



LUCET

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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PURPOSE:

To provide parameters for managing service requests for Applied Behavior Analysis to treat members with Autism Spectrum Disorder so that medical necessity decisions are applied in a consistent and relevant fashion.

OVERVIEW

Lucet manages Applied Behavior Analysis (ABA) benefits for the Blue Cross and Blue Shield Service Benefit Plan Coverage Criteria for Federal Employees in Alabama. 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; 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.

ABA is currently the behavioral treatment approach most commonly used with children with ASD. The defining characteristics of ABA are applied, behavioral, analytic, technological, conceptually systematic, effective and capable of appropriately generalized outcomes.

ABA involves a structured environment, predictable routines, individualized treatment, transition and aftercare planning, and significant family involvement. ABA attempts to increase skills related to behavioral deficits and reduce behavioral excesses including eliminating barriers to learning. Behavioral deficits may occur 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 behavioral excesses may include, but are not limited to physical aggression, property destruction, elopement, self-stimulatory behavior, self-injurious behavior and vocal stereotypy.

During 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

Requests for telehealth/telemedicine ABA services will be reviewed in accordance with current controlling health plan guidelines. Unless superseded by health plan guidelines, Lucet considers telehealth for direct ABA services (e.g., 97152, 97153, 97154, 0373t) to be experimental/investigational. Telehealth/telemedicine for parent education (e.g., 97156 and 97157) and direct supervision activities (e.g., 97155, 97158), and some assessment activities (97151) can be covered if allowed as an eligible telehealth/telemedicine service under the member benefit plan. When possible, it is recommended that telehealth/telemedicine service delivery be combined with face-to-face service delivery of direct supervision activities.

MEDICAL NECESSITY

Medical necessity is defined in the controlling specific health plan and/or group documents.

DEFINITIONS:

- **Behavior Intervention Plan**: A written document that describes a pattern of aberrant behavior, the environmental conditions that contribute to that pattern of behavior, the supports and interventions that will reduce the behavior and the skills that will be taught as an alternative to the behavior.
- **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.
 - 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, activities of daily living, 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.
 - 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**: Clinical significance is 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, 2021)

- **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, 2021)
- **Operational Control**: Instructional control is a productive working relationship between the instructor and learner. Obtaining instructional control through a variety of behavior analytic strategies increases the likelihood that the learner will consistently comply with a task or demand presented by the instructor.
- **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
- **Qualified Healthcare Professional**: an individual who is qualified by education, training, licensure/regulation (when applicable), and facility privileging (when applicable) who

performs a professional service within his/her scope of practice and independently reports that professional service. These professionals are distinct from “clinical staff”. A clinical staff member is a person who works under the supervision of a physician or other qualified health care professional and who is allowed by law, regulation and facility policy to perform or assist in the performance of a specified professional service but who does not individually report that professional service.

- **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, 2021 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.

Please refer to Guidelines for Treatment Record Documentation section of Lucet’s Provider Manual for standards on client file documentation.

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

COVERAGE GUIDELINES: INITIAL SERVICE REQUEST

Lucet authorizes ABA services for ASD when the following comprehensive diagnostic evaluation 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. Please note: Autism 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, which should include an ASD-specific standardized assessment.

- b. The comprehensive evaluation must rule out behavior/medical diagnoses 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 SERVICE REQUEST FOR ASSESSMENT

MUST MEET ALL OF THE FOLLOWING:

1. A diagnosis of ASD is provided and diagnostic criteria as set forth in the current DSM are documented in the medical record.
2. Hours requested are not more than what is required to complete the treatment assessment.
3. For initial ABA treatment assessment, the following baseline data must have been completed prior to or scheduled within 90 days of the assessment. Baseline data must have been completed no longer than 5 years prior to the initial treatment assessment or as indicated below. Please see definitions section for more information.
 - 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 as part of a comprehensive medical evaluation
4. Additional clinical rationale is required for authorization of more than 8 hours of assessment codes 97151 and 97152 for the initial assessment.

