National Medical Policy

Subject: **Autism Spectrum Disorders and Pervasive Developmental Disorders: Diagnosis and Treatment**

Policy Number: **NMP274**

Effective Date*: **November, 2005**

Updated: **November, 2007, January 2008, May 2008, December 2008, February 2010, March 2011, November 2011, January 2012, January 2013, January 2014**

This National Medical Policy is subject to the terms in the IMPORTANT NOTICE at the end of this document

NOTE:
Diagnostic testing and treatments may be subject to state specific and other regulatory mandates.

For Medicare and Medicaid Plans: Please refer to the appropriate coverage manuals for coverage guidelines prior to applying Health Net Medical Policies

Current Policy Statement

Health Net, Inc. considers the screening, diagnosis and treatment of autism spectrum disorders (ASDs) and Pervasive Developmental Disorders (PDDs) medically necessary as outlined below.

I. Screening

Screening for ASDs and PDDs should be done as a part of routine well-baby checks and ongoing developmental monitoring. Primary care providers (PCPs) should screen all children from birth to age 5 for autism and other developmental delays by:

- Assessing vision and hearing
- Directly observing the child in structured and unstructured settings
- Evaluating cognitive functioning (verbal and nonverbal)
- Assessing adaptive functioning
- Discussing with the parents any concerns they have, as they are usually the first to notice that something is not progressing as it should
- Asking the parents direct questions regarding the child's functioning if the PCP has

a concern

Screening assessment tools are available, and can be useful in determining the need for further evaluation and assessment, however they are not intended for sole use in making a diagnosis. These screening tools include:

- Pervasive Developmental Disorders Screening Test – II (PDDST-II) for children from birth to three years old
- Checklist of Autism in Toddlers (CHAT) for 18-month-old children
- Modified Checklist for Autism in Toddlers (M-CHAT) for two-year-olds
- Screening Test for Autism in Two-Year-Olds (STAT)
- Social Communication Questionnaire (SCQ) for children age four and over.

II. Diagnostic Evaluation

The diagnosis of ASDs and PDDs are based on a coordinated effort by a team of medical and behavioral health specialists working closely with the parents. The team generally includes the child's PCP or a behavioral pediatrician, a child psychiatrist, a speech and language pathologist and other ancillary clinical specialists as needed. These can include:

- A child psychologist
- A neurologist
- An audiologist
- An occupational therapist
- A physical therapist
- A special education teacher
- A medical geneticist

A thorough evaluation should include the following:

- Parent and/or caregiver interview, including siblings of the child with suspected ASD or PDD. This should include:
  - Pre- and Perinatal history
  - Past medical history, review of systems
  - Developmental and behavioral history
  - Academic history if child is of school age
  - Family medical and mental health history
  - Family functioning
  - Coping resources

- Comprehensive medical evaluation that should include:
  o A complete medical history
  o A thorough physical that includes a careful neurological exam
  o Routine visual and hearing screenings
  o Measurement of blood lead level if the child exhibits developmental delay and pica, or lives in a high-risk environment.
  o Quantitative plasma amino acid testing to detect phenylketonura
  o Additional laboratory and other tests should be conducted based on clinical history, physical examination and family history, including
    ☐ Metabolic testing: work-up for inborn errors in metabolism other than phenylketonuria if clinical and physical findings suggestive of a metabolic disorder are present and/or mental retardation is suspected.
    ☐ Genetic testing, specifically high resolution chromosome analysis (karyotype) and DNA analysis for fragile X syndrome in the presence of suspected mental retardation, a family history of fragile X syndrome or family history of mental retardation of unknown etiology
    ☐ Sleep-deprived EEG should be considered only if the child exhibits

seizures or is suspected of having subclinical seizures
- Direct observation of the child
- Evaluation by a speech-language pathologist
- Formal hearing evaluation including frequency-specific brainstem auditory evoked response
- Evaluation of the child's cognitive and adaptive functioning, including:
    - o An assessment, including a full mental status examination by a child psychiatrist to check for possible cormorbid conditions or to prevent an erroneous diagnosis
    - o Intelligence testing by a child psychologist, as mental retardation frequently accompanies ASDs
    - o Psychological and Neuropsychological testing if there is a question regarding the presence of a psychiatric or neurological condition other than, or in addition to, autism
- Evaluation of academic achievement for children six years of age or older

There are a number of assessment tools that are used by clinicians to assist in the diagnosis of ASDs and PDDs. These include:

- Childhood Autism Rating Scale (CARS), for use with children over two, evaluates body movements, adaptation to change, listening response, verbal communication and relatedness to people
- Autism Diagnostic Observation Scale – Generic (ADOS-G), "presses" for socio-communicative behaviors often delayed, abnormal or absent in autistic children child
- Autism Behavior Checklist (ABC), completed by parents or caregiver
- Autism Diagnosis Interview- Revised (ADI-R), structured interview performed with parents or caregiver
- Developmental and intelligence testing
- Neuropsychological and/or educational achievement testing
- Adaptive skills testing, which is essential to document the presence of associated mental retardation and to establish priorities for interventions
- Speech, language and communication testing that include vocabulary, actual language use skills, both receptive and expressive, articulation and oral-motor skills.
- Pragmatic skills testing to determine the child's level of communication skills relative to social contexts
- Occupation and physical therapy testing if sensory hyper- or hyposensitivities are present

III. Treatment

There is no cure for ASDs and PDDs, but they are treatable. The younger the child is at the time of diagnosis and implementation of treatment, the better the outcome will be. The outcome is best for children with good language skills and normal to high IQs who do not have comorbidities such as seizures or psychiatric disorders. While only a small percentage of people with ASDs will grow up to live and work independently, each child's individual potential should be developed as far as possible. Interventions should be selected based on enhancing the child's existing functional strengths and addressing the learning disability weaknesses.

There is no broad-based consensus on which clinical and academic strategies are most effective, but many interventions have been developed to address the social, language and behavioral/sensory problems that are the core features of ASDs. Therefore, clinicians, the school system, other public resources and parents need to work collaboratively in the optimal management of the child's disorder. Because of the many clinicians, teachers and

government agencies that will be involved in the treatment of each child, it is best for one clinician to be the point person in coordinating the overall treatment efforts.

Services that medical clinicians may need to provide, in addition to regular well-child care, include**:**

- Management of seizure disorder by a neurologist
- Interventions to improve verbal and nonverbal communication skills by a speech-language pathologist
- Physical and occupational therapy for co-morbid physical impairments when medically necessary
- Alternative and augmentative communication aids (e.g., sign language, flashcards, communication boards, etc.) if demonstrated effective for the individual with an ASD

Services that behavioral health clinicians may need to provide include:

- Psychiatric interventions
  - o Medication management
    - There is evidence that two atypical antipsychotics, risperidone (Risperdal), aripriprazole (Abilify) and the SSRI antidepressant fluoxetine (Prozac) are effective in managing repetitive and stereotypic behaviors, as well as challenging behaviors such as aggression, irritability and self-injury in children with ASDs. However, the atypical agents in particular have significant side effects, including weight gain and extrapyramidal symptoms, which can limit their use.
    - Other SSRIs have been used to attempt to manage both anxiety and repetitive behaviors, but there is as yet insufficient evidence to support the effectiveness of these agents for this use.
    - Psychostimulants have been used to manage symptoms of inattention and hyperactivity, however there is as yet insufficient evidence to support the effectiveness of the use of these agents for this purpose in children with ASDs who do not have comorbid ADHD.
  - o Inpatient hospitalization if there is an acute onset of aggression towards others or danger to self.

- Psychotherapeutic interventions
  - o Family therapy to help parents and siblings cope with the diagnosis and the child's behaviors
  - o Brief psychotherapy to teach behavioral modification techniques to parents to assist in managing their child.
  - o Individual psychotherapy for adolescent and young adult individuals with an ASD or PDD who are capable of insight and who become depressed when they realize the seriousness o their impairment.

