others trained to perform the same procedure. If the service would be most competently
 16 delivered by another health care practitioner who has more skill and training, it would be
 17 best practice to refer the member to the more expert practitioner.

19 Best practice can be defined as a clinical, scientific, or professional technique, method, or
 20 process that is typically evidence-based and consensus driven and is recognized by a
 21 majority of professionals in a particular field as more effective at delivering a particular
 22 outcome than any other practice (Joint Commission International Accreditation Standards
 23 for Hospitals, 2020).

25 Depending on the practitioner’s scope of practice, training, and experience, a member’s
 26 condition and/or symptoms during examination or the course of treatment may indicate the
 27 need for referral to another practitioner or even emergency care. In such cases it is prudent
 28 for the practitioner to refer the member for appropriate co-management (e.g., to their
 29 primary care physician) or if immediate emergency care is warranted, to contact 911 as
 30 appropriate. See the *Managing Medical Emergencies in a Health Care Facility (CPG 159*
 31 *– S)* clinical practice guideline for information.

33 **References**

34 Adams C, Lockton E, Freed J, Gaile J, Earl G, McBean K, Nash M, Green J, Vail A, Law
 35 J. The Social Communication Intervention Project: a randomized controlled trial of the
 36 effectiveness of speech and language therapy for school-age children who have
 37 pragmatic and social communication problems with or without autism spectrum
 38 disorder. *Int J Lang Commun Disord.* 2012; 47(3):233-44

40 Agency for Healthcare Research and Quality (AHRQ). Interventions for Adolescents and
 41 Young Adults With Autism Spectrum Disorders. Comparative Effectiveness Review
 42 (65), 2012

- 1 Agency for Healthcare Research and Quality (AHRQ). Therapies for Children With
 2 Autism Spectrum Disorder: Behavioral Interventions Update. Comparative
 3 Effectiveness Review (137), 2014
 4
- 5 American Academy of Pediatrics. Section On Complementary And Integrative Medicine;
 6 Council on Children with Disabilities; American Academy of Pediatrics, Zimmer M,
 7 Desch L. Sensory integration therapies for children with developmental and behavioral
 8 disorders. *Pediatrics*. 2012; 129(6):1186-9
 9
- 10 American Academy of Child & Adolescent Psychiatry. Autism Spectrum Disorders. (Oct.
 11 2023). Retrieved on February 19, 2024 from
 12 [https://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-](https://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-Guide/The-Child-With-Autism-011.aspx)
 13 [Guide/The-Child-With-Autism-011.aspx](https://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-Guide/The-Child-With-Autism-011.aspx)
 14
- 15 American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental*
 16 *disorders* (5th ed.)
 17
- 18 American Speech-Language-Hearing Association. (n.d.). Autism Spectrum Disorder.
 19 Retrieved January 19, 2024 from [http://www.asha.org/Practice-Portal/Clinical-](http://www.asha.org/Practice-Portal/Clinical-Topics/Autism/)
 20 [Topics/Autism/](http://www.asha.org/Practice-Portal/Clinical-Topics/Autism/)
 21
- 22 American Speech-Language-Hearing Association. (n.d.). Autism (Autism Spectrum
 23 Disorder. Retrieved on February 19, 2024 from
 24 <https://www.asha.org/public/speech/disorders/autism/>
 25
- 26 Amonkar N, Su WC, Bhat AN, Srinivasan SM. Effects of Creative Movement Therapies
 27 on Social Communication, Behavioral-Affective, Sensorimotor, Cognitive, and
 28 Functional Participation Skills of Individuals With Autism Spectrum Disorder: A
 29 Systematic Review. *Front Psychiatry*. 2021;12:722874. Published 2021 Nov 18.
 30
- 31 Association for Science in Autism Treatment. Learn More About Specific Treatments.
 32 Retrieved on February 19, 2024 from [https://asatonline.org/for-parents/learn-more-](https://asatonline.org/for-parents/learn-more-about-specific-treatments/)
 33 [about-specific-treatments/](https://asatonline.org/for-parents/learn-more-about-specific-treatments/)
 34
- 35 Association for Science in Autism Treatment. A Non-Exhaustive List of Current Position
 36 Statements Related to Autism Treatment. Retrieved on February 19, 2024 from
 37 <https://asatonline.org/for-parents/becoming-a-savvy-consumer/current-positions/>
 38
- 39 Augustyn M. Autism Spectrum Disorders: Evaluation and Diagnosis. In: UpToDate®.
 40 Voigt RG, Patterson MC (Eds), UpToDate, Waltham, MA. Topic last updated March
 41 2023

