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](http://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](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](http://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
- 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=67e3d235-5376-4c46-9127-4ad57d6fefd8
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