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A is for Autism:

Author: Amy M Schlessman, PT, DPT, DHS

Teaching level: introductory

Learning objectives
Upon completion of this course:

• The participant will be able to independently list four red flags of Autism Spectrum Disorders.
• The participant will be able to accurately list five statistics regarding the prevalence of Autism Spectrum Disorders.
• The participant will be able to independently describe the screening and diagnosis process for Autism Spectrum Disorders.
Learning objectives
Upon completion of this course:

• The participant will be able to compare and contrast at least four effective intervention strategies for children with Autism Spectrum Disorders.
• The participant will be able to compare and contrast at least four effective intervention strategies for adolescence with Autism Spectrum Disorders.

ASD

• Autism spectrum disorder (ASD) is a group of developmental disabilities that can cause significant social, communication and behavioral challenges.
What is ASD

- Includes the following conditions:
  - Autistic disorder
  - Pervasive developmental disorder not otherwise specified (PDD-NOS)
  - Asperger syndrome

ASD

- Autism spectrum disorder (ASD) is a developmental disability caused by differences in the brain.
- What causes these differences?
When Do Signs and Symptoms Develop?

• Some show hints in 1st few months old
• Some symptoms at 2 y.o. or +
• Some appear to develop normally up to 18-24 m.o., then regress
• Studies show:
  – 1/3-1/2 of parents noticed a problem before the child was 1 y.o.; almost 80%–90% noticed problems by 2 y.o.

• http://www.cdc.gov/ncbddd/autism/signs.html

Signs and Symptoms: Overview

• Difficulties with social, emotional, and communication skills
• May repeat certain behaviors
• May have difficulty with change in daily activities
• May have different ways of learning, paying attention, or reacting to people, events, situations, etc
• Signs typically begin during early childhood
• Signs typically last throughout an individual’s life
Signs and Symptoms

• **Children or adults with ASD might:**
  • Avoid eye contact
  • Not look at objects when another person points at them
  • Not point at objects to show interest (i.e. not point at air hot air balloon overhead)
  • Have difficulty relating to others or decreased interest in other people
  • Have difficulty understanding the feeling’s of others
  • Have difficulty talking about their own feelings

Signs and Symptoms

• **Children or adults with ASD might:**
  • Appear unaware when spoken to
  • Repeat or echo words/phrases said to them, or repeat words/phrases in place of normal language
  • Have trouble expressing his/her needs using common words or motions
  • Be very interested in people, but do not know how to talk to, play with, or relate to others
  • Not prefer to be held/cuddled, or only like to when they initiate it
Signs and Symptoms

- Children or adults with ASD might:
- Not play “pretend”
- Repeat actions again and again
- Have difficulty adapting to changes in routine
- Have unusual sensory reactions: to smell, taste, look, feel, or sound
- Lose skills they once had (i.e. stop saying words they were once saying)

http://www.cdc.gov/ncbddd/autism/signs.html

http://www.cdc.gov/ncbddd/autism/facts.html
Learn the Signs of Autism:
www.autismspeaks.org

Red Flags of Autism Spectrum Disorders
Possible "Red Flags"

- A person with ASD might:
  - Have delayed speech and language skills
  - Repeat words or phrases again and again, called echolalia
  - Give unrelated answers to questions
  - Get upset by minor changes
  - Have obsessive interests
  - Flap their hands, rock their body, or spin in circles
  - Have unusual reactions to sensory stimuli in the environment: sound, smell, taste, look, or feel

Possible "Red Flags"

- A person with ASD might:
  - Not respond to his/her name by 12 m.o.
  - Not point at objects to show interest (point at a hot air balloon overhead) by 14 m.o.
  - Not play pretend by 18 m.o.
  - Avoid eye contact and want to be alone
  - Have difficulty understanding the feeling’s of others
  - Have difficulty talking about his/her own feelings

continued
Possible "Red Flags"

- No big smiles or other warm, joyful expressions by 6 m.o. or thereafter
- No back/forth sharing of sounds, smiles or other facial expressions by 9 m.o.
- No babbling by 12 m.o.
- No back/forth gestures such as pointing, showing, reaching, waving etc. by 12 m.o.
- No words by 16 m.o.
- No meaningful, 2 word phrases (not including imitating or repeating) by 24 m.o.
- Any loss of speech, babbling or social skills at any age
- [https://www.autismspeaks.org/what-autism/learn-signs](https://www.autismspeaks.org/what-autism/learn-signs)

