NEW DIRECTIONS BEHAVIORAL HEALTH, L.L.C.

Blue Cross and Blue Shield Service Benefit Plan Coverage Criteria for Federal Employees	**Applied Behavior Analysis for the Treatment of Autism Spectrum Disorder**

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OVERVIEW

New Directions Behavioral Health® manages Applied Behavior Analysis (ABA) benefits for the Blue Cross and Blue Shield Service Benefit Plan in Florida. This medical coverage criteria are used to review and make benefit decisions for ABA service requests for Service Benefit Plan members with the diagnosis of Autism Spectrum Disorder (ASD).

Treatments other than ABA do not fall under the scope of this policy; these services include but are not limited to treatments that are considered to be investigational/experimental, such as Cognitive Training; Auditory Integration Therapy; Facilitated Communication; Higashi Schools/Daily Life; Individual Support Program; LEAP; SPELL; Waldon; Hanen; Early Bird; Bright Start; Social Stories; Gentle Teaching; Response Teaching Curriculum and Developmental Intervention Model; Holding Therapy; Movement Therapy; Music Therapy; Pet Therapy; Psychoanalysis; Son-Rise Program; Scotopic Sensitivity Training; Sensory Integration Training; Neurotherapy (EEG biofeedback).

ASD is a medical, neurobiological, developmental disorder, characterized by Core Deficit areas: persistent deficits in social communication and social interaction across multiple contexts AND, restricted, repetitive patterns of behavior, interests and activities. Diagnostic and Statistical Manual fifth edition (DSM-5) requires all of these symptoms to be present in early development, and further specifies clinically significant impairment in social, occupational or other important areas of current function.

Applied Behavior Analysis is the treatment approach most commonly used with children with ASD. ABA involves a structured environment, predictable routines, individualized treatment, transition and aftercare planning and significant family involvement. ABA attempts to increase skills related to functional deficits and reduce inappropriate excesses including eliminating barriers to learning. Neurologic dysfunction may produce core deficits in the areas of communication, social and adaptive skills, but are possible in other areas as well. Examples of deficits may include: a lack of expressive language, inability to request items or actions, limited eye contact with others and inability to engage in age-appropriate self-help skills such as tooth

brushing or dressing. Examples of inappropriate excesses may include but are not limited to physical aggression, property destruction, elopement, self-stimulatory behavior, self-injurious behavior and vocal repetition.

At an initial assessment, target symptoms are identified. A treatment plan is developed that identifies the core deficits and if aberrant activities are present, would include designated interventions intended to address these deficits and behaviors and achieve individualized goals. Prior approval is required for ABA and related services according to the benefit provisions listed in the Service Benefit Plan brochure. Treatment plans and relevant medical records, including assessments and evaluations are reviewed for medical necessity (defined below) at least twice annually to allow re-assessment and to document treatment progress.

A Functional Behavioral Assessment (FBA) may also be a part of any assessment. An FBA consists of:

- **a.** Description of the problem (topography, onset/offset, cycle, intensity, severity)
- **b.** History of the problem (long-term and recent)
- **c.** Antecedent analysis (setting, people, time of day, events)
- **d.** Consequence analysis
- **e.** Impression and analysis of the function of the problem

MEDICAL NECESSITY

According to the 2021 Blue Cross and Blue Shield Service Benefit Plan brochure,
"All benefits are subject to the definitions, limitations and exclusions in this brochure and are payable only when we determine that the criteria for medical necessity are met. Medical necessity shall mean health care services that a physician, hospital, or other covered professional for facility provider, exercising prudent clinical judgment would provide to a patient for the purpose of preventing, evaluation, diagnosing, or treating an illness, injury, disease, or its symptoms and that are:

- **a.** In accordance with generally accepted standards of medical practice in the United States
- **b.** Clinically appropriate, in terms of type, frequency, extent, site and duration; and considered effective for the patient's illness, injury, disease, or its symptoms
- **c.** Not primarily for the convenience of the patient, physician, or other health care provider and not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results for the diagnosis or treatment of a patient's illness, injury, or disease, or its symptoms
- **d.** Not part of or associated with scholastic education or vocational training of the patient
- **e.** In the case of inpatient care, able to be provided safely only in the inpatient setting

For these purposes, "generally accepted standards of medical practice" means standards that are based on credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community and physician specialty society recommendations."

COVERAGE GUIDELINES: INITIAL SERVICE REQUEST

New Directions may authorize ABA services for ASD only if all of the following criteria are met:

COMPREHENSIVE DIAGNOSTIC EVALUATION

1. The member has a diagnosis of Autism Spectrum Disorder (ASD) from a clinician who is licensed and qualified to make such a diagnosis. Such clinicians are usually a: neurologist, developmental pediatrician, pediatrician, psychiatrist, licensed clinical psychologist, or medical doctor experienced in the diagnosis of ASD.

- **a.** Documentation of the diagnosis must be accompanied by a clinical note of sufficient depth that allows concordance with DSMV criteria for core symptoms of ASD.
- **b.** The comprehensive evaluation must rule out behavior/medical diagnosis that potentially have similar symptom presentations.
  - **i.** This includes neurological disorders, hearing disorders, behavior disorders and other developmental delays.

Member is within the age range specified in the applicable health plan's member service plan description or in the applicable state mandate for treatment.

ABA TREATMENT ASSESSMENT

New Directions may authorize an ABA services assessment only if all of the following criteria are met:

1. Diagnosis of autism, using criteria found in the DSMV or ICD10.
2. Hours requested are not more than what is required to complete the treatment assessment.
3. For initial ABA treatment assessment, the following assessments must have been completed prior to or scheduled to be completed within 90 days of the assessment and be less than 5 years old:

- **a.** Developmental and cognitive evaluation
- **b.** Autism specific assessment that identifies the severity of the condition
- **c.** Adaptive behavior assessment completed within 8 months of start date of treatment
- **d.** Neurological evaluation
- **e.** Information applicable to state mandate

Note: Standardized psychological testing services are billed with specific psychological testing AMA-CPT code by eligible providers. Typically, a clinical psychologist is qualified to provide testing services.

INITIAL ABA SERVICE TREATMENT REQUEST

New Directions may authorize the initiation of ABA services for ASD only if all of the following criteria are met:

1. Diagnostic Criteria as set forth in the current DSMV or ICD10 are met.
2. ABA services do not duplicate services that directly support academic achievement goals that may be included in the member's educational setting or the academic goals encompassed in the member's IEP/ISP.
3. The ABA services recommended do not duplicate services provided or available to the member by other medical or behavioral health professionals. Examples include but are not limited to behavioral health treatment such as individual, group and family therapies; occupational, physical and speech therapies.
4. ABA services are not a substitute for non-treatment services addressing environmental factors, including shadow, para-professional, support, interpersonal or companion services in any setting.
5. Approved treatment goals and clinical documentation must be focused on active ASD core symptoms, substantial deficits that inhibit daily functioning and clinically significant aberrant activities. This includes a plan for stimulus and response generalization in novel contexts.
6. When there is a history of ABA treatment, the provider reviews the previous ABA treatment record to determine that there is a reasonable expectation that a member has the capacity to learn and generalize skills to assist in his or her independence and functional improvements.
7. For comprehensive treatment, the requested ABA services are focused on reducing the gap between the member's chronological and developmental ages such that the member is able to develop or restore function to the maximum extent practical or for focused treatment, the requested ABA services are designed to reduce the burden of selected targeted symptoms on the member, family and other significant people in the environment and to target increases in appropriate alternative behaviors.
8. Treatment intensity does not exceed the member's functional ability to participate and/or is not for the convenience of the patient, caregiver, treating provider or other professional.
9. Hours per week requested are not more than what is required to achieve the goals listed in the treatment plan and must reflect the member's, caregiver's and provider's availability to participate in treatment.
10. Treatment occurs in the setting(s) where target behaviors are occurring and/or where treatment is most likely to have an impact on target behaviors.
11. A complete medical record is submitted by the treating licensed and qualified professional or Licensed Behavior Analyst (LBA) to include:
    a. All initial assessments performed by the LBA and must utilize direct observation. Preferred skills assessments must be developmentally appropriate and include non-standardized assessments such as the ABLLS, VB-MAPP and any other developmental measurements employed. Only those portions of assessments that address aberrant activities and core deficits of autism are reimbursable; this

excludes assessments or portions of assessments that cover academic, speech, vocational deficits, etc. Please note that standardized adaptive behavior assessment tools are not accepted as skills assessment tools.

- **b.** Individualized treatment plan with clinically significant and measurable goals that clearly address the active symptoms and signs of the member's core deficits of ASD and aberrant activities if present.
- **c.** Goals should be written with measurable criteria such that they can be reasonably achieved within six months.
- **d.** Goals should include documentation of core symptoms/ aberrant activities of ASD in the treatment plan, date of treatment introduction, measured baseline of targeted goal, objective present level of behavior, mastery criteria, estimated date of mastery and a specific plan for generalization of skills.
- **e.** Functional Behavior Assessment to address targeted problematic behaviors with operational definition and provide data to measure progress, as clinically indicated.
- **f.** Documentation of treatment participants, procedures and setting.
- **g.** Coordination of care with member's other treating providers to communicate pertinent medical and/or behavioral health information.

