

Learning Disabilities in Pediatric Practice: A DDPlus Update

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Definition of terms...

- Learning disorders – broad term includes I/DD, ASD, ADHD, DLD and specific learning disabilities (LDs)
- Distinguishing general LD from specific LDs
- LDs are disorders in one or more basic psychological processes involved in understanding or in using language/symbols (spoken or written), which may manifest itself in impaired ability to listen, think, speak, read, write, spell or do math.
- LD as a label for a variety of neurological conditions that interfere with a person's ability to store, process or produce information.
- Tension between Lumpers and Splitters
- LD often operationalized as significant discrepancy between intellectual abilities and achievement

Think about LD in the Initial Evaluation and Management of ADHD

- Identify relevant medical, family, social history
 - Identify concerns about developmental and learning difficulties
- (see Toolkit “Diagnosis and Management of Specific Learning Disabilities”)*
- Identify mental health concerns (history, observation, and useful tools, e.g., PSC, PHQ, SCARED, SCQ)
 - Request relevant school records, e.g., teacher narrative, psych testing
 - Address mental health concerns in primary care setting www.aap.org/mentalhealth
 - Evidence-based behavior therapy *(see Toolkit “ADHD Rx for Children <6”)*
 - Titrate dose of ADHD medication to optimize response
 - Determine if learning difficulty improves on follow-up

Why is Diagnosis and Management of LDs Important

- LD common in children with ADHD, important in differential diagnosis of ADHD
- 20% of children with ADHD have LD, and 20% of children with LD have ADHD
- Preschool children with speech/language delay are at high risk for LD in reading
- LD can be identified at any time in school years
- LD commonly presents with underachievement, attention problems, behavior problems and school failure
- Unrecognized LD leads to depression, truancy, risky behaviors and school dropout

What are the Common (and Validated) LDs?

- Dyslexia (reading disorders)
- Dysgraphia (writing disorders)
- Dyscalculia (math disorders)
- Language-based LD (speech/language impairment)
- Nonverbal LD (visuospatial impairment)
- Executive function impairment/ADHD
- Less well validated concepts include models of laterality (“left/right brain”) and central auditory processing dysfunction

Dyslexia

- Learning disability in word reading
- Difficulty with reading rate, fluency, decoding, sight word recognition and spelling
- Effects on comprehension
- Not usually due to visual-perceptual problems. See AAP policy statement <http://pediatrics.aappublications.org/content/124/2/837.abstract>
- Core deficits in phonological processing and fluency/rapid naming
- Common signs: reads very slowly, difficulty with phonics/decoding, reversals, dysphonetic spelling errors
- Marked discrepancy between listening comprehension and reading comprehension
- Strong genetic and neurobiological basis of dyslexia

Dysgraphia

- Learning disability in written expression – handwriting, mechanics, language and organization
- May struggle with legibility, spatial organization, spelling, and written language
- Common signs: awkward pencil grip, illegible handwriting, frustration with writing thoughts on paper
- Marked discrepancy between oral and written expression
- Associations with ADHD, high-functioning autism

Dyscalculia

- Learning disability in arithmetic and mathematics
- Difficulty recognizing numbers and symbols, understanding basic math concepts, remembering math facts, and solving problems
- The “language” of math
- Common signs: difficulty with sequencing, visual-spatial difficulties, delays in arithmetic procedures (e.g., adding, subtracting), weak quantitative concepts, e.g., money, time

Language-based LD

- Prevalence of speech sound disorder 4%, language impairment (LI) 5-8%
- Risk of LD in young children with speech delay – “rule of thirds”
- Frequently overlooked in schools, misdiagnosed as ASD
- Often missed in Hispanic children learning ESL
- Behavioral complications – aggression, conduct problems
- History of speech and language delays/language impairment
- Difficulty expressing thoughts verbally and in writing, poor reading and listening comprehension, difficulties with word problems in math
- Frustrated when speaking, weak vocabulary, word-finding difficulties
- Problems with content areas, second languages

Non-Verbal Learning Disability

- Weak non-verbal reasoning and perceptual-motor skills
- Children with NVLD may be overlooked - they may be articulate and do well verbally, yet they may struggle in math and writing
- Sometimes associated with Asperger syndrome (mild autism spectrum disorder)
- Common signs: lack of awareness of nonverbal cues such as facial expressions, social skills deficits, motor coordination problems
- Discrepancy between measures of verbal and non-verbal ability

Executive Dysfunction

- ADHD as an EF disorder (vs motivational disorder)
- 80% of children with ADHD have some evidence of executive dysfunction
- FASD also characterized by impaired EF
- Difficulty with planning, organization, saliency determination, self-monitoring, error detection
- Psychological testing demonstrates lack of inhibition, impairment in processing speed and working memory
- Value of continuous performance tests and other objective measures?

How are LDs diagnosed?

