

Assessing Autism in Primary Care

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Objectives:

1. Name assessment tools for primary care providers to screen for autism
2. Identify key features of autism
3. Use parent resource guides for families



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Role of PCP

- Early identification of autism spectrum disorder (ASD)
- Routine health maintenance
- Preventive care and care coordination for children with ASD
- Provision of support, guidance, and advocacy for families of children with ASD

CDC: Learn the Signs

“ALARM”

- ❖ Autism is prevalent (1/68)
- ❖ Listen to parents
- ❖ Act early
- ❖ Refer
- ❖ Monitor

Concerns parents may raise:

- No big smiles or warm, joyful expressions by 6 months
- No back-and-forth sharing of sounds, smiles or other facial expressions by 9 months
- No babbling by 12 months
- No back-and-forth gestures such as pointing, showing, reaching or waving by 12 months
- No words by 16 months
- No meaningful, two-word phrases (not including imitating or repeating) by 24 months
- Any loss of speech, babbling or social skills at any age

Delayed Diagnosis

- Mean interval between onset of parental concerns and seeking professional help is approximately 6 months
- Average time between first medical attention and diagnosis is *13 months*
- Average age of diagnosis *4 yrs*
- Earlier: significant language delay and atypical behaviors, such as hand flapping and toe walking
- Later: less severe symptoms, lack of continuity of care, hearing impairment, oversensitivity to pain, living in a rural area, Hispanic ethnicity, and lower socioeconomic status

The Goal of DSM-5

- APA DSM-5 workgroups formed in 2007 with the goals of:
 - Creating a more “dimensional” classification system
 - Separating constructs of impairment and disorder (e.g., with the use of severity scales)
 - Reducing “-NOS” diagnoses in favor of broad categories with dimensional specifiers
 - Representing greater reflection of (and easier incorporation of) neurobiological findings
 - » Gotham, K. (July 11, 2013). Autism Spectrum Disorder in DSM-5: Overview of Updates to the Diagnostic and Statistical Manual and to the Autism Diagnostic Observation Schedule (ADOS-2). Webinar hosted by the New Hampshire Autism Council Screening & Diagnosis workgroup

Changes in 2013...

- ✦ Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) revisions
- ✦ Autistic Disorder, Asperger's Disorder, and Pervasive Developmental Disorder NOS all subsumed under the diagnostic label Autism Spectrum Disorder; Rett syndrome, if associated with ASD, is now specified as “known genetic condition”
 - Concentrates on required features
 - Social/communication deficits
 - Restricted, repetitive patterns of behavior, interests, activities
 - Addition of sensory criteria
 - Increases specificity while maintaining sensitivity
 - Important to distinguish spectrum from non-spectrum developmental disabilities
 - Improves stability of diagnosis

Social/communication

Persistent deficits in social communication and social interaction across contexts, not accounted for by general developmental delays, manifested by all of the following:

- Deficits in social-emotional reciprocity
- Deficits in nonverbal communicative behaviors
- Deficits in developing and maintaining relationships appropriate to the developmental level

Restricted Interests

- Restricted, repetitive patterns of behavior, interests, or activities as manifested by at least 2 of the following:
 - Stereotyped or repetitive speech, motor movements, or use of objects
 - Excessive adherence to routines
 - Highly restricted, fixated interests that are abnormal in intensity or focus
 - Hyper- or hypo-reactivity to sensory input or unusual sensory interests

DSM-5 Criteria: Social Communication Disorder

- Persistent deficits in social communication and social interaction across contexts, not accounted for by general developmental delays, manifested by all of the following:
 - Deficits in social-emotional reciprocity
 - Deficits in nonverbal communicative behaviors
 - Deficits in developing and maintaining relationships appropriate to the developmental level

Specify if:

- With or without accompanying intellectual impairment
- With or without accompanying language impairment
- Associated with a known medical or genetic condition or environmental factor
- Associated with another neurodevelopmental, mental, or behavioral disorder
- With catatonia

Catatonia?

Severity levels for Autism Spectrum Disorder

- Level 1: "Requiring Support"
- Level 2: "Requiring Substantial Support"
- Level 3: "Requiring Very Substantial Support"

Autism Spectrum Disorder in DSM-5

- "Note: Individuals with a well established DSM-IV diagnosis of autistic disorder, Asperger's disorder, or pervasive developmental disorder not otherwise specified should be given the diagnosis of autism spectrum disorder. Individuals who have marked deficits in social communication, but whose symptoms do not otherwise meet criteria for autism spectrum disorder, should be evaluated for social (pragmatic) communication disorder."