12. Direct line therapy services are provided by a Licensed Behavior Technician (LBT), or State-Certified Assistant Behavior Analyst (SCABA), supervised by a BCBA or Doctoral level BCBA (BCBA-D), or provided in a manner consistent with the controlling state mandate. In selected circumstances, New Directions will consider direct 1:1 services provided by a LBA or LBA-D.

13. Telehealth/ Telemedicine is not an approved method of service delivery for direct ABA services. Telehealth/ Telemedicine for parent education and direct supervision activities can be covered if allowed as an eligible telehealth/ telemedicine service under the member benefit plan. It is recommended that telehealth/ telemedicine service delivery be combined with face-to-face service delivery of direct supervision activities.

14. The treatment plan must include a plan to support the member's ability to generalize skills across stimuli, contexts and individuals, via caregiver training or an appropriate alternative. Provider should be able to demonstrate how instructional control will be transferred to caregivers.

15. Although not required for the initial service request, transition and aftercare planning should begin during the early phases of treatment.

COVERAGE GUIDELINES: CONTINUED SERVICE REQUEST

New Directions may authorize continued ABA treatment services for ASD only if all of the following criteria are met:

1. Diagnostic Criteria as set forth in the current DSMV or ICD10 are met.

2. ABA services do not duplicate services that directly support academic achievement goals that may be included in the member's educational setting or the academic goals encompassed in the member's IEP/ISP. This includes shadow, para-professional, or

companion services in any setting that are implemented to directly support academic achievement goals.

3. The ABA services recommended do not duplicate services provided or available to the member by other medical or behavioral health professionals. Examples include but are not limited to behavioral health treatment such as individual, group and family therapies; occupational, physical and speech therapies.
4. Approved treatment goals and clinical documentation must be focused on active ASD core symptoms, substantial deficits that inhibit daily functioning and clinically significant aberrant behavior. This includes a plan for stimulus and response generalization in novel contexts.
5. Member must show progress in generalizing skills across stimuli, contexts and individuals, via caregiver training or an appropriate alternative. Provider should be able to demonstrate how operational control is being transferred to caregivers.
6. Adaptive Behavior Testing (such as the Vineland Adaptive Behavior Scale (VABS), and Adaptive Behavior Assessment System (ABAS), Behavior Assessment System for Children: Adaptive Skills (BASC 3), Pervasive Developmental Disorder Behavior Inventory (PDDBI) within a 45-day period of the next scheduled concurrent review. The Vineland or other standardized psychological tests may be required on any concurrent review dependent on clinical information obtained during the course of ABA treatment.
7. For comprehensive treatment, the requested ABA services are focused on reducing the gap between the member's chronological and developmental ages such that the member is able to develop or restore function to the maximum extent practical or for focused treatment the requested ABA services are designed to reduce the burden of selected targeted symptoms on the member, family and other significant people in the environment, and to target increases in appropriate alternative behaviors.
8. Treatment intensity does not exceed the member's functional ability to participate and/or is not for the convenience of the family. Treatment occurs in the setting(s) where target behaviors are occurring and/or where treatment is most likely to have an impact on target behaviors.
9. Hours per week requested are not more than what is required to achieve the goals listed in the treatment plan and must reflect the member's, caregiver's and provider's availability to participate in treatment.
10. A complete medical record is submitted by the treating licensed and qualified professional or BCBA to include:
    - **a.** Collected data, including additional non-standardized testing such as ABLLS, VB-MAPP or other developmentally appropriate assessments, celeration charts, graphs, progress notes that link to interventions of specific treatment plan goals/objectives. Only those portions of assessments that address aberrant activities and core deficits of autism are reimbursable; this excludes assessments or portions of assessments that cover academic, speech, vocational deficits, etc.
    - **b.** Individualized treatment plan with clinically significant and measurable goals that clearly address the active symptoms and signs of the member's core deficits of ASD and aberrant activities if present.
    - **c.** Goals should be written with measurable criteria such that they can be reasonably achieved within six months.

d. Goals should include documentation of core symptoms/aberrant activities of ASD identified on the treatment plan, date of treatment introduction, estimated date of mastery, measured baseline of targeted goal, objective present level of behavior, mastery criteria, a specific plan for generalization of skills and the number of hours per week estimated to achieve each goal.

e. Functional Behavior Assessment to address targeted problematic behaviors with operational definition and provide data to measure progress, as clinically indicated.

f. Documentation of treatment participants, procedures and setting.

g. Coordination of care with member's other treating providers to communicate pertinent medical and/or behavioral health information.

11. Direct line therapy services are provided by a line therapist, or LBT, or SCABA, supervised by a LBA or LBA-D, or the provision of services is consistent with the controlling state mandate. In selected circumstances, New Directions will consider direct one to one services provided by a LBA or LBA-D.

12. Telehealth/telemedicine is not an approved method of service delivery for direct ABA services. Telehealth/telemedicine for parent education and direct supervision activities can be covered if allowed as an eligible telehealth/ telemedicine service under the member benefit plan. It is recommended that telehealth/ telemedicine service delivery be combined with face-to-face service delivery of direct supervision activities.

13. On concurrent review, the current ABA treatment demonstrates significant improvement and clinically significant progress to develop or restore the function of the member.

a. Significant improvement is mastery of a minimum of 50 percent of stated goals found in the submitted treatment plan. New Directions may request further psychological testing be obtained to clarify limited/lack of treatment response. Adaptive behavior, cognitive and/or language testing must show evidence of measurable functional improvement, as opposed to declining or plateaued scores.

i. For members who do not master 50 percent of stated goals and/or fail to demonstrate measurable and substantial evidence toward developing or restoring the maximum function of the member, the treatment plan should clearly address the barriers to treatment success.

b. There is a reasonable expectation of mastery of proposed goals within the requested six-month treatment period and that achievement of goals will assist in the member's independence and functional improvements.

c. If six-month goals are continued into the next treatment plan, these goals must be connected to long term goals that are clinically significant and with a reasonable expectation of mastery. When the mastery criteria have been modified to meet an incremental short-term objective, the overall goal is considered to be "continued."

d. There is a reasonable expectation that a member is able to, or demonstrates the capacity to, acquire and develop clinically significant generalized skills to assist in his or her independence and functional improvement to reduce the need for custodial, respite, interpersonal or paraprofessional care or other support services.

e. If the member does not demonstrate significant improvement or progress achieving goals for successive authorization periods, benefit coverage of ABA services may be reduced or denied.

14. The treatment plan for generalization of skills includes either:

a. A plan for caregiver training that includes assessment of the caregivers' skills, measurable goals for skill acquisition and monitoring of the caregivers' use of skills. Generalization of skills should be assessed during parent/caregiver training to ensure the member can demonstrate skill with caregivers in the natural environment during non-therapeutic times. Documentation may be requested to assess the caregivers' ability to implement treatment plan procedures and recommendations to evaluate the following areas.

i. Member's ability to demonstrate the use of replacement skills and/or reductions in aberrant behavior in natural settings

ii. Family/caregivers' ability to successfully prompt and teach skills and effectively utilize behavior reduction strategies

iii. The BCBA clinician can assess treatment effectiveness during non-therapeutic times

b. An alternative plan if caregiver participation does not result in generalization of skills.

15. Transition and aftercare planning should:

a. Begin during the early phases of treatment and will change over time based upon response to treatment and presented needs.

b. Focus on the skills and supports required for the member for transitioning toward their natural environment, as appropriate to their realistic developmental abilities.

c. Identify appropriate services and supports for the time period following ABA treatment.

d. Include a planning process and documentation with active involvement and collaboration with a multidisciplinary team to include caregivers.

e. Long term outcomes must be developed specifically for the individual with ASD, be functional in nature and focus on skills needed in current and future environments.

f. Set realistic expectations with current treatment plan goals connecting to long term outcomes.

Please refer to Guidelines for Treatment Record Documentation section of New Directions' Provider Manual for standards on client file documentation.

New Directions will review requests for ABA treatment benefit coverage based upon clinical information submitted by the provider.

SERVICE INTENSITY CLASSIFICATION

Comprehensive treatments range from 25 to 40 total hours of direct services weekly. However, New Directions will review each request on an individual basis for fidelity to medical necessity and approve total hours based on the member's severity, intensity, frequency of symptoms and

response to previous and current ABA treatment. Comprehensive treatment includes direct 1:1 ABA, caregiver training, supervision and treatment planning.