Early Intervention Programs

Educational interventions (such as Lovaas therapy, also known as Applied Behavioral Analysis or ABA, intensive behavioral intervention or BI, discrete trials training, early intensive behavioral intervention or EIBI, intensive intervention programs, Picture Exchange Communication Systems or PECS, facilitated communication, Treatment & Education of Autistic and Related Communication of Handicapped Children or TEACCH and/or floor time) can be used in the home or be provided in the school setting to help the child learn more appropriate behavior and become a better learner. Health Net, Regional Centers, schools and other entities working with the family should coordinate diagnostic and treatment services needed by a child with ASD so that they are provided in the appropriate setting.

Health Net considers Lovaas therapy (also known as Applied Behavioral Analysis or ABA) and other related teaching techniques as educational in nature and therefore not considered medical treatment. However, several states now require that health plans cover ABA and/or related services. Health Net/MHN has developed policies and procedures for use in reviewing and authorizing such services when so mandated.

Where state mandates require that health plans cover ABA and/or related services, Health Net/MHN has developed policies that procedures related to the following requirements:

- Verification that an accurate diagnosis of an ASD has been made prior to authorization of services or notification of services, where applicable
- Evidence that a complete behavioral analysis has been completed
- Treatment is provided by qualified autism providers
- Evidence that he overall treatment plan, including ABA, plan is tailored to the individual, has a real potential to be of benefit, targets specific behaviors or learning deficits and clearly lays out a date by which each goal is expected to be attained
- Periodic review of progress made, or not made, toward goals at a minimum of a6-month, and a maximum of 12-month, intervals

State mandates related to ASD and PDD are available at:
http://www.ncsl.org/?tabid=18246

The Public School System
An important potential source of help for children with autism is the public school system. Under Federal Public Law 94-142 (the Individuals with Disabilities Education Acts of 1990 and 1997), each school is supposed to provide handicapped children with a free, appropriate education through the age of 21. The school is supposed to evaluate each child and, with the parents, develop an Individual Education Plan (IEP) for him or her. The evaluation may include:

- Developmental and intelligence testing
- Neuropsychological and/or educational achievement testing
- Adaptive skills testing, which is essential to document the presence of associated mental retardation and to establish priorities for interventions
- Speech, language and communication testing that include vocabulary, actual language use skills, both receptive and expressive, articulation and oral-motor skills.
- Pragmatic skills testing to determine the child's level of communication skills relative to social contexts
- Occupation and physical therapy testing if sensory hyper- or hyposensitivities are present

Once the evaluation is completed and the information is combined with information from other sources, the IEP is developed. The plan should document specific and/or measurable goals and how these will be achieved. The plan will determine the educational setting that is most appropriate for the child. Goals for each child are both academic and behavioral/social and the educational setting needs to address both. The IEP is revisited on a regular basis over time to allow for changes to be made in response to the child's progress or the presentation of new difficulties.

Unfortunately, the level of services the public school system is able to provide varies considerably not only from state to state, from school district to school district within each state, mainly due to funding issues. It is important, therefore, that medical and

behavioral health clinicians who treat children with ASDs are familiar with the services offered by the school system in their local areas.

Parents
Parent training and education should be an ongoing part of any intervention program. Parents need to learn about positive reinforcement and how to use behavioral strategies. The same behavioral strategy needs to be used in the home, school or pre-school setting, so parents, teachers and caregivers need to work together to ensure consistency. All children's needs change as they grow, so the behavioral strategy will need to be modified over time to meet new needs.

The parents, caregivers and siblings of an autistic child need support and respite. There are a number of organizations, such as the Autism Society of America, that provide ongoing support and education.

The federal government, through Part C of the Individuals with Disabilities Education Act, mandates an Early Intervention (EI) program to find and treat children with special needs who are under 3 years old. The programs vary from state to state but the package of services available is consistent, requiring access and programming in a natural setting such as the home or another place familiar to the child. All services are free of charge, independent of the family's income.

To locate the EI in each state go to: http://www.nichcy.org/Pages/StateSpecificInfo.aspx then select a state and click on State Agencies.

Genetic counseling should be strongly considered for parents whose child's autism is associated with a defined etiology such as fragile X syndrome.

Other Community Resources
Federal, state and local governments often offer additional and even lifelong services to people with ASDs. The best sources of information about these are the Early Intervention program staff, the local school district or local subspecialty clinic that conducts diagnostic evaluations for autistic children

IV. Investigational Services

Health Net considers the following investigational for the diagnosis and treatment of ASDs and PDDs because of the lack of peer-reviewed evidence-based medical literature to support their use.

Investigational Diagnostic Testing
Laboratory, Imaging and other studies that are considered experimental and investigational because the peer-reviewed literature does not support their use include:

- Routine EEG studies
- Allergy testing (especially food allergy for gluten, casein, candida and other molds)
- Erythrocyte glutathione peroxidase studies
- Event-related brain potentials
- Nutritional testing
- Hair analysis for trace elements
- Intestinal permeability studies
- Magnetoencephalography/magnetic source imaging
- Neuroimaging studies such as CT, MRI, MRS, PET, SPECT and fMRI, even in the presence of megalencephaly
- Provocative chelation tests for mercury
- Stool analysis

- Tests for celiac antibodies
- Tests for immunologic or neurochemical abnormalities
- Tests for micronutrients such as vitamin levels
- Tests for mitochondrial disorders including lactate and pyruvate
- Tests for thyroid function
- Tests for urinary peptides

Investigational Treatment

Treatments that are considered investigational and experimental because the peer-reviewed medical literature does not support the use of these procedures or services in the treatment of ASDs and PDDs:

- Auditory integration training (auditory integration therapy)
- Chelation therapy
- Cognitive rehabilitation
- Elimination diets (e.g. gluten and/or milk elimination)
- Facilitated communication
- Holding therapy
- Immune globulin infusion
- Music therapy and rhythmic entrainment interventions
- Pet therapy (e.g., Hippotherapy)
- Nutritional supplements (e.g., megavitamins, high-dose pyridoxine and magnesium, dimethylglycine)
- Secretin infusion
- Sensory integration therapy
- Vision therapy
- Hyperbaric oxygen therapy

Scientific Rationale

Autism is a developmental disorder that presents in the first few years of life and profoundly interferes with the individual's lifelong functioning. Autism is characterized by impairment in three core areas:

- social interactions
- verbal and nonverbal communication
- restricted activities or interests and/ or unusual, repetitive behaviors.

The degree of impairment in these areas varies widely from child to child. Autism is the most common of a group of conditions collectively called Autism Spectrum Disorders (ASDs).

The 2011 Interagency Autism Coordinating Committee Strategic Plan for Autism Spectrum Disorder Report dated January 18, 2011, reported that Autism Spectrum Disorder (ASD) affects an estimated 1% of children in the United States. The risk is 3-4 times higher in males than in females. Compared to the prevalence of other childhood conditions, the rates for mental retardation are 9.7/1000, cerebral palsy is 2.8/1000, hearing loss is 1.1/1000 and vision impairment is 0.9/1000.

The etiology of autism is unknown, but it is suspected to be at least in part genetically determined due to its association with other conditions that are known to be inherited, such as fragile X syndrome and tuberous sclerosis, as well as the fact that families with one autistic child are at a much higher risk of having a second child with the disorder (5%) than the general population.

Investigators are also looking at possible metabolic causes, as autistic behaviors are associated with specific conditions such as untreated phenylketonuria and methylmalonicacidurea.