- No absolutely definitive tests – importance of “building a case”
- Medical evaluation – history, examination, neurodevelopmental assessment
- Qualitative assessment of attention, memory, language, visual processing, motor function
- Psychological evaluation - standardized measures of cognitive function (IQ score) and academic skills (also called *psycho-educational testing*)
- Role of neuropsychological testing?
- Standard scores - mean of 100 and SD of 15. Eligibility for special education rests on discrepancy between measured IQ and an area of academic skill
- Schools use dynamic process (Tier Process) that combines assessment and intervention in the classroom to determine a child’s educational needs

Interpreting psycho-educational testing

- An IQ score can be used to predict academic abilities
- IQ is only useful when the 5 index areas measured are developed evenly (Verbal, Visual Spatial, Reasoning, Processing Speed, Working Memory)
- If Processing Speed and Working Memory are significantly lower than other abilities, the General Ability Index becomes a more accurate score to predict abilities
- When there is uneven development it is more important to examine strengths and weaknesses, and how they effect the presenting academic challenges
- IQ tests are limited, and not always the best measure of a child's abilities (i.e. severe autism) they do not consider a person's inspiration, motivation, social ability or daily living skills

The Tier Process

- Response to Intervention (RTI) - multi-tiered model designed to combine assessment and intervention to maximize student behavior
- Schools identify students at risk for learning/behavior problems and monitor progress
- Every state is implementing the model at some level in their schools
- NC DPI will fully shift to RTI to identify LD in July 2020
- RTI is general education model encouraging collaboration with special ed teachers
- Special educators have a greater presence in the regular education classroom, co-plan lessons with general education teachers, and may perform interventions in the space of the regular classroom rather than in separate settings
- Progress monitoring is integral to the RTI framework.
- For more information on RTI, see National Center on RTI www.RTI4success.org

Individualized Education Plans (IEPs)

- IDEA mandates student enrolled in the [Exceptional Children's](#) (EC) program has an IEP
- Least restrictive environment
- IEPs describe plans to educate each EC student and accommodate student's disability
- IEPs specifies: needed services, modifications, alternate assessments, time spent in regular education and with non-disabled peers
- Annual and short term goals are recorded, and a way to measure progress is specified
- IEPs specify category of eligibility for special education services

Autism, Behavioral-Emotional Disabilities, Deaf-Blindness, Hearing Impairment, Multiple Disabilities, Intellectual Disabilities (Educable [EMD], Trainable [TMD], and Severely/Profoundly [S/PMD]), Orthopedic Impairment, Other Health Impairment, Specific Learning Disabilities, Speech/Language Impairment, Traumatic Brain Injury, Developmental Delay, and Visual Impairment

- Some of these may require a diagnosis letter or other documentation from the treating health care provider

First Steps in Evaluation

- Ask parents about family history of learning disabilities
- Consider general health, nutritional and behavioral issues that may be impacting learning
- Grade retention, excessive school absences, lack of “grit” and risk of dropout
- Consider vision and hearing impairments - test vision and hearing if clinically indicated
- Ask parents to obtain input from school, e.g., teacher, special education teacher, or principal
- Review samples of the child’s schoolwork, and engage the child in age appropriate reading, writing and arithmetic activities in the clinic
- Gather any pertinent records, health records, eye and hearing exams, grades/school testing, and developmental assessments
- Document suspected LD and request further evaluation by the school
- Consider referral to a psychologist or DBPeds subspecialist who evaluates children with LD
- For more information on the role of the pediatrician in the IEP process, see <http://pediatrics.aappublications.org/content/104/1/124.abstract?sid=67e3d235-5376-4c46-9127-4ad57d6fef8>

Best Practice – Management of LDs

- Dispelling myths and misconceptions – ‘laziness,’ ‘boredom,’ ‘seeing things backwards,’ overlays and Irlen lenses
- “Demystification” – helping the child and family to understand nature of the learning difficulty and steps needed to make progress. Demystification relieves shame, promotes self-esteem and positive coping strategies
- Direct remediation of LD - intensive 1-on-1 instruction with special ed teacher, encouragement from parents/teachers. Daily practice at home
- Progress needs to be monitored carefully to better understand what works best for each child
- Bypass strategies – ‘getting around’ LDs so child can progress with curriculum despite his/her challenges, e.g.,
 - child with dyslexia may benefit from extensive use of video/other media for learning
 - dysgraphia may need scribe/voice recognition software for written assignments
 - dyscalculia may need to use a calculator extensively

LD Information and Resources

- International Dyslexia Association www.InterDys.org
- Learning Disabilities Association of America www.LDANatl.org
- Learning Disabilities Online www.NCLD.org
- National Center on Response to Intervention www.RTI4success.org
- Learning Ally www.learningally.org
- Schwab Learning www.SchwabLearning.org

Glossary of terms

<http://www.ldonline.org/glossary#V>