Developmental & Behavioral Pediatrics:
An Overview for the General Pediatrics Boards

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ABP Content Specs
Preventive Pediatrics/Well Child Care (8%)

• Normal Growth and Development
• Screening and Disease Prevention
• Anticipatory Guidance
• Nutrition
• Immunizations

ABP Content Specs
Mental and Behavioral Health (5%)

• Cognition, language, learning and neurodevelopment
  – Learning differences, ADHD, autism
• Psychologic/psychiatric disorders
  – Anxiety, depression, psychogenic disorders
Normal Growth and Development

Developmental Domains

- Motor
  - Gross Motor
  - Fine Motor
- Cognitive
- Language
  - Receptive Language
  - Expressive Language
- Social-Emotional
- Adaptive/Self-help Skills
- Play

Developmental Milestones

Full Term Infant

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor</td>
<td>Moro reflex</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Becomes alert with the sound of a bell or voice</td>
</tr>
<tr>
<td>Language</td>
<td></td>
</tr>
<tr>
<td>Social - Emotional</td>
<td>Fixates on face/object and briefly follows</td>
</tr>
</tbody>
</table>
### Developmental Milestones

#### 2 Months

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor</td>
<td>- Follows objects past mid-line</td>
</tr>
<tr>
<td></td>
<td>- Lifts head and shoulders off bed in prone position</td>
</tr>
<tr>
<td>Cognitive</td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>- Coos</td>
</tr>
<tr>
<td>Social - Emotional</td>
<td>- Social smile</td>
</tr>
</tbody>
</table>

#### 4 Months

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor</td>
<td>- No head lag when pulled to sit</td>
</tr>
<tr>
<td></td>
<td>- Bears weight on forearms while prone</td>
</tr>
<tr>
<td></td>
<td>- Rolls from prone to supine</td>
</tr>
<tr>
<td></td>
<td>- Bears weight while held standing</td>
</tr>
<tr>
<td>Cognitive</td>
<td>- Shakes rattle</td>
</tr>
<tr>
<td>Language</td>
<td>- Laughs out loud and squeals</td>
</tr>
<tr>
<td>Social - Emotional</td>
<td>- Imitates social interaction</td>
</tr>
</tbody>
</table>

#### 6 Months

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor</td>
<td>- Transfers object between hands</td>
</tr>
<tr>
<td></td>
<td>- Reaches for objects</td>
</tr>
<tr>
<td></td>
<td>- Sits with support</td>
</tr>
<tr>
<td></td>
<td>- Rolls over in both directions</td>
</tr>
<tr>
<td>Cognitive</td>
<td>- Turns directly to sound and voice</td>
</tr>
<tr>
<td>Language</td>
<td>- Babbles consonant sounds</td>
</tr>
<tr>
<td></td>
<td>- Imitates speech</td>
</tr>
<tr>
<td>Social - Emotional</td>
<td>- Smiles at mirror</td>
</tr>
</tbody>
</table>

4/15/2019

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## Developmental Milestones
### 9 Months

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motor</strong></td>
<td>- Bangs two blocks together</td>
</tr>
<tr>
<td></td>
<td>- Sits without support</td>
</tr>
<tr>
<td><strong>Cognitive</strong></td>
<td>- Turns when name is called</td>
</tr>
<tr>
<td></td>
<td>- Plays peek-a-boo</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>- Mama and Dada (non-specific)</td>
</tr>
<tr>
<td><strong>Social - Emotional</strong></td>
<td>- Stranger anxiety</td>
</tr>
<tr>
<td></td>
<td>- Recognizes common objects and people</td>
</tr>
</tbody>
</table>