Environmental factors are also being studied, such as viruses and paternal age. It used to be thought that parental actions caused autism, but this has never been substantiated and in fact parents are nearly always their autistic child's most effective advocates. Another environmental agent that has been discredited is thimerosal, a preservative that was used in many vaccines until its use was discontinued in 1999. The main *Lancet* study that suggested a link between thimerosal and autism was found to be flawed and, as a result, the article has been withdrawn from the journal.

Indicators of Autism

1. The infant does not babble by 12 months; or
2. The infant does not gesture (e.g. pointing, waving bye-bye) by 12 months; or
3. The toddler is not speaking single words by 16 months; or
4. The toddler is not speaking spontaneous two-word phrases by 24 months (not just the immediate and involuntary repetition of words or phrases spoken by others); or
5. The toddler does not respond to their own name
6. Loss of any language of social skills at any age

Other possible indicators:

1. Poor eye contact
2. Not knowing how to play with toys
3. Excessively lines up toys or objects
4. Is attached to one particular toy or object
5. Doesn't smile
6. At times, seems to be hearing impaired but at other times not

Symptoms of ASD

Individuals with an ASD display a range of behaviors that can include:

- Hyperactivity
- Short attention span
- Self-injurious behavior
- Impulsivity
- Aggressiveness
- Temper tantrums, especially in young children or in unfamiliar situations

Individuals with an ASD can experience abnormalities in:

- Eating (preference for few foods and peculiar tastes)
- Sleeping (recurrent wakening with rocking)
- High pain tolerance
- Oversensitivity to being touched, or to sounds or lights
- Fascination with certain stimuli or objects
- Abnormal reaction to danger (lack of response to real dangers but excessive fear of harmless objects)

Most children with an ASD demonstrate impairments in one or more of the three core areas by the age of 18 months. In some cases they seem to be affected from birth, while in others the child appears to develop normally until age one or two and then regresses. However, it is estimated that about half of all cases are not diagnosed until the child is age 4-6, resulting in a delay in an appropriate assessment and implementation of treatment

strategies.

ASDs are often diagnosed when parents become concerned that their child:

- May be deaf (child is unresponsive to speech, parents' voices or is not learning to talk)
- Seeks affection mainly on his or her own terms (fails to cuddle, shows indifference or aversion to affection or physical contact, doesn't respond to smiles
- Seems bored or uninterested in conversation or play going on in those around him or her or has little sense of other people's boundaries (can be inappropriately intrusive in social situations, as though no one else exists
- Does not call attention to things he or she finds interesting (may use parent's or another person's hand to obtain a desired object without looking at the person whose hand it is)

Making and Communicating the Diagnosis

The diagnosis of an ASD results from the careful synthesis of all of the clinical data gathered with DSM-IV-TR/ICD-10 diagnostic criteria. Differential diagnosis includes other ASDs, developmental disorders of language and psychiatric disorders.

Even though the parents have known something was "not quite right" with their child, being informed of the diagnosis is devastating. Often they will find it hard to focus on anything said after that, or be unable to ask questions or comprehend what is being recommended as the next step. It is vital that clinicians understand that what they are saying is likely not being heard in its entirety. Providing written information and the names of the clinicians who can be contacted with questions can be of great assistance. It is also useful to suggest that the parents begin to keep a journal in which to write down the many questions they will have in the days and months ahead.

Research

Numerous governmental and private institutions are involved in research on the developmental neurobiology, genetics and psychopharmacology of autism. The largest coordinated effort is the Studies to Advance Autism Research and Treatment (STAART), which is composed of eight network centers: University of North Carolina (Chapel Hill), Yale University, University of Washington (Seattle), University of California (Los Angeles), Mount Sinai Medical School (New York), Kennedy Krieger Institute (Maryland), Boston University (Massachusetts) and University of Rochester (New York).

Another large group that is studying the world's largest group of well-diagnosed individuals with autism characterized by genetic and developmental profiles is the Collaborative Programs of Excellence in Autism (CPEA). The institutions participating in this study are: Boston University, the University of California (Davis, Irvine and Los Angeles), Yale University, University of Washington (Seattle), University of Rochester, University of Texas (Houston), University of Pittsburgh and University of Utah (Salt Lake City).

Literature Review for Behavioral Interventions (ABA) (January 2012)

There are over 7,000 studies published in the medical literature regarding ASD interventions. According to Krebs Seida et al (2009), the methodological quality of systematic reviews of these studies has generally been poor, their clinical results are mostly tentative, and there is little evidence for the relative effectiveness of treatment options. There are only a small number of studies that are considered high quality involving young children with autism from which to draw conclusions. Most of the studies consist of non- randomized control trials with small sample sizes that examine different treatments with radically different delivery approaches and intensities delivered over

different time spans (12 weeks to 2 years), using different measurement approaches. There is also a lack of long term comparative studies make it difficult to identify which treatment approach is best for young children with autism.

The American Academy of Pediatrics (2007) states that intensive, sustained special education programs and behavior therapy such as applied behavioral analysis (ABA) early in life can help children with ASD acquire self-care, social, and job skills, and often can improve functioning, and decrease symptom severity and maladaptive behaviors and that claims that intervention by around age three years is crucial are not substantiated. Educational interventions have some effectiveness in children: intensive ABA treatment has demonstrated effectiveness in enhancing global functioning in preschool children, and is well-established for improving intellectual performance of young children. The limited research on the effectiveness of adult residential programs shows mixed results.

Early intensive behavioral intervention (EIBI) is a term used to describe an intensive, multidisciplinary approach used to treat the symptoms of ASD. This treatment includes, but not limited to Early Interventional Behavioral Therapy (IEIBT), Intensive Behavior Intervention (IBI), Applied Behavioral Analysis (ABA), and the Lovaas Method. EIBI focuses on identifying behaviors that interfere with normal developmental processes, understanding the relationship between a behavior and the child's environment, and modifying those behaviors to improve the child's functional capacity. They involve the use of operant conditioning, a behavioral modification technique in which a reinforcement, either positive or negative, is used to elicit or control certain behaviors. The operant conditioning is delivered in a highly structured and intensive program, with one-to-one instruction by a trained therapist anywhere from 20 to 40 hours per week for a year(s) depending on the childs situation.

Early intensive behavioral intervention programs have a larger body of supportive evidence than other types of interventions including systematic reviews of randomized trials and cohort studies but most have methodologic limitations. The available data suggests that these intensive therapies may be most beneficial when administered early in a child's development at around the age of 3 and can be administered in a home, at school, or in a clinical setting. Treatment provided with the primary objective of improving academic performance and cognitive/intellectual status is considered educational or training in nature.

The original work by O. Ivar Lovaas and colleagues in 1987 at UCLA consisted of a prospective comparative study as well as a long-term follow-up study. The study group consisted of 38 children with autism who were non-randomly assigned to IBI therapy (n=19) or minimal treatment (n=19). Outcomes were compared with data from 21 children with similar characteristics who were treated at another facility. Lovaas reported that almost half of the children receiving intensive therapy (47%, 9 of 19 children) passed normal first grade and had an IQ score that was at least average, in contrast to the children in the minimal treatment group or comparison control group. It was reported that the mean IQ scores after therapy were 83 for the IBI group, 52 for the minimal treatment group, and 58 for the comparison control group.

The long-term follow-up of this study reported by McEachin et al. (1993) found that the improvements in cognitive function and behavior were sustained for at least 5 years. These investigators also suggested that nearly half of the intensively treated children were, essentially, cured of autistic symptoms. However, this study had a number of serious methodological flaws, including small sample size, lack of randomization of patients to treatment groups, potential selection bias resulting from exclusion of low-functioning autistic patients, and endpoints that may not meet current standards. In addition, it has been suggested that a subgroup of children may have been responsible for the overall changes observed in group means. Specifically, the 9 children described as "normal functioning" reportedly accounted for most of the improvement in IQ scores in the

IBI group. This subgroup had a mean increase of 37 points in IQ, whereas the remaining 10 children showed an increase of only 3 points (Howlin et al., 2009. The dramatic gains reported by Lovaas have not been replicated by other investigators to date in subsequent studies.

