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## Medical Evaluation Of The Child With Autistic Spectrum Disorder

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The role of the physician in the evaluation of the child with an autistic spectrum disorder (ASD) is guided by a multistep process. The first step includes the screening of all children to identify those with symptoms that may be indicative of a child on the autistic spectrum. The goal is to identify these children as early as possible. The next step is the evaluation of the child who is suspect of having a spectrum disorder in order to make a diagnosis. The third step involves the laboratory evaluation of the child who has been given a diagnosis of ASD to ascertain if there are any other medical conditions associated with this disorder and to collect baseline studies that may help direct treatment protocols. When a child does fit on the autistic spectrum, the fourth step is development of a treatment plan. It is the responsibility of a “team leader” to develop an appropriate treatment plan that is unique to the needs of the particular child and to ensure that the multidisciplinary team is functioning appropriately for the child and the family. The physician may participate as the team leader or as a team member. In either case, evaluation and management of medical protocols, including appropriate medication trials, is the physician’s responsibility.

This chapter discusses each step in this evaluation process and the appropriate qualifications for the medical personnel. It is

important to note that the state of the science in the field of autism has not yet produced the replicable data necessary for comprehensive, verifiable practice guidelines. This chapter reflects not only on recent consensus statements (CAN Consensus Group, 1998), practice parameters (Bernet et al., 1999), and evidence-based guidelines (Filipek et al., 1999) using information currently available but also on clinical experience and judgment recorded by members of the Interdisciplinary Council of Development and Learning (ICDL). These guidelines are likely to be modified as results of more studies become available.

### **STEP ONE: INITIAL SCREENING**

The initial screening of all children to identify those on the autistic spectrum occurs at the level of the primary health care provider (e.g. pediatrician, family practitioner, or nurse practitioner.)

It is imperative that physicians and other health care providers understand their key role in recognizing a child’s potential difficulties and making appropriate referrals so that the child can begin to benefit from services. Recent research indicates that the children with autism who are identified earliest and receive subsequent treatment intervention may have the best prognosis (Greenspan

& Wieder, 1998; McEachin, Smith & Lovaas, 1993). It may be anticipated that early medical interventions that enhance the growth of the developing cortex (neuropil) may also have greater effects when given early, rather than late, in the child's course of treatment. In light of these findings, early identification of children with disorders of relating and communicating, including autistic spectrum disorders, is a primary goal of the ICDL. Certainly by the age of 18 months, those children who have not yet developed age-appropriate skills in relating and communicating need to be identified.

This task is particularly challenging for several reasons. When a child is young, parents—especially parents of their first child—may not realize that the child should have, or has not, acquired these skills. The parents may not even be willing to accept the fact that their young child has not yet acquired these skills. In addition, the physician may not recognize these subtle changes in the child's ability to relate and communicate because of the short amount of time usually allotted to well-child visits. This situation is especially likely if the parents themselves are not recognizing any possible delays in development and, therefore, are not bringing their concerns to the physician's attention.

In order to ensure early identification, both parents and professionals need to acquire an increased awareness of the possibility of development of these symptoms in the young child. Key clinical milestones to observe in a child include:

- *The child's ability for warm, joyful relating.*
- *The child's ability for engaging in a continuous back-and-forth pattern of emotional and gestural cueing.*

- *The child's ability to engage with a caregiver in an intentional, complex, reciprocal interaction pattern* in order to solve a problem, such as taking a parent to the door to help open it or pushing a caregiver to the refrigerator and pointing to the desired food.

If, by 18 months of age, the child is unable to demonstrate by both history and observation the above milestones, the child should have a complete evaluation to rule out a pervasive developmental disorder (PDD).

A standard screening device that can help distinguish between potentially autistic and nonautistic behavior and identify most children at risk also would be beneficial to early identification. The Checklist for Autism in Toddlers (CHAT) successfully identifies autism in many children. (Baron-Cohen, Allen, & Gillberg, 1992; Baron-Cohen et al., 1996). In Britain, this 3-minute screening tool, which is used at the 18-month well-baby exam, has been shown to predict 90% of children who will develop autism, PDD, or other developmental delay syndromes. The CHAT uses a questionnaire and an observation to elicit abnormalities in development of the child's joint attention and pretend play. A normal CHAT, however, does not rule out a developmental disorder. Therefore, a suspicion by the parent or clinician of poorly developed verbal or nonverbal communication skills and delay along the social-emotional continuum at any age should always trigger appropriate referral for formal evaluation. In addition, abnormal performance on the CHAT requires further assessment for possible ASD. It may be that abnormal CHATs are recorded for many children who end up developing normally or who have developmental delay for other reasons.