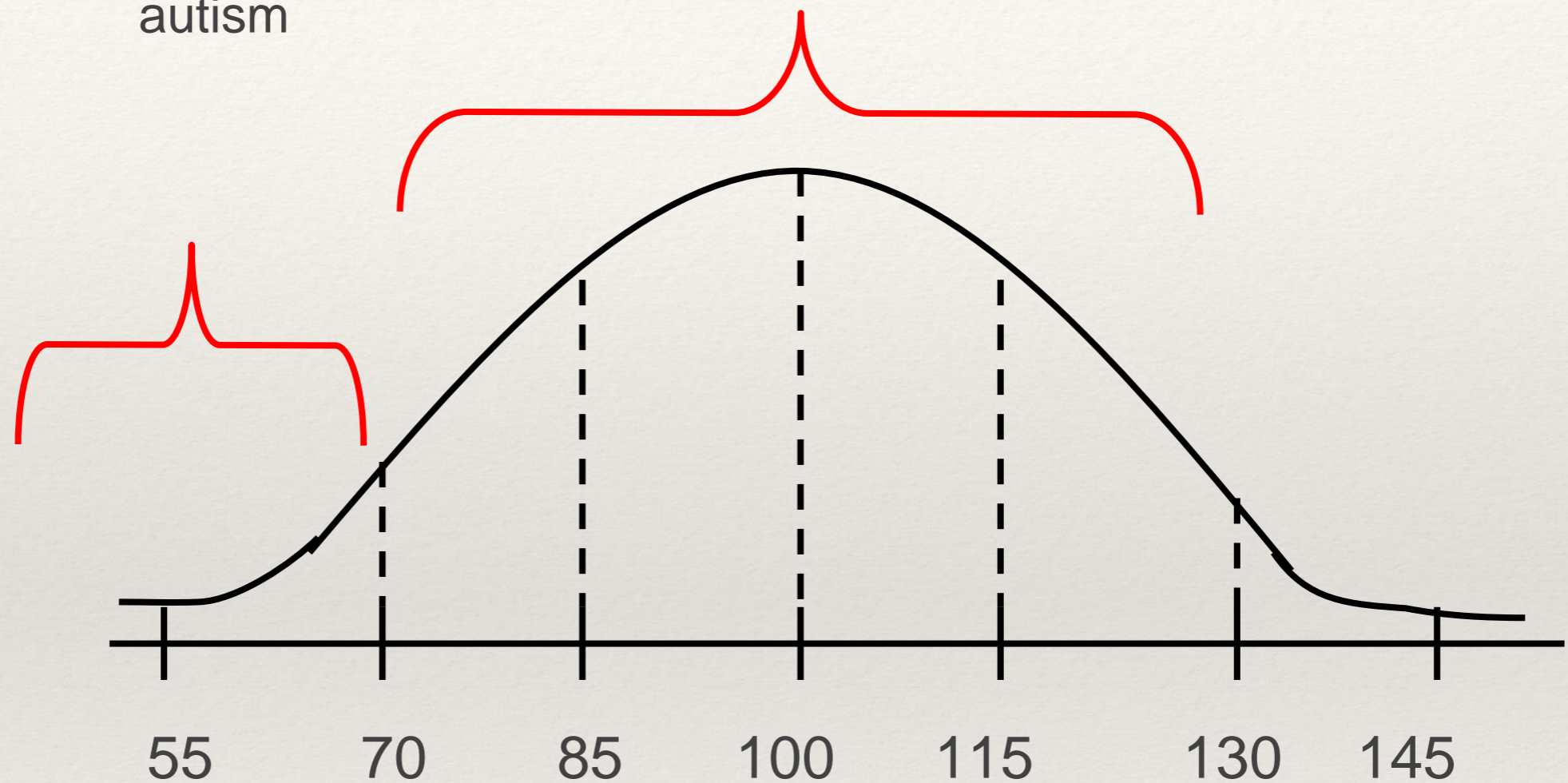
Importance of Assessment

- Diagnosis
 - Emphasis on individual profiles, not just the diagnosis
 - However, importance of diagnosis in order to obtain services
- Access to Services
 - School: Educational Classification -- IDEA categories
 - Government Agencies: Department of Developmental Services (Formerly DMR) REGIONAL CENTER
 - Government Resources: www.nichd.nih.gov/autism;
www.nimh.nih.gov/publicat/autism.pdf
 - National Resources: e.g., Autism Speaks (www.autismspeaks.org)
 - Community Resources: e.g., Autism Spectrum Resource Center (www.ct-asrc.org)
- Treatment/Intervention
 - Assessment first step toward developing treatment goals and intervention planning

Levels of Cognitive Functioning

Approx. 70-75% of individuals with autism

Approx 25% of individuals with ASD



MEAN = 100
STANDARD DEVIATION = +/- 15

Profiles: Scatter is common...



