

Autism Spectrum Disorder

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Learning Objectives

- * Review current criteria of Autism Spectrum Disorder according to the DSM-5 while discussing “red flags” necessitating a referral for further evaluation
- * Discuss components of a neuropsychological/developmental evaluation
- * Discuss considerations when treating patients with Autism Spectrum Disorder

- * What percentage of children have a developmental or behavioral disability?

Early Identification is Lacking

-15% of children have a developmental or behavioral disability such as autism, intellectual disability, and Attention-Deficit/Hyperactivity Disorder.

In addition, many children have delays in language or other areas, which also impact school readiness.

However, less than 50% of these children are identified as having a problem before starting school, by which time significant delays may have already occurred and opportunities for treatment have been missed.

- Centers for Disease Control & Prevention -

National Center on Birth Defects and Developmental Disabilities. (2009, September). Developmental Screening. Centers for Disease Control and Prevention. Retrieved October 27, 2015 from <http://www.cdc.gov/ncbddd/childdevelopment/screening.html>

Benefits of Early Intervention

- * Neurological evidence suggests that the brain's plasticity during early childhood allows for the creation of new neural connections that yield new behaviors and skills
- * Provides parents social support that can in turn appease family stress and foster family cohesion
- * Provides parents strategies that can support their child's development

Early Screening

- * 9 months
- * 18 months
- * 24 or 30 months



Autism Spectrum Disorders

- * A group of neurodevelopmental disorders characterized by deficits in communication and socialization, as well as by the presence of restricted and repetitive behaviors
- * DSM-IV-TR: Autistic Disorder, PDD NOS, Asperger's Disorder, Childhood Disintegrative Disorder, and Rett's Disorder
- * DSM-V: Autism Spectrum Disorder

DSM-V Criteria

- * Deficits in Communication and Socialization (all 3 must be present)
 - * Impaired social-emotional reciprocity
 - * Deficits in nonverbal communicative behaviors used for social interaction
 - * Deficits in developing, maintaining, and understanding relationships

DSM-V Criteria

- * Presence of Restricted and Repetitive Behaviors and Interests (at least 2)
 - * Stereotyped or repetitive motor movements, use of objects, or speech
 - * Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior
 - * Highly restricted, fixated interests that are abnormal in intensity or focus
 - * Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment

DSM-V Criteria

- * Severity levels
 - * Level 1 "Requiring support"
 - * Level 2 "Requiring substantial support"
 - * Level 3 "Requiring very substantial support"

Incidence

- * ASD is reported to occur in all racial, ethnic, and socioeconomic groups (CDC)
- * Prevalence rates have steadily increased
 - * CDC reported prevalence rate of 1 in 150 in 2000, and 1 in 68 in 2010
- * Ongoing debate about rise in prevalence:
 - * Actual increased occurrence?
 - * Improvement in diagnostic criteria?
 - * Increased awareness and availability of ASD eval services?
 - * Relaxing of diagnostic practice in order to obtain needed services for children?

- * Gender ratio of 4:1 (male to female)
 - * However, ratio varies based on IQ
 - * Ratio approaches 2:1 in those with ASD and moderate to severe intellectual disability
- * ASD commonly co-occurs with other developmental, psychiatric, neurologic, chromosomal, and genetic diagnoses. The co-occurrence of one or more non-ASD developmental diagnoses is 83%. The co-occurrence of one or more psychiatric diagnoses is 10%.

Source: Centers for Disease Control and Prevention. (2015, August). Autism Spectrum Disorder Data and Statistics. Retrieved December 16, 2015 from <http://www.cdc.gov/ncbddd/autism/data.html>

Comorbidity

- * Intellectual disability (40-69%)
- * Anxiety disorders (7-84%, with high rates of specific phobia)
- * Depression (4-58%)
- * Tic disorders (6%)
- * Seizure disorders (11-39%)
- * ADHD (up to 55%)
 - * DSM-V allows diagnosis of both

Presentation, Disease Course, and Outcome

****Behavioral presentation varies considerably****

- * *First year of life*
 - * ASD can be diagnosed as early as 18-24 months
 - * Some signs evident in children as young as 6 months