- 1 Augustyn M, von Hahn LE. Autism spectrum disorder: Clinical features. In: UpToDate,
2 Voigt RG, Patterson MC (Eds), UpToDate, Waltham, MA. Literature review current
3 through: January 2023; Topic last updated March 2023
4
- 5 Autism Spectrum Disorders Across the Life Course and Occupational Therapy Services.
6 Am J Occup Ther. 2022;76(Supplement_3):7613410210
7
- 8 Bernier A, Ratcliff K, Hilton C, Fingerhut P, Li CY. Art Interventions for Children With
9 Autism Spectrum Disorder: A Scoping Review. Am J Occup Ther. 2022 Sep
10 1;76(5):7605205030
11
- 12 BlueCross BlueShield Association. Special report: early intensive behavioral intervention
13 based on applied behavior analysis among children with autism spectrum disorders.
14 Chicago IL: BlueCross BlueShield Association (BCBS). TEC Assessment 23(9). 2008
15
- 16 Case-Smith J, Arbesman M. Evidence-based review of interventions for autism used in or
17 of relevance to occupational therapy. Am J Occup Ther. 2008; 62(4):416-29
18
- 19 Centers for Disease Control and Prevention (CDC). Autism and Developmental
20 Disabilities Monitoring (ADDM) Network. Data & Statistics on Autism Spectrum
21 Disorder. Accessed September 2023. Available at URL address:
22 <https://www.cdc.gov/ncbddd/autism/data.html>
23
- 24 Centers for Disease Control and Prevention (CDC). Autism and Developmental
25 Disabilities Monitoring (ADDM) Network. (See CDC MMWR.) Accessed September
26 2023. Available at URL address: <https://www.cdc.gov/ncbddd/autism/addm.html>
27 https://www.cdc.gov/ncbddd/autism/pdf/Key_Findings_508.pdf
28
- 29 Centers for Disease Control and Prevention (CDC). Screening and Diagnosis of Autism
30 Spectrum Disorder. Page last reviewed: March 31, 2022. Accessed September 2023.
31 Available at URL address: <https://www.cdc.gov/ncbddd/autism/screening.html>
32
- 33 Chan JS, Deng K, Yan JH. The effectiveness of physical activity interventions on
34 communication and social functioning in autistic children and adolescents: A meta-
35 analysis of controlled trials. Autism. 2021;25(4):874-886
36
- 37 Chaves-Gnecco D, Feldman HM. Developmental/Behavioral Pediatrics. In: Zitelli and
38 Davis' Atlas of Pediatrics. 3, 71-99. Copyright © 2023 by Elsevier, Inc.
39
- 40 Cheuk DK, Wong V, Chen WX. Acupuncture for autism spectrum disorders (ASD).
41 Cochrane Database Syst Rev. 2011 Sep 7;(9):CD007849