<u>WISC-IV Index/IQ</u>	<u>Standard Score</u>	<u>Confidence Interval</u>	<u>Percentile Rank</u>
Verbal Comprehension	126	118-131	96
Perceptual Reasoning	106	98-113	66
Working Memory	99	91-107	47
Processing Speed	65	60-78	1
Full Scale*	102	97-107	55

*Important not to interpret IQ score in isolation

Diagnostic Tools

- Autism Behavior Checklist –57 questions completed by parent or teacher
- Gilliam Autism Rating Scale - 56 items for parents
GARS-3
- Autism Diagnostic Interview-Revised (ADIS)
- Childhood Autism Rating Scale - 15-item direct-observation instrument

Diagnostic Tools: ADOS

- Autism Diagnostic Observation Schedule (ADOS-2) GOLD standard for diagnosis of autism
- Autism Diagnostic Observation Schedule-Toddler Module

What Else Can Look Like ASD?

- Global developmental delay/intellectual disability
- Social (pragmatic) communication disorder
- Developmental language disorder
- Language-based learning disability
- Hearing impairment
- Landau-Kleffner syndrome
- Rett disorder Severe early deprivation/reactive attachment disorder
- Attention-deficit/hyperactivity disorder (ADHD) plus anxiety
- Nonverbal learning disability
- Anxiety plus language delay (with/without sensory issues)
- Cognitive delay plus anxiety
- Obsessive-compulsive disorder

✦ <http://www.cdc.gov/ncbddd/actearly/act.html>

Diagnostic Stability

- Likelihood of stable diagnosis is high
 - If diagnosed with autism at 2 years of age with standard tests by highly experienced clinicians
- If diagnosed with PDD-NOS at 2 years of age, diagnostic shift is more likely, but still not common
 - >10% shifted from PDD-NOS to out of spectrum
 - 30% maintained PDD-NOS diagnosis at 9 years of age
 - Most change occurred between 2 and 5 years of age
- We may see more “shift” than is reported in this study...

A More Recent Study

- Study in South Korea
 - 1 in 38 children diagnosed with ASD (7–12 years of age)
 - Collaboration with researchers at Yale Child Study Center
 - Typical children and children in special education participated in a 2 level screening/evaluation process
 - A large number identified in typical schools
 - 16% with intellectual disability
 - 12% with superior intelligence
 - 2/3 with milder form

Kim YS, Leventhal BL, Koh YJ, et al. Prevalence of autism spectrum disorders in a total population sample. *Am J Psychiatry*. 2011;168(9):904–912.

Epidemiology

- “True” increase or “epidemic?”
- Increased awareness, broader diagnostic criteria, diagnostic substitution...
- Probably a little of both...

Etiology

- Unknown
 - Initially described as a disorder of parenting/“refrigerator mothers”
- Neurobiologic disorder
- Gene/environment interaction

Genetics

- Twin studies with 60% of monozygotic twins concordant for full syndrome; 90% for related social or cognitive abnormalities
- Risk of any form of PDD for sibling of proband with autism as high as 5%
- Relatives may be affected by difficulties that are conceptually related to autistic behaviors (broader autistic phenotype)

Other genetic disorders to consider

- Tuberous sclerosis complex
- Fragile X syndrome
- Angelman syndrome
- Rett Syndrome

Further work-up

- Labs: Lead, Chromosomal microarray (CMA) and DNA analysis for fragile X
 - Karyotype is warranted if a balanced translocation is suspected (eg, history of ≥ 2 miscarriages) because CMA does not detect balanced translocations
- Hearing Test
- Metabolic testing, Neuroimaging, EEG only if clinically indicated

