ASD
Screening, Referral, Detection

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ASD: Key Domains

• Qualitative impairment in reciprocal social interaction

• Qualitative impairment in communication

• Restricted, repetitive, and stereotyped patterns of behavior, interests, and other activities
ASD subtypes

• **Essential**: meet criteria for ASD with no coexisting medical condition known to cause autism.
  – Most ASD.
  – Less likely to have GDD/Intellectual disabilities
  – Less likely to have atypical physical features or lab/imaging findings
  – Boys > girls

• **Complex**: have an identifiable syndrome or medical disorder known to be associated with autism. Less than 10% of ASD.
  – Boys = girls
Complex ASD

- Fragile X
- Tuberous Sclerosis
- Phenylketonuria
- Fetal Alcohol Syndrome
- Angelman Syndrome
- Rett Syndrome
- Smith-Lemli-Opitz Syndrome
Myths about ASD

• The child with ASD...
  – Is not affectionate
  – Does not form attachments
  – Never makes eye contact
  – Does not communicate
  – Engages in self-stimulatory and repetitive behaviors most of the time

• All children with repetitive behaviors have autism
• All children with delayed language and/or poor social skills have autism
Early Detection/Early Intervention

• Goal of general developmental and ASD screening is **EARLY DETECTION**
• Goal of early detection is enrollment in **EARLY INTERVENTION** (EI)
• EI systems now only catch about 20% of infants and toddlers with disabilities so screening high risk samples may miss the majority of children with ASD
The value of early identification

- ASD is presumably present at birth, with onset of symptoms before 36 months
- Accurate diagnosis possible at 18-24 months, maybe earlier (Sib studies)
- Parents first voice concerns around 18 months or earlier, but diagnosis is typically not until 3 years or older
- Huge potential benefits of early treatment
How early can children with ASD be identified?

• Home movies research 12-18 months *(Palomo et al, 2006)*
  – Less pointing to share an interest
  – Less eye contact as part of an integrated communicative act
  – Less communicative babbling, lack of response to name
  – Experts unable to detect autism in children <12 months
  – Confirms the reality of regression subset (33-39%)

• Research on baby siblings *(Mitchell et al, 2006)*
  – By 12 months, differences in gesture and receptive language
  – 15 of 97 siblings had ASD diagnosed by age 2 years
ASD Red Flags

• 1st year
  – Doesn’t turn when name called but responds to noise

• 2nd year
  – No pointing to request or show things
  – Regression
  – In his “own world”
  – No sharing interest
  – Uses caregiver hands as tool
  – Lack of appropriate gaze

• Later onset
  – Unusual prosidy
  – Repetitive movements or postures

Adapted from Wetherby and Woods (2003)
esi.fsu.edu
AAP Policy Statement 2001

• Developmental surveillance is key to detection
• Use standardized screening tools at periodic intervals to increase accuracy
• Actively seek parental concerns about development
• *Create links with available resources in community*
Surveillance
Screening
Diagnosis
Assessment
4 Surveillance Factors

Surveillance factors
1. Sibling with ASD
2. Parent concern, ?inconsistent hearing, ?unusual responsiveness
3. Other caregiver concern
4. Pediatrician (or other professional) concern
Surveillance factor score 2 or more

2: Perform Surveillance
Score 1 for Each Risk Factor:
- Sibling with ASD
- Parental Concern
- Other Caregiver Concern
- Pediatrician Concern

8: 
1. Provide Parental Education
2. Simultaneously Refer for:
   a. Comprehensive ASD Evaluation
   b. Early Intervention/Early Childhood Education Services
   c. Audiologic Evaluation
3. Schedule Follow-Up Visit
4. Re-enter Algorithm at 1b
Surveillance factor score 1

Is the child > 18 mo

- no: Evaluate social/communication skills
- yes: Administer specific ASD Screening tool

Are the results positive or concerning?

- no:
  - 1. Provide parent education
  - 2. Schedule extra visit within 1 month

- yes:
  - 1. Provide parent education
  - 2. Refer for Comprehensive ASD Evaluation
  - 3. Refer for EI/Early Childhood Educational services
  - 4. Refer for Audiology Evaluation
Surveillance score 0

Is this an 18- or 24-month visit?

Administer specific ASD Screening tool

Are the results positive or concerning?