Comprehensive ABA treatment targets members whose treatment plans address deficits in all of the core symptoms of Autism. Appropriate examples of comprehensive treatment include Early Intensive Behavioral Intervention (EIBI) and treatment programs for older children with aberrant behaviors across multiple settings. This treatment level, which requires very substantial support, should initially occur in a structured setting with 1:1 staffing and should advance to a least restrictive environment and small group format. Caregiver training is an essential component of Comprehensive ABA treatment. This treatment is primarily directed to children ages 3 to 8 years old because Comprehensive ABA treatment has been shown to be most effective with this population in current medical literature.

Focused treatments range from 10 to 25 total hours of direct services per week. However, New Directions will review each request on an individual basis for fidelity to medical necessity and approve total hours based on the member's severity, intensity, frequency of symptoms and response to previous and current ABA treatment. This treatment may include caregiver training as the only component.

Focused treatment typically targets a limited number of goals requiring substantial support. Targets include marked deficits in social communication skills and restricted, repetitive behavior such as difficulties coping with change. In cases of specific aberrant and/or restricted, repetitive behaviors, attention to prioritization of skills is necessary to prevent and offset exacerbation of these behaviors and to teach new skill sets. Identified aberrant behaviors should be addressed with specific procedures outlined in a Behavior Intervention Plan.

Emphasis is placed on group work and caregiver training to assist the member in developing and enhancing his/her participation in family and community life and developing appropriate adaptive, social or functional skills in the least restrictive environment.

Requested treatment hours outside of the range for Comprehensive or Focused treatment will require a specific clinical rationale.

HOURS TO BE AUTHORIZED

Total authorized hours will be determined based on all of the following:

- The current medical policy and medical necessity
- Provider treatment plan, that identifies suitable behaviors for treatment and improves the functional ability across multiple contexts
- Severity of symptoms, including aberrant behaviors
- Continued measurable treatment gains and response to previous and current ABA treatment
- Hours per week requested are not more than what is required to achieve the goals listed in the treatment plan and must reflect the member's, caregiver's and provider's availability to participate in treatment

CASELOAD SIZE

The Behavioral Analyst Certification Board's ("BACB") Applied Behavior Analysis Treatment of Autism Spectrum Disorder: Practice Guidelines for Healthcare Funders and Managers, 2nd Edition, [page 35], states that Behavior Analysts should carry a caseload that allows them to provide appropriate case supervision to facilitate effective treatment delivery and ensure consumer protection.

Caseload size for the Licensed Behavior Analyst is typically determined by the following factors:

- Complexity and needs of the clients in the caseload
- Total treatment hours delivered to the clients in the caseload
- Total case supervision and clinical direction required by caseload
- Expertise and skills of the Licensed Behavior Analyst;
- Location and modality of supervision and treatment (for example, center vs. home, individual vs. group,)
- Availability of support staff for the Licensed Behavior Analyst (for example, a SCABA).

The recommended caseload range for one (1) Behavior Analyst is as follows:

SUPERVISING FOCUSED TREATMENT

- Without support of a SCABA is 10 - 15*
- With support of one (1) SCABA is 16 - 24*

Additional BCaBAs permit modest increases in caseloads.

* Focused treatment for severe problem behavior is complex and requires considerably greater levels of case supervision, which will necessitate smaller caseloads.

SUPERVISING COMPREHENSIVE TREATMENT

- Without support of a SCABA is 6 - 12
- With support of one (1) SCABA is 12 - 16

Additional BCaBAs permit modest increases in caseloads.

DIAGNOSTIC INSTRUMENTS/ASSESSMENTS

These assessments are typically longer, in pronounced detail concerning specific deficits and/or survey a broader swath of core behaviors in autism. Reliability and validity of the instrument are defined in depth. Reliability gauges the extent to which the instrument is free from measurement errors across time, across raters and within the test. Validity is the degree to which other evidence supports inferences drawn from the scores yielded by the instrument. This is often grouped into content, construct and criteria related evidence. These assessments also provide a measure for severity of illness.

Screening Measures: These are brief assessments designed to identify children who need of a comprehensive evaluation secondary to risks associated with delay, disorder or disease that will interfere with normal development. Screening measures differ from diagnostic measures in that they typically require less time and training to administer and have high rates of false positives.

Results of screening measures indicate the level of risk for disability as opposed to the provision of a diagnosis. Screening measures are not appropriate standalone support for an autism diagnosis and should be followed up by an in-depth assessment. Additional acceptable documentation includes autism specific standardized assessments, or a detailed clinical note based on the DSM-5 signs and symptoms. Examples of screening measures include:

Autism Spectrum Rating Scale (ASRS), long or short form
Childhood Autism Rating Scale, second edition. (CARS-2)
Childhood Autism Spectrum Test. (CAST)
Social Communications Questionnaire (SCQ)
Autism Behavior Checklist (ABC)
Gillian Autism Rating Scale (GARS)
Checklist for Autism in Toddlers (CHAT)
MCHAT R F with follow up questions (score 3-7)
MCHAT R without follow up questions (score 8-20)

Autism Specific Standardized Assessments

Autism Diagnostic Observation Schedule, second edition. (ADOS-2)
Autism Diagnostic Interview, revised. (ADI-R)
Social Responsiveness Scale, second edition. (SRS-2)
DSM-5 Checklist

Other Standardized Assessment Instruments

Vineland Adaptive behavior Scale (VABS)
Adaptive Behavior Assessment Scale (ABAS)
Behavior Assessment System for Children (BASC)
Pervasive Developmental Disorder Behavior Inventory (PDDBI)

Standardized Cognitive Assessments

Leiter International Performance Scale-R
Mullen Scales of Early Learning
Bayley Scales of Infant Development
Kaufmann Assessment Battery for Children, second edition. (K-ABC-II)
Wechsler Preschool and Primary Scale of Intelligence, third edition. (WPPSI-III)
Wechsler Intelligence Scale for Children, fourth edition. (WISC-IV)
Test of Non-Verbal Intelligence, fourth edition (TONI-4)

Curricular Assessments

These tools are developed to provide a curriculum-based individual assessment. They are criterion-refenced, as opposed to psychological testing, which is vetted, standardized and norm referenced. The latter provide a pathway to allow comparison of an individual member's score to a norm-referenced mean.

Examples include:
Assessment of Basic Language and Learning Skills (ABLLS)
Verbal Behavior Milestones Assessment and Placement Program (VBMAPP)
PEAK
Essentials For Living (EFL)
Assessment of Functional Living Skills (AFLS)

DEFINITIONS:

- Caregiver Training: Caregiver participation is a crucial part of ABA treatment and should begin at the onset of services. Provider's clinical recommendations for amount and type of caregiver training sessions should be mutually agreed upon by caregivers and provider. Caregiver participation is expected for at least 80% of agreed upon caregiver training sessions scheduled between provider and caregiver.
    - **a.** Caregiver training is defined as the education and development of caregiver-mediated ABA strategies, protocols, or techniques directed at facilitating, improving, or generalizing social interaction, skill acquisition and behavior management, to include observational measures for assurance of treatment integrity. Caregiver training is necessary to address member's appropriate generalization of skills, including activities of daily living and to potentially decrease familial stressors by increasing member's independence.
    - **b.** Caregiver training goals submitted for each authorization period must be specific to the member's identified needs and should include goal mastery criteria, data collection and behavior management procedures if applicable and procedures to address ABA principles such as reinforcement, prompting, fading and shaping. Each caregiver goal should include date of introduction, current performance level and a specific plan for generalization. Goals should include measurable criteria for the acquisition of specific caregiving skills.
    - **c.** It is recommended that one hour of caregiver training occurs for the first 10 hours of direct line therapy, with an additional 0.5 hours for every additional 10 hours of scheduled direct line therapy unless contraindicated or caregiver declines. Caregiver training hours should increase to a higher ratio of total direct line therapy hours if member goals address activities of daily living, as provider plans for transition to lower level of care within the next 6 months or, as member comes within one year of termination of benefits based on benefit coverage.
    - **d.** If parents decline or are unable to participate in caregiver training, a generalization plan should be created to address member's skill generalization across environments and people. Should 80% not be attainable over the course of an authorization period, a plan to increase parent participation should also be included in the request for ongoing care.
    - **e.** Caregiver training does not include training of teachers, other school staff, other health professionals or other counselors or trainers in ABA techniques. However, caregiver training can include teaching caregivers how to train other professionals or people involved in the member's life.

- **Clinically Significant:** the measurement of practical importance of the treatment effect – whether it creates a meaningful difference and has an impact that is noticeable in daily functioning

- **Core Deficits of Autism**: persistent deficits in social communication and social interaction across multiple contexts AND, restricted, repetitive patterns of behavior, interests and activities

- **Functional Behavior Assessment**: comprises descriptive assessment procedures designed to identify environmental events that occur just before and just after

occurrences of potential target behaviors and that may influence those behaviors. That information may be gathered by interviewing the member's caregivers; having caregivers complete checklists, rating scales, or questionnaires; and/ or observing and recording occurrences of target behaviors and environmental events in everyday situations. (AMA CPT, 2019).