Metabolic work-up

Only if history of

- Lethargy, limited endurance
- Hypotonia
- Recurrent vomiting and dehydration
- Early seizure
- Dysmorphic or coarse features
- Intellectual disability (or if intellectual disability cannot be excluded)
- Developmental regression
- Hearing impairment
- Vision impairment
- Unusual odors
- Specific food intolerance (eg, protein)
- Inadequate or questionable adequate newborn screen

Recent Studies Suggest Larger Environmental Role

- ✦ Previous studies suggested strong genetic role
- ✦ Current study looked at 192 twin pairs
 - ❖ 54 identical, 138 fraternal
 - ❖ Identical twins with 60–70% chance of dual diagnoses
 - ❖ Fraternal twins with 20–30% chance of dual diagnoses
- ✦ Two-fold increase risk for ASD when mother on a selective serotonin reuptake inhibitor (SSRI)

Hallmayer J, Cleveland B, Torres A, et al. Genetic heritability and shared environmental factors among twins with autism. *Arch Gen Psychiatry*. Online July 2011; Croen LA, Grether JK, Yoshida CK, et al. Antidepressant use during pregnancy and childhood autism spectrum disorders. *Arch Gen Psychiatry*. Online July 2011.

Screening for ASD

- ★ AAP recommendations
 - ❖ Developmental surveillance at all well child visits
 - ❖ Elicit parent concerns
 - ❖ Developmental screening at 9, 18, and 30 (or 24) month well child visits
 - ❖ Use structured developmental assessment
 - ❖ Screening for autism at 18 and 30 (or 24) month well child visits
 - ❖ Screening if delayed language/communication milestones, regression in social or language skills, children with a sibling diagnosed with ASD, and in children whose parents, care provider, or clinician raise concerns regarding ASD

American Academy of Pediatrics Council on Children With Disabilities, Section on Developmental Behavioral Pediatrics, Bright Futures Steering Committee and Medical Home Initiatives for Children With Special Needs Project Advisory Committee. Identifying infants and young children with developmental disorders in the medical home: an algorithm for developmental surveillance and screening. *Pediatrics*. 2006;118(1):405–420; Johnson CP, Myers SM, and American Academy of Pediatrics Council on Children With Disabilities. Identification and evaluation of children with autism spectrum disorders. *Pediatrics*. 2007;120(7):1183–1215.

Surveillance of ASDs

- ★ Direct observation/interactions/“clinical probes”
 - ❖ Pointing and directing child to “look” (12–15 months)
 - ❖ Calling child’s name (12 months)
 - ❖ Asking “Where’s mommy?”
 - ❖ Eye contact, gaze referencing, pointing—evidence of joint attention
 - ❖ Observe for unusual movements (looking at things closely, out of corner of eye, repetitive movements, sensitivities)

Surveillance of ASDs

- ★ Probing questions for parents:
 - ❖ What is your child's favorite toy/type of play? (12 to 18 months)
 - ❖ Does your child babble? Wave bye-bye? Raise arms to be lifted? Hear your voice as well as other things in the environment? (9 to 12 months)
 - ❖ Does your child have echolalia, "pop-up" words, exceptional labeling? (12, 15, and 24 months)

Screening Tools

- ✦ Infant Toddler Checklist (ITC) 6 to 24 months - not specific for ASD but screens for early communication delays, one of the core features of ASD
- ✦ Level 1 screening tools for at risk or no risk children
 - ❖ Checklist for Autism in Toddlers (CHAT)
 - ❖ Modified Checklist for Autism in Toddlers (M-CHAT)
 - ❖ Pervasive Developmental Disorders Screening Test-II (PDDST-II)
- ✦ No recommendation for screening school age children
 - ❖ Consider Social Communication Questionnaire

M-CHAT

- ✦ 23 yes-no questions
- ✦ Measures social reciprocity, language, some motor
- ✦ 18 – 30 months
- ✦ Detects ASD, language impairment, mental retardation
- ✦ Sensitivity/specificity

M-CHAT and Autism Screening

- ✦ Failing score if 2 or more critical items or any 3 items are failed
- ✦ Free download at www.firstsigns.org
- ✦ 2-page scoring guide
- ✦ Takes 5 minutes to complete and 5 minutes to score
- ✦ Autism screen recommended by AAP Autism Expert Panel for use at 18–24 month well-child visit