Sheinkopf and Siegel (1998) conducted a small prospective, case-matched controlled trial with 22 participants which partially replicated the UCLA project. Children received less intensive treatment, an average of 18 to 25 hours/week, and providers received less supervision from senior staff. After treatment, all children in the experimental group (n=11) had IQ estimates above 65 (one had missing data). By contrast, only 6 of the 11 children in the control group (n=11) had IQ above 65 at follow-up. The study suggested that treatment need not be as intensive as that provided in the UCLA Lovaas study to be effective. Definitive conclusions could not be made, however, because of the small sample size.

In 2000, Smith, Groen and Wynn published the results of a randomized control trial that replicated the Lovaas intervention approach. They compared a group of 19 children receiving intensive intervention 40 hr per week for 2 or more years. Interventions were nitially through one-to-one didactic behavioral teaching in the homes, then expanded into inclusive preschools as well. The mean IQ was 51 which was lower than the orginal Lovass group, mean age was 36 months. This treatment group was compared to a non-randomly assigned comparison group who received the same treatment for a greatly reduced amount of time and to a second comparison group gathered via chart review. The studies reported that 9 of 19 (47%) of those children who received the experimental treatment were functioning in the average range by ages 7 to 8 years, whereas only 1 child (2%) across both comparison groups had that kind of outcome.

The importance of this study is that the methodology improved upon Lovaas's original study, including random group assignment, a uniform assessment battery delivered at uniform time points, careful diagnosis of autism and differentiation among levels of severity, and objective accounting of the number of treatment hours. Two potentially important differences existed between the original study and the replication were the amount of treatment and the nature of the groups. The number of hours the experimental group received in the 1st year of treatment was 25, with fewer hours over the next 2 years. The other main difference involved treatment for the comparison group as parents were trained to deliver the experimental treatment for 5 hr per week (as well as 5 hr per week of individual training at home), for 3 to 9 months. Finally, comparison children also received 10 to 15 hr per week of special education from their public school systems throughout the study period

Outcome measures included standardized IQ and language tests, adaptive behavior scales, a behavior checklist completed by both parents and teachers to assess social-emotional functioning, a standardized measure of academic achievement, assessment of the type of school placement at follow-up, and a measure of parent satisfaction. Children were assessed within 3 months of beginning treatment and were seen for follow up between 7 and 8 years of age. The authors findings replicated Lovaas's original report of significant IQ gains of the treated group in relation to the comparison group. The treated group in the Smith, Groen, and Wynn study gained a mean of 15 IQ points (from 51 to 66, $p < .05$ on a one-tailed test [ES = 0.77]) while the comparison group mean IQ score was stable over time (51 to 50). This compares favorably to Lovaas's original treatment group gain of 22 points.

Post-treatment, Smith, Groen, and Wynn's treated group still functioned in the IQ range associated with mental retardation. Two of 15 children in the treated group and 1 in the comparison group achieved the "best outcome" status. Fourteen of 15 experimental children and 11 of 13 comparison children were verbal, and the difference in language

performance between the groups was not significant. There were no post-treatment group differences in adaptive behavior or intensity of behavior problems. In summary, this study replicated the positive effects of the experimental treatment on IQ functioning reported originally by Lovaas and colleagues but the long term "recovery" were not replicated.

Sallows and Graupner (2005) reported on a study of children with autism that were randomly assigned to a clinic-directed group, replicating the parameters of the early intensive behavioral treatment developed at UCLA, or to a parent-directed group that received intensive hours but less supervision by equally well-trained supervisors (Wisconsin Early Autism Project [Madison]). Twenty–three children were assigned to either clinic- directed group (n=13) replicating parameters of the UCLA intensive behavioral treatment or to the parent- directed group (n=10), which was intended to be a less intensive treatment. Children in the clinic group received an average of 39 hours of direct treatment in the first year and 37 in the second year with gradual decrease in hours as children entered school. The average for the parent-directed group was 32 hour in first year, 31 in the second year with one family choosing to receive 14 hours both years.

Among the 23 children, the average Full Scale IQ increased from 51 to 76. After one year of treatment eight of the children reached IQ of 85 or higher, (five clinic-directed and three parent directed) and three children reached this level after three to four years of treatment (three parent-directed) which was a total of 11 or 48% of the children. It was noted that children with higher pre-treatment IQs were more likely to reach four year IQs in the average range. It was noted that these children also demonstrated increases in language and adaptive areas —succeeding in regular first or second grade classes, demonstrating generally average academic abilities, spoke fluently and had peers with whom they played regularly. The parent-directed children did approximately as well as the clinic-directed children which was unexpected. It was noted that low IQ (below 44) and absence of language (no words of 36 months) predicted limited progress. There is a planned follow with these children to be followed for several more years to determine outcome in adolescence and adulthood. At this time, it does not appear that follow-up studies have been published.

Howard et al. (2005) studied the effects of three treatment approaches on preschool-age children with autism spectrum disorders (ASD). Intensive behavior analytic intervention (IBT) with a 1:1 adult: child ratio at 25–40 hours a week was provided to 29 children in community, home and school setting. Intensive "eclectic" intervention, which was a combination of methods (combination of TEACCH, sensory integration therapy and some applied analysis methods) with a 1:1 or 1:2 ratio, at 30 hours a week was provided to a comparison group (n=16) in public special education classrooms (AP group). A second comparison group (GP) (n=16) in a non- intensive public early intervention programs received a combination of methods, provided in small groups, at 15 hours per week.

Standardized tests for cognitive ability and intellectual functioning included the Bayley Scales of Infant Development. The Reynell Developmental Language Scales was used to assess receptive and expressive language development. Adaptive skills were measured with the Vineland Adaptive Behavior Scales. Testing was administered at intake and approximately 14 months after treatment began. At intake the groups were similar on key variables. It was noted that at follow-up, there did not appear to be statistically significant differences between the mean scores of children in the AP and GP groups. The IBT group had higher mean scores in all domains than the AP and GP groups that appeared to be statistically significant. An exception to this general finding was in the motor skills domain, which did not produce a statistically significant group difference when results were expressed as learning rates. At follow-up, the IBT group had mean standard scores in the normal range on cognitive, non-verbal, communication, and motor skills, whereas the only mean score in the normal range for the AP and GP groups was in motor skills. Limitations of the study included: assignment was parent-determined, not random; the examiners who performed the assessments were not blind as to the group assignments at follow-up

testing; results were analyzed in terms of performances on standardized, norm-referenced assessments conducted in formal testing situations, rather than repeated direct observational measurement of behavior in situ that characterized applied behavior analysis.

Remington et al. (2007) reported on a non-randomized study of preschool children with autism treated either with early intensive behavioral intervention or treatment as usual. Children in the intervention group (n=23), that were identified on the basis of parent preference, received home-based early intensive behavioral intervention for two years. One-to-one teaching based on applied behavior analysis for 25.6 hours per week on average was delivered by trained tutors and parents. The comparison group (n=22) received their local education authorities' standard provision for young children with autism—a variety of interventions designed to ameliorate the impact of autism and enhance functioning, none of which were intensive or delivered on one-to- one basis for most of the time. Prospective assessment was performed before treatment, after 1 year of treatment, and again after 2 years. Norm-referenced instruments were used to gather the cognitive, language, and behavioral outcome data. The measurements included: for intellectual functioning the Bayley scales and Standard Binet Intelligence Scale fourth edition was used. The Bayley scales is designed for children up to 42 months of age and is appropriate for children with intellectual disabilities or those whose language skills are not sufficiently advanced to take a full-scale intelligence test. The Reynell developmental language-scales-third edition was utilized for language assessment. Adaptive skills were measured with the Vineland Adaptive Behavior Scale-Survey Form. In the area of child behavior the Positive Social subscale of the Nisonger Child Behavior Rating form along with the parent report versions of the Developmental Behavior Checklist were used.