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 AUTHORIZATION REQUEST

MUST MEET ALL OF THE FOLLOWING:

1. Diagnostic Criteria as set forth in the DSM-5 are met.
2. Documentation of psychological assessment, including autism-specific testing, adaptive behavior testing and cognitive evaluation to define baseline functioning. Any assessment should be accompanied by a formal report detailing the scores achieved and the results of the assessment.
3. ABA services do not duplicate services that directly support academic achievement goals that are or could be included in the member's educational setting, or the academic goals encompassed in the member's Individualized Education Plan (IEP)/Individualized Service Plan (ISP). This includes shadow, para-professional,

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

4. 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; or occupational, physical and speech therapies.
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 behaviors that require the expertise of a Behavior Analyst. 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 designed to reduce 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.
8. 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.
9. 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.
10. 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.
11. Treatment occurs in the setting(s) where target behaviors are occurring and/or where treatment is likely to have an impact on target behaviors unless the setting is excluded by member's benefit plan.
12. Direct line therapy services are provided by a Registered Behavior Technician (RBT), or Board Certified Assistant Behavior Analyst, supervised by a Master level or Doctoral level Board Certified Behavior Analyst, or provided in a manner consistent with the controlling state mandate.
13. 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 to include 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 use behavior reduction strategies.
 - iii. The Behavioral Analyst can assess treatment effectiveness during non-therapeutic times.
 - iv. An alternative plan if caregiver participation does not result in generalization of skills.
 - b. In the absence of successful caregiver involvement in treatment, provider should identify an appropriate alternate plan to promote the member's ability to generalize skills outside of therapy sessions, including post-discharge.
- 14.** A complete medical record is submitted by the Behavior Analyst, to include:
- a. All assessments performed by the Behavior Analyst, using direct observation.
 - b. Preferred skills assessments must be developmentally and age appropriate and include non-standardized curriculum assessments such as the ABLLS, VB-MAPP, or other developmental measurements employed during initial assessments. Only those portions of assessments that address core deficits of autism are considered to be medically necessary; this excludes assessments or portions of assessments that cover academic, speech, vocational skills, etc. Standardized adaptive behavior assessment tools are not accepted in lieu of curricular assessment tools.
 - c. Individualized treatment plan with clinically significant and measurable goals that clearly address the member's active core deficits of ASD. Goals should include date of treatment introduction, measured baseline/present level of performance of the targeted goal, objective present level of behavior, mastery criteria, estimated date of mastery and a specific plan for generalization of skills.
 - d. Functional Behavior Assessment to address targeted problematic behaviors with operational definition and provide data to measure progress, as clinically indicated.
 - e. Documentation of treatment participants, procedures and setting.
 - f. Plan for coordination of care with member's other qualified health care professionals to communicate pertinent medical and/or behavioral health information.
 - g. When applicable, plan for coordination with Lucet Case Management activities.

COVERAGE GUIDELINES: CONTINUED SERVICE REQUEST

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

CONTINUED ABA AUTHORIZATION REQUEST

Member must demonstrate clinically significant improvement or progress achieving goals for successive authorization periods or benefit coverage of ABA services may be reduced or denied.

MUST MEET ALL OF THE FOLLOWING:

1. Criteria 1-13 in the Initial ABA Authorization Request section are met.
2. Member shows clinically significant progress in generalizing skills across stimuli, contexts and individuals, via caregiver training or an appropriate alternative. Provider must be able to demonstrate how operational control is being transferred to caregivers.
3. A complete medical record is submitted by the Behavior Analyst to include:
 - a. All re-assessments performed by the Behavior Analyst, using direct observation.
 - b. Preferred skills assessments that are developmentally and age appropriate and include non-standardized curriculum assessments such as the ABLLS, VB-MAPP, or other developmental measurements employed during initial assessments. Only those portions of assessments that address core deficits of autism are considered to be medically necessary; this excludes assessments or portions of assessments that cover academic, speech, vocational skills, etc.
 - i. Non-standardized curriculum assessment should be completed every 6 months
 - ii. Standardized adaptive behavior assessment tools are not accepted in lieu of curricular assessment tools.
 - c. Individualized treatment plan with clinically significant and measurable goals that clearly address the member's active core deficits of ASD. Goals should include date of treatment introduction, measured baseline/present level of performance of the targeted goal, objective present level of behavior, mastery criteria, estimated date of mastery and a specific plan for generalization of skills.
 - d. Functional Behavior Assessment to address targeted problematic behaviors with operational definition and provide data to measure progress, as clinically indicated.
 - e. Documentation of treatment participants, procedures and setting.
 - f. Coordination of care with member's other qualified health care professionals to communicate pertinent medical and/or behavioral health information.
 - g. When applicable, coordination with Lucet Case Management activities.
4. Current ABA treatment documentation demonstrates clinically significant progress to develop or restore the member's adaptive function.
 - a. There is a reasonable expectation of mastery of proposed goals within the requested six-month treatment period.
 - b. There is a reasonable expectation that achievement of goals will result in functional improvement and assist in the member's independence to reduce the need for custodial, respite, interpersonal or paraprofessional care or other support services.

- c. The member demonstrates the capacity to develop and generalize clinically significant skills to assist in his or her independence in order to reduce the need for custodial, respite, interpersonal or paraprofessional care or other support services.
 - d. Members in treatment demonstrate clinically significant improvement as evidenced by significant increase (e.g., one standard deviation) on standardized adaptive or cognitive testing in the previous year, as opposed to declining or plateaued scores OR as evidenced by mastery of a minimum of 50 percent of goals in the previously submitted treatment plan and the achievement of treatment plan goals will assist in the member's independence and functional improvement. Members who do not master 50 percent of stated goals and/or do not demonstrate measurable and clinically significant progress toward developing or restoring the maximum function of the member, the treatment plan should clearly address the barriers to treatment success. Lucet may request further standardized testing be obtained to clarify current level of functional abilities.
 - e. If six-month goals are continued into the next treatment plan, these goals should 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".
 - f. Standardized adaptive testing should be completed annually and results should be submitted with the request for continued treatment.
5. Transition and aftercare planning information should be included in each review and 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 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. Realistic expectations should be set with current treatment plan goals connecting to long term outcomes.
6. Additional clinical rationale is required for more than 6 hours of assessment codes 97151 and 97152, for the 6-month reassessment.

SERVICE INTENSITY CLASSIFICATION

Comprehensive treatments range from 25 to 40 total hours of direct services weekly. However, Lucet 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 core symptoms of Autism. Appropriate examples of comprehensive treatment include early intensive behavioral intervention 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 the least restrictive environment appropriate for the member. 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. Caregiver training is an essential component of Comprehensive ABA treatment.

Focused treatments range from 10 to 25 total hours of direct services per week. Lucet 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 individual services, group services and caregiver training.

Focused treatment typically targets a limited number of behavior goals requiring support of ABA treatment. Behavioral 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.

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 Council on Autism Service Provider's ("CASP") Applied Behavior Analysis Treatment of Autism Spectrum Disorder: Practice Guidelines for Healthcare Funders and Managers, 2nd Edition 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 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 Behavior Analyst
- Location and modality of supervision and treatment (for example, center vs. home, individual vs. group)
- Availability of support staff for the Behavior Analyst (for example, an Assistant Behavior Analyst)

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

SUPERVISING FOCUSED TREATMENT

- Without support of an Assistant Behavior Analyst is 10 - 15*
- With support of one (1) Assistant Behavior Analyst is 16 - 24*

Additional Assistant Behavior Analysts 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 an Assistant Behavior Analyst is 6 - 12
- With support of one (1) Assistant Behavior Analyst is 12 - 16

Additional Assistant Behavior Analysts permit modest increases in caseloads.