“Red Flags” 6-12 months of age

- * Delayed vocal sound production
- * Decreased frequency of simple babbling
- * Reduced frequency of pointing
- * Atypical eye contact
- * Lack of social smiling
- * Failure to respond to name
- * Emotional flatness
- * Atypical disengagement of visual attention
- * Diminished interest in social interaction
- * Unusual/repetitive hand and finger mannerisms

Milestones in Children from 4 to 15 months

“Red Flags” 12-24 months

- * Earlier symptoms become more evident
- * Lack of interest in peers
- * Limited imitation of others
- * Low rates of joint attention
- * Restricted range of functional and imaginative play
- * Greater frequency and duration of repetitive hand and finger mannerisms and preoccupation with parts of objects

“Red Flags” 12-24 months

- * Delayed speech
 - * Delayed comprehension
 - * Limited use of complex babble, single words, and phrases
 - * Unusual prosody
 - * Delayed and immediate echolalia
- * Limited nonverbal communication
 - * Reduced frequency of pointing and other gestures
 - * Limited range of facial expressions
 - * Facial expressions less commonly directed at others
 - * Less integration of gaze with vocalization

Regressive Onset

- * 20-47% of children with ASD appear to exhibit few symptoms until they experience a marked loss of language and/or socialization skills around the age of 15-24 months
 - * Any loss of speech, babbling or social skills at any age is concerning
- * No empirical support for relationship between vaccines and regressive onset of ASD

Ages 3, 4, and 5

- * Communication may improve, but language notable for other abnormalities
 - * Echolalia, unusual prosody, limited reciprocal conversation
- * Nonverbal communication impaired
 - * Limited gestures and joint attention, unusual eye contact, limited range/use of facial expressions
- * Functional and imaginative play restricted in range and/or frequency
- * Frequency of restricted interests and repetitive behaviors often increase

Middle Childhood

- * Abnormalities in verbal/nonverbal communication and socialization skills generally remain
- * With intervention:
 - * May gain adaptive daily living skills
 - * May become more aware of societal rules
 - * More interested in fulfilling wishes of others → decrease in public display of repetitive behaviors
- * 5-20% of individuals may no longer meet criteria for ASD and function within normal limits of social relationships
 - * INTENSIVE EARLY INTERVENTION

Adolescence

- * Behavioral difficulties
 - * Self-injurious behaviors
 - * More often found in individuals with low IQs and poor adaptive functioning
 - * Compulsive behaviors
 - * Tantrums
 - * Aggressive behaviors
- * A lot depends on interventions, intellectual functioning, and communicative/social skills
 - * Increased communication and social skills typically improves progression in and engagement with therapy

Adulthood

- * Little is known about ADHD symptomatology
- * ~50% have poor outcomes
 - * High level of residential assistance
 - * Few friends
 - * Supported or no employment
 - * Many ARE employed for at least several hours each week

Types of Assessment

- * Developmental
- * Autism specific
- * Neuropsychological

Developmental Assessment

- * Domains assessed:
 - * Physical (e.g., reaching, rolling, crawling, walking)
 - * Cognitive (e.g., thinking, learning, solving problems)
 - * Communication (e.g., talking, listening, understanding)
 - * Social/Emotional (e.g., playing, feeling secure and happy)
 - * Adaptive/Self-Help (e.g., eating, dressing)

Developmental Assessment

- * Most common:
 - * Bayley Scales of Infant and Toddler Development (3rd Edition)
 - * Mullen Scales of Early Learning



Developmental Assessment

- * Weaknesses:
 - * Difficult to use with a severely physically or sensory impaired child (may underestimate child's ability)
 - * Children/families not proficient in English not included in normed sample

Adaptive Functioning

- * Practical, everyday skills required to function and meet environmental demands
 - * Including effectively and independently taking care of oneself and interacting with other people
- * Need to identify independent behaviors and what an individual actually does on their own without assistance from others, in addition to what they may be able to do