- **Generalization**: skills acquired in one setting are applied to many contexts, stimuli, materials, people and/or settings to be practical, useful and functional for the individual. Generalized behavior change involves systematic planning and needs to be a central part of every intervention and every caregiver training strategy. When the member accomplishes generalization, this increases the likelihood of completing tasks independently.

- **Interpersonal Care:** interventions that do not diagnose or treat a disease and that provide either improved communication between individuals, or a social interaction replacement

- **Long-Term Objective:** An objective and measurable goal that details the overall terminal mastery criteria of a skill being taught. Specifically, this terminal mastery criteria will indicate that a member can demonstrate the desired skill across people, places and time, which suggests the skill no longer requires further teaching.

- **Mastery Criteria**: objectively and quantitatively stated percentage, frequency or intensity and duration in which a member must display skill/behavior to be considered an acquired skill/behavior, including generalization and maintenance.

- **Neurological Evaluation**: This needs to be completed and documented on every member by a licensed physician as part of the diagnostic evaluation. Any significant abnormalities on the minimal elements of an exam should trigger a referral to a neurologist to perform comprehensive testing to assess neurological abnormalities. Minimal elements include:
  Evaluation of Cranial nerves I-XII
  Evaluation of all four extremities, to include motor, sensory and reflex testing
  Evaluation of coordination
  Evaluation of facial and/or somatic dysmorphism
  Evaluation of seizures or seizure like activity

- **Non-standardized instruments:** include, but not limited to, curriculum-referenced assessment, stimulus preference- assessment procedures and other procedures for assessing behaviors and associated environmental events that are specific to the individual patient and behaviors. (AMA CPT, 2019)

- **Paraprofessional Care:** services provided by unlicensed persons to help maintain behavior programs designed to allow inclusion of members in structured programs or to support independent living goals except as identified in state mandates or benefit provisions

- **Present Level of Performance**: objective and quantitative measures of the percentage, frequency or intensity and duration of skill/behavior prior to intervention

- **Respite Care:** care that provides respite for the individual's family or persons caring for the individual

- **Short-Term Objective:** An intermediate, objective and measurable goal that details the incremental increases a member must demonstrate in moving toward the identified Long-Term Objective

- **Standardized Assessments**: include, but not limited to, behavior checklists, rating scales, and adaptive skill assessment instruments that comprise a fixed set of items and are administered and scored in a uniform way with all patients. (AMA CPT, 2019) The listed assessments are not meant to be exhaustive but serve as a general guideline to quantify baseline intelligence and adaptive behaviors and when repeated, measure treatment outcomes. The autism specific assessments assist not only in the confirmation of diagnosis but more importantly, in the severity and intensity of the baseline core ASD behaviors.

DIAGNOSTIC CODES

ICD-10 Codes

F84.0	**Autistic Disorder**
F84.3	**Other Childhood Disintegrative Disorder**
F84.5	**Asperger Disorder**
F84.8	**Other Pervasive Developmental Disorder**
F84.9	**Pervasive Developmental Disorder, unspecified**

REFERENCES

Adler BA, et al. (2015). Drug-refractory aggression, self-injurious behavior, and severe tantrums in autism spectrum disorders: A chart review study. Autism 2015, Vol. 19(1) 102–106.
ADOS-2, Adminstration and Coding. http://www.beginningwitha.com/downloads/ADOS-2%20Presentation.pdf

Anderson D K, et al. (2009) Patterns of Growth in Adaptive Social Abilities Among Children with Autism Spectrum Disorders. J Abnormal Child Psychol. 2009 October; 37(7): 1019–1034.
Angkustsiri K, et al. (2014). Social Impairments in Chromosome 22q11.2 Deletion Syndrome (22q11.2DS): Autism Spectrum Disorder or a Different Endophenotype? J Autism Dev Disord. 2014 April; 44(4): 739–746.

Astley SJ, et al. (2000). Diagnosing the Full spectrum of Fetal Alcohol Exposed Individuals: Introducing the 4-Digit Diagnostic Code. Alcohol and alcoholism Vol 35, No 4, 400-410 2000.
Autism and Health. Autism Speaks.
https://www.autismspeaks.org/sites/default/files/docs/facts_and_figures_report_final_v3.pdf

Autism Spectrum Disorder in Under 19s: Support and Management. (2013). NICE Clinical Guideline Published: 28 August 2013 https://www.nice.org.uk/guidance/cg170 .
Axelrod, Felicia B.*1,2, Gold-von Simson, Gabrielle1,2. Hereditary sensory and autonomic neuropathies: types II, III, and IV. Orphanet Journal of Rare Diseases 2007, 2:39 doi:10.1186/1750-1172-2-39

Azad G F, et al. (2015). One-to-One Assistant Engagement in Autism Support Classrooms. Teacher Education and Special Education 1–10 2015. DOI: 10.1177/0888406415603208
Bae, S., Hong, J. (2018). The Wnt Signaling Pathway and Related Therapeutic Drugs in Autism Spectrum Disorder. Clinical Psychopharmacology and Neuroscience, 16 (2), 129-135. https://doi.org/10.9758/cpn.2018.16.2.129.

Baer, Donald M., Wolf, Montrose M., Risley, Todd R., The University of Kansas. Some current dimensions of applied behavior analysis. Journal of Applied Behavior Analysis. 1968, 1, 91-97
Baker, Emma K. et al. Exploring autism symptoms in an Australian cohort of patients with Prader-Willi and Angelman syndromes, Journal of Neurodevelopmental Disorders (2018) 10:24 https://doi.org/10.1186/s11689-018-9242-0

Bailey, D. B., Hebbeler, K., Spiker, D., Scarborough, A., Mallik, S. & Nelson, L. (2005). Thirty-Six-Month Outcomes for Families of Children Who Have Disabilities and Participated in Early Intervention. Pediatrics, 116 (6), 1346-1352.

Battaglia A. (2008). The inv dup (15) or idic (15) syndrome (Tetrasomy 15q). Orphanet Journal of Rare Diseases 2008, 3:30 doi: 10.1186/1750-1172-3-30

Behavior Analyst Certification Board, Inc. (2014Applied Behavior Analysis Treatment of Autism Spectrum Disorder: Practice Guidelines for Healthcare Funders and Managers (2nd ed.) http://bacb.com/wp-content/uploads/2016/08/ABA_Guidelines_for_ASD.pdf.

Ben-Itzchack, E. & Zachor, D. A. (2007). The effects of intellectual functioning and autism severity on outcome of early behavioral intervention for children with autism. Research in Developmental Disabilities, 28 (3), 287-303.

Bodfish, J. (2004). Treating the core features of autism; are we there yet? Mental Retardation and Developmental Disabilities Research Reviews, 10 (4), 318-326.

Bryson, S. E., Zwaigenbaum, L., McDermott, C., Rombough, V. & Brian, J. (2008). The Autism Observation Scale for Infants: scale development and reliability data. Journal of Autism and Developmental Disorders, 38 (4), 731-738.

Campbell, J. (2005) Diagnostic Assessment of Asperger's Disorder: A Review of Five Third-Party Rating Scales. Journal of Autism and Developmental Disorders, Vol. 35, No. 1, February 2005.

Charman T. (2014). Early identification and intervention in autism spectrum disorders: Some progress but not as much as we hoped. International Journal of Speech-Language Pathology, 2014; 16(1): 15–18

Chlebowski, Colby, Green, James A., Barton, Marianne L., Fein, Deborah. Using the Childhood Autism Rating Scale to Diagnose Autism Spectrum Disorders. Department of Psychology, University of Connecticut, 406 Babbidge Road, U-1020 Storrs, CT. 06269-1020, USA J Autism Dev Disord. 2010 July ; 40(7): 787–799. doi:10.1007/s10803-009-0926-x.

C.M. Pickart, M.J. Eddins. (2004) Review: Ubiquitin: structures, functions, mechanisms Biochimica et Biophysica Acta 1695 55–72

Coghlan S, Horder J, et al. (2012). GABA System Dysfunction in Autism and Related Disorders: From Synapse to Symptoms. Neuroscience Biobehavioral Review. 2012 October; 36(9): 2044–2055.

Cooper, John. Heron, Timothy. Heward, Willliam. Behavior Analysis, 3rd Ed. 2020
Coffin Siris Synndrome. Genetics Home Reference, NIH.
https://ghr.nlm.nih.gov/condition/coffin-siris-syndrome.

Cohen, H., Amerine-Dickens, M. & Smith, T. (2006). Early Intensive Behavioral Treatment: Replication of the UCLA Model in a Community Setting. Developmental and Behavioral Pediatrics, 27 (2), S145-155.

Connolly, Mary B. Dravet Syndrome: Diagnosis and Long-Term Course. doi:10.1017/cjn.2016.243 Can J Neurol Sci. 2016; 43: S3-S8.