### 12 Months

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motor</strong></td>
<td>- Pulls to stand and cruises</td>
</tr>
<tr>
<td></td>
<td>- Takes a few steps</td>
</tr>
<tr>
<td></td>
<td>- Fine pincer grasp</td>
</tr>
<tr>
<td></td>
<td>- Drinks from a cup held by another person</td>
</tr>
<tr>
<td><strong>Cognitive</strong></td>
<td>- Assists with dressing</td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td>- Mama and Dada specific + 1 additional word</td>
</tr>
<tr>
<td></td>
<td>- Follows 1 step command with gesture</td>
</tr>
<tr>
<td><strong>Social - Emotional</strong></td>
<td>- Points to get desired object</td>
</tr>
</tbody>
</table>
### Developmental Milestones

#### 15 Months

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Motor**         | - Scribbles with a crayon  
                   | - Puts cube into a cup  
                   | - Walks independently  
                   | - Stoops to floor and recovers to standing |
| **Cognitive**     | - Turns pages in book                                                      |
| **Language**      | - Speaks 3-6 additional words besides Mama and Dada  
                   | - Points to one body part  
                   | - Follows 1 step command without gesture |
| **Social - Emotional** | - Points at object to express interest                                      |

#### 18 Months

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Motor**         | - Self-feeding with a spoon  
                   | - Stacks 4 cube tower  
                   | - Throws ball  
                   | - Walks upstairs holding a hand  
                   | - Runs well |
| **Cognitive**     | - Imitates household chores like sweeping, vacuuming, etc.                 |
| **Language**      | - 10-20 word vocabulary  
                   | - Points to 3 body parts                                                  |
| **Social - Emotional** | - Engages in pretend play with others (e.g., tea party)                     |
### Developmental Milestones

**24 Months**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| Motor             | - Builds a tower of 6 cubes  
                        - Washes and dries hands  
                        - Removes clothing  
                        - Kicks a ball  
                        - Jumps with 2 feet |
| Cognitive         | - Sorts objects                                                              |
| Language          | - Greater than 50 word vocabulary  
                        - Starts using pronouns  
                        - Speech is 50% intelligible to a stranger  
                        - Follows 2 step command |
| Social - Emotional| - Parallel play                                                               |

**3 Year Old**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| Motor             | - Copies a circle  
                        - Puts on a t-shirt/shorts  
                        - Stacks a tower of 8 cubes  
                        - Stands on one foot for 1-2 seconds  
                        - Pedals tricycle  
                        - Climbs stairs, alternating feet |
| Cognitive         | - Knows the name of a friend  
                        - Understands basic adjectives (tired, hungry)  
                        - Knows age and gender |
| Language          | - Speaks with 5-8 word sentences  
                        - 75% of what is said is intelligible  
                        - Starts using "what" and "who" |
| Social - Emotional| - Imaginative play  
                        - Fears imaginary things |

**4 Year Old**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| Motor             | - Draws a 4-6 part person  
                        - Copies cross  
                        - Balances on 1 foot for 4 seconds  
                        - Hops |
| Cognitive         | - Dresses and brushes teeth without help  
                        - Names 4 colors |
| Language          | - Asks questions:  
                        - 100% intelligible to a stranger |
| Social - Emotional| - Cooperative play |

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Rule of 4’s

• Count to 4
• Recite a 4-word sentence
• Identify 4 primary colors
• Draw a 4-part person
• A stranger understands 4/4 (100%) of what they’re saying

Developmental Milestones
5 Year Old

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| Motor          | - Writes first name
|                | - Prepares a bowl for food
|                | - Skips, alternating feet                                                  |
| Cognitive      | - Plays board games
|                | - Counts 5 blocks                                                          |
|                | - Names all the primary colors                                             |
| Language       | - Defines words                                                             |
|                | - Retells story clearly                                                     |
|                | - Produces rhyming words                                                    |
| Social - Emotional | - Has group of friends                                                |

Block Stacking

<table>
<thead>
<tr>
<th>Age</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-15 months</td>
<td>2 block tower</td>
</tr>
<tr>
<td>18 months</td>
<td>4 block tower</td>
</tr>
<tr>
<td>24 months</td>
<td>6 block tower</td>
</tr>
<tr>
<td>30 months</td>
<td>8 block tower</td>
</tr>
<tr>
<td>3 years</td>
<td>3 block bridge</td>
</tr>
<tr>
<td>4 years</td>
<td>5 block gate</td>
</tr>
</tbody>
</table>
### Drawing Capabilities

