Autism Screening

Core Seminar
February 2, 2009
Katherine A. TeKolste, MD
Developmental Pediatrician
UW LEND Expansion Grant

Autism
DSM IV

Social Impairments ≥ 2
Communication impairments ≥ 1

Onset before 3 y
≥ 6 impairments in all

Social Interaction Qualitative Impairments
✓ Impaired non-verbal behavior (e.g. eye contact)
✓ Failure to develop peer relationships
✓ Lack of seeking to share enjoyment or interests
✓ Lack of social or emotional reciprocity

(≥2)

Repetitive behaviors Restricted Interests ≥ 1
**Qualitative Impairment in Communication**

- Delay in or lack of spoken language
- If speech is present, lack of ability to initiate or sustain conversation
- Stereotyped & repetitive/idosyncratic language
- Lack of pretend/social imitative play

(≥1)

**Restricted Interests Repetitive Behavior**

- Preoccupation with restricted interest
- Inflexible adherence to non-functional routines or rituals
- Stereotyped and repetitive motor mannerisms (e.g. hand flapping)
- Persistent preoccupation with parts of objects

(≥1)

**Regression**

- Typically between 12-24 months
- Loss is usually gradual, can fluctuate, can occur with atypical development
- Occurs in 30%

Current average age at diagnosis is 3.5 to 4 years old


**Parental Concerns**

- 80% developed concerns by 24 months of age
- Average age of first concern – 18 months
  - Before 18 months – 56%
  - Before 11 months – 20%

When can Autism be diagnosed?

- Diagnosis before 2 yo appear to have short-term stability at age 3
- Mounting evidence that a diagnosis of ASD can be made reliably by 2 yo and is stable over time

Why diagnose early?

- A substantial subset of children with ASDs - marked progress during the period that they receive intensive EI
- Nearly all children with ASDs appear to show some benefit
- Children with ASD who begin treatment before age 3-3.5 years make the greatest gains with intervention

Developmental Surveillance & Screening

- Informal, yet structured, monitoring of developmental achievements
- Interpret in light of environmental, social and medical factors
- Multiple sources of information, may include screening
- Periodic, not one point in time
- Brief assessment using standardized instrument to screen development
  - General Screen
    - Multi-domain
  - Focused Screen
    - Single domain
**Surveillance:**

**Milestones (sign posts)**

**Everyone!**

- CDC Act Early
- Talaris Institute – Timelines
  - [http://www.talaris.org/timeline.htm](http://www.talaris.org/timeline.htm)
- Zero to Three
- AAP
  - [http://www.aap.org/healthtopics/stages.cfm](http://www.aap.org/healthtopics/stages.cfm)
- Washington State
  - [Child Profile](http://www.chilprofile.org)
  - [Child Health Notes](http://www.medicalhome.org/leadership/chn.cfm)
  - [Medical Home](http://www.medicalhome.org)

**Red Flags:**

**General Development**

**Parents**

- CDC Act Early
- Talaris Institute – Timelines
- Zero to Three
- AAP
- Washington State

**Primary Care Providers**

- CDC Act Early
- Talaris Institute – Timelines
- Zero to Three
- AAP
- Washington State

**Red Flags’ Checklists:**

- Kids Get Care
- WA State Well Child Exam Forms
- ‘Health watch’ items-AAP checklists

- ‘Health watch’ items-AAP checklists

- Persistence of unusual behaviors
-設計 maintenance of unusual behaviors
- Social and emotional issues
- Health Promoters
- Primary Care Providers

**AAP Recommends**

- General developmental screening tool:
  - All children
  - 9 m, 18m and 30 m/24m health supervision visits
  - At any time surveillance raises concern
**Developmental Screening**

Tool recommendations:
- AAP Policy Statement
- Autism Practice Parameter - AAP endorsed, American Academy of Neurology
- ABCD Grant Developmental Screening Recs - WA state
- Oregon ABCD Developmental Surveillance and Screening Initiative
- Others - IL, NC...

**Screening Instruments**

<table>
<thead>
<tr>
<th>Test:</th>
<th>Competencies measured:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages &amp; Stages Questionnaires (ASQ)</td>
<td>Communication, fine motor, gross motor, personal-social, problem-solving</td>
</tr>
<tr>
<td>Parent Evaluation of Developmental Status (PEDS)</td>
<td>Parents' concerns about learning, development, and behavior</td>
</tr>
<tr>
<td>Child Development Inventories (CDI)</td>
<td>Language, motor, cognitive, social, behavior</td>
</tr>
</tbody>
</table>

- **All** have good sensitivity (identify kids with problems), specificity (doesn't over-identify kids without problems), validity and reliability.