Constantino, J., Frazier, T., (2013). Commentary: The observed association between autistic severity measured by the Social Responsiveness Scale (SRS) and general psychopathology – a response to Hus et al. (2013). *J Child Psychol Psychiatry*. 2013 June ; 54(6): 695–697. doi:10.1111/jcpp.12064.

Cook J.l., et al. (2016) Fetal Alcohol Spectrum Disorder: a Guideline for Diagnosis across the Lifespan. CMAJ, February 16, 2016, 188(3), 191-197.

DeFilippis, M., Dineen Wagner, K. (2016). Treatment of Autism Spectrum Disorder in Children and Adolescents. Psychopharmacology Bulletin, 46 (2), 18-41.

Dunkel-Jackson, S., Dixon, M. (2018). Promoting Generalized Advanced Language Skills of Children in Intensive Behavioral Intervention with Promoting the Emergence of Advanced

Knowledge Generalization Module (PEAK–G). Behavior Analysis in Practice, 11, 289-306. https://doi.org/10.1007/s40617-017-0204-x.

Eapen V, Črnčec R and Walter, A. (2013) Clinical outcomes of an early intervention program for preschool children with Autism Spectrum Disorder in a community group setting. BMC Pediatrics 2013, 13:3

Edens, Brittany M., Vissers, Caroline, Su, Jing, He, Chuan, Song, Hongjun, Ma, Yonchao C.. FMRP Modulates Neural Differentiation through m^6 A-Dependent MRNA Nuclear Export, Cell Report 28, 2019, 845-854 July 23, 2019 © 2019 The Author(s). https://doi.org/10.1016/j.celrep.2019.06.072

Eikeseth, S. (April 2008). Outcome of comprehensive psycho-educational interventions for young children with autism. Research in Developmental Disabilities; epublished April 1, 2008. Last viewed on May 29, 2008 at http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6VDN-4S62CHG-1&_user=10&_coverDate=04%2F01%2F2008&_alid=747088497&_rdoc=1&_fmt=high&_orig=search&_cdi=5987&_sort=d&_docanchor=&view=c&_ct=8&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=877fc403df4e4d59586f24aff1ecbb7e.

Eikeseth S, Klintwall L, Jahr E, et al. Outcome for Children with Autism Receiving Early and Intensive Behavioral Intervention in Mainstream Preschool and Kindergarten Settings. Research in Autism Spectrum Disorders 2012; 6(2):829-35.

Eikeseth, S., Smith, T., Jahr, E. & Eldevik, S. (2002). Intensive Behavioral Treatment at School for 4- to 7-Year-Old Children with Autism: A 1-Year Comparison Controlled Study. Behavior Modification, 26 (1), 49-68.

Eikeseth, S., Smith, T., Jahr, E. & Eldevik, S. (2007). Outcome for Children With Autism Who Began Intensive Behavioral Treatment Between Ages 4 and 7: A Comparison Controlled Study. Behavior Modification, 31 (3), 264-278.

Eldevik, S., Eikeseth, S., Jahr, E. & Smith, T. (2006). Effects of Low-Intensity Behavioral Treatment for Children with Autism and Mental Retardation. Journal of Autism and Developmental Disorders, 36 (2), 211-224.

Eldevik S, Hastings RP, Jahr E, et al. Outcomes of Behavioral Intervention for Children with Autism in Mainstream Pre-school Settings. J Autism Dev Disord 2012 Feb;42(2):210-20. PMID: 21472360.
Eldevik, S., Hastings, R., Hughes, J., Jahr, E., Eikeseth, S. and Cross, S. (2009). Meta-Analysis of Early Intensive Behavioral Intervention for Children with Autism. Journal of Clinical Child and Adolescent Psychology, 38 (3), 439-450.

Fenping D, et al. (2016). Deletion of CTNNB1 in Inhibitory Circuitry Contributes to Autism-Associated Behavioral Defects. Human Molecular Genetics, 25 (13), 2738–2751. doi: 10.1093/hmg/ddw131.

Finn, Amy Sue. The sensitive period of language acquisition: The role of age related differences in cognitive and neural function. Spring 2010Fitzpatrick SE, et al. (2016). Aggression in autism spectrum disorder: presentation and treatment options. Neuropsychiatric Disease and Treatment 2016:12 1525–1538.

Flanagan HE, Perry A, Freeman NL. Effectiveness of large-scale community-based intensive Behavioral Intervention: A waitlist comparison study exploring outcomes and predictors. Research in Autism Spectrum Disorders 2012; 6(2):673-82.

Francis, K. (2005). Autism interventions: a critical update. Developmental Medicine and Child Neurology, 47 (7), 493-499.

Frances, A. (2010) The Significance of Clinical Significance: Diagnostic And Statistical Manual Of Mental Disorders. Psychiatric Times.

Frazier TW, Embacher R, et al. (2015). Molecular and Phenotypic Abnormalities in Individuals with Germline Heterozygous PTEN Mutations and Autism. Mol Psychiatry. 2015 September; 20(9): 1132–1138.

Freeman N, Perry A. (2010). Outcomes of Intensive Behavioural Intervention in the Toronto Preschool Autism Service. Journal on Developmental Disabilities 2010; 16(2):17-32.
Glaser B, e al. (2007). Structural changes to the fusiform gyrus: A cerebral marker for social impairments in 22q11.2 deletion syndrome? Schizophrenia Research 96 (2007) 82–86
Glessner, J., Wang, K., Cai, G., Korvatska, O., et al. Autism genome-wide copy number variation reveals ubiquitin and neuronal genes. Nature. 2009 May 28; 459(7246): 569–573. doi:10.1038/nature07953.

Glogowska, M., Roulstone, S., Peters, T. J., & Enderby, P. (2006). Early speech- and language-impaired children: linguistic, literacy, and social outcomes. Developmental Medicine & Child Neurology, 48 (06), 489-494.

Gordon, B., Elliot, C. (2001). Assessment with the Differential Ability Scales. Handbook of Psychoeducational Assessment, (1-67).

Gotham K, et al. Trajectories of Autism Severity in Children Using Standardized ADOS Scores. (2012). PEDIATRICS Volume 130, Number 5, November 2012Gotham, K., Risi, S., Pickles, A. & Lord, C. (2007). The Autism Diagnostic Observation Schedule: revised algorithms for improved diagnostic validity. Journal of Autism and Developmental Disorders, 37 (4), 613-627.
Gotham, Katherine1, Pickles, Andrew2, Lord, Catherine1. Standardizing ADOS Scores for a Measure of Severity in Autism Spectrum Disorders. J Autism Dev Disord. 2009 May ; 39(5): 693–705. doi:10.1007/s10803-008-0674-3.

Green, G., Brennan, L. C., & Fein, D. (2002). Intensive behavioral treatment for a toddler at high risk for autism. *Behavior Modification, 26,* 69-102

Grzadzinski, Rebecca1,2*, Dick, Catherine1, Lord, Catherine1 and Bishop,Somer3 Grzadzinski et al. Parent-reported and clinician-observed autism spectrum disorder (ASD) symptoms in children with attention deficit/hyperactivity disorder (ADHD): implications for practice under DSM-5

Molecular Autism (2016) 7:7 DOI 10.1186/s13229-016-0072-1

Hanley, G. P., Iwata, B. A., & McCord, B. E. (2003). Functional analysis of problem behavior: A review. *Journal of Applied Behavior Analysis, 36,* 147-185.

Hanratty J, Livingstone N, et al. (2015). Systematic Review of the Measurement Properties of Tools Used to Measure Behaviour Problems in Young Children with Autism. PLoS ONE 10(12): e0144649 doi:10.1371/journal.pone.0144649

Harris, S. (2003). Functional assessment. Journal of Autism and Developmental Disorders, 33 (2), 233.

Hastings, R. (2003). Behavioral adjustment of siblings of children with autism engaged in applied behavior analysis early intervention programs: The moderating role of social support. Journal of Autism and Developmental Disorders, 33 (2), 141-150.

Healthcare Improvement Scotland, SIGN Evidence-based clinical guidelines. SIGN145Assessment, diagnosis and interventions for autism spectrum disorders, A national clinical guideline June 2016

Healthcare Improvement Scotland, SIGN Evidence-based clinical guidelines. SIGN156 Children and young people exposed prenatally to alcohol, A national clinical guideline, January 2019
Hempel, A., Pagnamenta, A., Blyth, M., et al. (2015) Deletions and de novo mutations of SOX11 are associated with a neurodevelopmental disorder with features of Coffin–Siris syndrome. J Med Genet 2016;53:152–162. doi:10.1136/jmedgenet-2015-103393

Hepburn, Susan L. & Moody, Eric J. (2011) Diagnosing Autism in Individuals with Known Genetic Syndromes: Clinical Considerations and Implications for Intervention. Int Rev Res Dev Disabil. 40: 229–259.