<table>
<thead>
<tr>
<th>Age</th>
<th>What They Can Draw</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>○</td>
</tr>
<tr>
<td>4</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td>□</td>
</tr>
<tr>
<td>6</td>
<td>△</td>
</tr>
<tr>
<td>7</td>
<td>◻</td>
</tr>
</tbody>
</table>

### Feeding Skills

<table>
<thead>
<tr>
<th>Task</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses cup well</td>
<td>18 months</td>
</tr>
<tr>
<td>Uses spoon well</td>
<td>2 years</td>
</tr>
<tr>
<td>Uses fork well</td>
<td>4 years</td>
</tr>
</tbody>
</table>

### Play Skills

<table>
<thead>
<tr>
<th>Task</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbolic Play</td>
<td>15 - 18 mo</td>
</tr>
<tr>
<td>Parallel Play</td>
<td>24 mo</td>
</tr>
<tr>
<td>Fantasy Play</td>
<td>36 mo</td>
</tr>
<tr>
<td>Cooperative Play</td>
<td>3-4 yrs</td>
</tr>
</tbody>
</table>
Gross Motor Achievements

- Walking by 10–14 months
- Throwing and kicking a ball by 2 years
- Pedaling a tricycle by 3 years
- Hopping by 4 years

Fine Motor Achievements

- Fine pincer grasp by 12 months
- Completing simple form boards by 2 years
- Cutting a piece of paper by 3 years
- Copying geometric shapes by 4 years
- Writes name by 5 years

Speech & Language Achievements

- Speaking single words by 12 months
- Word combinations by 2 years
- Making clear, simple sentences by 3 years
- Making conversation by 3 or 4 years
Social/Self-Help Achievements

- Social smile by 2 months
- Self-feeding using cutlery by 3 years
- Being toilet-trained by 3½ years
- Playing cooperatively in groups by 3 years

Developmental Red Flags

- No head control by 3 months
- Fisting beyond 3-4 months
- Primitive reflexes persisting past 6 months
- <50 words / no 2-word phrases by 2 years
- Echolalia beyond 30 months
- Developmental regression at any age

ABP Content Specs
Preventive Pediatrics/Well Child Care

- Screening and disease prevention
Identifying Infants and Young Children with Developmental Disorders in the Medical Home: An Algorithm for Developmental Surveillance and Screening

Council Children with Disabilities
Section on Developmental Behavioral Pediatrics
Bright Futures Steering Committee
Medical Home Initiatives for Children with Special Needs Project Advisory Committee

Assessing Development in Primary Care: 2006 AAP Guidelines

• **Surveillance:**
  – Flexible, longitudinal, continuous, and cumulative process whereby knowledgeable health care professionals identify children who may have developmental problems
  – **Administer:** At every well-child visit

• **Screening:**
  – Use of a standardized assessment tool
  – **Administer:** Whenever surveillance raises a concern and at 9, 18, and 30 month well-child visits
    • Use of autism specific tool at 18 and 30 months

Surveillance

Comprehensive child development **surveillance** includes:
• Eliciting and attending to the parents’ concerns
• Maintaining a developmental history
• Making accurate and informed observations of the child
• Identifying the presence of risk and protective factors
• Documenting the process and findings
Developmental Screening and Surveillance

• What to do when concerns are present…
  – Conduct further evaluation to establish diagnosis and investigate for possible etiology
    • < 3 yrs: State early intervention program
    • > 3 years: refer to local school district
    • Medical evaluations/referrals as appropriate
    • Always check hearing when language delays are present
  – Initiate therapeutic interventions
  – Provide education and support to family, schedule close follow-up