In conclusion, children must be followed and observed through routine well-care visits

for their attainment of skills along the social-emotional continuum as described by Greenspan (1992). The child should be referred *immediately* for a step-two evaluation when there is suspicion by the parent or clinician that a child has a delay in (1) receptive and expressive language skills, (2) joint attention and engagement, (3) two-way communication skills, and/or (4) imaginative play, or if there is (5) an abnormal CHAT or a failure on other appropriate developmental screening tests in these areas (Filipek et al., 1999), or (6) a loss of language at anytime.

### **STEP TWO: NEURODEVELOPMENTAL REFERRAL**

The step-two evaluation should be performed by a physician who understands the underlying characteristics and pathophysiology of ASD and who has experience in developing appropriate treatment programs for affected children. This evaluation will generally fall in the domain of a developmental pediatrician, a pediatric neurologist, or a child psychiatrist. The responsibility of this specialist is to (1) make the diagnosis, (2) use appropriate diagnostic tools together with other members of the diagnostic and treatment team to evaluate the child's baseline pathophysiologic parameters, (3) order an appropriate medical evaluation to rule out other associated medical conditions, and (4) put together a multidisciplinary treatment plan. This plan will then be followed closely and monitored over time so that it can remain unique, flexible, and dynamic in response to the needs of the child.

The primary role of the specialist physician is to make a diagnosis; however, there is a caveat here. If the child is delayed in any of the parameters discussed, this child will, in any case, need some type of early intervention. It

has been shown that in most cases, a 6-month delay occurs from the time the child presents with abnormal symptomatology to the beginning of an early intervention program (Greenspan & Wieder, 1998). Therefore, extensive diagnostic evaluations should be conducted concurrently with the initiation of the treatment program. The ICDDL recommends that treatment begin as *soon as possible*, even while these other diagnostic evaluations are still being performed.

The specialist evaluation should include the following critical components:

- *Family histories*, with probes for history of autism, mental retardation, fragile X syndrome, tuberous sclerosis complex, and affective disorder.
- *Developmental and medical history*, with special emphasis on history of regression and specific developmental level attainment.
- *Physical and neurologic examination*, including longitudinal measurements of head circumference; notice of neurocutaneous abnormalities requiring a Wood's-lamp examination, dysmorphic features, reflexes and cranial nerves; and a thorough observation of muscle mass and tone, gait, posture, facial movement (including presence or absence of a Moebius mouth) and generalized movement abilities (given recent description of very early onset of abnormal motor movements in this group of children) (Teitelbaum, Nye, Fryman, & Maurer, 1998).
- *Functional/emotional developmental level assessment* to include:
  - Observation of child-caregiver interaction patterns for 20 to 30 minutes or longer on at least two separate occasions.
  - Clinician-child interaction designed to elicit the child's highest level of functioning.

- Observation and exploration of family interaction patterns including, if possible, parents and siblings.
- Construction of a developmental profile of the child's emotional, interactive, cognitive, language, motor, and sensory patterns based on the preceding components of evaluation and assessment.
- *Use of a standardized diagnostic instrument* based on the DSM-IVR definitions of ASD (American Psychiatric Association, 1994), which may be helpful in distinguishing children with autism or PDD from other developmental difficulties. Examples include the Childhood Autism Rating Scale (CARS) (Schopler, Reichler, DeVillis, & Daly, 1980; Schopler, Reichler, & Rodden-Renner, 1988), Autism Diagnostic Interview-Revised (ADI-R) (Lord, Rutter, & LeCouteur, 1994), and the Autism Diagnostic Observation Scale (ADOS) (DiLavore, Lord, & Rutter, 1995). The specialist physician will be familiar with the proper use and choice of these instruments as well as with how to tailor the testing to the needs of the child and the clinical setting. For example, the rigorous diagnostic inclusion criteria for a research study might require completion of the ADI-R, whereas those in a clinical setting may find use of a CARS more practical for initial diagnosis and long-term followup.
- *Evaluations by other members of the multidisciplinary diagnostic team*, which will be critical to the determination of the child's complete functional profile and may include (but are not limited to) the following disciplines (see the Table of Contents for related chapters in *The ICDL Clinical Practice Guidelines*):
  - Speech and language
  - Auditory functioning

- Pediatric occupational therapy
- Educational/cognitive abilities
- Visual-motor capacities
- Neuropsychiatric evaluations

### **STEP THREE: MEDICAL TESTING PROCEDURES**

The ICDL recommends consideration of the following procedures as part of the complete medical evaluation, to be performed under the supervision of the appropriate specialist. The selection of the specific tests will be directed by the results of the history and the physical examination.

