Prefatory Comment on Pediatric Subspecialty Training in Child Development/Developmental Disabilities

- Developmental and Behavioral Pediatrics:
  - 3 years of pediatrics followed by
  - 3 year pediatric fellowship

- Neurodevelopmental Disabilities:
  - 2 years of pediatrics followed by
  - 4 year integrated program including
    - Adult neurology (1 year)
    - Child neurology (1 year)
    - Developmental disabilities (1 year)
    - Neurosciences (1 year)

GOALS

- The content of Neurodevelopmental Disabilities (NDD)
- Basic steps in the screening and management of NDD

Overview

SPECTRUM of NDD vs. CONTINUUM of NDD

The way in which each specific disability category differs from the other disability categories
SPECTRUM of NDD

- cognitive: Mental Retardation (MR; intellectual deficiency or cognitive impairment) to slow learner
- motor: Cerebral Palsy (CP) to Developmental Coordination Disorder (DCD)
- language: aphasia to slow talker (communication disorder; CD)
- autistic: spectrum disorder (ASD) learning disabilities (LD)
- attention: deficit hyperactivity disorder (ADHD)
- sensory: visual or auditory impairment

The Continuum Of Developmental Disabilities

- The way in which each disability resembles all other neurodevelopmental disabilities
  Their "family resemblance"

Continuum

- Cognitive delay
- Motor delay/clumsiness
- Fine motor coordination problems
- Language processing problems
- Attentional deficits
- Perceptual motor deficits
- Socialization difficulties

Associated Deficits = Comorbidity

- Associated deficits
  Incomplete rather than incorrect diagnoses

Maturational Approach

- Milestones
  - Gesellian
  - Orderly and sequential
- Streams of development
  - No single IQ/DQ
**Infants and Toddlers**

**Streams of Development**
- Language: expressive ("says") and receptive ("understands")
- Motor: gross (posture and locomotion) and fine (eye-hand coordination, drawing/writing)
- Non-verbal problem solving: puzzles, gestalt
- Self-help/activities of daily living (ADL)
- Social interaction

**Three Developmental Processes**
- Delay
- Dissociation
- Deviance

**Patternological Diagnosis**

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**Screening Tests**
- Capute Scales: CLAMS for early language
- Denver Developmental Screening Test (3-5 years)
- Draw-A-Person (DAP) test (>3 yrs)
  - Kinetic Family Drawing (KFD) test (>7 yrs)

**Development is not that different from growth**

The obvious is most frequently what is missed
Developmental Delay
- Mild delays
- More significant delays
  - MR
  - Specific syndromes/etiologies

School Age Children
- Verbal skills: reading and reading based academics, spoken language
- Non-verbal skills: mathematics, drawing, music, art
- Tests: report cards (with teacher notations), standardized achievement tests (Iowa, CAT, etc), individual assessments

LEARNING DISABILITIES
- Left-brain: language based (reading, spelling)
- Right-brain: non-verbal (mathematics, handwriting, attention)
- Mixed processing disorders

School problems
- Acting out behavior
- Somatization
- Struggling in school
- Failing in school

SCHOOL FAILURE
- MR
- LD
- ADHD
- CD
- ASD
- Hearing
- Vision
- Chronic illness
- Brain tumor
- Depression
- Other psychiatric diagnosis
- Child abuse
- Child sexual abuse

Overlap between LD and ADHD
Approximately (at least) 50%
Differentiating LD and ADHD

- Consistently does poorly in specific subjects day after day
- Performs erratically: does well in most subjects on certain days and does poorly in most subjects on other days
- Differences between performance in large class versus in one-to-one setting
- Differences between class test results and standardized achievement batteries
- Error pattern

School Failure

There is no diagnosable reason for school failure (or struggling with school work) for which retention (being left back) is the specific and correct response. For each and every reason (etiology or diagnosis) for school failure there is a specific intervention that is not retention (or social promotion).

Therefore, no child should be left behind

No child should ever be left back or repeat a grade

Treatments for NDD

- Parent education; parent support groups
- Special education placement and discipline support services
- Medication

Resources

- Early Intervention (Birth to Three programs in every state (assessment and treatment free)
- Early Childhood Special Education for children 3 to 5 years
- Public School System • IEP for MR, LD, CD • 504 plan functional behavioral assessment

Referrals

- Developmental pediatrics
- Behavioral pediatrics
- Child Neurology
- Child and Adolescent Psychiatry
- Child Psychology
- Other Disciplines • PT, OT, SLP, SE, Nursing, Nutrition, Audiology, Social Work, Dentistry
Dysmorphology

- The presence of minor dysmorphic features suggests an increased risk for the presence or later occurrence of developmental or behavioral problems.
- The presence of minor dysmorphic features supports a CNS etiology for any existing developmental or behavioral problems.

Table 9. Minor physical anomalies

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<th>No.</th>
<th>Feature</th>
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<tr>
<td>1</td>
<td>Fine hair</td>
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<td>2</td>
<td>Downward-sloping forehead</td>
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<td>3</td>
<td>Head circumference &gt; 150°</td>
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<td>4</td>
<td>Epicanthus</td>
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<td>5</td>
<td>Nystagmus</td>
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<td>6</td>
<td>Cleft lip</td>
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<td>Anomalous eye movement</td>
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<tr>
<td>8</td>
<td>Micrognathia</td>
<td>-</td>
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<tr>
<td>9</td>
<td>Syndactyly</td>
<td>-</td>
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<tr>
<td>10</td>
<td>Cardiovascular defects</td>
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INTRODUCTION TO DEVELOPMENTAL PEDIATRICS