- 1 Dandil Y, Smith K, Kinnaird E, Toloza C, Tchanturia K. Cognitive Remediation
2 Interventions in Autism Spectrum Condition: A Systematic Review. *Front Psychiatry*.
3 2020 Jul 24;11:722
4
- 5 Daniolou S, Pandis N, Znoj H. The Efficacy of Early Interventions for Children with
6 Autism Spectrum Disorders: A Systematic Review and Meta-Analysis. *J Clin Med*.
7 2022 Aug 30;11(17):5100
8
- 9 Dawson G, Rogers S, Munson J, et al. Randomized, controlled trial of an intervention for
10 toddlers with autism: the Early Start Denver Model. *Pediatrics*. 2010; 125(1):e17-e23
11
- 12 Diggle T, McConachie HR, Randle VR. Parent-mediated early intervention for young
13 children with autism spectrum disorder. *Cochrane Database Syst Rev*.
14 2003;(1):CD003496
15
- 16 Dimolareva M, Dunn TJ. Animal-Assisted Interventions for School-Aged Children with
17 Autism Spectrum Disorder: A Meta-Analysis. *J Autism Dev Disord*. 2021;51(7):2436-
18 2449
19
- 20 DIR® Floortime. The Interdisciplinary Council on Developmental & Learning Disorders.
21 Retrieved January 19, 2024 from <http://www.icdl.com/home>
22
- 23 Downey R, Rapport MJ. Motor activity in children with autism: a review of current
24 literature. *Pediatr Phys Ther*. 2012 Spring;24(1):2-20
25
- 26 Eckes T, Buhlmann U, Holling HD, Möllmann A. Comprehensive ABA-based
27 interventions in the treatment of children with autism spectrum disorder - a meta-
28 analysis. *BMC Psychiatry*. 2023 Mar 2;23(1):133
29
- 30 Falkmer T, Anderson K, Falkmer M, Horlin C. Diagnostic procedures in autism spectrum
31 disorders: a systematic literature review. *Eur Child Adolesc Psychiatry*. 2013 Jan 16
32
- 33 Filipek PA, Accardo PJ, Ashwal S, et al. Practice parameter: Screening and diagnosis of
34 autism: Report of the Quality Standards Subcommittee of the American Academy of
35 Neurology and the Child Neurology Society (2000/2013). Retrieved on January 19,
36 2024 from <https://n.neurology.org/content/neurology/55/4/468.full.pdf>
37
- 38 Flippin M, Reszka S, Watson LR. Effectiveness of the Picture Exchange Communication
39 System (PECS) on communication and speech for children with autism spectrum
40 disorders: a meta-analysis. *Am J Speech Lang Pathol*. 2010; 19(2):178-95

- 1 Fletcher-Watson S, McConnell F, Manola E, McConachie H. Interventions based on the
 2 Theory of Mind cognitive model for autism spectrum disorder (ASD). *Cochrane*
 3 *Database Syst Rev.* 2014 Mar 21;3:CD008785
 4
- 5 Fraguas D, Díaz-Caneja CM, Pina-Camacho L, Moreno C, Durán-Cutilla M, Ayora M,
 6 González-Vioque E, de Matteis M, Hendren RL, Arango C, Parellada M. Dietary
 7 Interventions for Autism Spectrum Disorder: A Meta-analysis. *Pediatrics.* 2019
 8 Nov;144(5)
 9
- 10 Geretsegger M, Elefant C, Mössler KA, Gold C. Music therapy for people with autism
 11 spectrum disorder. *Cochrane Database Syst Rev.* 2014 Jun 17;6:CD004381
 12
- 13 Geretsegger M, Fusar-Poli L, Elefant C, Mössler KA, Vitale G, Gold C. Music therapy for
 14 autistic people. *Cochrane Database Syst Rev.* 2022;5(5):CD004381. Published 2022
 15 May 9. doi:10.1002/14651858.CD004381.pub4
 16
- 17 Gordon K, Pasco G, McElduff F, Wade A, Howlin P, Charman T. A communication-based
 18 intervention for nonverbal children with autism: what changes? Who benefits? *J*
 19 *Consult Clin Psychol.* 2011; 79(4):447-57
 20
- 21 Granpeesheh D, Tarbox J, Dixon DR. Applied behavior analytic interventions for children
 22 with autism: a description and review of treatment research. *Ann Clin Psychiatry.* 2009;
 23 21(3):162-73
 24
- 25 Greenspan SI, Brazelton TB, Cordero J, et al. Guidelines for early identification, screening,
 26 and clinical management of children with autism spectrum disorders. *Pediatrics.* 2008;
 27 121(4):828-830
 28
- 29 Guthrie, W., Wallis, K., Bennett, A., Brooks, E., Dudley, J., Gerdes, M., Pandey, J., Levy,
 30 S. E., Schultz, R. T., & Miller, J. S. (2019). Accuracy of Autism Screening in a Large
 31 Pediatric Network. *Pediatrics*, 144(4), e20183963. <https://doi.org/10.1542/peds.2018-3963>
 32
 33
- 34 Guo BQ, Li HB, Liu YY. Association between hair lead levels and autism spectrum
 35 disorder in children: A systematic review and meta-analysis. *Psychiatry Res.* 2019
 36 Jun;276:239-249
 37
- 38 Hirota T, King BH. Autism Spectrum Disorder: A Review. *JAMA.* 2023;329(2):157-168.
 39 doi:10.1001/jama.2022.23661