ABP Content Specs Preventive Pediatrics/Well Child Care

• Anticipatory guidance

Colic

• Normal crying patterns of infants: average ~2.2 hours/day, peaks at 6 weeks
• Colic rule of 3’s: > 3 hrs/day, >3 days/week, for > 3 weeks
  – ~10-25% of infants experience colic
  – Crying bouts longer, more intense, more difficult to console, more sleep disruption
• Diagnosis made by history, organic cause found in < 5%
• No “proven” methods to treat colic, correct management is to reduce parental frustration by having another caretaker take over
  – Warn never to shake baby
  – Mothers at higher risk for post partum depression
• Typically stops after 3-4 months of age
Breath-holding Spells

- Typical presentation: anger, frustration, or infant in pain
  - Typically lasts < 1 minute
  - Involuntary reflex
- Occurs between ages 6-18 months
  - May occur up until age 4
  - ~5% of children
- Simple breath holding-spell: child becomes pale or cyanotic
- Complex breath holding-spell: child continues to cry until unconscious
  - Can progress to a hypoxic seizure with a postictal period
- Association between anemia and incidence of BHS
- Tx: Reassurance (iron if anemic)

Night Terrors

- Child wakes screaming, thrashing and exhibits distinctive physical findings (deep breathing, dilated pupils, sweating, etc.)
  - Child can become mobile, which can result in injury
- Occur during the first third of the night (non-REM sleep)
- If woken up, child will be “disoriented” with no recall of episode
- Typically in children ages 3-7
- Often family history is present
- May be associated with stress, lack of sleep, illness/fever or underlying sleep problems (OSA, RLS)
- If frequent and consistent timing, may wake up 15 minutes prior

Nightmares

- Occur during the last third of the night
- Child can be woken easily
- Child will recall the nightmare, often vividly
- Not mobile
Cognition, language, learning and neurodevelopment
  - Learning differences, ADHD, autism

CONSIDER:
- Hearing Impairment
- Communication Disorders
- Global Developmental Delay / Intellectual Disability
- Autism Spectrum Disorder
- Environmental Factors
- General Health
**Hearing Impairment**

- 1-6/1000 newborns
- 50% genetic
  - 30% syndromic (e.g., Waardenburg, Pendred, Usher)
  - 70% non-syndromic (e.g., connexin 26/GJB2)
    - 77% AR, 22%AD, 1% X-linked or mitoch.

**Hearing Impairment**

- 50% non-genetic:
  - TORCH infection (e.g., CMV)
  - Ear/craniofacial anomalies
  - Birth Weight < 1500 gm
  - Low Apgar Scores (0-3 at 5 min, 0-6 at 10 min)
  - Respiratory Distress/ Prolonged mechanical ventilation, hyperbilirubinemia requiring exchange transfusion
  - Bacterial meningitis/ Ototoxic meds

**Hearing Loss: Post-newborn**

- Recurrent or persistent OME
  – at least 3 mo
- Head trauma with fracture of temporal bone
- Congenital CMV
  – often asymptomatic, HL may show up in later childhood (median age 44 months)
- Childhood infectious diseases
  – e.g. meningitis, mumps, measles
Hearing Loss: Post-newborn

- Chemotherapy
- Structural anomalies:
  - e.g. Mondini malformation, enlarged vestibular aqueduct
- Neurodegenerative disorders
  - e.g. Hunter syndrome, demyelinating diseases (e.g. Friedreich ataxia, Charcot-Marie-Tooth)

Hearing Loss - Audiogram

- Newborn Hearing Screening:
  - Auditory brainstem response (ABR)
  - Otoacoustic emissions (OAE)
- Visual Reinforcement Audiometry (VRA):
  - 6 months – 2 years
  - Child turns to sound stimulus and is “rewarded” to reinforce listening behavior (e.g., puppet lights up)
  - Does not provide ear specific information
Age Appropriate Hearing Tests

- Conventional Pure Tone Audiometry Screen:
  - Appropriate for school age children who can cooperate with commands
  - Tests each ear independently (headphones)
  - Can differentiate between sensorineural and conductive hearing loss
  - “Conditioned Play Audiometry” may be used in preschool aged children where testing is modified and made into a game