*Audiologic evaluation:* The hearing evaluation should be behavioral in focus and include formal, pure tone audiometry performed by an experienced pediatric audiologist. Brainstem auditory-evoked potentials are necessary only if the initial test is equivocal, suboptimal, or suggests central nervous system abnormality.

*Electroencephalography:* A significant number of children with autism and related disorders may have abnormal electroencephalograms (EEG's) and epileptiform activity and/or epilepsy (Tuchman & Rapin, 1997; Tuchman, 1994; Volkmar & Nelson, 1990; Tuchman, Jayakar, Yaylali, & Villalobos, 1998; Chez, Buchanan, Zucker, & May, 1997). It has been shown that EEG recording during all four stages of sleep may be necessary to identify these abnormalities. Prolonged EEG studies are significantly more likely to identify abnormalities in children with ASD than are routine one-hour studies. Epileptiform abnormalities have been found in only 27% of routine one-hour sleep EEG studies as compared with 60% of prolonged overnight EEG studies (Tuchman et al., 1998). In addition, there is a high rate of epileptiform activity when measured in an overnight study in children with ASD and a

history of clinical regression (Chez et al., 1997). Therefore, an extended sleep-deprived EEG with adequate sampling of all four stages of sleep is recommended if the child has evidence of clinical seizures, history of regression in social and communicative functions, or any suspicion that clinical or subclinical epilepsy may be present. Whether the recording is conducted for 4 hours, overnight, or for a complete 24-hour period is not currently specified because the optimal time length is not known. However, many children will require overnight or 24-hour EEG's to obtain all stages of sleep (CAN Consensus Group, 1998).

*Metabolic screening tests:* Metabolic lab tests are indicated for those children who present with both autism and other signs of metabolic disease (e.g., lethargy, cyclic vomiting, failure to thrive, early seizures, dysmorphic or coarse features, severe or profound mental retardation). Metabolic tests are also used to evaluate rare disorders that are difficult to detect and which occur in less than 5% of children with ASD. Autism has been associated with several inborn errors of metabolism, primarily phenylketonuria (PKU). The following may be considered in the metabolic assessment: (1) quantitative amino acids, (2) urine organic acids, (3) uric acid and calcium in a 24-hour urine, (4) thyroid studies, (5) lactate, pyruvate and carnitine, and (6) lead levels, especially if pica is present.

*Genetic testing:* Population-based studies suggest that between 5% and 12% of children with autism have underlying medical or genetic conditions (Cohen & Volkmar, 1997). Both DNA fragile X testing and high-resolution cytogenetic studies should therefore be considered (Wing, 1996; Gillberg & Wahlstrom, 1985). These are indicated if there is associated mental retardation in the family or patient, or if dysmorphic features are present in the child. Karyotyping should

be at high resolution with particular attention noted for possible duplications of 15q 11-13 (Cook et al., 1997). Families need to be aware that absence of a positive genetic test does not exclude a genetic basis for autism. As ongoing research develops, these and other cytogenetic tests may require reevaluation for inclusion in the assessment.

*Structural neuroimaging: (Brain CT or MRI):* The use of neuroanatomic imaging studies, such as the magnetic resonance imaging (MRI), in the primary diagnostic workup of children with autism is indicated only for those whose neurologic examination, EEG, or other clinical indicators suggest a focal lesion (CAN Consensus Group, 1998; Filipek et al., 1999).

*Functional neuroimaging:* Tests in this category, including single photo emission tomography (SPECT), position emission tomography (PET), magnetoencephalography (MEG), or magnetic resonance spectroscopy (MRS), are valuable research tools in this field. At the present time, however, they are not indicated for the primary diagnostic evaluation of autism.

*Other laboratory tests:* Children with autism may have an increased incidence of certain infections such as otitis media (Konstantareas & Homatidis, 1987). Altered immune parameters have also been demonstrated in some cases (Warren et al., 1996; Van Gent, Heijnen, & Treffers, 1997). In addition, a higher instance of allergies has been reported in this population. Recently, abnormal gastrointestinal dysfunction has been reported in a subset of children with autism (D'Eufemia, Celli, Finocciaro, Pacifico, Viozzi, & Zaccagnini, 1996; Horvath et al., 1998; Wakefield et al., 1998). However, there is not yet clear evidence to suggest that immune or gastrointestinal abnormalities cause (or that their treatments can reverse) the changes in the brain in autism. According

to the current standards of care, medical evaluation should be directed toward the detection and treatment of any disorder that may contribute to discomfort and behavioral dysfunction. It also is emphasized that a child with autism is susceptible to any of the diseases of childhood. The treating physician should maintain a high index of suspicion for infection or other medical problems in the child, especially during episodes of regression or exacerbation.