Hicks, Steven D., Rajan, Alexander T., Wagner, Kayla E., Barns, Sarah, Carpenter, Randall L., Middleton, Frank A.. Validation of a Salivary RNA Test for Childhood Autism Spectrum Disorder; frontiers in Genetics, 08 Nov 2018 doi: 10.3389/fgene.2018.00534

Houtrow, Amy J., Valliere, Frank R., Byers, Emily, Editors. Opportunities for Improving Programs and Services for Children with Disabilities. Committee on Improving Health Outcomes for Children with Disabilities; Board on Health Care Services; Health and Medicine Division; National Academies of Sciences, Engineering, and Medicine. 400 pages | 6 x 9 | PAPERBACK. ISBN 978-0-309-47224-1 | DOI 10.17226/25028. http://nap.edu/25028.

Howlin, P. (2005). The effectiveness of interventions for children with autism. Journal of Neural Transmission, Suppl. (69), 101-119.

Howlin, P., Magiati, I. & Charman, T. (2009). Systematic Review of Early Intensive Behavioral Interventions for Children with Autism. American Journal on Intellectual and Developmental Disabilities, 114 (1), 23-41.

Hus, Vanessa et al. (2014). Standardizing ADOS Domain Scores: Separating Severity of Social Affect and Restricted and Repetitive Behaviors. J Autism Dev Disord. 2014 October; 44(10): 2400–2412.

Hus, V., Lord, C., PhD. (2014) The Autism Diagnostic Observation Schedule, Module 4: Revised Algorithm and Standardized Severity Scores. *J Autism Dev Disord*. 2014 August; 44(8): 1996–2012. doi:10.1007/s10803-014-2080-3.

Hus, Vanessa1, Bishop, Somer2, Gotham, Katherine1, Huerta, Marisela3, Lord, Catherine3. Factors influencing scores on the Social Responsiveness Scale. J Child Psychol Psychiatry. 2013 February; 54(2): 216–224. doi:10.1111/j.1469-7610.2012.02589.x.

Itzchak, E. B., Lahat, E., Burgin, R. & Zachor, A. D. (2008). Cognitive, behavior and intervention outcome in young children with autism. Research in Developmental Disabilities, 29 (5), 447-458. Itzchak EB, Zachor DA. (2011). Who Benefits from Early Intervention in Autism Spectrum Disorders? Research in Autism Spectrum Disorders 2011; 5(1):345-50.

Jo, Heejoo, Schieve, Laura A., et al. (2015). Age at Autism Spectrum Disorder (ASD) Diagnosis by Race, Ethnicity, and Primary Household Language Among Children with Special Health Care Needs, United States, 2009–2010. (2015) Maternal Child Health J 19:1687–1697.
Jordan L., Hillis A. (2011) Challenges in the diagnosis and treatment of pediatric stroke. Nat Rev Neurol. 2011 April ; 7(4): 199–208. doi:10.1038/nrneurol.2011.23

Kovshoff H, Hastings RP, Remington B. (2011). Two-year outcomes for children with autism after the cessation of early intensive behavioral intervention. Behav Modif 2011 Sep; 35(5):427-50. PMID: 21586502.

Krumm, N., O'Roak, B., Shendure, J., Eichler, E. (2014). A De Novo Convergence of Autism Genetics and Molecular Neuroscience. Trends Neurosci, 37 (2), 95-105.

Landa, R. (2018). Efficacy of early interventions for infants and young children with, and at risk for, autism spectrum disorders. Int Rev Psychiatry, 30(1): 25–39. doi:10.1080/09540261.2018.1432574.

Lane C, Milne E, Freeth M. (2016). Cognition and Behaviour in Sotos Syndrome: A Systematic Review. PLoS ONE 11(2): e0149189. doi:10.1371/journal.pone.0149189.

Larsson, Eric V. (2012). Applied Behavior Analysis (ABA) for Autism: What is the Effective Age Range for Treatment?, The Lovaas Institute for Early Intervention

Lindgren S, et al. (2016). Telehealth and Autism: Treating Challenging Behavior at Lower Cost. Pediatrics, 137 (S2), 167-175. DOI: 10.1542/peds.2015-2851O.

Linstead E, et al. (2017). An Evaluation of the Effects of Intensity and Duration on Outcomes Across Treatment Domains for Children with Autism Spectrum Disorder. Translational Psychiatry, (7), 1-6. e1234; doi:10.1038/tp.2017.207.

Lo-Castro, Adriana et al. (2010). Autism spectrum disorders associated with chromosomal abnormalities. Research in Autism Spectrum Disorders 4 (2010) 319–327.

Lopata C, et al. (2013). Comparison of Adaptive Behavior Measures for Children with HFASDs. Autism Research and Treatment Volume 2013, Article ID 415989, 10 pages http://dx.doi.org/10.1155/2013/415989.

Lord, C. & Bishop, S. (2015) Recent Advances in Autism Research as Reflected in DSM-5 Criteria for Autism Spectrum Disorder. Annual Review of Clinical Psychology 2015. 11:53 – 70.

Lounds Taylor J, Dove D, Veenstra-VanderWeele J, Sathe NA, McPheeters ML, Jerome RN, Warren Z. (2012). Interventions for Adolescents and Young Adults With Autism Spectrum

Disorders. Comparative Effectiveness Review No. 65. (Prepared by the Vanderbilt Evidence-based Practice Center under Contract No. 290-2007-10065-I.) AHRQ Publication No. 12-EHC063-EF. Rockville, MD: Agency for Healthcare Research and Quality. August 2012. www.effectivehealthcare.ahrq.gov/reports/final.cfm.

Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology, 55,* 3-9.

Luyster R., Gotham K., et al. (2009) The Autism Diagnostic Observation Schedule – Toddler Module: A new module of a standardized diagnostic measure for autism spectrum disorders. *J Autism Dev Disord*. 2009 September ; 39(9): 1305–1320. doi:10.1007/s10803-009-0746-z.
McKeel, A., Matas, J. (2017). Utilizing PEAK Relational Training System to Teach Visual, Gustatory, and Auditory Relations to Adults with Developmental Disabilities. Behav Analysis Practice, (10), 252-260. DOI 10.1007/s40617-017-0194-8.

Magiati, I., Charman, T. & Howlin, P. (2007). A two-year prospective follow-up study of community-based early intensive behavioral intervention and specialist nursery provision for children with autism spectrum disorders. Journal of Child Psychology and Psychiatry, 48 (8), 803-812.

Maldergem, L., Hou, Q., et al. (2014). Loss of function of KIAA2022 causes mild to severe intellectual disability with an autism spectrum disorder and impairs neurite outgrowth. Human Molecular Genetics, 2013, Vol. 22, No. 16 3306–3314 doi:10.1093/hmg/ddt187

Masi, A., DeMayo, M., Glozier, N., Guastella, A., (2017) An Overview of Autism Spectrum Disorder, Heterogeneity and Treatment Options. Neurosci. Bull. April, 2017, 33(2):183–193 DOI 10.1007/s12264-017-0100-y

Mayes, S., Calhoun, S., Murray, M., etal. Use of Gillam Aspergers' Disorder Scal in Differentiating High and Low Functioning Autism and ADHD. Psychological Reports, 2011, 108, 1, 3-13.

McConachie H, Parr JR, Glod M, Hanratty J, Livingstone N, Oono IP, et al. (2015). Systematic review of tools to measure outcomes for young children with autism spectrum disorder. Health Technol Assess 2015; 19(41).

McEachin, J. J., Smith, T., & Lovaas, O. I. (1993). Long-term outcome for children with autism who received early intensive behavioral treatment. *American Journal on Mental Retardation, 97,* 359-372.

Mehregan H, Najmabadi H, Kahrizi K. (2016). Genetic studies in intellectual disability and behavioral impairment. Arch Iran Med. 2016; 19(5): 363 – 375.

Mohammadzaheri, Fereshteh, Koegel, Lynn Kern, Rezaee, Mohammad, Rafiee, Seved Majid. (2014).

A Randomized Clinical Trial Comparison between Pivotal Response Treatment (PRT) and Structured Applied Behavior Analysis (ABA) Intervention for Children with Autism. J Autism Dev Disord. 44:2769–2777. DOI 10.1007/s10803-014-2137-3.

Mood D, et al. (2014). Clinical Use of the Autism Diagnostic Observation Schedule–Second Edition with Children Who Are Deaf. Seminars in Speech and Language. Volume 35, Number 4 2014, 288-300.

Moss J & Howlin, P. (2009). Autism spectrum disorders in genetic syndromes: implications for diagnosis, intervention and understanding the wider autism spectrum disorder population. Journal of Intellectual Disability Research: volume 53 part 10 pp 852–873 october 2009

Ockeloen, CW, et al. (2015). Further delineation of the KGB syndrome phenotype caused by ANKRD11 aberrations. European Journal of Human Genetics (2015) 23, 1176–1185.

Odom SF, et al. (2010). Evidence-Based Practices in Interventions for Children and Youth with Autism Spectrum Disorders. Preventing School Failure, 54(4), 275–282, 2010.