- no
  - Schedule next followup

- yes
  - 1. Provide parent education
  - 2. Refer for Comprehensive ASD Evaluation
  - 3. Refer for EI/Early Childhood Educational services
  - 4. Refer for Audiology Evaluation
### What are the Screening Tools?

**Questionnaires**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Age Range</th>
<th>Comments/Notes</th>
</tr>
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<tbody>
<tr>
<td>Communication and Symbolic Behavior Scales Developmental Profile Infant-Toddler Checklist (CSBS-DP-ITC)⁴⁻⁵</td>
<td>6–24 mo</td>
<td>Total of points in 3 composite domains (communication, social, and symbolic) and total reveals criterion level cutoffs for <em>concern or no concern</em>. Child should be referred for comprehensive evaluation if social composite, symbolic composite, or total is below criterion level. Research⁵ suggests this screen is useful in detecting possible global delay, language delay, or autism spectrum disorder (ASD) as early as 12 months.</td>
</tr>
<tr>
<td>Modified Checklist for Autism in Toddlers (M-CHAT)⁶⁻⁷</td>
<td>16–48 mo</td>
<td>At risk when fail ≥2 critical items or any 3 items. Use of M-CHAT questionnaire with follow-up M-CHAT interview (M-CHAT-FUI) in 2 weeks improves specificity (fewer false-positives). Follow-up interview should include only items parent indicated at risk. Failing follow-up interview indicates increased risk for ASD and need for referral for diagnostic evaluation.</td>
</tr>
<tr>
<td>Social Communication Questionnaire (SCQ)⁸⁻⁹</td>
<td>≥4 y</td>
<td>Must have cognitive age &gt;2 years; score above cutoff reveals risk for ASD and need for comprehensive evaluation. This parent-self-administered screen is based on the Autism Diagnostic Interview-Revised. It is less useful for younger children or those who are delayed.</td>
</tr>
<tr>
<td>Childhood Asperger Syndrome Test (CAST)¹⁰⁻¹¹</td>
<td>4–11 y</td>
<td>Score above cutoff reveals risk for an ASD or related social-communication difficulties and need for comprehensive evaluation.</td>
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<tr>
<td>High-Functioning Autism Spectrum Screening Questionnaire (ASSQ)¹²⁻¹³</td>
<td>7–16 y</td>
<td>Forms to give to parents or other caregivers; score above cutoff reveal risk status for an ASD and need for comprehensive evaluation.</td>
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<tr>
<td>What are the Screening Tools?</td>
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<tr>
<td>-----------------------------</td>
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<tr>
<td>Provider Observation or Administration</td>
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<table>
<thead>
<tr>
<th>Screening Tool</th>
<th>Age Range</th>
<th>Administration</th>
<th>Time Required</th>
<th>Reliability</th>
<th>Validity</th>
<th>Purchase</th>
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<tr>
<td>Childhood Autism Rating Scale, Second Edition (CARS2)</td>
<td>&gt;2 y</td>
<td>Observational: Behavioral checklist completed by trained interviewer/observer (15)</td>
<td>15–30</td>
<td>0.92–0.98&lt;sup&gt;c&lt;/sup&gt;; 0.94&lt;sup&gt;c&lt;/sup&gt; (data from CARS)</td>
<td>0.85&lt;sup&gt;c&lt;/sup&gt; (data from CARS)</td>
<td><a href="http://www.wpspublish.com">www.wpspublish.com</a></td>
</tr>
<tr>
<td>Screening Tool for Autism in Toddlers &amp; Young Children (STAT)</td>
<td>24–36 mo</td>
<td>Observational and interactive, requires specific training (12)</td>
<td>20</td>
<td>0.92&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.85&lt;sup&gt;b&lt;/sup&gt;</td>
<td><a href="http://stat.vueinnovations.com">http://stat.vueinnovations.com</a></td>
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</tbody>
</table>
Modified Checklist for Autism in Toddlers: MCHAT

- For 16-48 months
- Sensitivity: 85%
  - If a child has ASD how often will they screen positive
- Specificity: 93%
  - If a child doesn’t have ASD how often will they screen negative
- Questionnaire completed by parent
- 5-10 minutes to complete (parent)
- Simple Scoring
- Download form and scoring
  - [www.firstsigns.org/downloads/mchat.PDF](http://www.firstsigns.org/downloads/mchat.PDF)
  - [www.firstsigns.org/downloads/mchat_scoring.PDF](http://www.firstsigns.org/downloads/mchat_scoring.PDF)
M-CHAT Scoring Instructions
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. Table contains failed responses.