In the area of intellectual functioning and IQ, there was a significant main effect of group ($p=.008$), but no interaction effect. Significant group effects (but no interactions) were also found for Vineland Daily Living Skills ($p=.016$), and Vineland Motor Skills ($p=.040$), but not for the Vineland Composite score or the Socialization and Communication domains. In all cases, the children receiving early intensive behavioral intervention appeared to out-perform the children in the comparison group. At baseline assessments the groups did not differ, but after 2 years, it was noted that there were strong differences that favored the intensive behavioral intervention in areas of intelligence, language, daily living skills, positive social behavior, and a statistical measure of best outcome for individual children.

Ben-Itzchak and Zachor (2007) reported on a study that assessed the relation between pre-intervention variables including cognition, socialization and communication, to outcome in young children with autism. The study included 25 children with autism who were enrolled in intensive behavior intervention. The children attended a center-based applied behavior analysis (ABA) program. A trained behavior analyst planned and supervised the individual intervention curriculum of each child and the treatment was provided one-on-one by skilled behavioral therapists for at least 35 weekly hours. The treatment included parents taught how to use behavioral methods at home and working with the program supervisor on developmental goals for use in natural environments. The children were separated into groups based on IQ scores and on the severity of social interaction and communication deficits. Six developmental-behavioral domains were assessed at pre- and post- one year of intervention times. The domains included imitation, receptive language, expressive language, nonverbal communication skills, play skills and stereotyped behaviors. After one year of intervention, significant progress was noted in all the six developmental-behavioral domains. Children with higher initial cognitive levels and children with fewer measured early social interaction deficits demonstrated an increased acquisition of skills in three developmental areas, receptive language expressive language and play skills. Better progress in receptive language skills was seen in both groups. Improved progress in expressive language was associated with the child's social abilities, while more significant progress in play skills was related to pre-intervention cognitive level.

Magiati et al. (2007) conducted a prospective study to compare outcome for pre-school children with ASD receiving autism-specific nursery provision or home-based early intensive behavioral intervention (EIBI) in a community setting. The study included 44 children, (aged 23- to 53-months) with ASD. Twenty-eight children were in EIBI home-based programs and 16 in autism-specific school based nursery provision which included a minimum of 15 hours per week. Cognitive, language, play, adaptive behavior skills and severity of autism were assessed initially and two years later. Improvements were noted in both groups in age equivalent scores but standard scores changed little over time. At follow-up, no significant group differences were noted in cognitive ability, language, play or severity of autism. The only difference approaching significance ($p=.06$), in favor of the EIBI group, was for Vineland Daily Living Skills standard scores. There were large individual differences in progress, with intake IQ and language level best predicting overall progress.

Eikeseth et al. (2007) reported on outcomes for children who began intensive behavioral treatment between ages four and seven (mean age of 5.5 years). The children were assigned to either a behavioral treatment (n=13) or eclectic treatment (n=11 boys) based on staff availability. Children in both groups received treatment for a minimum of 20 hours a week from trained therapists at their local schools. The children in the behavioral group received ABA and the children remained in education programs that combined a variety of interventions (e.g., ABA, TEACCCH, sensory integration and other approaches). Results were reported in 2007 when the children had mean age of eight years, two months. Follow-up was 31.4 months in the behavioral group and 33.3 in the eclectic group. When the children entered school the hours were reduced to a mean of 18 hours for the behavioral group and 16 hours for the eclectic group. Intellectual functioning was evaluated with the WPPSI- R, Wechsler Intelligence Scale for Children-Revised, or Bayley Scales of Infant Development-Revised. The behavioral treatment group showed larger increases in IQ and adaptive functioning than did the eclectic group ($p<.05$). The largest gain was noted in IQ. The behavioral treatment group also displayed fewer aberrant behaviors and social problems at follow-up. The behavioral treatment group showed an increase of 25 points (from 62 to 87) as compared to 7 points (from 65 to 72) in the eclectic treatment group. Gains on the Vineland Adaptive Behavior Scales ranged from 9 points for Daily Living Skills to 20 points for Communication; in contrast, mean scores in the eclectic treatment group declined 6 to 12 points. Limitations of the study included that it was quasi-random rather than random group assignment, small sample size, and no direct quality control measures of treatment. The author notes that replications of the study are needed.

A report in the HAYES Technology Directory in 2011 evaluated evidence from search of the peer-reviewed literature published between 1966 and October 2011. The literature search identified a number of articles describing various types of behavioral therapies. HAYES selected prospective studies with at least 10 patients that assessed programs specifically described as IBI, EIBI, Lovaas therapy, or ABA. The available studies included 17 prospective comparative or controlled studies (n=642) of poor to fair quality.

Subsequent research on IBI therapy based on Lovaas methodology includes two randomized studies, one quasi-randomized study, and a number of nonrandomized comparative studies. All enrolled children had a diagnosis of autism, autism spectrum disorder, or pervasive development disorder (PDD). Sample sizes were relatively small in all the studies, ranging from 15 to 78 children. Outcome measures used in the various studies included intelligence quotient (IQ) scores, measures of infant and child development, assessment of language skills, measures of adaptive behavior, school placement and performance, psychological evaluation, and clinical assessment. Several studies provided relatively long-term follow-up data, in some cases up to 2 to 5 years following enrollment in the study, but others provided 1 year or less of follow-up.

IBI Therapy Versus Other Autism-Specific Treatment:
A total of eight studies of poor to fair quality evaluated IBI therapy relative to eclectic treatment interventions developed specifically for children with autism. Sample sizes ranged from 22 to 78 participants. The findings show that IBI therapy generally improves visual-spatial skills relative to eclectic treatment for autism. The results were conflicting regarding the efficacy of IBI therapy relative to eclectic treatment to improve intelligence and cognitive abilities, language skills, adaptive behavior, and the proportion of children moved into mainstream classrooms.

IBI Therapy Versus Other Treatment:
Four studies of poor to fair quality evaluated the efficacy of IBI therapy relative to other types of treatment. In general, these therapies were not targeted specifically at autism. IBI therapy was compared with special education programming combined with parent training, varying services selected by the family, standard treatment provided by the local educational authority, and portage treatment. Sample sizes were quite small and varied from 28 to 48 participants. In general, the findings show that IBI therapy significantly raises IQ scores and increases the proportion of children in regular classroom settings relative to other therapies not specifically designed for autism. However, the results were conflicting regarding the efficacy of IBI therapy to improve visual-spatial skills, language skills, and adaptive behavior.

IBI Therapy Parameters: High-Intensity Versus Low-Intensity, Professionally Directed Versus Parent-Directed, Home-Based Versus Residential or Outpatient:
One small nonrandomized study (n=27) of poor quality compared high-intensity and low-intensity, home-based ABA programs for children with ASD. Autism severity scores did not change markedly in either group following therapy, and there were no significant differences at the end of treatment. The only statistically significant between-group differences at follow-up were for educational functioning. One notable limitation of this study was that the high-intensity treatment differed by geographical location of the patients, which may have obscured any group differences. Two small studies of poor to fair quality compared the efficacy of an intensive clinic-managed treatment model of IBI therapy relative to an intensive parent-managed model. Both studies reported similar findings for the clinic-managed and parent-managed groups. Children showed significant improvement on key outcomes, including IQ, language skills, and socialization and communication domains of the Vineland Adaptive Behavior Scale (VABS), regardless of whether IBI therapy was delivered in a clinic-directed or parent-directed program. These findings suggest that parents can successfully manage a program of IBI therapy for their children. However, the program requires a substantial time commitment from parents

A small quasi-randomized study compared IBI therapy administered in a residential facility or the patient's home with less intensive outpatient therapy. After 2 months, the home-based group showed significant improvement in three of seven Autistic Symptom Checklist categories, while the residential group improved in one category, and the outpatient group did not show improvement in any of the categories. However, children in this group did show improvement in functional behavior scores. At 5 years after the start of the study, 2 (40%) children in the residential group, 1 (20%) in the outpatient group, and none in the home-based group were placed in a residential treatment program. Although these results suggest that home-based IBI therapy is equivalent or superior to residential IBI programs, the sample size was too small to support definitive conclusions.