Recognize Red Flags, Know Typical Development

- **Typical Development Resources:**
- CDC offers free materials on child development
  - Free Materials “Learn the Signs, Act Early”
Learn the Signs, Act Early

http://www.cdc.gov/ncbddd/actearly/milestones/index.html

http://www.cdc.gov/ncbddd/actearly/pdf/checklists/all_checklists.pdf:
Quiz: Milestones
http://www.cdc.gov/ncbddd/actearly/milestones/index.html

Videos: Milestones
http://www.cdc.gov/ncbddd/actearly/milestones/index.html
Recognize Red Flags, Know Typical Development

- Typical Development Resources:
  - CDC offers free materials on child development
    - Free Materials “Positive Parenting Tips”
      - Developmental milestones
      - Tips for things that parents can do to help children at each age
        - Infants (0-1), Toddler (1-2), Toddler (2-3), Preschooler (3-5), Middle Childhood (6-8), Middle Childhood (9-11), Teens (12-14), Teens (15-17)

Positive Parenting Tips:
Positive Parenting Tips:

Recognize Red Flags, Know Typical Development

• **Typical Development Resources:**
  - Amazing Me-It’s Busy Being 3!
    - Ages 2-4
      - 3-year-old kangaroo who is very excited about all that he can do now that he is three
      - For parents/caregivers: shows what to look for as your child grows and develops
Amazing Me
http://www.cdc.gov/ncbddd/actearly/amazingme.html

Recognize Red Flags, Know Typical Development

- Typical Development Resources:
- **Watch Me! Celebrating Milestones and Sharing Concerns**
  - FREE: 1 hour training
  - Who? Early care and education providers
  - Why?
    - Play critical roles in the health and wellbeing of children
    - Are very well positioned to help identify children who might need extra help in their development
  - What? Provides tools and best practices for:
    - Monitoring the development of children in early care/early learning centers
    - Talking about a child’s development with the parents
  - How? 4 Modules:
Statistics Regarding the Prevalence of Autism Spectrum Disorders

ASD: Prevalence

- About 1 in 68 children has been identified with autism spectrum disorder (ASD) according to estimates from CDC's Autism and Developmental Disabilities Monitoring (ADDM) Network
- ASD is reported to occur in all racial, ethnic, and socioeconomic groups
- ASD is almost 5 times more common among boys than among girls

- [http://www.cdc.gov/ncbddd/autism/data.html](http://www.cdc.gov/ncbddd/autism/data.html)
ASD: Prevalence

- Studies in Asia, Europe, and North America have identified individuals with ASD with an average prevalence of about 1%. A study in South Korea reported a prevalence of 2.6%.
- About 1 in 6 children in the U.S. had a developmental disability in 2006-2008, ranging from mild disabilities (i.e. speech and language impairments) to serious developmental disabilities, such as intellectual disabilities, cerebral palsy, and autism.

The Screening and Diagnosis Process

for Autism Spectrum Disorders

Screening and Diagnosis

• Can be difficult
  – Use: behavior and development
• *By age 2, a diagnosis by an experienced professional can be considered very reliable
• 2 Steps to Diagnosing an ASD:
  – Developmental Screening
  – Comprehensive Diagnostic Evaluation
Step 1: Developmental Screening

• American Academy of Pediatrics (AAP), July 2006

• All children should be screened for developmental delays and disabilities during regular well-child doctor visits at:
  – 9 months
  – 18 months
  – 24 or 30 months


Step 1: Developmental Screening

• All children should be screened specifically for ASD during regular well-child doctor visits at:
  – 18 months
  – 24 months

Screening:

• **Autism A.L.A.R.M. Guidelines**
  – CDC, the American Academy of Pediatrics (AAP), and First Signs
    • Adapted from key policy statements of the AAP and American Academy of Neurology

Screening:

• **Autism A.L.A.R.M. Guidelines**

  • **A** utism is prevalent
  • **L** isten to parents
  • **A** ct early
  • **R** efer
  • **M** onitor