- 1 Holloway JM, Tomlinson SM, Hardwick DD. Strategies to Support Learning of Gross
2 Motor Tasks in Children with Autism Spectrum Disorder: A Scoping Review. *Phys
3 Occup Ther Pediatr.* 2023;43(1):17-33
4
- 5 Huashuang Z, Yang L, Chensheng H, Jing X, Bo C, et al. Prevalence of Adverse Effects
6 Associated With Transcranial Magnetic Stimulation for Autism Spectrum Disorder: A
7 Systematic Review and Meta-Analysis. *Front Psychiatry.* 2022 May 23;13:875591
8
- 9 Hyman SL, Levy SE, Myers SM, AAP Council on Children with Disabilities, Section On
10 Developmental and Behavioral Pediatrics. Identification, Evaluation, and Management
11 of Children with Autism Spectrum Disorder. *Pediatrics.* 2020;145(1):e20193447
12
- 13 James S, Montgomery P, Williams K. Omega-3 fatty acids supplementation for autism
14 spectrum disorders (ASD). *Cochrane Database Syst Rev.* 2011 Nov 9;(11):CD007992
15
- 16 James S, Stevenson SW, Silove N, Williams K. Chelation for autism spectrum disorder
17 (ASD). *Cochrane Database Syst Rev.* 2015 May 11;5:CD010766
18
- 19 Joint Commission International. (2020). Joint Commission International Accreditation
20 Standards for Hospitals (7th ed.): Joint Commission Resources
21
- 22 Kirby AV, Morgan L, Hilton C. Autism and Mental Health: The Role of Occupational
23 Therapy. *Am J Occup Ther.* 2023 Mar 1;77(2):7702170010. doi:
24 10.5014/ajot.2023.050303. PMID: 36996455; PMCID: PMC10162488
25
- 26 Lee MS, Kim JI, Ernst E. Massage therapy for children with autism spectrum disorders: a
27 systematic review. *J Clin Psychiatry.* 2011 Mar;72(3):406-11
28
- 29 Liang X, Li R, Wong SHS, et al. The Effects of Exercise Interventions on Executive
30 Functions in Children and Adolescents with Autism Spectrum Disorder: A Systematic
31 Review and Meta-analysis. *Sports Med.* 2022;52(1):75-88
32
- 33 Linden A, Best L, Elise F, Roberts D, Branagan A, et al. Benefits and harms of
34 interventions to improve anxiety, depression, and other mental health outcomes for
35 autistic people: A systematic review and network meta-analysis of randomised
36 controlled trials. *Autism.* 2023 Jan;27(1):7-30
37
- 38 Lounds Taylor J, Dove D, Veenstra-VanderWeele J, et al. Interventions for Adolescents
39 and Young Adults With Autism Spectrum Disorders [Internet]. Rockville (MD):
40 Agency for Healthcare Research and Quality (US); 2012 Aug. (Comparative
41 Effectiveness Reviews, No. 65.) Available from:
42 <https://www.ncbi.nlm.nih.gov/books/NBK107275/>