Systematic Reviews with Meta-Analyses
A total of eight systematic reviews with meta-analyses evaluated IBI therapy for children with autism. The conclusions of the systematic reviews were conflicting and appeared to vary depending on the type of studies included in the review. Two meta-analyses concluded that the evidence is weak and/or inadequate regarding the efficacy of IBI therapy for treatment of autism. One meta-analysis concluded that IBI therapy is an effective therapy for a subpopulation of children with autism. Finally, five meta-analyses

concluded that IBI therapy results in improvement, and several of these studies suggested that the treatment should be considered a therapy of choice for children with autism. No adverse outcomes or side effects have been reported with the use of IBI therapy and there is no evidence that it causes harm or increases the severity of the disorder. The evidence is insufficient to establish definitive patient selection criteria for IBI for autism in children.

Quality of the Evidence:
The evidence for IBI therapy is of low quality with individual study quality ranging from poor to fair. Major limitations in design and methodology were present in most of the available studies including lack of randomization, small sample sizes without power analyses, and enrollment of select subpopulations of children. Other important limitations of the available studies included the lack of standardized treatments in control and/or comparator groups, poor reporting of details of control and/or comparator interventions, wide variability in the types of instruments used both across and within studies, and failure to report on treatment fidelity. The evaluation of treatment effects was hampered by these methodological flaws.

HAYES concluded that there is some evidence that suggests that treatment of young autistic children with intensive behavioral intervention (IBI) therapy, also called Lovaas or applied behavior analysis (ABA) therapy, may promote gains in cognitive function, language skills, and adaptive behavior. However, although almost all studies suggested improvements in children treated with IBI compared with other treatments, most studies had major limitations in design and methodology, including lack of randomization procedures, small sample sizes, and a lack of blinded assessments to determine treatment effects. In addition, although the initial work by Lovaas suggested that some high-functioning autistic children who undergo IBI therapy can achieve normal school performance and behavior, these findings have not been replicated by other investigators.

The American Academy of Pediatrics published "A Systematic Review of Early Intensive Intervention for Autism Spectrum Disorders" in the May 2011 journal of *Pediatrics*. Based on a data search from 2000 – 2010, they identified 34 studies that met the inclusion criteria (confirmed diagnosis of ASD, greater than 10 patients, less than 13 years of age) that focused on behavioral and developmental approaches. Seventeen studies were case series; 2 were randomized controlled trials. One study was rated as 1 good quality, 10 as fair quality, and 23 as poor quality and the strength of the evidence overall ranged from insufficient to low. Studies of University of California Los Angeles/Lovaas– based interventions and variants reported clinically significant gains in language and cognitive skills in some children, as did 1 randomized controlled trial of an early intensive developmental intervention approach (the Early Start Denver Model). Specific parent-training approaches yielded gains in short-term language function and some challenging behaviors. Data suggest that subgroups of children displayed more prominent gains across studies, but participant characteristics associated with greater gains are not well understood. The authors concluded that studies of Lovaas-based approaches and early intensive behavioral intervention variants and the Early Start Denver Model resulted in some improvements in cognitive performance, language skills, and adaptive behavior skills in some young children with ASDs, although the literature is limited by methodologic concerns.

The American Academy of Child and Adolescent Psychiatry (AACAP) published the guideline *Practice Parameters For The Assessment And Treatment Of Children, Adolescents, And Adults With Autism And Other Pervasive Developmental Disorders* in 1999 and is currently in the process of being updated. The guideline states that behavioral interventions can significantly facilitate acquisition of language, social, and other skills and that behavioral improvement and help reduce levels of parental stress. However, they raise questions about the various methodological issues, intervention intensity and the validity of the diagnosis of autism and characteristics of the study participants.

In the March 2011 Agency for Health Care Research and Quality publication "*Therapies for Children With Autism Spectrum Disorders: Comparative Effectiveness Review* ", the authors focused on studies of children between 2- 12 years of age with a diagnosis of ASD and children under 2 if the child was at risk for ASDs. Seventy eight unique behavioral studies were identified and categorized on the strength of the evidence as high, moderate, low and insufficient. These included the UCLA/Lovaas-focused approach and developmentally focused ESDM approach. Both approaches were associated with greater improvements in cognitive performance, language skills, and adaptive behavior skills compared with broadly defined eclectic treatments in subgroups of children, although the strength of evidence (confidence in the estimate) is low pending replication of the available studies. The AHRQ identified 'gaps' in the evidence and methodological concerns such as no or inappropriate control groups, characterization of the study groups, unstandardized outcome measures , lack of long term outcomes and selective reporting. According to the report, no studies directly compare effects of different treatment approaches and little evidence of practical effectiveness or feasibility beyond research studies exists, so questions remain about whether reported findings would be observed on a larger scale within communities. The authors concluded that some evidence supports early and intensive behavioral and developmental intervention, including intensive approaches (provided >30 hours per week) and comprehensive approaches (addressing numerous areas of functioning)

The National Autism Center conducted a complex multifaceted review of all available evidence from early childhood through adolescence and reported results in the National Standards Project (NSP) - a systemic review of the behavioral and educational peer-reviewed treatment literature involving individuals with confirmed ASD published between 1957 and 2007. The NSP reviewed over 7,000 articles in which 775 peer reviewed studies addressing a variety of interventions pertaining to the treatment of ASD were identified. With evidence of benefit from several well-controlled studies, the National Autism Center's National Standards Report considers intensive behavioral intervention to be an "established" treatment.

The NAC grouped similar treatments into categories and rated them by the strength of the evidence.

- Established: Sufficient evidence is available to confidently determine that a treatment produces beneficial treatment effects for individuals on the autism spectrum
- Emerging: Although one or more studies suggest that a treatment produces beneficial treatment effects for individuals with ASD, additional high quality studies must consistently show this outcome before we can draw firm conclusions about treatment effectiveness.
- Unestablished: There is little or no evidence to allow us to draw firm conclusions about treatment effectiveness with individuals with ASD. Additional research may show the treatment to be effective, ineffective, or harmful.
- Ineffective/Harmful: Sufficient evidence is available to determine that a treatment is ineffective or harmful for individuals on the autism spectrum.

The NAC categorizes ABA treatment, behavioral inclusive programs and early intensive behavioral into the comprehensive behavioral treatment category because they involve a combination of applied behavior analytic procedures (e.g., discrete trial, incidental teaching, etc.). They are e delivered to young children (generally under the age of 8) in a variety of settings (e.g., home, self-contained classroom, inclusive classroom, community) and involve a low student-to-teacher ratio (e.g., 1:1). All of the studies falling into this category met the strict criteria of targeting the defining symptoms of ASD, having formal treatment manuals, providing treatment with a high degree of intensity, and measuring the overall effectiveness of the program.