Developmental Surveillance and Screening for ASD
American Academy of Neurology and the Child Neurology Society

**Clinical Practice Recommendations:**

- Developmental surveillance should be performed at all well-child visits from infancy through school age, and at any age thereafter if concerns are raised about social acceptance, learning, or behavior.
- Recommended developmental screening tools include: Ages and Stages Questionnaire, BRIGANCE® Screens, the Child Development Inventories, and the Parents’ Evaluations of Developmental Status.
- Further developmental evaluation is required whenever a child fails to:
  - babble by 12 m.o
  - gesture by 12 m.o
  - single words by 16 m.o.
  - 2-word spontaneous phrases by 24 m.o.
  - loss of any language or social skills at any age

Developmental Surveillance and Screening for ASD
American Academy of Neurology and the Child Neurology Society

**Clinical Practice Recommendations:**

- Siblings of children with autism should be monitored carefully for acquisition of social, communication, play skills, and the occurrence of maladaptive behaviors.
- For all children failing routine developmental screening, screening specifically for autism should be performed using one of the validated instruments.
- Laboratory investigations, including audiology assessment and lead screening, are recommended for any child with developmental delay and/or autism.
Screening Tools for General Development and ASD: Examples

• Ages and Stages Questionnaires (ASQ)
• Communication and Symbolic Behavior Scales (CSBS)
• Parents’ Evaluation of Developmental Status (PEDS)
• Modified Checklist for Autism in Toddlers (M-CHAT)
• Screening Tool for Autism in Toddlers and Young Children (STAT)

Step 2: Comprehensive Diagnostic Evaluation

• Thorough review:
  – Child’s behavior
  – Development
  – Parental interview
  – May include: hearing screen, vision screening, genetic testing, neurological testing, and other medical testing

• Sometimes primary care physicians choose to refer the child and family to a specialist for further assessment and diagnosis
  • http://www.cdc.gov/ncbddd/autism/screening.html
Step 2: Comprehensive Diagnostic Evaluation

Typically:
• Diagnostic evaluation from a multi-disciplinary team including:
  – Pediatrician
  – Psychologist
  – Speech and language pathologist
  – Occupational therapist
  – Others
    • Physical Therapist
    – https://www.autismspeaks.org/what-autism/diagnosis

Intervention strategies for children and adolescence with ASD
## Benefits of a OT in ASD Evaluations

- **Therapist May Assess:**
  - Attention span and stamina
  - Transition to new activities
  - Play skills
  - Need for personal space
  - Responses to touch or other types of stimuli
  - Motor skills such as posture, balance, or manipulation of objects
  - Aggression or other types of behaviors
  - Interactions between the child and caregivers


## Strategies Used in OT

- Physical activities (i.e. stringing beads, doing puzzles, help a child develop coordination and body awareness)
- Play activities to help with interaction and communication
- Developmental activities
- Adaptive strategies, including transitions

Benefits of OT

• Daily living skills
• Fine motor skills
• Gross motor skills used for walking, climbing stairs, or riding a bike
• Sitting, posture
• Perceptual skills, such as telling the differences between colors, shapes, and sizes
• Awareness of his or her body and its relation to others
• Visual skills for reading and writing
• Play,
• Self-help, problem solving
• Develop peer and adult relationships
• Learn how to focus on tasks
• Express feelings in more appropriate ways
• Engage in play with peers
• Learn coping, how to self-regulate


Looking Backward, Thinking Forward

Occupational Therapy and ASD

• Historical perspective:
• Bagatell 2015
• Reviewed 115 articles published in 5 OT journals in the US (1980-2013)
• Results:
  – As years progressed:
    • Consistent increase in number of publications
    • A shift from a biomedical focus to an occupation focus
• Future research: build a stronger evidence base, develop occupation-based assessments and interventions, address needs of individuals with ASD and their families across the life span.
Occupational therapy practice guidelines for children and adolescents with challenges in sensory processing and sensory integration (SI) (Watling 2011)

- 194 articles were included in the review; 136 (70%) incorporated evidence at the highest levels
- Moderate evidence
  - **Touch pressure/deep pressure and massage to address touch aversion and improved responsiveness to sound in children with autism**