Adaptive Functioning

- * Adaptive skills assessment can provide important information for diagnosis and planning of treatment or intervention for individuals with developmental delays, biological risk factors, TBIs, ASD, ADHD, health impairments, etc.
- * Disability and special education regulations routinely require a comprehensive adaptive behavior assessment

Assessment of Adaptive Skills

- * Vineland – 2nd Edition
 - * Ages birth to 90
 - * Communication/Daily Living Skills/Socialization/Motor Skills/Maladaptive Behavior Index
- * Adaptive Behavior Assessment System – 2nd Edition (ABAS-II)
 - * Birth to age 89
 - * ABAS-II is the only instrument to incorporate current American Association on Mental Retardation (AAMR) guidelines by providing composite norms for three general areas of adaptive behavior (conceptual, social, and practical).

Adaptive Functioning

- * ABAS-II
 - * Mean GAC of children with ASD ranged from 64 (parent form) to 67 (teacher form)
 - * Significantly lower than control groups of 98-102, respectively
- * Greatest deficits in:
 - * Communication
 - * Health & Safety
 - * Leisure
 - * Social Skill Areas
- * Least deficits in Functional Pre-Academics

Adaptive Functioning

- * Matthews, et al. (2015):
 - * Daily living skills were a relative strength compared to communication and socialization in adults, but not adolescents
 - * In general, highest subdomain scores were observed in writing skills and lowest scores were observed in interpersonal skills
 - * Regardless of cognitive ability, all standard scores were well below average, indicating a need for lifelong intervention that targets adaptive functioning

Matthews, N. L., Smith, C. J., Pollard, E., Ober-Reynolds, S., Kirwan, J., & Malligo, A. (2015). Adaptive functioning in autism spectrum disorder during the transition to adulthood. *Journal of Autism and Developmental Disorders*, 45(8), 2349-2360.

Screening & Diagnosis

Autism Evaluation

- * Autism Diagnostic Observation Schedule – 2nd Edition (ADOS-2)
 - * Interactive tool that involves direct observation of a behavioral sample through a series of reciprocal play and social routines
 - * Semi-structured, standardized assessment of:
 - * Communication
 - * Social interaction
 - * Play
 - * Restricted and repetitive behaviors
 - * Presents various activities that elicit behaviors directly related to a diagnosis of ASD



Autism Evaluation

- * Autism Diagnostic Interview-Revised (ADI-R)
 - * Parent interview
 - * Gathers info about early development and core deficits involved in ASD
 - * Useful for evaluation repetitive behaviors, stereotyped interests, and rigid preferences that may not be directly observable during an evaluation
 - * Administration time: 90-150 minutes
 - * Available in multiple languages

Autism Evaluation

- * Childhood Autism Rating Scale (CARS)
 - * Behavior rating scale
 - * 15 items representative of a characteristic, ability, or behavior common to children with autism and/or developmental disability
 - * Scores are based on severity
 - * Indicates how noticeably the child's behavior deviates from that of a typically developing child

Autism Evaluation

- * Gilliam Autism Rating Scale – 3rd Edition (GARS-3)
 - * Updated to reflect DSM-V diagnostic criteria
 - * Ages 3 through 22
 - * 56 items
 - * 6 subscales:
 - * Restrictive/Repetitive Behaviors
 - * Social Interaction
 - * Social Communication
 - * Emotional Responses
 - * Cognitive Style
 - * Maladaptive Speech



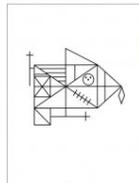
Neuropsychological Assessment

- * Concerned with relationships between the brain and behavior
- * Try to characterize behavioral and cognitive changes resulting from central nervous system disease or injury
- * Assessment of how one's brain functions, which indirectly yields information about the structural and functional integrity of your brain
- * Determine a pattern of cognitive strengths and weaknesses and, in turn, understand more about how the brain is functioning