The Alberta Heritage Foundation for Medical Research (AHFMR) published a technology assessment of intensive intervention programs based on reviews by the British Columbia Office of Health Technology Assessment (BCOHT), Emergency Care Research Institution (ECRI), and a review of 12 peer- reviewed outcome studies published by Tristam Smith (Ludwig and Harstall, 2001). The assessment evaluated Lovaas therapy, TEACCH, the Rutgers Program, the Denver Program and the LEAP Program, and concluded that there is insufficient evidence to establish a relationship between the intensity and duration of any intensive intervention treatment program and outcome measures, such as intelligence tests, language development and adaptive behavior tests. The assessment noted because of the methodological limitations and weaknesses of existing research, evidence remains limited on the efficacy and effectiveness of one intervention in comparison to another. It does appear that children improve in functioning (as measured by various indices) with behavioural intervention programs. They state " it remains to be determined if any one program is more effective than another program."

The New Zealand Health Technology Assessment (NZHTA) reviewed "the most recent and best evidence" for the effectiveness of behavioral and skill-based early intervention in the treatment of young children with Autism Spectrum Disorder (Doughty, 2004). The NZHTA determined that the majority of recent primary studies reviewed documented some

improvement associated with the intervention; however, could not determine whether any specific early and/or intensive intervention program is more effective than others. The included studies covered a range of interventions, and it was not clear that the definition of intensive behavioral treatment, parent training, or parent-managed behavioral therapy were uniform across studies. Details regarding intensity and duration of interventions were not documented in all studies, and most sample sizes were small.

The NZHTA concluded given these and other limitations, the primary studies could provide only very preliminary evidence regarding the effectiveness of behavioral and skill-based early interventions, and that further research with larger sample sizes from multi-site collaborations using identical methods and outcome measures is needed.

In 2007, The Scottish Intercollegiate Guidelines Network (SIGN) published evidenced-based clinical guidelines for the assessment, diagnosis and clinical interventions for children and young people with autism spectrum disorders. They note that most intensive behavioral programs for autism spectrum disorders (ASD) are based on principles of behavior modification using applied behavior analysis (ABA). The programs are intensive, usually involving 20-140 hours of intervention per week. They refer to the Lovass program as being the most well-known but recommend is that the Lovaas program s not be presented as an intervention that will lead to normal functioning. The report did recommend that "behavioural interventions be considered to address a wide range of specific behaviors in children and young people with ASD, both to reduce symptom frequency and severity and to increase the development of adaptive skills."

Summary

Iintensive behavior programs may improve core symptoms of ASD but should not be expected to lead to normal function. The studies revealing the most gains for intensive behavior programs included a high level of intervention (eg, 30 to 40 hours per week of intensive one-on-one services for two or more years and starting before the age of five years). However, the evidence is insufficient to provide a general recommendation that all children with ASD require this level of intervention. The most significant improvements generally are seen within the first 12 months of treatment. Pretreatment variables that are associated with improved outcomes include the presence of joint attention, functional play skills, higher cognitive abilities, and decreased severity of autism symptoms.

There is some controversy about the use of ABA for older children, and there are few studies to guide recommendations for this age group (Myers 2007, Granpeesheh 2009).

The studies tend to be smaller both in duration and in numbers. Children requiring ABA at an older age may be more impaired than children who no longer require ABA. In such children, ABA may be used to target specific needs, rather than broad deficits, limiting the generalizability of study results.

Patient Education Websites - English

1. Autism Society www.autism-society.org
2. MedlinePlus. Autism. Available at: http://vsearch.nlm.nih.gov/vivisimo/cgi-bin/query-meta?v%3Aproject=medlineplus&query=autism%27
3. MedlinePlus. Autism Spectrum Disorders (ASDs). Available at: http://www.nichd.nih.gov/health/topics/asd.cfm
4. California State Department of Developmental Services http:/// http://www.dds.ca.gov/AUTISM/
   Centers for Disease Control and Prevention http://www.cdc.gov/ncbddd/autism/ Kids Quest on Disability and Health http://www.cdc.gov/ncbddd/kids/autism.html
5. National Information Center on Children and Youth with Disabilities (NICHCY) http://www.nichcy.org/EducateChildren/Pages/Default.aspx
6. National Institute of Child Health and Human Development (NICHD) www.nichd.nih.gov
7. National Institute on Deafness and Other Communication Disorders Information Clearinghouse www.nidcd.nih.gov
8. National Institute of Mental Health www.nimh.nih.gov/health/publications/autism/complete-publication.shtml
9. U. S. Department of Education www.ed.gov
10. Agency for Healthcare Research and Quality Effective Health Care Program. Therapies for Children with Autism Spectrum Disorders: A Review of the Research for Parents and Caregivers. http://www.effectivehealthcare.ahrq.gov/ehc/products/106/709/autism_consumer.pdf
11. American Academy of Pediatrics. *Autism: Caring for Children With Autism Spectrum Disorders: A Resource Toolkit for Clinicians*. Elk Grove Village, IL: American Academy of Pediatrics; 2007. http://www.aap.org/publiced/autismtoolkit.cfm

Patient Education Websites - Spanish

1. MedlinePlus. Autismo. Acesso en: http://espanol.ninds.nih.gov/trastornos/autismo.htm
2. MedlinePlus. Acerca del autismo. CDC. Acesso en: http://www.cdc.gov/ncbddd/Spanish/spautism.htm
3. National Information Center on Children and Youth with Disabilities (NICHCY) http://nichcy.org/families-community/spanishresources

Codes Related to this policy: (Subject to coverage guidelines)

NOTE:

The codes listed in this policy are for reference purposes only. Listing of a code in this policy does not imply that the service described by this code is a covered or non-covered health service. Coverage is determined by the benefit documents and medical necessity criteria. This list of codes may not be all inclusive.

On October 1, 2014, the ICD-9 code sets used to report medical diagnoses and inpatient procedures will be replaced by ICD-10 code sets. Health Net National Medical Policies will now include the preliminary ICD-10 codes in preparation for this transition. Please note that these may not be the final versions of the codes and that will not be accepted for billing or payment purposes until the October 1, 2014 implementation date.

ICD-9

299.0 – 299.91 Pervasive developmental disorders

ICD-10
F84 Pervasive Developmental Disorders

CPT/HCPCS

Code	Code Description
99080	Special reports such as insurance forms, more than the information conveyed in the usual medical communications or standard reporting form
90847	Family psychotherapy (conjoint psychotherapy) (with patient present)
90853	Group Pyschotherapy (Other than of a multiple-family group)
96118	Neuropsychological testing (eg, Halstead-Reitan Neuropsychological Battery, Wechsler Memory Scales and Wisconsin Card Sorting Test), per hour of the psychologist's or physician's time, both face-to-face time administering tests to the patient and time interpreting these test results and preparing the report.
96119	Neuropsychological testing (eg, Halstead-Reitan Neuropsychological Battery, Wechsler Memory Scales and Wisconsin Card Sorting Test), with qualified health care professional interpretation and report, administered by technician, per hour of technician time, face-to-face
96120	Neuropsychological testing (eg, Wisconsin Card Sorting Test), administered by a computer, with qualified health care professional interpretation and report
96152	Health and behavior intervention, each 15 minutes, face-to-face; individual
H0031	Mental health assessment, by nonphysician
H0032	Mental health service plan development by nonphysician
H2019	Therapeutic behavioral services, per 15 minutes
S5108	Home care training to home care client, per 15 minutes

2013 New and Revised CPT Codes

Initial Psychiatric Evaluation (formerly 90801 or new patient E/M code)
- 90791 Psychiatric diagnostic evaluation (no medical services)
- 90792 Psychiatric diagnostic evaluation (with medical services)

Psychotherapy (formerly 90804-90808, 90816-90821)
- 90832 Psychotherapy, 30 minutes
- 90834 Psychotherapy, 45 minutes
- 90837 Psychotherapy, 60 minutes

Add-On to E/M and Psychotherapy (formerly 90805-90809, 90817-90822)
- 90833 30-minute Psychotherapy add-on code
- 90836 45-minute Psychotherapy add-on code
- 90838 60-minute Psychotherapy add-on code

Interactive Psychotherapy (formerly 90802, 90810-90815, 90823-90829, 90857)
For use with the psychiatric evaluation codes, the psychotherapy and psychotherapy add-on codes, and the group (non-family) psychotherapy code
- 90785 Interactive psychotherapy

Crisis Psychotherapy (new)
- 90839 Pyschotherapy for crisis, first 60 minutes (appropriate E/M code may be used in lieu of 90839)
- 90840 Psychotherapy for crisis, each additional 30 minutes

Medication Management (formerly 90862 or E/M code)
- Appropriate E/M code (99xxx series) Note: A new Add On code, +90863, pharmacologic management, including prescription and review of medication, can

be added to a primary psychotherapy code-90833, 90836, 90837-but NOT with an E/M code.