- Recommendation: Advanced training should include safe use of equipment and monitoring of the child's response to sensory stimulation across contexts and environments

Comorbidity of physical and motor problems in children with autism

- Matson et al 2011
- In addition to core symptoms of ASD, there are a number of other physical and motor conditions that co-occur at high rates
- Factors and behaviors that correlate highly with ASD:
  - premature birth, birth defects, gross and fine motor skills, and obesity.
  - Implications: assess and treat the core symptoms of ASD as well as the associated
PT and ASD

Grounding early intervention: physical therapy cannot just be about motor skills anymore

• Lobo et al 2013
• Goals of EI should be not ONLY to advance targeted motor skills, but ALSO to more broadly advance future abilities and meet the EI goal of maximizing children's learning potential
ASD: An Emerging Opportunity for Physical Therapy

- Mieres et al 2012
- A growing body of evidence from research ASD confirms a substantial sensory motor component to ASD
- Policy and practice lag behind in recognizing the potential contributions of PTs in research, practice, and education related to ASD
- Findings from research provide ample substantiation for PTs to join interdisciplinary efforts as researchers, scholars, educators, policy analysts, and advocates in ASD.
- PTs have the potential and ability to play a much greater role in ASD

Motor activity in children with autism: a review of current literature

- Downey 2012 (Peds PT Journal)
- PTs have expanded their role and visibility in the treatment of children with ASD
- Limitations in motor activity have not been considered in the assessments of core deficits of this population
  - PTs should be prepared to discuss and address these limitations in children with ASD
- 49 articles reviewed- suggestions further areas of research in physical therapy and autism
- Result: limitations in motor activity may be present in individuals with ASD, and further research is needed to identify specific functional limitations
Motor characteristics of young children referred for possible ASD

- Lane et al 2012
- 30 Children (mean age 31 months) referred to an ASD clinic demonstrated a mean delay of 6 months for gross motor skills and 8 months for fine motor skills
- Delay in fine and gross motor skills at an early age is a characteristic of infants referred to an ASD clinic

Current perspectives on motor functioning in infants, children, and adults with ASDs

- Bhat et al 2011 (PTJ)
- Motor impairments are present in children and adults with ASDs
  - gross motor, fine motor, postural control, and imitation/praxis impairments.
- Early motor delays within the first 2 years of life may contribute to the social impairments of children with ASDs
  - Early Intervention: Address motor impairments through timely assessments and effective interventions
- Current evidence: has limitations; and suggests clinical implications for motor assessment and interventions in children with ASDs
- Assessment: comprehensive motor evaluations are necessary for children with ASDs and infants at risk for ASDs
- Interventions: need to develop novel interventions grounded in movement and motor learning principles for children with autism
Sensory Pattern Contributions to Developmental Performance in Children With ASD

• Practitioners should consider how sensory processing in ASD both supports and limits children's ability to engage in social communication and learning opportunities

• Tomcheck et al 2015

Parents
Parent and family impact of ASD

- Karst et al 2012
- Decreased parenting efficacy
- Increased parenting stress
- Increase in mental and physical health problems compared with parents of both typically developing children and children with other developmental disorders
- Significant financial strain and time pressures
- High rates of divorce and lower overall family well-being
- Parent/family effects can reciprocally and negatively impact the diagnosed child and can even serve to diminish the positive effects of intervention
  - Most interventions for ASD are evaluated only in terms of child outcomes, ignoring parent and family factors that may have an influence on both the immediate and long-term effects of therapy

Factors related to parents’ choices of treatments for their children with ASDs

- Miller et al 2012
- Most popular sources of information: professionals in non-medical fields and autism books
- Less than 1/2 of surveyed parents reported choosing a scientifically supported treatment
- Most influential group of professionals: educators,
  - who tended to recommend treatments with less scientific support than treatments with scientific support
- Sources of influence for treatment choices most often came from popular media, anecdotal reports, and professional recommendations.
- Demographic factors (i.e. parent education, family income): had little relationship to treatment choices
Treatments for autism: Parental choices and perceptions of change

• Bowker 2011
• Survey, 970 parents of ASD children
• Most families adopt multiple treatment approaches.
• Parents were most likely to discontinue non-evidence based treatments when they did not see improvement in their child’s functioning.