Odom SL, Boyd BA, Hall LJ. (2010). Evaluation of Comprehensive Treatment Models for Individuals with Autism Spectrum Disorders. J Autism Dev Disord (2010) 40:425–436.

Olsson, Martina Barnevik1,2, Holm, Anette3, Westerlund, Joakim1,4, Hedvall, Asa Lundholm1,3, Gillberg, Christopher1. (2017). Children with borderline intellectual functioning and autism spectrum disorder: developmental trajectories from 4 to 11 years of age. Neuropsychiatric Disease and Treatment 13.

Olsson, Martina Barnevik1,2, Westerlund, Joakim1,3, Lundström, Sebastian1, Giacobini, MaiBritt2,4, Fernell, Elisabeth.1,5., Gillberg, Christopher 1. (2015). “Recovery” from the diagnosis of autism – and then?. Neuropsychiatric Disease and Treatment. 11 999–1005.

Oono IP, Honey EJ, McConachie H. (2013). Parent-mediated early intervention for young children with autism spectrum disorders (ASD) (Review). Cochrane Database of Systematic Reviews 2013, Issue 4. Art. No.: CD009774.

Ospina, M. B., Krebs Seida, J., Clark B., Karkhaneh, M., Hartling, L., Tjosvold, L., Vandermeer, B. & Smith, V. (2008). Behavioural and Developmental Interventions for Autism Spectrum Disorder: A Clinical Systematic Review. PLoS ONE, 3 (11), e3775.

Ottenbacher KJ, et al. (1999). Measuring developmental and functional status in children with disabilities. Developmental Medicine & Child Neurology 1999, 41: 186–194.

Paley B, et al. (Behavioral Interventions for Children and Adolescents with Fetal Alcohol Spectrum Disorders. Alcohol Research and Health. Vol. 34, No. 1, 201, 65-75.

Pedersen AL, Pettygrove S, et al. (2016). DSM Criteria that Best Differentiate Intellectual Disability from Autism Spectrum Disorder. Child Psychiatry Hum Dev DOI 10.1007/s10578-016-0681-0.

Perry A, Blacklock K, Dunn Geier J. The relative importance of age and IQ as predictors of outcomes in Intensive Behavioral Intervention. Research in Autism Spectrum Disorders 2013; 7(9):1142-50.

Perry A, Cummings A, Geier JD, et al. Predictors of Outcome for Children Receiving Intensive Behavioral Intervention in a Large, Community-Based Program. Research in Autism Spectrum Disorders 2011; 5(1):592-603.

Perry A, Cummings A, Geier JD, et al. Effectiveness of Intensive Behavioral Intervention in a Large, Community-Based Program. Research in Autism Spectrum Disorders 2008 Oct; 2(4):621-42.

Peters-Scheffer N, et al. (2011). A meta-analytic study on the effectiveness of comprehensive ABA-based early intervention programs for children with Autism Spectrum Disorders. Research in Autism Spectrum Disorders 5 (2011) 60–69.

Peters-Scheffer N, Didden R, Mulders M, et al. (2013). Effectiveness of low intensity behavioral treatment for children with autism spectrum disorder and intellectual disability. Research in Autism Spectrum Disorders 2013; 7(9):1012-25.

Reggiani, Claudio, et al.. Novel promoters and coding first exons in DLG2 linked to developmental disorder and intellectual disability, Genome Medicine (2017) 9:67 doi: 10.1186/s13073-017-0452-y

Reichow B, Steiner AM, Volkmar. (2012). Social skills groups for people aged 6 to 21 with autism spectrum disorders (ASD) (Review). (2012). Evid.-Based Child Health 7: 266–315.

Reichow, B. & Wolery, M. (2008). Comprehensive Synthesis of Early Intensive Behavioral Interventions for Young Children with Autism Based on the UCLA Young Autism Project Model. Journal of Autism and Developmental Disorders, 39 (1), 23-41.

Reichow, B., Hume, K., Barton, E., Boyd B. (2018), Early Intensive Behavioral Intervention (EIBI) for Young Children with Autism Spectrum Disorders (ASD). Cochrane Database of Systematic Reviews, (5) Article No. CD009260. DOI: 10.1002/14651858.CD009260.pub3. Related Neurodevelopmental Disorders. UCSF PBC Sensory Neurodevelopmental & Autism program. http://anp.ucsf.edu/overview/related

Remington, B., Hastings, R. P., Kovshoff, H., degli Espinosa, F., Jahr, E., Brown, T., ALsford, P., Lemaic, M. & Ward, N. (2007). Early Intensive Behavioral Intervention: Outcomes for Children with Autism and Their Parents after Two Years. American Journal on Mental Retardation, 112 (6), 418-438.

Roach, S. MD, Golomb, M. MD, et al. (2008)Management of Stroke in Infants and Children. A Scientific Statement From a Special Writing Group of the American Heart Association Stroke Council and the Council on Cardiovascular Disease in the Young. *Stroke*. 2008;39:2644-2691.)

Rogers, S. and Vismara, L. (2008). Evidence-based Comprehensive Treatments for Early Autism. Journal of Clinical Child and Adolescent Psychology, 37 (1), 8-38.

Rolison M, et al. (2015). Interactive Social Neuroscience to Study Autism Spectrum Disorder. YALE Journal of Biology and Medicine 88 (2015), pp.17-24.

Rosander, Cecilia, Hallb€o€ok, Tove. (2015). Dravet syndrome in Sweden: a population-based study. Developmental Medicine & Child Neurology. 57: 628–634. DOI: 10.1111/dmcn.127.

Rosenberg RE, et al. (2011). Parent Report of Community Psychiatric Comorbid Diagnoses in Autism Spectrum Disorders. Autism Research and Treatment Volume 2011, Article ID 405849, 10 pages doi:10.1155/2011/405849.

Roth M.E., et al. (2014). A Meta-Analysis of Behavioral Interventions for Adolescents and Adults with Autism Spectrum Disorders. J Behav Educ 23:258–286

Sallows, G. O. & Graupner, T. D. (2005). Intensive Behavioral Treatment for Children with Autism: Four-Year Outcome and Predictors. American Journal on Mental Retardation, 110 (6), 417-438.

Sandler, A. (2005). Placebo Effects in Developmental Disabilities: Implications for Research and Practice. Mental Retardation and Developmental Disabilities, 11 (2), 164-170.

Scahill L, et al. (2016) . Effect of Parent Training on Adaptive Behavior in Children with Autism Spectrum Disorder and Disruptive Behavior: Results of a Randomized Trial. Journal of the American Academy of Child & Adolescent Psychiatry, 55(7), 602–609. https://doi.org/10.1016/j.jaac.2016.05.001.

Schaaf, R. C. & Miller, L. J. (2005). Occupational Therapy Using a Sensory Integrative Approach for Children with Developmental Disabilities. Mental Retardation and Developmental Disabilities, 11 (2), 143-148.

Schaaf, R. C. & Nightlinger, K. M. (2007). Occupational therapy using a sensory integrative approach: A case study of effectiveness. American Journal of Occupational Therapy, 61 (2), 239-246.

Schaefer G B, Clinical Genetic Aspects of ASD Spectrum Disorders. (2016). Int. J. Mol. Sci. 2016, 17, 180.

Schaefer G.B, Mendelsohn NJ. (2013). Clinical genetics evaluation in identifying the etiology of autism spectrum disorders: 2013 guideline revisions. Genet Med 2013:15(5):399–407. Scottish Intercollegiate Guidelines Network. (2016). Assessment, Diagnosis and Interventions for Autism Spectrum Disorders. SIGN publication, (145). http://www.sign.ac.uk.

Sheinkopf, Stephen J., Siegel, Bryna (1998) Journal of Autism and Developmental Disorders, Vol 28, No. 1, 15 -23.

Shine R, Perry A. (2010). The relationship between parental stress and intervention outcome of children with autism. Journal on Developmental Disabilities 2010; 16 (2):64-6.

Shirley M D, et al. (2016). Copy Number Variants Associated with 14 Cases of Self-Injurious Behavior. PLOS ONE | DOI:10.1371/journal.pone.0149646 March 2, 2016

Shook, G. L., Ala'i-Rosales, S. & Glenn, S. (2002). Training and Certifying Behavior Analysts. Behavior Modification, 26 (1), 27-48.

Sikora, D. M., Hall, T. A., Hartley, S. L., Gerrard-Morris, A. E. & Cagle, S. (2008). Does Parent Report of Behavior Differ Across ADOS-G Classifications: Analysis of Scores from the CBCL and GARS. Journal of Autism and Developmental Disorders, 38 (3), 440-448.