#### **STEP FOUR: THE TREATMENT PLAN**

For a child who is on the autistic spectrum, the ICDL advocates the use of a multidisciplinary, integrated team to provide an intensive, relationship-based therapeutic plan, with specialty treatment usually conducted one-on-one. This plan is unique to each individual and delivered in a dynamic, flexible manner that is keyed to the interactive social-emotional, cognitive, sensory, and motor patterns of the child (Greenspan & Wieder, 1998). In addition, the plan must be family oriented because the family will play a significant role in the implementation of the treatment strategies. The plan must also be service coordinated (e.g., between regional centers, schools, and insurance companies) in order to garner both the human and financial resources required to implement an inclusive treatment plan. The plan can be home-based, school-based, or a combination of both, depending on the unique characteristics and challenges of the child. However, one role of the physician (including both the primary care and specialist) is to aid the parents in getting through the maze of finding the best human resources and to get health plans and public agencies to help finance these often expensive treatment plans. The team members may include, but are not limited to, clinicians from speech, occupational therapy,

nutrition, medicine, psychology, education, advocacy, and social work.

The role of the physician in the treatment plan involves:

- Leadership and involvement with the multidisciplinary team just discussed.
- Treatment of coexisting medical problems.
- Treatment of target behavior symptoms with medications as necessary.
- Ongoing monitoring and longitudinal followup coordination with the multidisciplinary team.

The role of the multidisciplinary team, as well as the assessment of functional abilities of the child over time, is discussed elsewhere in *The ICDL Clinical Practice Guidelines*.

It is imperative that all coexisting medical problems be addressed fully for the child. Some common clinical presentations include the following: If allergies coexist, elimination of appropriate allergens from the child's environment can markedly improve the child's capacity for attention and learning in the therapeutic setting. Attention to treatment of coexisting gastrointestinal abnormalities, such as constipation or obstipation with overflow diarrhea (Wakefield et al., 1998) or reflex esophagitis and disaccharide malabsorption (Horvath et al., 1999), could also markedly change a child's chronic pain level and might lead to improved learning capacity. In addition, sleep disorders have recently been described in a subset of children with autistic spectrum disorders (Thirumalai, Robinson, & Shubin, 1999). This association clearly could affect daily behavior and autistic symptoms and deserves medical evaluation and appropriate treatment.

There are three general categories of medications that may be helpful in treating

target behavior symptoms in children with autism. These include:

- Drugs that affect neurotransmitters (e.g., selective serotonin reuptake inhibitors or SSRIs).
- Drugs that stabilize mood and treat epilepsy (or, presumably, EEG abnormalities) (e.g., “anticonvulsants”).
- Hormonal or growth factors (e.g., steroids).

These medications have not proven to be curative, but they can help ease target symptom behaviors that may be interfering with development and learning. The aim of medication therapy, therefore, is to optimize functioning for the child. The various drug choices are best implemented through a drug trial where target behaviors are first identified and followed in as blind a manner as possible to overcome placebo effects.

As always, with the use of any pharmacologic agent, care should be taken in the selection and administration of medications. The profile of side effects and risk must be weighed against the potential benefits of course, and vary depending on the agent used and the target symptom identified. Use of simple charting techniques often helps parents and personnel working with the children to quantify and identify the symptomatology being observed over time. It is important to never lose sight of the overall goal of optimizing the child’s functioning in therapeutic, educational, and social settings by monitoring the child’s adjustment and engagement. For many of the medications used to alter target symptoms in children on the autistic spectrum, studies of large numbers of individuals who are affected have not been completed, although a body of clinical use with some of these medications is growing. In most cases, use of these medications is extrapolated from the adult literature using indications from the

pathophysiology. The ICDL suggests that usage of psychopharmacology may be recommended if the clinician monitors the children closely and in a trial format to optimize the efficacy and to avoid side effects. Typical target symptoms that may be evaluated for modulation with drugs that affect neurotransmitters include obsessive/compulsive ritualized behaviors, hyperactivity/inattention, tics, sleep disorders, anxiety, and aggressive or self-injurious behaviors.