DIAGNOSTIC INSTRUMENTS/ AND SCREENING ASSESSMENTS

Screening Measures: These are brief assessments designed to identify children who need 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 in-depth assessments. Additional acceptable documentation includes autism-specific standardized assessments, or a detailed clinical note based on a comprehensive review of DSM-5 signs and symptoms. Examples of screening measures include:

- Autism Spectrum Rating Scale (ASRS), 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)

Diagnostic assessments: These offer significant 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.

Standardized Autism Diagnostic 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

Standardized Adaptive Assessment Instruments

Adaptive assessments are a type of psychological testing, which is vetted, standardized and norm referenced. These assessments provide a pathway to allow comparison of an individual member's score to a norm-referenced mean.

- 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)

Non-Standardized Curricular Assessments

These tools are developed to provide a curriculum-based individual assessment. They are criterion-referenced, 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 (ABLSS)
- Verbal Behavior Milestones Assessment and Placement Program (VBMAPP)
- PEAK
- Essentials For Living (EFL)
- Assessment of Functional Living Skills (AFLS)

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, Administration and Coding. <http://www.beginningwitha.com/downloads/ADOS-2%20Presentation.pdf>

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.

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: 20 December 2017: <https://www.nice.org.uk/guidance/cg128>.

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>

.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

Ben-Itzhack, 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.

CDC Report: Screening and Diagnosis of Autism Spectrum Disorder for Healthcare Providers.
<https://www.cdc.gov/ncbddd/autism/hcp-screening.html>

Charman T. 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

Chawner et al. A Genetics-First Approach to Dissecting the Heterogeneity of Autism: Phenotypic Comparison of Autism Risk Copy Number Variants. *Am J Psychiatry*. 2021 Jan 1;178(1):77-86. doi: 10.1176/appi.ajp.2020.20010015. PMID: 33384013; PMCID: PMC8022239.

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.

Coghlan S, Horder J, et al. 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, William. *Behavior Analysis*, 3rd Ed. Ed. 2020

Coffin Siris Syndrome. 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.I., et al. (2016) Fetal Alcohol Spectrum Disorder: A Guideline for Diagnosis across the Lifespan. *CMAJ*, February 16, 2016, 188(3), 191-197.

Council of Autism Service Providers (2014). *Applied Behavior Analysis Treatment of Autism Spectrum Disorder: Practice Guidelines for Healthcare Funders and Managers* (2nd ed.)
<https://casproviders.org/wp-content/uploads/2020/03/ABA-ASD-Practice-Guidelines.pdf>

Davis JM, Heft I, Scherer SW, Sikela JM. A Third Linear Association Between Olduvai (DUF1220) Copy Number and Severity of the Classic Symptoms of Inherited Autism. *Am J Psychiatry*. 2019 Aug 1;176(8):643-650. doi: 10.1176/appi.ajp.2018.18080993. Epub 2019 Feb 15. PMID: 30764650; PMCID: PMC6675654.

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 m6 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.
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.

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 2010

Fitzpatrick SE, et al. (2016). Aggression in autism spectrum disorder: presentation and treatment options. *Neuropsychiatric Disease and Treatment* 2016;12 1525–1538.

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.

Glaser B, et 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

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 2012 Gotham, 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.

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

Hanratty J, Livingstone N, et al. 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.

Healthcare Improvement Scotland, SIGN Evidence-based clinical guidelines. SIGN145 Assessment, 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

Hirvikoski T, Mittendorfer-Rutz E, Boman M, Larsson H, Lichtenstein P, Bölte S. Premature mortality in autism spectrum disorder. Br J Psychiatry. 2016 Mar;208(3):232-8. doi: 10.1192/bjp.bp.114.160192. Epub 2015 Nov 5. PMID: 26541693.

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 2018. 400 pages | 6 x 9 | PAPERBACK. ISBN 978-0-309-47224-1 | DOI 10.17226/25028. <http://nap.edu/25028>.