Communication Disorders

DSM-5 Communication Disorders:
- Language Disorder
  - (expressive and mixed receptive-expressive)
- Speech Sound Disorder
  - (new name for phonological disorder)
- Childhood-onset Fluency Disorder (stuttering)
- Social (pragmatic) Communication Disorder

Communication Disorders

- Expressive Disorders
  - Disorders of morphology (form), semantics (word meaning), syntax (grammar), pragmatics (social use of language)
- Mixed Expressive/Receptive Disorders:
  - Above plus comprehension deficits
- Phonological Disorders
  - Disorders of articulation (motor movements), dyspraxias (motor planning)
  - Disorders of fluency (flow, rhythm)
  - Disorders of voice/resonance
Articulation Intelligibility
Rule of Quarters

<table>
<thead>
<tr>
<th>Age</th>
<th>% of spoken language that is intelligible to strangers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2/4 = 50% intelligible</td>
</tr>
<tr>
<td>3</td>
<td>3/4 = 75% intelligible</td>
</tr>
<tr>
<td>4</td>
<td>4/4 = 100% intelligible</td>
</tr>
</tbody>
</table>

Childhood-Onset Fluency Disorder
(“Stuttering”)

- Disturbance in fluency and time patterning of speech
- Begins age 2 ½ to 4, peak age 5
- Normal up to age 3 or 4
- Male:female ratio is 3-4:1
- 75% of preschoolers will stop
- Persistence beyond school age will require a workup

- Indications for evaluation:
  - Family history of stuttering
  - Persists 6 months or more
  - Presence of concomitant speech or language disorders
  - Secondary emotional distress
Language Delays: Key Points

- A hearing evaluation is always needed
- A bilingual home and a second child (including a boy) with sibs and parents speaking for the child do not explain language delays
- If language delays are suspected, referral for further evaluation and possible initiation of speech therapy is indicated
- If associated with other delays, think Global Developmental Delay
- If associated with poor social skills and repetitive behaviors, think Autism Spectrum Disorder

Global Developmental Delay/Intellectual Disability

- Global Developmental Delay (GDD):
  - Delays in multiple areas of development
  - Typically diagnosed based on administration of standardized developmental testing measure
  - Term typically used in younger children (<6)
Global Developmental Delay/Intellectual Disability

- Intellectual Disability (ID)
  - Previously “Mental Retardation”
  - Deficits in intellectual function (e.g., IQ < 70) and adaptive function (e.g., Vineland)
  - The predictive validity of IQ testing increases with age
  - Onset before age 18
  - Level of severity determined by adaptive functioning, not IQ score
  - Many individuals with mild ID (IQ 55-70) live independently, are employed, and get married

Lab Testing for GDD/ID

- For speech delay, always check hearing first
- For a newborn/infant, always check previous metabolic screening done by state
- For older children, serum lead level, TSH
- Genetic testing as history/exam indicates
  - Chromosomal microarray
  - Fragile X testing
- Metabolic screening is not recommended for asymptomatic children with idiopathic ID

Etiology of ID

- Prenatal (50-70%)
  - Genetic, CNS malformations, fetal compromise, infection, teratogens
- Perinatal (<10%)
  - HIE, prematurity
- Postnatal
  - Trauma, asphyxia, infection, toxins, vascular malformations, tumors, degenerative disease
- Environmental (additive)
  - Deprivation/malnutrition
- More severe forms, more likely to find definitive etiology
Tips for Clinical Cases

• If a child is ill or uncooperative, consider a "low score" invalid
• Chronic disease or recurrent hospitalizations can cause developmental delay
• For premature infants, continue age correction until 18-24 months of age

Autism Spectrum Disorder

• Pervasive Developmental Disorders
  - Autistic Disorder
  - Asperger Syndrome
  - Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS)
  - Rett Syndrome
  - Childhood Disintegrative Disorder