There are several categories of psychopharmacologic drugs that can help address some of these target symptoms. The category with increasing clinical experience is the SSRIs. These medications are potent inhibitors of the serotonin transporter and include medication such as fluoxetine and fluvoxamine. The SSRIs can be used in autism to reduce the frequency and intensity of repetitive, ritualized behaviors, including motor stereotypes and more classic compulsive rituals. In addition, other autistic symptoms have been noted to improve on these drug trials, including improvement in eye contact, social initiation and responsivity, decreased withdrawal, and expanded repertoire of interests. In some children, behavior may improve with a decrease in tantrums, aggression, and self-injurious behavior. Parents also describe improvements in initiating, shifting, and sustaining attention with more connectedness to the environment and less internal preoccupation. All these improvements can result in a child wanting to be more a part of the group, less aloof, and more available to the therapeutic interventions. There is general consensus that the SSRIs should be administered in as low a dosage as possible and then titrated up slowly so that a narrow range of effect versus side effect can be maintained. For example, since the drug Prozac comes in a liquid form, it can be started at 1 mg to 2 mg per day and gradually increased, as needed, to help modulate

target symptoms. Clinical experience has shown that many children achieve the best results on doses of less than 3 mg to 5 mg per day. Typical side effects from medications in this group include hyperactivity, sleeplessness, aggressiveness, and possible appetite changes. Imipramine and clomipramine (non-selective serotonin reuptake inhibitor tricyclic drugs), if used, have potential side effects consisting of cardiac arrhythmias. EKG monitoring should accompany the use of these drugs.

Other categories of psychopharmacologic drugs that may be useful for autism include neuroleptics, antidepressants, lithium, anxiolytics, and stimulant medications. Anticonvulsants have a place in the treatment protocol if the child has a diagnosed seizure disorder. Children diagnosed with regressive epileptic aphasia have been reported to respond to treatment with anticonvulsants (e.g., Depakote sprinkles) and/or steroids (e.g., prednisone) (Chez, Buchanan, Zucker, & May et al., 1998; Stefanatos, 1995). In these cases, use of these medications should be supervised by a specialist with experience in this field because these treatments have major side effect risk profiles that may offset any potential benefits.

The discussion of pharmacology is necessarily brief for the purpose of this chapter. For more extensive information, the practitioner is referred to several useful references on the subject (McDougle, 1997; Zimmerman, Bonfardin, & Myers, 2000 [in press]). It cannot be overemphasized, however, that medication trials are just one part of the multimodal, integrated treatment plan advocated by the ICDC in the guidelines.

## CONCLUSIONS AND COMMENTS

Implementation of biomedical evaluations and interventions for children with disorders in relating and communication,

including ASD, can be especially challenging. One reason is that, at present, therapists lack a clear understanding of the causes and biological pathways involved in these disorders. In fact, it is likely that there are a number of different causes and pathways (e.g., genetic, autoimmune, environmental toxins) that influence development at various stages pre- and postnatally, resulting in different types of disorders in relating and communicating, including different subtypes of ASD. For example, different disorders, such as fragile X syndrome, fetal alcohol syndrome, tuberous sclerosis, congenital hypotonia, undiagnosed hearing loss, and prenatal rubella exposure, can all be associated with increased likelihood of symptoms of self-absorption, aimless behavior, lack of language, perseveration, and self-stimulation, all of which are common autistic symptoms. This suggests that there are many different pathways to these types of symptoms.

Therefore, the current state of knowledge suggests the possibility of multiple pathways leading to shared dysfunctions or expressions of symptoms. A few final common pathways may express a variety of different underlying biological patterns, much like a fever is an expression of many different biological processes. In addition, for certain children, etiological and mediating factors may be cumulative. For example, a variety of genetic vulnerabilities may be associated with a number of cumulative environmental challenges leading to disordered functioning. Furthermore, there are many different subtypes of disorders in relating and communicating, including many subtypes of ASD. It is likely that a number of subtypes have not yet been clearly described.

Research findings may, therefore, be particularly difficult to interpret. It may appear that a particular underlying biological pattern is not meaningful, when in fact it is relevant

for a particular subtype that has not yet been tested out. For example, many clinicians and researchers have recently separated out the group of children who regress in the second or third year life after having had some appropriate functioning in the first year of life. But in all likelihood, there are many subtypes among the group of children who regress as well as among the children who have an earlier, insidious onset.