- 1 Martin R, Srivastava T, Lee J, Raj N, Koth KA, Whelan HT. Using hyperbaric oxygen for
2 autism treatment: A review and discussion of literature. *Undersea Hyperb Med.* 2015
3 Jul-Aug;42(4):353-9
4
- 5 McDaniel Peters BC, Wood W. Autism and Equine-Assisted Interventions: A Systematic
6 Mapping Review. *J Autism Dev Disord.* 2017 Oct;47(10):3220-3242
7
- 8 McLaughlin MR. Speech and language delay in children. *Am Fam Physician.* 2011;
9 83(10):1183-8
10
- 11 McPheeters ML, Warren Z, Sathe N, et al. A systematic review of medical treatments for
12 children with autism spectrum disorders. *Pediatrics.* 2011; 127(5):e1312-1321
13
- 14 Meyers SM and Johnson CP. Management of Children With Autism Spectrum Disorders
15 *Pediatrics.* 2007; 120(5): 1162 -1182
16
- 17 Mieres AC, Kirby RS, Armstrong KH, Murphy TK, Grossman L. Autism spectrum
18 disorder: an emerging opportunity for physical therapy. *Pediatr Phys Ther.* 2012;
19 24(1):31-7
20
- 21 Ming X, Brimacombe M, Wagner GC. Prevalence of motor impairment in autism spectrum
22 disorders. *Brain Dev.* 2007 Oct;29(9):565-70. National Academy of Sciences, National
23 Research Council, Division of Behavioral and Social Sciences and Education,
24 Committee on Educational Interventions for Children with Autism. *Educating Children
25 with Autism.* C Lord, JP McGee, eds. Washington, DC: National Academies Press;
26 2001
27
- 28 National Institute for Health and Clinical Excellence (NICE). Autism spectrum disorder in
29 adults: diagnosis and management. London (UK): National Institute for Health and
30 Clinical Excellence (NICE); 2012 Jun; updated August 2016; updated June 2021.
31 (NICE clinical guideline; no. 142). Available at URL address:
32 <http://guidance.nice.org.uk/CG142>
33
- 34 National Institute for Health and Clinical Excellence (NICE). Autism spectrum disorder in
35 under 19s: support and management. London (UK): National Institute for Health and
36 Clinical Excellence (NICE); 2013 Aug; reviewed Sep 2016; reviewed June 2021.
37 (NICE clinical guideline; no. 170). Available at URL address:
38 <https://www.nice.org.uk/guidance/cg170>
39
- 40 National Institute for Health and Clinical Excellence (NICE) (United Kingdom). Autism
41 spectrum disorder in under 19s: recognition, referral and diagnosis. (NICE clinical

- 1 guideline 128). 2011; updated: December 2017. Retrieved January 19, 2024 from
 2 <http://guidance.nice.org.uk/CG128>
 3
- 4 National Institute of Mental Health [NIMH]. Autism Spectrum Disorder. Retrieved on
 5 January 19, 2024 from [http://www.nimh.nih.gov/health/publications/a-parents-guide-](http://www.nimh.nih.gov/health/publications/a-parents-guide-to-autism-spectrum-disorder/index.shtml)
 6 [to-autism-spectrum-disorder/index.shtml](http://www.nimh.nih.gov/health/publications/a-parents-guide-to-autism-spectrum-disorder/index.shtml)
 7
- 8 National Institute of Neurological Disorders and Stroke (NINDS). Autism Spectrum
 9 Disorder. Retrieved January 19, 2024 from [https://www.ninds.nih.gov/health-](https://www.ninds.nih.gov/health-information/disorders/autism-spectrum-disorder?search-term=Autism%20fact%20sheet)
 10 [information/disorders/autism-spectrum-disorder?search-](https://www.ninds.nih.gov/health-information/disorders/autism-spectrum-disorder?search-term=Autism%20fact%20sheet)
 11 [term=Autism%20fact%20shee](https://www.ninds.nih.gov/health-information/disorders/autism-spectrum-disorder?search-term=Autism%20fact%20sheet)
 12
- 13 National Institute of Neurological Disorders and Stroke (NINDS). Pervasive
 14 Developmental Disorders. Retrieved January 19, 2024 from
 15 [https://www.ninds.nih.gov/health-information/disorders/pervasive-developmental-](https://www.ninds.nih.gov/health-information/disorders/pervasive-developmental-disorders?search-term=pervasive%20developmental)
 16 [disorders?search-term=pervasive%20deve](https://www.ninds.nih.gov/health-information/disorders/pervasive-developmental-disorders?search-term=pervasive%20developmental)
 17
- 18 National Research Council. Educating Children with Autism. Washington, DC: National
 19 Academy Press, 2001
 20
- 21 Oono IP, Honey EJ, McConachie H. Parent-mediated early intervention for young children
 22 with autism spectrum disorders (ASD). *Cochrane Database Syst Rev.* 2013 Apr
 23 30;4:CD009774
 24
- 25 Ospina MB, Krebs Seida J, Clark B, Karkhaneh M, Hartling L, Tjosvold L, Vandermeer
 26 B, Smith V. Behavioral and developmental interventions for autism spectrum disorder:
 27 a clinical systematic review. *PLoS One.* 2008;3(11):e3755
 28
- 29 Perryman T, Ricks L, Cash-Baskett L. Meaningful Transitions: Enhancing Clinician Roles
 30 in Transition Planning for Adolescents With Autism Spectrum Disorders. *Lang Speech*
 31 *Hear Serv Sch.* 2020 Oct 2;51(4):899-913
 32
- 33 Reichow B, Barton EE, Boyd BA, Hume K. Early intensive behavioral intervention (EIBI)
 34 for young children with autism spectrum disorders (ASD). *Cochrane Database Syst*
 35 *Rev.* 2012 Oct 17;10:CD009260
 36
- 37 Salehinejad MA, Ghanavati E, Glinski B, Hallajian AH, Azarkolah A. A systematic review
 38 of randomized controlled trials on efficacy and safety of transcranial direct current
 39 stimulation in major neurodevelopmental disorders: ADHD, autism, and dyslexia.
 40 *Brain Behav.* 2022 Aug 8:e2724. doi:10.1002/brb3.2724