The Need for More Effective Father Involvement in Early Autism Intervention

• A Systematic Review and Recommendations
• Flippin 2011
• Fathers of children with autism spectrum disorders (ASD) are underrepresented in research
  – Importance of father engagement with child
  – Stress management for father
  – Difference between mother and father in engagement and stress management
Father-Based In-Home Intervention on Perceived Stress and Family Dynamics in Parents of Children With Autism

• Bendixen et al 2011
• Fathers were taught an intervention designed to improve their child’s social reciprocity and communication; they then trained mothers.
• Results:
  – Fathers’ stress: reduced (not significantly, possibly d/t variability in scores); mothers’ stress scores: significantly reduced
  – Parenting styles were significantly different before and after intervention.
• Take Home: Interdisciplinary teams can work together to have a positive impact on the lives of families of children with autism

Early Intensive
Early Intensive Intervention for ASD

- Warren et al 2011
- 34 studies
- early intensive behavioral intervention resulted in some improvements in cognitive performance, language skills, and adaptive behavior skills in some young children with ASDs

Early intensive behavioral intervention (EIBI) for young children with ASD

- Is evidence that EIBI is an effective behavioral treatment for some children with ASD
- Limitations: most data from non-randomized studies versus RCTs
  - Reichow 2012
Yoga

- Preschoolers 20 minute yoga session 1x/wk, 6 wks
  - may have positive benefits for static balance, strength, bilateral coordination and flexibility.
  - Bubela et al 2014

- Existing literature: suggests yoga’s benefits across multiple age ranges
Yoga

• Yoga for adolescents with ASD: a curriculum with a sensory approach that incorporates coping strategies for stress and promotes physical fitness
  – Delgado-Bridges 2012
  – 9 lessons teaching breathing exercises and yoga poses for relaxation.
    • Concepts of feeling relaxed and anxious were defined and explained
    • Contains a variety of visual supports, including visual sentence strips
  – Findings: demonstrate the potential for yoga to
    • Reduce stress
    • Increase attending skills
    • Increase self-regulation skills
    • Decrease challenging behaviors
    • Increase ability to concentrate
    • Increase compliance behaviors
    • Decrease hyperactivity
    • Increase imitation skills

Yoga

• Get Ready to Learn (GRTL) classroom yoga program among children with ASD
  – 16 weeks, daily
  – Showed significant decreases in teacher ratings of maladaptive behavior (measured with the Aberrant Behavior Checklist)
    • Use of daily classroom wide yoga interventions has a significant impact on key classroom behaviors among children with ASD.
  – Koenig et al 2012
Virtual Reality

Virtual reality (VR) in pediatric neurorehab

- Wang et al 2011
- VR has the potential to address both cognitive and behavioral impairments
- VR has the potential to be an engaging reinforcer in treatments for children with ASD
- Recommendation- facilitate the generalization of novel skills outside the VR
Effectiveness of Work, Activities of Daily Living, Education, & Sleep Interventions for People With ASD

- A Systematic Review -23 studies
  - Weaver 2015
- Supported:
  - Use of mobile and tablet technologies for vocational skills
- Preliminary evidence supporting:
  - Daily yoga and brief exercise MAY improve classroom performance and behavior
  - Group physical activities MAY assist with school readiness
- Variable support for: ADL/IADL intervention
  - Thus: Cognitive Orientation to Occupational Performance, sensory integration, and contextual interventions may increase occupational performance
- Limited Evidence for:
  - use of technologies for IADLs was limited
  - effective interventions for feeding and eating issues

Aquatic
The effects of a PT aquatic program on children with ASD

- With PT: 10 week session, 60 minutes, 6 children
  - Plus 30 minutes per week of family time in pool with instruction
- Results:
  - Improvement in water skills
  - Could be used as a model for the development of transitional programs to encourage family participation in community activities with their child, especially in activities that are otherwise difficult for their child
- Ennis 2011

The efficacy of an aquatic program on physical fitness and aquatic skills in children with and without ASD

- Pan 2011
- 14 week
- Promotes improvements in motor skills and physical fitness components for children with ASD
Resources

- CDC: Autism Spectrum Disorder Podcast