Howard JS, Stanislaw H, Green G, Sparkman CR, Cohen HG. Comparison of behavior analytic and eclectic early interventions for young children with autism after three years. Res Dev Disabil. 2014 Dec;35(12):3326-44. doi: 10.1016/j.ridd.2014.08.021. Epub 2014 Sep 2. PMID: 25190094.

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. 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.
- Hyman S. L., Levy, S. E., Myers, S. M. (2020). Identification, Evaluation, and Management of Children with Autism Spectrum Disorder. *American Academy of Pediatrics*, 145 (1), 1 – 64.
- 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
- Kristen S, et. al. Evidence for three subtypes of repetitive behavior in autism that differ in familiarity and association with other symptoms. *J Child Psychol Psychiatry*. 2008 November; 49(11): 1193–1200. doi:10.1111/j. 1469-7610.2008.01944.x.
- 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
- Laverty C, et.al. Persistence and predictors of self-injurious behaviour in autism: a ten-year prospective cohort study. Laverty et al. *Molecular Autism* (2020) 11:8 <https://doi.org/10.1186/s13229-019-0307-z>

Lee RWY, Corley MJ, Pang A, Arakaki G, Abbott L, Nishimoto M, Miyamoto R, Lee E, Yamamoto S, Maunakea AK, Lum-Jones A, Wong M. A modified ketogenic gluten-free diet with MCT improves behavior in children with autism spectrum disorder. *Physiol Behav.* 2018 May 1; 188:205-211. doi: 10.1016/j.physbeh.2018. 02.006. Epub 2018 Feb 5. PMID: 29421589; PMCID: PMC5863039.

Li C, et. al. Performance of the Autism Spectrum Rating Scale and Social Responsiveness Scale in Identifying Autism Spectrum Disorder Among Cases of Intellectual Disability. *Neurosci. Bull.* December 2018, 34(6):972–980. <https://doi.org/10.1007/s12264-018-0237-3>

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.

Lord, C. 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.

Lord C, Elsabbagh M, Baird G, Veenstra-Vanderweele J. Autism spectrum disorder. *Lancet.* 2018 Aug 11;392(10146):508-520. doi: 10.1016/S0140-6736(18)31129-2. Epub 2018 Aug 2. PMID: 30078460; PMCID: PMC7398158.

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

Manoli DS, State MW. Autism Spectrum Disorder Genetics and the Search for Pathological Mechanisms. *Am J Psychiatry*. 2021 Jan 1;178(1):30-38. doi: 10.1176/appi.ajp.2020.20111608. PMID: 33384012; PMCID: PMC8163016.

Marlow M, Servili C, Tomlinson M. A review of screening tools for the identification of autism spectrum disorders and developmental delay in infants and young children: recommendations for use in low- and middle-income countries. *Autism Res*. 2019 Feb;12(2):176-199. doi: 10.1002/aur.2033. Epub 2019 Feb 1. PMID: 30707000.

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., et al. Use of Gilliam Asperger's Disorder Scale 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.

Medavarapu S, Marella LL, Sangem A, Kairam R. Where is the Evidence? A Narrative Literature Review of the Treatment Modalities for Autism Spectrum Disorders. *Cureus*. 2019 Jan 16;11(1): e3901. doi: 10.7759/cureus.3901. PMID: 30911457; PMCID: PMC6424545.

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

Mohammadzahari, 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

Muhle RA, Reed HE, Vo LC, Mehta S, McGuire K, Veenstra-VanderWeele J, Pedapati E. Clinical Diagnostic Genetic Testing for Individuals with Developmental Disorders. *J Am Acad Child Adolesc Psychiatry*. 2017 Nov;56(11):910-913. doi: 10.1016/j.jaac.2017.09.418. PMID: 29096769.

Muhle R, et. al. Clinical Diagnostic Genetic Testing for Individuals with Developmental Disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, Volume 56, Number 11, November 2017.