- 1 Sanchack KE et al. Autism Spectrum Disorder: Updated Guidelines from the American
2 Academy of Pediatrics Am Fam Physician. 2020 Nov 15;102(9):629-63
3
- 4 Sandbank M, Bottema-Beutel K, Crowley LaPoint S, Feldman JI, Barrett DJ, Caldwell N,
5 Dunham K, Crank J, Albarran S, Woynaroski T. Autism intervention meta-analysis of
6 early childhood studies (Project AIM): updated systematic review and secondary
7 analysis. BMJ. 2023 Nov 14;383:e076733
8
- 9 Sathe N, Andrews JC, McPheeters ML, Warren ZE. Nutritional and Dietary Interventions
10 for Autism Spectrum Disorder: A Systematic Review. Pediatrics. 2017 Jun;139(6)
11
- 12 Sinha Y, Silove N, Hayen A, Williams K. Auditory integration training and other sound
13 therapies for autism spectrum disorders (ASD). Cochrane Database Syst Rev. 2011 Dec
14 7;(12):CD003681
15
- 16 Smith T, Iadarola S. Evidence Base Update for Autism Spectrum Disorder. J Clin Child
17 Adolesc Psychol. 2015;44(6):897-922
18
- 19 Smith AM, King JJ, West PR, Ludwig MA, Donley ELR, Burrier RE, et al. Amino Acid
20 Dysregulation Metatypes: Potential Biomarkers for Diagnosis and Individualized
21 Treatment for Subtypes of Autism Spectrum Disorder. Biol Psychiatry. 2019 Feb
22 15;85(4):345-354
23
- 24 Tachibana Y, Miyazaki C, Ota E, Mori R, Hwang Y, Kobayashi E, Terasaka A, Tang J,
25 Kamio Y. A systematic review and meta-analysis of comprehensive interventions for
26 pre-school children with autism spectrum disorder (ASD). PLoS One. 2017 Dec
27 6;12(12):e0186502
28
- 29 Tierney CD, Kurtz M, Souders H. Clear as mud: another look at autism, childhood apraxia
30 of speech and auditory processing. Curr Opin Pediatr. 2012; 24(3):394-9
31
- 32 Trzmiel T, Purandare B, Michalak M, Zasadzka E, Pawlaczyk M. Equine assisted activities
33 and therapies in children with autism spectrum disorder: A systematic review and a
34 meta-analysis. Complement Ther Med. 2019;42:104-113
35
- 36 US Preventive Services Task Force. Autism Spectrum Disorder in Young Children:
37 Screening (2016). Update in progress. Retrieved on January 19, 2024 from
38 [http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/
39 autism-spectrum-disorder-in-young-children-screening?ds=1&s=autism](http://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/autism-spectrum-disorder-in-young-children-screening?ds=1&s=autism)