ASD: DSM-IV-TR vs. DSM-5

<table>
<thead>
<tr>
<th>DSM-IV-TR</th>
<th>DSM-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pervasive Developmental Disorders</td>
<td>Autism Spectrum Disorder</td>
</tr>
<tr>
<td>Autistic Disorder</td>
<td></td>
</tr>
<tr>
<td>Asperger Syndrome</td>
<td></td>
</tr>
<tr>
<td>Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS)</td>
<td></td>
</tr>
<tr>
<td>Rett Syndrome</td>
<td></td>
</tr>
<tr>
<td>Childhood Disintegrative Disorder</td>
<td></td>
</tr>
</tbody>
</table>
**Autism Spectrum Disorder (DSM-5)**

- Deficits in social communication and social interaction (3/3 criteria)
  - Deficits in social-emotional reciprocity
  - Deficits in non-verbal communicative behaviors
  - Deficits in developing, maintaining and understanding relationships

- Restricted, repetitive patterns of behavior (2/4 criteria)
  - Stereotyped or repetitive motor movements, use of objects, or speech
  - Insistence on sameness, inflexible adherence to routines
  - Highly restricted, fixated interests that are abnormal in intensity or focus
  - Hyper or hyporeactivity to sensory input or unusual sensory interests

**Red Flags for ASD**

- Lack of response to name
- Deficits in joint attention
- Lack of sharing interests
- Inappropriate eye gaze
- Lack of pointing
- Inappropriate play with toys
- Repetitive movements with body or objects
- Unusual sensory exploration
- Intolerance of changes in routines and schedules
- Developmental regression
Common Issues in Children with ASD

- Sleep problems
- GI and feeding problems
- Seizures
- Motor impairments
- Sensory issues
- Intellectual disability
- Learning problems
- Behavioral problems
  - Irritability
  - Aggression/Self-injury
  - Hyperactivity/Inattention
  - Elopement
- Mental health disorders
  - Anxiety
  - Depression
- Use of CAM treatments
- Transition planning
- Family stress

Autistic Spectrum Disorder: Key Points

- **Prevalence** (CDC surveillance year 2014): ~ 1/59
- **Male: Female** 4:1
- **Seen in association with:**
  - Seizure disorders, congenital infection, metabolic abnl (PKU)
  - Genetic Disorders (Fragile X, Angelman, Tuberous Sclerosis)
  - No proven association with vaccines (MMR, thimerosal)
- **Genetic Basis - Concordance rates:**
  - MZ twins (60-90%)
  - DZ twins, sibs (2-8%)
- **Etiology likely multi-factorial**

Learning Disorders
School Failure

• Learning Disorders: Average Intelligence
• "Slow Learner": Borderline Intelligence
• ADHD and Disruptive Behavior Disorders (Oppositional Defiant Disorder, Conduct Disorder)
• Mood and Anxiety Disorders
• Chronic Medical Illness
• Psychosocial stressors

Learning Disabilities (LD)

• A child can have a LD with normal or even superior intelligence
• Having a LD means there is a specific difficulty in one of the following areas:
  – Listening
  – Speaking
  – Reading
  – Writing
  – Reasoning
  – Math Skills

• A LD can often be compensated for in the early grades
• Testing profile will typically reveal a discrepancy between IQ and academic achievement testing
• A child who reverses the letters (e.g., b/d) or numbers (e.g., 6/9) may not have a LD. This can be a normal finding up to age 7
• LD may lead to anxiety/depression, substance abuse, school drop-out
• Educational interventions are critical (evidence based reading programs, academic support, classroom accommodations)
ADHD

Attention-Deficit/Hyperactivity Disorder

- Significant symptoms of Inattention and/or Impulsivity/Hyperactivity
- Several inattentive or hyperactive-impulsive symptoms present prior to age 12
- Several symptoms present in more than one setting (e.g., home and school)
- Clear evidence of clinically significant impairment in social, academic, or occupational functioning

ADHD Presentations

- Combined
- Predominantly Inattentive
- Predominantly Hyperactive-Impulsive
ADHD: Key Points