National Research Council (2001). *Educating Children with Autism*. Committee on Educational Interventions for Children with Autism. Catherine Lord and James P McGee, eds. Division of Behavioral and Social Sciences and Education. Washington DC: National Academies Press

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.

Olsson, Martina Barnevik, Holm, Anette, Westerlund, Joakim, Hedvall, Asa Lundholm, Gillberg, Christopher. (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 Barnevik, Westerlund, Joakim, Lundström, Sebastian, Giacobini, MaiBritt, Fernell, Elisabeth., Gillberg, Christopher. (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.

Paley B, et al. 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.

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.

Peterson JL, Earl R, Fox EA, Ma R, Haidar G, Pepper M, Berliner L, Wallace A, Bernier R. Trauma and Autism Spectrum Disorder: Review, Proposed Treatment Adaptations and Future Directions. *J Child Adolesc Trauma*. 2019 Dec 12(4):529-547. doi: 10.1007/s40653-019-00253-5. Epub 2019 Apr 10. PMID: 31819782; PMCID: PMC6901292.

Randall M, Egberts KJ, Samtani A, Scholten RJ, Hooft L, Livingstone N, Sterling-Levis K, Woolfenden S, Williams K. Diagnostic tests for autism spectrum disorder (ASD) in preschool children. *Cochrane Database Syst Rev*. 2018 Jul 24;7(7):CD009044. doi: 10.1002/14651858.CD009044.pub2. Epub ahead of print. PMID: 30075057; PMCID: PMC6513463.

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.

Rogers TD, McKimm E, Dickson PE, Goldowitz D, Blaha CD, Mittleman G. Is autism a disease of the cerebellum? An integration of clinical and pre-clinical research. *Front Syst Neurosci*. 2013 May 10; 7:15. doi: 10.3389/fnsys.2013.00015. PMID: 23717269; PMCID: PMC3650713.

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, Halbrook, Tove. (2015). Dravet syndrome in Sweden: a population-based study. *Developmental Medicine & Child Neurology*. 57: 628–634. DOI: 10.1111/dmnc.127.

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>.

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.

Schieltz KM, Wacker DP. Functional assessment and function-based treatment delivered via telehealth: A brief summary. *J Appl Behav Anal.* 2020 Jul;53(3):1242-1258. doi: 10.1002/jaba.742. Epub 2020 Jul 9. PMID: 32643811; PMCID: PMC7361834.

Scottish Intercollegiate Guidelines Network. (2016). Assessment, Diagnosis and Interventions for Autism Spectrum Disorders. SIGN publication, (145). <http://www.sign.ac.uk>.

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

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.

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 I <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 2039-2046

Uljarevic M, et. al. Using the big data approach to clarify the structure of restricted and repetitive behaviors across the most commonly used autism spectrum disorder measures. *Molecular Autism* (2021) 12:39 <https://doi.org/10.1186/s13229-021-00419-9>

Uzunova 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.

University of Nebraska ASD Network, Screening Tools Review. https://www.unl.edu/asdnetwork/uploads/featured-articles/Table_2_ASD_Specific_Screening.pdf

Virués-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, Jinchun, Wu, Jinyu, Xia, Kun, Sun, Zhong Sheng. PAK2 Haploinsufficiency Results in Synaptic Cytoskeleton Impairment and Autism-Related Behavior, *Cell Report* 24, 2029-2044 August 21, 2019, © 2018 The Author(s). <https://doi.org/10.1016/j.cellrep.2018.07.061>

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. Maminwarantikura Women's Resource Centre.
www.marulustrategy.com.au.

White SW, Simmons GL, Gotham KO, Conner CM, Smith IC, Beck KB, Mazefsky CA. Psychosocial Treatments Targeting Anxiety and Depression in Adolescents and Adults on the Autism Spectrum: Review of the Latest Research and Recommended Future Directions. *Curr Psychiatry Rep*. 2018 Aug 28;20(10):82. doi: 10.1007/s11920-018-0949-0. PMID: 30155584; PMCID: PMC6421847.

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. (2014). 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