- 1 Virués-Ortega J. Applied behavior analytic intervention for autism in early childhood:
2 meta-analysis, meta-regression and dose-response meta-analysis of multiple outcomes.
3 Clin Psychol Rev. 2010; 30(4):387-99
4
- 5 Volkmar F, Siegel M, Woodbury-Smith M, King B, McCracken J, State M; American
6 Academy of Child and Adolescent Psychiatry (AACAP) Committee on Quality Issues
7 (CQI). Practice parameter for the assessment and treatment of children and adolescents
8 with autism spectrum disorder. J Am Acad Child Adolesc Psychiatry. 2014
9 Feb;53(2):237-57
10
- 11 Wang L, Peng JL, Qiao FQ, et al. Clinical Randomized Controlled Study of Acupuncture
12 Treatment on Children with Autism Spectrum Disorder (ASD): A Systematic Review
13 and Meta-Analysis. Evid Based Complement Alternat Med. 2021;2021:5549849.
14 Published 2021 Jul 24
15
- 16 Warren Z, McPheeters ML, Sathe N, Foss-Feig JH, Glasser A, Veenstra-Vanderweele J. A
17 systematic review of early intensive intervention for autism spectrum disorders.
18 Pediatrics. 2011; 127(5):e1303-11
19
- 20 Warren Z, Veenstra-Vanderweele J, Stone W, Bruzek JL, Nahmias AS, Foss-Feig JH,
21 Jerome RN, Krishnaswami S, Sathe NA, Glasser AM, Surawicz T, McPheeters ML.
22 Therapies for Children With Autism Spectrum Disorders. Comparative Effectiveness
23 Review No. 26. (Prepared by the Vanderbilt Evidence-based Practice Center under
24 Contract No. 290-2007-10065-I.) AHRQ Publication No. 11-EHC029-EF. Rockville,
25 MD: Agency for Healthcare Research and Quality. April 2014. Available at:
26 <https://effectivehealthcare.ahrq.gov/topics/autism-update/research>. Archived
27
- 28 Weissman L. Autism spectrum disorder in children and adolescents: Overview of
29 management. In: UpToDate, Post TW (Ed), UpToDate, Waltham, MA. Literature
30 review current through January 2023. Topic last updated: Dec 19, 2023
31
- 32 Weitlauf AS, McPheeters ML, Peters B, Sathe N, Travis R, Aiello R, Williamson E,
33 Veenstra-Vanderweele J, Krishnaswami S, Jerome R, Warren Z. Therapies for
34 Children With Autism Spectrum Disorder: Behavioral Interventions Update.
35 Comparative Effectiveness Review No. 137. (Prepared by the Vanderbilt Evidence-
36 based Practice Center under Contract No. 290-2012-00009-I.) AHRQ Publication No.
37 14-EHC036-EF. Rockville, MD: Agency for Healthcare Research and Quality; August
38 2014. www.effectivehealthcare.ahrq.gov/reports/final.cfm
39
- 40 Weitlauf AS, Sathe NA, McPheeters ML, Warren Z. Interventions Targeting Sensory
41 Challenges in Children With Autism Spectrum Disorder—An Update [Internet].

- 1 Rockville (MD): Agency for Healthcare Research and Quality (US); 2017 May.
2 Available from <http://www.ncbi.nlm.nih.gov/books/NBK448053/>
3
- 4 Williams Buckley A, Hirtz D, Oskoui M, Armstrong MJ, Batra A, et al. Practice guideline:
5 Treatment for insomnia and disrupted sleep behavior in children and adolescents with
6 autism spectrum disorder: Report of the Guideline Development, Dissemination, and
7 Implementation Subcommittee of the American Academy of Neurology. *Neurology*.
8 2020 Mar 3;94(9):392-404
9
- 10 Williamson E, Sathe NA, Andrews JC, Krishnaswami S, McPheeters ML, Fonnesebeck C,
11 Sanders K, Weitlauf A, Warren Z. Medical Therapies for Children With Autism
12 Spectrum Disorder—An Update [Internet]. Rockville (MD): Agency for Healthcare
13 Research and Quality (US); 2017 May. Available from
14 <http://www.ncbi.nlm.nih.gov/books/NBK448262/>
15
- 16 Wu YT, Tsao CH, Huang HC, Yang TA, Li YJ. Relationship Between Motor Skills and
17 Language Abilities in Children With Autism Spectrum Disorder. *Phys Ther*.
18 2021;101(5):pzab033
19
- 20 Xiong T, Chen H, Luo R, Mu D. Hyperbaric oxygen therapy for people with autism
21 spectrum disorder (ASD). *Cochrane Database Syst Rev*. 2016 Oct 13;10:CD010922