Therefore, determining appropriate biomedical evaluations and interventions for each individual child is particularly challenging. An intervention that may be helpful for one child may not be helpful for another. Similarly, a research finding that may be relevant for one child may not be for another. The clinician and parents must, therefore, attempt to use current research and clinical experience to determine what is likely to be most helpful for a given child and the family, given their individual differences. In this challenging context, there are a few guidelines that may be worth emphasizing.

Parents and clinicians need to be cautious about two courses of action. First, they need to be cautious about uncritically jumping on the bandwagon of an intervention that does not have systematic case study support and definitive studies in progress. At the same time, however, they need to investigate promising interventions. Even if one or two studies on a general population have not shown results, the intervention may be potentially helpful for a certain pattern or subgroup. In other words, a few positive or negative studies on a general population of children often cannot answer the question about what may be useful for a particular child.

In exploring biomedical interventions, it is also very important to balance potential risks and benefits. Interventions that have no known risks may be easier to explore than ones that have clear risks associated with

them. For example, if a particular intervention is promising and there are reasons to believe it may be helpful with a specific child's unique profile, it is often possible to try the intervention and observe the child both on and off the intervention to ascertain its helpfulness. In contrast, one would be more reluctant to conduct such a trial if the risks were significant.

At present, there are no definitive, proven biomedical interventions, in and of themselves, that can significantly alter the course of severe disorders of relating and communication, including ASD. There are, however, a number of approaches that, at times, can be helpful when included in a comprehensive program and when tailored to a child's unique profile. Selected psychopharmacological approaches, as described previously, are an example. There are also exploratory approaches that have not yet been well researched. Some involve a limited number of studies, with some suggesting potential helpfulness and others suggesting no clear value. Some very promising approaches simply have not yet been studied systematically at all.

The lack of definitive biomedical treatment and insufficiently studied exploratory interventions often lead to a number of reactions. Some clinicians respond very cautiously, waiting for definitive research. Others respond in a more exploratory way, trying to figure out what will likely be helpful for a child with a unique profile (i.e., subtype). Some children may present with a pattern that suggests a particular exploratory approach (e.g., a history of severe allergic phenomena). Other children may present with a unique history, such as negative reactions to medications, leading to a less exploratory biomedical attitude. Each clinician and family must, therefore, work together to consider the options for a particular child, weighing potential risks and benefits, and taking into account

the child and family's unique characteristics. In order to determine what's likely to be most helpful, however, clinicians and parents should be aware of the options available.

It is beyond the scope of this chapter and the guidelines to review all the well-researched and lesser-researched biomedical interventions. However, in this context, some of these emerging ideas and appropriate references include (but are not limited to) the following: The role of casein (milk) and gluten (wheat) proteins in the pathogenesis of autistic behavior (Reichelt, Ekrem, & Scot, 1990); the benefit of vitamin B6 in the treatment of target symptoms (Rimland, 1994); the possible link of autism to autoimmune mechanisms (Warren, Singh, Averett et al., 1996) for some individuals—especially those with positive family histories of other autoimmune diseases (Zimmerman, 1999); the possible association of GI dysfunction and brain functioning, especially with recently described “autistic enterocolitis” in a subset of children with autism (Wakefield et al., 1998), as well as reflux esophagitis and disaccharide malabsorption and relationship of symptom change, especially diarrhea with secretin treatment (Horvath et al., 1998; Horvath, Papadimitriou, Rabszty, Drachenberg, & Tildon, 1999). There are a number of resources available that can provide

further information on these subjects, including those written for parents (Gerlach, 1998; Seroussi, 2000) as well as protocols and guidelines for clinicians (Bernet, 1999; Filipek et al., 1999; CAN Consensus Group, 1998; Baker & Pangborn, 1999).

With increasing research support from government agencies and parent support groups, such as Cure Autism Now (CAN <http://www.canfoundation.org>) and the National Alliance for Autism Research (NAAR <http://www.naar.org>), the future holds the promise of more diagnosis and treatment modalities for individuals with ASD. Clearly, identification of underlying core neurobiological deficits of the autistic spectrum will lead to development of the most appropriate medical treatment. Future revisions to *The ICDL Clinical Practice Guidelines* will continue to update this progress. In the meantime, it must be emphasized that the role of the health care professional is to have the highest index of suspicion if social and language delays exist in any child and to make the earliest possible referral for evaluation. If this occurs, a multidisciplinary intervention program as discussed in these guidelines can then begin immediately, as this is the child's greatest hope for improved outcomes. ■

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