Review History

June 2006	MHN Clinical Practice Committee Approval
July 2006	HN Medical Advisory Council initial approval
September 2006	Medical Advisory Council review of external specialty expert comment – no change in policy
December 2006	Updated – added Hyperbaric oxygen therapy (HBOT) as not medically necessary
March 2007	Code update
November 2007	Update – no revisions – further rationale and references added
January 2008	Update – no revisions
May 2008	HN Medical Advisory Committee
October 2008	MHN Clinical Practice Committee Review
December 2008	Updated by MHN and approved by the Medical Advisory Council Removed LOVASS et al from investigational list to educational interventions
February 2010	Update. No revisions. Codes reviewed.
March 2011	MHN, no revisions
November 2011	Update, revisions made related to state mandates for ABA coverage, MHN and HN Medical Advisory Board
January 2012	Added section on early intensive behavioral intervention to the Scientific Rationale and added specific CPT codes and a link to state mandates
December 2012	MHN committee approval, No revisions
January 2013	HN Medical Advisory Council No clinical revisions. Updated with 2013 CPT codes
January 2014	HN Medical Advisory Council. No clinical revisions

This policy is based on the following evidence-based guidelines:

1. American Academy of Child and Adolescent Psychiatry. Practice parameters for the assessment and treatment of children, adolescents, and adults with autism and other pervasive developmental disorders. Academy of Child and Adolescent Psychiatry Working group on Quality Issues. J Am Acad Child Adolesc Psychiatry. 1999, 38 (Supp 12):55S-76S. Available at: http://www.aacap.org/clinical/parameters/summaries/autism.htm
2. American Academy of Pediatrics, Committee on Children with Disabilities, The Pediatrician's Role in the Diagnosis and Management of Autistic Spectrum Disorder in Children, Pediatrics Vol. 107(5) May 2001. Available at:http://aappolicy.aappublications.org/cgi/content/full/pediatrics;107/5/1221
3. American Academy of Child and Adolescent Psychiatry. Policy Statement- Secretin in the Treatment of Autism. June 15, 2002. Available at: http://www.aacap.org/publications/policy/ps39.htm
4. Psychosocial Paediatrics Committee, Canadian Paediatric Society (CPS). Early intervention for children with autism. Paediatrics & Child Health 2004; 9(4): 267-270. Available at: http://www.cps.ca/english/statements/PP/pp04-02.htm
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12. Myers SM, Johnson CP, Council on Children with Disabilities (2007). Management of Children with Autism Spectrum Disorders. Pediatrics November 2007; 120 (5) 1162-1182. www.pediatrics.org/cgi/doi/10.1542/2007-2362

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1. Hollander E. et. al. (2012). A Double-Blind Pacebo-Controlled Trial of Fluoxetine for Repetitive Behaviors and Global Severity in Adult Autism Spectrum Disorders. Am J Psychiatry 2012; 169:292-299

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Important Notice

General Purpose.
Health Net's National Medical Policies (the "Policies") are developed to assist Health Net in administering plan benefits and determining whether a particular procedure, drug, service or supply is medically necessary. The Policies are based upon a review of the available clinical information including clinical outcome studies in the peer-reviewed published medical literature, regulatory status of the drug or device, evidence-based guidelines of governmental bodies, and evidence-based guidelines and positions of select national health professional organizations. Coverage determinations are made on a case-by-case basis and are subject to all of the terms, conditions, limitations, and exclusions of the member's contract, including medical necessity requirements. Health Net may use the Policies to determine whether under the facts and circumstances of a particular case, the proposed procedure, drug, service or supply is medically necessary. The conclusion that a procedure, drug, service or supply is medically necessary does not constitute coverage. The member's contract defines which procedure, drug, service or supply is covered, excluded, limited, or subject to dollar caps. The policy provides for clearly written, reasonable and current criteria that have been approved by Health Net's National Medical Advisory Council (MAC). The clinical criteria and medical policies provide guidelines for determining the medical necessity criteria for specific procedures, equipment, and services. In order to be eligible, all services must be medically necessary and otherwise defined in the member's benefits contract as described this " Important Notice" disclaimer. In all cases, final benefit determinations are based on the applicable contract language. To the extent there are any conflicts between medical policy guidelines and applicable contract language, the contract language prevails. Medical policy is not intended to override the policy that defines the member's benefits, nor is it intended to dictate to providers how to practice medicine.

Policy Effective Date and Defined Terms.
The date of posting is not the effective date of the Policy. The Policy is effective as of the date determined by Health Net. All policies are subject to applicable legal and regulatory mandates and requirements for prior notification. If there is a discrepancy between the policy effective date and legal mandates and regulatory requirements, the requirements of law and regulation shall govern. * In some states, prior notice or posting on the website is required before a policy is deemed effective. For information regarding the effective dates of Policies, contact your provider representative. The Policies do not include definitions. All terms are defined by Health Net. For information regarding the definitions of terms used in the Policies, contact your provider representative.

Policy Amendment without Notice.
Health Net reserves the right to amend the Policies without notice to providers or Members. In some states, prior notice or website posting is required before an amendment is deemed effective.

No Medical Advice.
The Policies do not constitute medical advice. Health Net does not provide or recommend treatment to members. Members should consult with their treating physician in connection with diagnosis and treatment decisions.

No Authorization or Guarantee of Coverage.
The Policies do not constitute authorization or guarantee of coverage of particular procedure, drug, service or supply. Members and providers should refer to the Member contract to determine if exclusions, limitations, and dollar caps apply to a particular procedure, drug, service or supply.

Policy Limitation: Member's Contract Controls Coverage Determinations.
The determination of coverage for a particular procedure, drug, service or supply is not based upon the Policies, but rather is subject to the facts of the individual clinical case, terms and conditions of the member's contract, and requirements of applicable laws and regulations. The contract language contains specific terms and conditions, including pre-existing conditions, limitations, exclusions, benefit maximums, eligibility, and other relevant terms and conditions of coverage. In the event the Member's contract (also known as the benefit contract, coverage document, or evidence of coverage) conflicts with the Policies, the Member's contract shall

govern. Coverage decisions are the result of the terms and conditions of the Member's benefit contract. The Policies do not replace or amend the Member's contract. If there is a discrepancy between the Policies and the Member's contract, the Member's contract shall govern.

Policy Limitation: Legal and Regulatory Mandates and Requirements. The determinations of coverage for a particular procedure, drug, service or supply is subject to applicable legal and regulatory mandates and requirements. If there is a discrepancy between the Policies and legal mandates and regulatory requirements, the requirements of law and regulation shall govern.

Policy Limitations: Medicare and Medicaid.
Policies specifically developed to assist Health Net in administering Medicare or Medicaid plan benefits and determining coverage for a particular procedure, drug, service or supply for Medicare or Medicaid members shall not be construed to apply to any other Health Net plans and members. The Policies shall not be interpreted to limit the benefits afforded Medicare and Medicaid members by law and regulation.