Simms, M., MD, MPH. (2017) When Autistic Behavior Suggests a Disease Other than Classic Autism. Pediatr Clin N Am 64 (2017) 127–138. http://dx.doi.org/10.1016/j.pcl.2016.08.009

Singer-Dudek J, et al. (2010). A Comparative Analysis of the CABAS® Model of Education at the Fred S. Keller School: A Twenty-Year Review. The Behavior Analyst Today, Volume 11, Number 4, 253-256.

Skelly, A. (2011). Probability, Proof, and Clinical Significance. Evidence-Based Spine-Care Journal, 2 (4), 9-11.

Smith, Justin D., Single-Case Experimental Designs: A Systematic Review of Published Research and Current Standards. NIH Public Access Author Manuscript, Psychol Methods. 2012 Dec; 17 (4): . doi:10.1037/a0029312

Smith, T., Iadarola, S. (2015). Evidence Base Update for Autism Spectrum Disorder. Journal of Clinical Child & Adolescent Psychology, 44 (6), 897-922. https://doi.org/10.1080/15374416.2015.1077448.

Smith T. (2013). What Is Evidence-Based Behavior Analysis? The Behavior Analyst, 2013 (1), 36, 7–33.

Soto, Timothy, Giserman Kiss, Ivy & Carter, Alice S.. Symptom Presentations and Classification of Autism Spectrum Disorder in Early Childhood: Application to the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (DC: 0-5), HHS Public Access, Infant Mental Health J. 2016 September; 37(5): 486-497. Doi: 10.1002/imhj.21589

Speech and Language Milestone Chart, PRO-ED Inc.

Stahmer, A., Ingersoll, B., & Carter, C. (2003). Behavioral approaches to promoting play. Autism, 7 (4), 401-413.

Strasser, Lauren, Downes, Michelle. Kung, Jane, Cross, J. Helen, De Haan, Michelle. (2018). Prevalence and risk factors for autism spectrum disorder in epilepsy: a systematic review and meta-analysis. Developmental Medicine & Child Neurology. 60: 19–29.

Substance Abuse and Mental Health Services Administration. Addressing Fetal Alcohol Spectrum Disorders (FASD). Treatment Improvement Protocol (TIP) Series 58. (2014). HHS Publication No.(SMA) 13-4803. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014.

Sullivan, G., MD, MPH, Feinn, R., PhD. (2012) Using Effect Size—or Why the P Value Is Not Enough. Journal of Graduate Medical Education, September 2012, 278-281. DOI: http://dx.doi.org/10.4300/JGME-D-12-00156.1

Swillen, Ann, McDonald-McGinn, Donna M. Developmental Trajectories in 22q11.2 Deletion. (2015).

Am J Med Genet C Semin Med Genet. June ; 169(2): 172–181. doi:10.1002/ajmg.c.31435.
Szatmari P, et al. (2014).Developmental Trajectories of Symptom Severity and Adaptive Functioning in an Inception Cohort of Preschool Children with Autism Spectrum Disorder. JAMA Psychiatry. 2015; 72(3):276-283. doi:10.1001/jamapsychiatry.2014.2463.

Tachibana T, et al. (2017). A Systematic Review and Meta-Analysis of Comprehensive Interventions for Pre-School Children with Autism Spectrum Disorder (ASD). PLOS ONE, 12 (12). https://doi.org/10.1371/journal.pone.0186502.

Tachibana T, et al. (2017). A Systematic Review and Meta-Analysis of Comprehensive Interventions for Pre-School Children with Autism Spectrum Disorder (ASD). PLOS ONE, (12) **S1 Data Analysis 1** https://doi.org/10.1371/journal.pone.0186502.

Tachibana T, et al. (2017). A Systematic Review and Meta-Analysis of Comprehensive Interventions for Pre-School Children with Autism Spectrum Disorder (ASD). PLOS ONE, (12) **S2 Data Analysis II** https://doi.org/10.1371/journal.pone.0186502.

Theodorou, Laurie. Oregon Early Childhood Diagnostic Crosswalk, Oregon Health Authority, Health Systems Division Child and Family Behavior Health January 1, 2018

Topal, Z., Demir Samurcu, N., Taskiran, S.,Evren Tufan, A. & Semerci, B.. Social communication disorder: a narrative review on current insights, Dove Press Journal: Neuropsychiatric Disease and Treatment 2018:14 2039-2046Uzunova G, et al. (2014)The Role of Ionotropic Glutamate Receptors in Childhood Neurodevelopmental Disorders: Autism Spectrum Disorders and Fragile X Syndrome. Current Neuropharmacology, 2014, 12, 71-98.

The Role of Ionotropic Glutamate Receptors in Childhood Neurodevelopmental Disorders: Autism Spectrum Disorders and Fragile X Syndrome. Current Neuropharmacology, 2014, 12, 71-98.Viués-Ortega, J. (2010). Applied behavior analytic intervention for autism in early childhood: Meta-analysis, meta-regression and dose–response meta-analysis of multiple outcomes. *Clinical Psychology Review, 30,* 387-399.

Volkmar, F., Paul, R., Klin, A. & Cohen, D. (2005). Handbook of Autism and Pervasive Developmental Disorders (Vol. 1, 3rd ed., text rev.). Hoboken, NJ: John Wiley & Sons, Inc.

Volkmar F, Siegel M, Woodbury-Smith M, King B, McCracken J, State M, (2014). American Academy of Child and Adolescent Psychiatry (AAC AP) Committee on Quality Issues (C QI). Practice parameter for the assessment and treatment of children and adolescents with autism spectrum disorder. J Am Acad Child Adolesc Psychiatry. 2014 Feb; 53(2):237-57.

Wang, Yan, Zeng, Cheng, Li, Jinchen, Wu, Jinyu, Xia, Kun, Sun, Zhong Sheng. PAK2 Haploinsufficiency Resultsin Synaptic Cytoskeleton Impairment and Autism-Related Behavior, Cell Report 24, 2029-2014 August 21, 2019 © 2018 The Author(s). https://doi.org/10.1016/j.cellrep.2018.07.061

Weeks, J. Evidenced-Based Assessment for Autism Spectrum Disorders. US Office of Education Personnel Preparation Grant H325K12306. http://ed-psych.utah.edu/school-psych/_documents/grants/autism-training-grant/Autism-Assessment-Monograph.pdf

Weitlauf AS, McPheeters ML, Peters B, Sathe N, Travis R, Aiello R, Williamson E, Veenstra-VanderWeele J, Krishnaswami S, Jerome R, Warren Z. (2014). Therapies for Children with

Autism Spectrum Disorder: Behavioral Interventions Update. Comparative Effectiveness Review No. 137. (Prepared by the Vanderbilt Evidence-based Practice Center under Contract No. 290-2012-00009-I.) AHRQ Publication No. 14-EHC036-EF. Rockville, MD: Agency for Healthcare Research and Quality; August 2014.

Werner DeGrace, B. (2004). The everyday occupation of families with children with autism. American Journal of Occupational Therapy, 58, 543-550.

Weston, J., Thomas, S. (2018). Fetal alcohol spectrum disorder (FASD) and complex trauma: A resource for educators. Marninwarntikura Women's Resource Centre. www.marulustrategy.com.au.

Wigham S, McConachie H,. (2014). Systematic Review of the Properties of Tools Used to Measure Outcomes in Anxiety Intervention Studies for Children with Autism Spectrum Disorders. PLoS ONE 9(1): e85268. doi:10.1371/journal.pone.0085268.

Williams J.F., et al. (2015). Fetal Alcohol Spectrum Disorders. Pediatrics Volume 136, number 5, November 2015, 1395-2010.

Wong, C., Odom, S. L., Hume, K., Cox, A. W., Fettig, A., Kucharczyk, S. et al. (014). *Evidence-based practices for children, youth, and young adults with autism spectrum disorder.* Chapel Hill, NC: The University of North Carolina, Frank Porter Graham Child Development Institute, Autism Evidence-Based Practice Review Group. http://autismpdc.fpg.unc.edu/sites/autismpdc.fpg.unc.edu/files/2014-EBP-Report.pdf.

Wong C, et al. (2015). Evidence-Based Practices for Children, Youth, and Young Adults with Autism Spectrum Disorder: A Comprehensive Review, Journal of Autism and Developmental Disorders, 45 (7), 1951–1966.

Zarate, F., Fish, J. (2017). SATB2-Associated Syndrome: Mechanisms, Phenotype, and Practical Recommendations. American Journal of Medical Genetics Part A, (173A), 327–337. DOI 10.1002/ajmg.a.38022.

Zeanah CH, Gleason MM. (2015). Annual Research Review: Attachment disorders in early childhood – clinical presentation, causes, correlates and treatment. J Child Psychol Psychiatry. 2015 March; 56(3): 207–222. doi:10.1111/jcpp.12347.

Zeanah, Charles H. & Lieberman, Alicia. Defining Relation Pathology in Early Childhood: The Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood DC: 0-5 Approach, Infant Mental Health Journal, Vol. 37 (5), 509-520 (2016) © 2016 Michigan Association for Infant Mental Health doi: 10.1002/imhj.21590