**Screening Instruments**

<table>
<thead>
<tr>
<th>Who</th>
<th>Age of child</th>
<th>Time to complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASQ II (III) Parent</td>
<td>4-60 mos</td>
<td>10-20 min</td>
</tr>
<tr>
<td>PEDS Parent</td>
<td>0-8 yr</td>
<td>2 min +</td>
</tr>
<tr>
<td>PEDS-DM</td>
<td>Parent</td>
<td>0-72 mos</td>
</tr>
</tbody>
</table>
Accuracy of Parental Report

- Poor on RECALL of milestones
- Accurate on REPORT of current skills
  - Parental concerns accurate:
    - Speech and language
    - Fine motor
    - General delay
  - Parental concerns less accurate:
    - Self-help skills, behavior

Parent’s Evaluation of Developmental Status (PEDS)

- Written at 5th grade reading level
- English, Spanish, Vietnamese
- Can be completed by interview
- Forms must be ordered from publisher

Parent’s Evaluation of Developmental Status (PEDS)

- ‘Please list any concerns about your child’s learning, development, and behavior.’
- ‘Do you have any concerns about how your child:
  - Talks and makes speech sounds?
  - Understands what you say?
  - Uses hands and fingers to do things?
  - Uses arms and legs
  - Behaves?
  - Gets along with others?
  - Is learning to do things for him/herself?
  - Is learning preschool or school skills?
  - Other?’
**PEDS**

- Sorts children into high, moderate or low risk for developmental problem
- Identifies when to screen, refer, counsel or monitor

**PEDS Response Form**

From the PEDS website

**PEDS Score and Interpretation Form**

---
• 6-8 items for each age (based on the Brigance)
• Each item taps a different developmental domain (1 item in each domain)
• Fine motor, gross motor, expressive language, receptive language, self-help, social-emotional
• For older children, reading and math
• Respond: No, a little, yes
**Ages and Stages Questionnaire**

- 6 items in each of 5 domains
  - Communication, gross motor, fine motor, problem-solving and personal-social
  - Helpful illustrations

- 5 open-ended questions

**ASQ Scoring**

- 10 points for ‘yes’
- 5 points for ‘sometimes’
- 0 points for ‘not yet’

Total the answers to each question in each category.
**Ages and Stages Questionnaire - 3**

- Standardized on 12,695 children
  - Specificity 0.86; sensitivity 0.85
- Parent completed – 10 minutes
  - 2-3 minutes to score
  - Parents enjoy learning from the forms
- Can photocopy or print from CD-ROM
- Questionnaires for use from 1 to 66 months of age
- Activity suggestions included

**ASQ-SE**

- Age range covered: 6–60 months
- Personal-social screen: Self-regulation, compliance, communication, adaptive functioning, autonomy, affect, and interaction with people
- 8 questionnaires for use at 6, 12, 18, 24, 30, 36, 48, and 60 months & corresponding scoring sheets
- 10–15 minutes to complete 1-3 minutes to score
- Languages: English and Spanish

**Child Development Inventories**

- 3 screens for children birth to 6 years of age
  - Infant Development Inventory – 0-18 mos
  - Early Childhood Development Inventory – 18-36 mos
  - Preschool Development Inventory – 36-72 mos
- Each has 60 items – yes/no responses
- 10 minutes to complete; 2 min scoring
- Written at 9th Grade level
**General Developmental Screeners – Autism?**

- ASQ – retrospective research shows the ASQ accurately identified for further assessment children who were later found to have autism
- ASQ-3 – has new questions on behavior and expressive language highlighting parent concerns that point to autism

**Red Flags – Autism**

**First 2 years:**

- **6-12 months**
  - Infreq looking others faces
  - Gaze aversion/poor eye contact
  - Delayed babbling
  - Absent facial expression
  - Social smiling
  - Delayed social smile
  - Infreq vocalizations
  - Abnormal pattern focus/attn

- **9-12 months**
  - ↓ orienting to name
  - Seeks attn. environmental sounds > human voice
  - ↓ gaze monitoring/shift
  - ↓ conjoint attn – follow point
  - ↓ ant. arousal to stimul
  - Infreq babbling

- **12-18 months**
  - ↓ or rare pointing to share
  - ↓ or rare showing to share
  - Delayed S&L
  - Ø spont. words
  - Ø understand ‘no’
  - Ø follow simple command
  - Perseverative play
  - Does not wave ‘Bye-bye’

**Red Flags: Autism Risk Factors**

- Sibling with an ASD
- Observer Concerns:
  - Parent
  - Caregiver
  - Clinician

If ≥ 2 risk factors are present, refer to:
1. Specialist(s) experienced in autism diagnosis
2. Audiologist
3. Early Intervention Program

If 1 risk factor present:
Administer ASD-specific screening tool.
If no risk factors: Routine
ASD screens - 18 and 24 m
**Autism Screening Tools (Level 1)**