<p>| | | | |</p>
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<tr>
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<td>21. No</td>
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<td>5. No</td>
<td>11. Yes</td>
<td>17. No</td>
<td>23. No</td>
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<tr>
<td>6. No</td>
<td>12. No</td>
<td>18. Yes</td>
<td></td>
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Positive Predictive Value
Probability that the child has ASD when restricted to children who test positive

Figure 1 Flowchart of participation, based on risk for ASD
* Four additional cases were invited for evaluation based on the physician’s concern, though the child passed the M-CHAT or Follow-Up Interview. None of these children was diagnosed with ASD.
23. You reported that ________ does not usually look at your face to check your reaction when faced with something unfamiliar and a little scary.

Is this still true?

- No
  - Then he/she does look at your face to check your reaction when faced with something scary?
    - Yes
      - If your child hears an unfamiliar or scary noise, will he/she look at you before deciding how to respond?
        - Yes
          - Does your child look at you when someone new approaches?
            - Yes
              - Sometimes or probably looks at parent's reaction ______
            - No
              - Probably does not look at parent’s reaction _____________
          - No
            - FAIL
    - No
      - PASS

- Yes
  - PASS
  - What does your child do when faced with something unfamiliar and a little scary?
    - PASS
Referrals for Positive MCHAT

- Evaluation and Diagnosis: if concern re global delays, intellectual disability, or suspect Genetic or neurologic disorder:
  
  DB
  Pediatrician/Geneticist/Neurologist/Psychologist

- Early Intervention Services (Part C of IDEA)
- Audiologic Evaluation: Pediatric Audiologist
# CSBS DP Infant-Toddler Checklist

**Child's name:**

**Date of birth:**

**Date filled out:**

**Was birth premature?**

- [ ] Yes
- [ ] No

- [ ] If yes, how many weeks premature?

**Filled out by:**

**Relationship to child:**

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**Instructions for caregivers:** This Checklist is designed to identify different aspects of development in infants and toddlers. Many behaviors that develop before children talk may indicate whether or not a child will have difficulty learning to talk. This Checklist should be completed by a caregiver when the child is between 6 and 24 months of age to determine whether a referral for an evaluation is needed. The caregiver may be either a parent or another person who nurtures the child daily. Please check all the boxes that best describe your child's behavior. If you are not sure, please choose the closest response based on your experience. Children at your child's age are not necessarily expected to use all the behaviors listed.

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### Emotion and Eye Gaze

1. Do you know when your child is happy and when your child is upset?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

2. When your child plays with toys, does he/she look at you to see if you are watching?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

3. Does your child smile or laugh while looking at you?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

4. When you look at and point to a toy across the room, does your child look at it?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

---

### Communication

5. Does your child let you know that he/she needs help or wants an object out of reach?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

6. When you are not paying attention to your child, does he/she try to get your attention?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

7. Does your child do things just to get you to laugh?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

8. Does your child try to get you to notice interesting objects—just to get you to look at the objects, not to get you to do anything with them?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

### Gestures

9. Does your child pick up objects and give them to you?  
   - [ ] Not Yet  
   - [ ] Sometimes  
   - [ ] Often

10. Does your child show objects to you without giving you the object?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

11. Does your child wave to greet people?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

12. Does your child point to objects?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

13. Does your child nod his/her head to indicate yes?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

### Sounds

14. Does your child use sounds or words to get attention or help?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

15. Does your child string sounds together, such as uh oh, mama, gaga, bye bye, baba?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

16. About how many of the following consonant sounds does your child use: “ma, na, ba, da, qa, wa, la, ya, se, she”?  
    - [ ] None  
    - [ ] 1–2  
    - [ ] 3–4  
    - [ ] 5–8  
    - [ ] over 8

### Words

17. About how many different words does your child use meaningfully that you recognize (such as bab for bottle; gagge for doggie)?  
    - [ ] None  
    - [ ] 1–3  
    - [ ] 4–10  
    - [ ] 11–30  
    - [ ] over 30

18. Does your child put two words together (for example, more cookie, bye bye Daddy)?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

### Understanding

19. When you call your child's name, does he/she respond by looking or turning toward you?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