NEUROPSYCHOLOGICAL ASSESSMENT

- * Data coupled with information from clinical reports, behavioral observations, and self/parent/teacher reports
- * Cognitive
 - * Verbal vs. Nonverbal Reasoning Skills
- * Language
- * Attention
- * Executive Functioning
 - * Including working memory and processing speed
- * Memory
- * Visual-Spatial/Visual Perception/Visual-Motor
- * Fine Motor
- * Emotional/Behavioral/Social
- * Academic Screener



Neuropsych – Test Engagement

- * Pragmatic language deficits may interfere with understanding nature of testing situation
 - * Difficulty staying on task, paying attention, answering questions in a relevant manner
- * May lack social motivation or experience social anxiety
- * May perseverate on topics or tasks of interests
- * Hyperarousal to testing stimuli
- * May be rigid – difficulty with transitions

Neuropsych Results

An uneven profile is characteristic of individuals with ASD with general relative strengths in visual-spatial nonverbal measures and a concurrent weakness in verbal ability

Intelligence

- * High degree of variability
 - * 50-70% of children with ASD have IQ < 70
- * Nonverbal > Verbal
- * Asperger's IQs > Autism or PDD-NOS

Adaptive Behavior/Skills

- * Highly variable
- * Typically most pronounced deficits in socialization and communication domains

Things to Consider

- * In high-functioning individuals, IQ > adaptive
- * Adaptive functioning results are useful in planning intervention treatment
 - * Focus on developing basic self-help skills
- * Need to consider IQ and adaptive skills to assist with educational and vocational placement and career planning
- * Lower IQ → more likely to have poorer adaptive functioning and independence later in life
 - * Need intensive intervention services

Neuropsych Results

Language

- * Generally absent to low levels of language as toddlers and at preschool age
 - * Many do speak with time + intervention
- * Strengths:
 - * Phonology, articulation, basic grammar, single-word vocab
- * Difficulty:
 - * Semantics, conversation, constructing narratives, prosody, comprehension, pragmatic use of language

Things to Consider

- * Early language skills are strong predictor of outcome
- * Speech & Language should focus on both semantic and grammatical skill acquisition, while developing functional communication
- * Target communication goals in both structured settings and naturalistic day-to-day tasks/activities
 - * Target both semantic and pragmatic language skills
- * Picture exchange communication system and sign language may be appropriate for young children who are not yet using words or phrase-speech

Neuropsych Results

Visuospatial Abilities

- * Sometimes enhanced visual-perceptual processing abilities
- * Deficits in face processing and face recognition ability
 - * Attend significantly less to the eyes when viewing a face, which can contribute to social skill difficulties

Neuropsych Results

Sensorimotor Functions

- * Impairments common in fine and gross motor skills that involve planning and execution
 - * Abnormal gait, posture, coordination, muscle tone
- * Sensory impairments can impact cognition and behavior patterns
 - * Auditory oversensitivity and visual self-stimulation are most common

Things to Consider

- * Sensory impairments can significantly impact functioning
- * OT can target sensorimotor impairment
 - * Teaching specific motor skills
 - * Modulate env't to reduce unpleasant stimuli
- * Behavior therapy
 - * Help to desensitize individual to aversive stimuli
 - * Teach relaxation and cognitive strategies
- * Hearing should be tested before diagnosis!

Neuropsych Results

Memory/Learning

- * Highly variable
- * Memory for social and emotional info tends to be selectively impaired
- * Factual info recall tends to be intact, whereas recall of autobiographical info is often impaired, except for particularly salient events
- * Lower functioning individuals rely heavily on procedural forms of learning

Things to Consider

- * Imitation impairments can impede learning
 - * Focus on developing imitation skills as early as possible
- * Programs can target simple vocal and motor imitation and progress to complex verbalizations and actions

Neuropsych Results

Attention/Concentration

- * May demonstrate impairments in automatic allocation of attention, controlled attention, and working memory
- * Heightened attention to personally salient stimuli

Processing Speed

- * Likely impaired on verbally loaded tasks
 - * May be ok on spatial, nonverbal tasks
- * Weakest relative to other indices using WISC-IV in a group of high-functioning (IQ > 70) children (age 10) with autism (Oliveras-Rentas, Kenworthy, Roberson, Martin, & Wallace, 2012)
- * Even if unimpaired on testing, processing speed is still often slowed in natural settings where distractions place burdens on attention