- **M-CHAT (Modified Checklist for Autism in Toddlers)**
  - 16-48 months, 5-10 min parent questionnaire
  - In public domain
- **Pervasive Developmental Disorders Screening Test-II, Primary Care Screener (PDDST-II PCS)**
  - 18-48 months, 10-15 min parent questionnaire
  - Must purchase
- **CSBS-DP (Communication and Symbolic Behavior Scales Developmental Profile)**
  - 6-24 months with social or communication deficits
  - INFANT TODDLER CHECKLIST portion
  - Effective as broadband screener in general population to detect infants 9 to 24 m with communication delays, including ASD
  - Under 18 m – ?? Infant Toddler Checklist

---

**M-CHAT: 23 Item Checklist**

**Modified Checklist for Autism in Toddlers (M-CHAT)**

*University of Connecticut Department of Psychology*

Please fill out the following about how your child usually is. Please try to answer every question. If the behavior is rare (e.g., you’ve seen it once or twice), please answer as if the child does not do it.

1. Does your child enjoy being swung, bounced on your knee, etc.?  
   - Yes  
   - No
2. Does your child take an interest in other children?  
   - Yes  
   - No
3. Does your child like climbing on things, such as up stairs?  
   - Yes  
   - No
4. Does your child enjoy playing peek-a-boo/hide-and-seek?  
   - Yes  
   - No
5. Does your child ever pretend, for example, to talk on the phone or take care of a doll or pretend other things?  
   - Yes  
   - No
6. Does your child ever use his index finger to point, to ask for something?  
   - Yes  
   - No

---

**M-CHAT Scoring**

- A child fails the checklist when 2 or more critical items are failed OR when any three items are failed.
- Yes/no answers convert to pass/fail responses.
- List with the ‘fail’ responses for each item on the M-CHAT and bold capitalized ‘critical’ items.
**M-CHAT Follow-up Interview**

- Only administer questions failed on the M-CHAT
- Decreases over-identification of children without problems (increases specificity)

**M-CHAT Translations available for download:**

<table>
<thead>
<tr>
<th>Language</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
<td>Bangla</td>
</tr>
<tr>
<td>Chinese</td>
<td>Dutch</td>
</tr>
<tr>
<td>French</td>
<td>French Canadian</td>
</tr>
<tr>
<td>German</td>
<td>Greek</td>
</tr>
<tr>
<td>Gujarati</td>
<td>Icelandic</td>
</tr>
<tr>
<td>Japanese</td>
<td>Japanese with Illustrations</td>
</tr>
<tr>
<td>Kurdish</td>
<td>Portuguese – Brazil</td>
</tr>
<tr>
<td>Portuguese – Portugal</td>
<td>Sinhala</td>
</tr>
<tr>
<td>Somali</td>
<td>Spanish – Western hemisphere</td>
</tr>
<tr>
<td>Spanish – Spain</td>
<td>Tamil</td>
</tr>
<tr>
<td>Turkish</td>
<td>Vietnamese</td>
</tr>
</tbody>
</table>

**CSBS-DP**

- Infant Toddler Checklist (6-24m)
  - May be particularly useful for child under 18 months
  - Social and communication skills

AAP Recommendations

- Level 2 Autism Screeners (help to differentiate at-risk for autism vs other developmental d/o (e.g. GDD, specific language impairment)
  - Primarily used in EI programs or developmental clinics serving children with wide variety of developmental problems
  - Need further study before any one recommended over others

AAP Policy: Johnson CP et al. 2007

Level 2 Autism Screeners

- Asperger Syndrome Diagnostic Scale
- Autism Behavior Checklist
- Autism Quotient – Adolescent version
- Autism Spectrum Screening Questionnaire
- Childhood Autism Rating Scale
- Gilliam Asperger’s Disorder Scale
- Gilliam Autism Rating Scale (2nd Ed.)
- Krug Asperger’s Disorder Index
- Pervasive Developmental Disorders Screening Test-II, Developmental Clinic Screener
- Screening Tool for Autism in Two-Year-Olds
- Social Communication Questionnaire
  Formerly the Autism Screening Questionnaire (ASQ)
  4y and up
  Based on the ADI

AAP Policy (Nov 2007)

Trainees

- DB Peds
- Psychology
- Nursing
- General Peds/FM
- Parent/Family
- Special Ed
- SW
- SLP
- OT/PT
- Nutrition
- Audiology
- Public Health
- Dental
Roles for trainees and health care professionals:

- Raising concerns with parents/caretakers and suggesting follow up
- Referral to follow up resources
- Communication with referral source
- Documentation of concerns
- Information and support resources
- Diagnosis??

Current Instruments to Diagnose Autism

- Autism Diagnostic Interview – Revised (ADI-R)
- Autism Diagnostic Observation Schedule – Generic (ADOS-G)
- Childhood Autism Rating Scale (CARS)
- Diagnostic Interview for Social and Communication Disorders (DISCO)
- DSM-IV Criteria
- The ICD-10 Classification of Mental and Behavioral Disorders (ICD-10) criteria

NIMH, CDC, AACAP, …