- Disorder of dopamine and norepinephrine systems in frontostriatal circuitry
- 5-11% of school-age children
- Male: female (6:1-3:1)
- Genetic Predisposition: 5-6 fold increase in first degree relatives
- Environmental Factors: e.g. head trauma, lead exposure, VLBW, prenatal teratogens (alcohol, tobacco)
- Symptoms persist into adulthood in 60-80%

ADHD: Evaluation

- Thorough history and exam, obtain home and school rating scales (e.g., Vanderbilt), no routine labs indicated
- Co-morbid Conditions/Alternative Diagnoses:
  - Learning Disorders
  - Anxiety, Mood Disorders
  - Oppositional Defiant Disorder
  - Conduct Disorder
  - Tic Disorders
  - Substance abuse disorders (adolescents)
  - Medical problems (sensory impairments, sleep disorder)

ADHD - Treatment

- Psychopharmacologic: stimulants = first line
  - Inhibit reuptake of dopamine and norepinephrine
  - Stimulant Side effects: appetite suppression, insomnia, headache, abdominal pain, growth suppression, irritability
  - Behavioral/Educational Interventions
  - IEP vs 504 plan, testing accommodations
  - Behavioral therapy to target oppositional behavior, social deficits, organizational/executive function deficits
• Psychologic/psychiatric disorders
  – Anxiety, depression, psychogenic disorders

• Mood Disorders:
  – e.g. Major Depressive Disorder, Dysthymic Disorder, Bipolar Disorder
  – DSM 5: “Disruptive Mood Dysregulation Disorder”
• Anxiety Disorders:
  – e.g. Generalized Anxiety Disorder, Separation Anxiety Disorder, Panic Disorder, Social Anxiety Disorder, School Phobia, Selective Mutism
• Obsessive-Compulsive Disorder
• Post-traumatic Stress Disorder

• Symptoms of depression, mood disorders:
  – Depressed or irritable mood
  – Changes in appetite/sleep
  – Decreased interest in activities
  – Suicidal ideation
• Symptoms of anxiety
  – Excessive worry
  – Avoidance (school, social events)
  – Physical symptoms (headache, stomach ache)
Evaluation and Treatment

- If concerning symptoms present, obtain further history, administer screening tool, refer as appropriate
- Treatment:
  - Psychotherapy (Cognitive Behavioral Therapy)
  - Medication (SSRI)

Sample Questions

An 8-year-old boy has an above-average intelligence quotient, but he is struggling in school and consistently brings home failing grades. He is generally well behaved, but he gets angry with the poor grades. He enjoys being with his friends and is active in after-school activities.

Of the following, the MOST appropriate intervention is to:

A. Have the parents set up a behavioral chart to encourage him to improve his grades
B. Reassure the parents that he is smart and schedule a follow-up appointment in 6 months
C. Refer him for psycho-educational evaluation
D. Refer him to a psychiatrist
E. Tell the parents to punish him if he continues to fail
The parents of an 18-month-old boy contact you after he has two episodes of holding his breath and tainting. Most recently, he was upset when he had to leave the playground and began to scream and cry. He turned blue while holding his breath prior to losing consciousness. He had a similar event 1 month ago when he cut his finger and saw that it was bleeding. The anxious parents ask what they should do.

Of the following, the MOST appropriate intervention is to
A. Obtain a complete blood count
B. Pick up the child quickly and comfort him when he starts to cry
C. Reassure the parents that this is a benign event
D. Refer the child for behavioral therapy
E. Refer the child for electroencephalography

A 7-year-old girl is having behavioral problems in school. Her academic skills are strong, but she is impulsive and has difficulty staying on task and remaining quiet while the teacher is talking. When the students line up, she pushes to be at the head of the line. At home, her parents have problems getting her to comply with their requests. She needs frequent reminders to sit and do her homework.