Things to Consider

- * Few interventions specifically target attention
- * Removing distractors, simplifying complex tasks, using high interest materials, and frequent breaks can help
- * Use strong and immediate reinforcers **of interest** for nonpreferred activities
- * Slow processing speed may give problems with rate of learning, comprehension of new information, and mental fatigue
 - * Can be addressed with extended time for tasks and activities

Neuropsych Results

Executive Functions

- * Deficits common
 - * Planning, shifting attention, monitoring performance, cognitive flexibility
- * Significant impairment in cognitive and behavioral inhibition
- * May perform well on testing in the highly structured environment, yet exhibit deficits in naturalistic env't
 - * Parent and teacher reports are important!

Things to Consider

- * Supports and environmental changes can assist with planning and organizational skills
- * Cognitive shifting difficulties can be counteracted with:
 - * Clear, time-dependent instructions
 - * Warnings for transitions
 - * Barriers set to prevent perseveration
- * Visual schedules can help a child stay on task

Neuropsych Results

Emotion, Personality, Social Behavior

- * Poor quality of reciprocal social interaction
- * Social overtures may be unusual in quality or restricted to personal demands/interests
 - * May lack integration into context or be socially inappropriate
- * Limited empathic ability

Things to Consider

- * Explicit teaching of social skills is important
- * Basic skills for younger children and lower functioning:
 - * Eye contact, imitation, requesting, simple reciprocal interactions
- * More interactive play skills and complex understanding of social interactions as child matures
- * High functioning children often have social anxiety
 - * CBT can increase skills and confidence while relieving anxiety

Things to Consider in General

- * Early Intervention
 - * The younger child begins to receive treatment, the better!
 - * Greatest likelihood for success if begun prior to age 5
 - * Optimal age between 2 and 3 years old
- * Medications & Diet
 - * As many as 70% older than 8 have received a psychoactive medication
 - * SSRIs approved to treat irritability, aggressive behaviors, self-injurious behaviors, tantrums, and rapid shifts in mood in children age 5-16 with ASD
 - * Stimulants common tx for attentional difficulties
 - * Other medications are being explored as potential treatments

Things to Consider in General

- * Behavioral Management and Skills
 - * Intensive ABA (15-25 hours/week) shown to be effective to guide preferred behaviors and teach skills in a stepwise fashion
- * Sustained attention improves with strong incentives
- * Younger and lower-functioning children may demonstrate increased repetitive behavior in clinical setting due to unfamiliarity and testing demands
- * Younger and lower-functioning → Motor stereotypies
- * Older and higher-functioning → Resistance to change and preoccupying interests

Things to Consider in General

- * Repetitive behavior requires a functional assessment
 - * Data on ABC
 - * Typical functions:
 - * Escaping demands
 - * Attention seeking
 - * Intrinsic reinforcement
 - * *Most difficult to treat
- * Individuals with low IQs and adaptive abilities are most likely to engage in repetitive self-injury and violent behaviors toward objects or others

Things to Consider in General

- * Psychological & Emotional Issues
 - * Comorbid conditions need to be considered
 - * CBT can be helpful for high-functioning children who are motivated to participate
 - * Behavioral therapy and relaxation training
 - * May be helpful for anxiety in lower functioning children
 - * Mediation for depression, anxiety, sleep problems, and irritability/aggression

Local Resources

- * **CARD Center for Autism and Related Disorders**
 - * <http://centerforautism.com/services.aspx>
- * **Arizona Family Resource Counseling Center**
 - * <http://www.azfamilycounseling.com/contactus.html>
- * **BISTA Behavioral Interventions, Support, Treatment, and Assessment**
 - * <http://www.bistacenter.org/contact-us/>
- * **Specializing in Education of Exceptional Kids (SEEK)**
 - * <http://www.seekarizona.org/>
- * **Southwest Autism Research and Resource Center (SARRC)**
 - * <http://www.azaba.org/>

Thank you!

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Any questions?