20. About how many different words or phrases does your child understand without gestures? For example, if you say “where's your tummy,” “where's Daddy,” “give me the ball,” or “come here,” without showing or pointing, your child will respond appropriately.  
    - [ ] None  
    - [ ] 1–3  
    - [ ] 4–10  
    - [ ] 11–30  
    - [ ] over 30

### Object Use

21. Does your child show interest in playing with a variety of objects?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

22. About how many of the following objects does your child use appropriately: cup, bottle, bowl, spoon, comb or brush, toothbrush, washcloth, ball, toy vehicle, toy telephone?  
    - [ ] None  
    - [ ] 1–2  
    - [ ] 3–4  
    - [ ] 5–8  
    - [ ] over 8

23. About how many blocks (or rings) does your child stack?  
    - [ ] None  
    - [ ] 2 or more blocks  
    - [ ] 3 or 4 blocks  
    - [ ] 5 or 6 blocks  
    - [ ] 7 or more blocks

24. Does your child pretend to play with toys (for example, feed a stuffed animal, put a doll to sleep, put an animal figure in a vehicle)?  
    - [ ] Not Yet  
    - [ ] Sometimes  
    - [ ] Often

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**Do you have any concerns about your child's development?**  
- [ ] yes  
- [ ] no  

If yes, please describe on back.
## CSBS Scoring

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<thead>
<tr>
<th>Component</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication Composite:</strong></td>
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<tr>
<td>Emotion and Use of Eye Gaze</td>
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<tr>
<td>Use of Communication</td>
<td>8</td>
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<tr>
<td>Use of Gestures</td>
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<tr>
<td><strong>Total</strong></td>
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<tr>
<td><strong>Expressive Speech Composite:</strong></td>
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<tr>
<td>Use of Sounds</td>
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<tr>
<td>Use of Words</td>
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<td><strong>Total</strong></td>
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<tr>
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<td>Use of Objects</td>
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<td><strong>Total</strong></td>
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<td><strong>Total</strong></td>
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### Cutoff Scores for the CSBS-DP
#### Infant/Toddler Checklist

Amy M. Wetherby & Barry M. Prizant © 2001 by Paul H. Brookes Publishing

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<th>Age</th>
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<td>0 to 2</td>
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<td>13 to 17</td>
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<tr>
<td></td>
<td>Concern</td>
<td>0 to 18</td>
<td>0 to 8</td>
<td>0 to 12</td>
</tr>
</tbody>
</table>
Does Screening Mean You Need to be an Expert in Evaluating a Child’s Development?

NO...

- Screening is looking at a whole population to *identify those at risk*.
- Identified children are referred for evaluation/assessment.
  - Assessment determines the existence of delay or disability
  - Generates a plan for intervention.
- Screening is optimized by surveillance
Diagnosis based on DSM

DSM IV Criteria

• Qualitative impairment in reciprocal social interaction

• Qualitative impairment in communication

• Restricted, repetitive, and stereotyped patterns of behavior, interests, and other activities
Diagnosis of Autism

Diagnostic Elements

History
Physical Examination
Parent interview
Structured child observation
Any better explanation for findings than ASD?

CARS (Childhood Autism Rating Scale): For > 2 yrs. old; 15-item, direct observation; 5-10 minutes.

ADOS (Autism Diagnostic Observation Schedule): For toddlers to adults; direct observation, 30-45 minutes.

ADI-R (Autism Diagnostic Interview): For mental age > 2 yrs.; structured interview; 1.5 – 2.5 hours.
Assessment of a Child with Autism
Diagnostic Elements

History
Physical Examination
Parent interview
Structured child observation
Any better explanation for findings than ASD?

Assessment of
- Daily functioning (adaptive behavior )- Vineland
- Developmental level (DQ/IQ)
- Behavioral / parenting concerns
- Language and communication skills
- Medical areas - neurologic, GI, rare disorders, nutritional status
- Emotional psychological concerns - ADHD, depression, anxiety, OCD...
- Personal concerns
- Family concerns
- Environmental concerns
- Targets for intervention
Response to Intervention predicted by “Autism Complex”
THE BROADER CONTEXT

- Autism
- Epilepsy
- Social Anxiety
- Asperger's Syndrome
- Aggression
- Sensory Integration Difficulties
- Depression
- Severe Functional Impairment
- ADHD Symptoms
- Sleep Disturbances
- Cognitive Impairment
- Compulsive & Repetitive Behavior
- Anxiety
- Self-injurious Behavior

Eric London 09