Of the following, the MOST appropriate next step is to
A. Begin a trial of stimulant medication
B. Complete Vanderbilt questionnaires
C. Have the parents institute a token economy behavior plan
D. Obtain a thyroid function test
E. Refer the child for psychoeducational testing

A 3-year-old child is showing evidence of significant delay in his expressive and receptive language; other aspects of his development are normal. His hearing has been tested and is normal. You review the situation with his mother.

Of the following, the MOST appropriate action is to
A. Have the boy evaluated for an augmented communication device
B. Have the boy return for a follow-up visit in 6 months
C. Have the mother begin to teach him simple signs to minimize his frustration
D. Refer the boy for a psychoeducational evaluation
E. Refer the boy for speech-language evaluation and therapy as indicated
During a health supervision visit, a boy calls to his father by saying “dada.” His mother enters the room holding a snack. The child reaches out to her and cries loudly “mama.” When the boy notices his mother is holding a banana, he smiles and says “nana.” His mother picks him up and offers him the banana. You inquire if he is saying any other words. His mother replies “not yet.”

Of the following, these findings are MOST expected for a typically developing child who is:

A. 9 months old  
B. 12 months old  
C. 15 months old  
D. 18 months old  
E. 24 months old

A 6-yr is having problems in school. As part of the eval for special education services, the school performed a full individual evaluation. On a standardized aptitude test, his IQ score is 60. His birth history, PMH, and PEx are unremarkable. Hearing and vision screen are normal. Parents report the patient had some early language developmental delay, but deny any regression of milestones. There is a FHx of some adults with learning difficulties.

Of the following tests, the BEST next step is to perform

A. Electroencephalogram  
B. Genetic testing  
C. Magnetic resonance imaging of the brain  
D. Serum amino acids  
E. Urine for cytomegalovirus

A child can stoop and pick up a toy, drink from a cup, make a stack of 2 blocks, and follow one-step commands without gestures.

Of the following, the age that BEST describes this child’s developmental abilities is:

A. 12 months old  
B. 15 months old  
C. 18 months old  
D. 21 months old  
E. 24 months old
A 9-month-old girl can sit without support, feed herself with her fingers, play peek-a-boo, wave bye-bye, and uses a scissor-like grasp to pick up small objects.

Of the following, the MOST likely additional task she can accomplish is to:

A. Climb onto furniture  
B. Crawl up stairs  
C. Bang two blocks together  
D. Release a block into a cup  
E. Walk independently

The parents of a 2-year-old boy are concerned because he speaks in 2- to 3-word utterances and they can only understand about 50% of what he says. He is noted to stutter occasionally when he is trying to get his point across.

Of the following, you are MOST likely to:

A. Provide reassurance to the parents  
B. Refer the child for audiologic testing  
C. Refer the child for developmental testing  
D. Refer the child for speech therapy  
E. Refer the child to otolaryngology to evaluate for possible ankyloglossia

A 3-year-old boy enters the examination room. His mother calls his name and he does not respond. He grabs your hand and puts it on a bottle of bubbles. His mother hands him a toy car that he turns over and begins to spin the wheels while saying the sound "eeh." He then begins to jump up and down while looking out the window. According to his developmental history, he is speaking 5 single words on an inconsistent basis. He will primarily repeat words in a nonfunctional manner. He began walking at age 12 months.

Of the following, the MOST likely diagnosis for this boy is:

A. Attention-deficit/hyperactivity disorder  
B. Autism spectrum disorder  
C. Cerebral palsy  
D. Epilepsy  
E. Language delay
An 8 year old second grade boy was referred for evaluation due to academic difficulties. His psychological and psychoeducational evaluations revealed:

WISC-IV: Full scale IQ = 99, Verbal Comprehension = 85, Perceptual Reasoning = 105, Working Memory = 110, Processing Speed = 108

WIAT-2: Word reading = 92, Reading comprehension = 81, Numerical operations = 98, Math reasoning = 79

The child’s likely diagnosis is:

A. Borderline Intellectual Functioning
B. Learning Disability
C. Attention-deficit/Hyperactivity Disorder
D. Auditory Processing Disorder

Thank you and good luck!