MCHAT

1. If you point at something across the room, does your child look at it? (FOR EXAMPLE, if you point at a toy or an animal, does your child look at the toy or animal?)
2. Have you ever wondered if your child might be deaf?
3. Does your child play pretend or make-believe? (FOR EXAMPLE, pretend to drink from an empty cup, pretend to talk on a phone, or pretend to feed a doll or stuffed animal?)
4. Does your child like climbing on things? (FOR EXAMPLE, furniture, playground equipment, or stairs)
5. Does your child make unusual finger movements near his or her eyes? (FOR EXAMPLE, does your child wiggle his or her fingers close to his or her eyes?)
6. Does your child point with one finger to ask for something or to get help? (FOR EXAMPLE, pointing to a snack or toy that is out of reach)
7. Does your child point with one finger to show you something interesting? (FOR EXAMPLE, pointing to an airplane in the sky or a big truck in the road)
8. Is your child interested in other children? (FOR EXAMPLE, does your child watch other children, smile at them, or go to them?)
9. Does your child show you things by bringing them to you or holding them up for you to see – not to get help, but just to share? (FOR EXAMPLE, showing you a flower, a stuffed animal, or a toy truck)

MCHAT

10. Does your child respond when you call his or her name? (FOR EXAMPLE, does he or she look up, talk or babble, or stop what he or she is doing when you call his or her name?)
11. When you smile at your child, does he or she smile back at you?
12. Does your child get upset by everyday noises? (FOR EXAMPLE, does your child scream or cry to noise such as a vacuum cleaner or loud music?)
13. Does your child walk?
14. Does your child look you in the eye when you are talking to him or her, playing with him or her, or dressing him or her?
15. Does your child try to copy what you do? (FOR EXAMPLE, wave bye-bye, clap, or make a funny noise when you do)
16. If you turn your head to look at something, does your child look around to see what you are looking at?
17. Does your child try to get you to watch him or her? (FOR EXAMPLE, does your child look at you for praise, or say “look” or “watch me”?)
18. Does your child understand when you tell him or her to do something? (FOR EXAMPLE, if you don’t point, can your child understand “put the book on the chair” or “bring me the blanket”?)
19. If something new happens, does your child look at your face to see how you feel about it? (FOR EXAMPLE, if he or she hears a strange or funny noise, or sees a new toy, will he or she look at your face?)
20. Does your child like movement activities? (FOR EXAMPLE, being swung or bounced on your knee)

ASD screening tools for older children

- Autism-Spectrum Quotient-Child (AQ-Child) for children age 4 to 11 years
- Autism Spectrum Screening Questionnaire (ASSQ) for children age 7 to 16 years
- Childhood Autism Syndrome Test (CAST), formerly Childhood Asperger Syndrome Test, for children age 4 to 11 years
- The Social Communication Questionnaire (SCQ), formerly known as the Autism Screening Questionnaire, for children four years and older
- Developmental Behaviour Checklist (DBC)-Autism Screening Algorithm and DBC-Early Screen for children age 4 to 18 years with intellectual disabilities

Screening tools for autism spectrum disorder

Tool	Age	Description	Sensitivity/specificity	Validation	Comment
CHAT	18 to 24 months	9 parent-report items 5 observed items	Sensitivity: 20 to 38 percent Specificity: 98 percent	>16,000 children in the community	Validated as first-tier screen*, but may be more useful as a second-tier screen*.
M-CHAT-R/F	16 to 30 months	20 parent-report items Takes approximately 5 minutes to administer and 2 minutes to score Available in English, Spanish, and other languages from the Official M-CHAT Website	Sensitivity: 85 percent Specificity: 99 percent	>15,000 children in primary care practices	Validated as first-tier screen*. Assesses risk of ASD as low, medium, or high. Children at medium risk require structured follow-up questions for additional information before referral for diagnostic evaluation. Follow-up interview takes approximately 5 to 10 minutes.
STAT	24 to 36 months	12 observed activities during 20-minute play session Requires training for administration and scoring	Sensitivity: 92 to 95 percent Specificity: 73 to 85 percent	52 children with ASD and other developmental disorders and 71 high-risk children	Not validated as a first-tier screen*. Language comprehension is not required.
ITC	6 to 24 months	24-item questionnaire, a component of the Communication and Symbolic Behavior Scales-Developmental Profile (CSBS-DP)	Positive predictive value: 75 percent	10,479 infants screened at one-year health supervision visit	The CSBS-DP is a broadband screen for communication delays, but has not been validated as a screen for ASD.
SCQ	4 to 40 years	40 parent-report items (yes/no) Takes <10 minutes to administer and <5 minutes to score	Sensitivity: 85 percent Specificity: 75 percent	200 high-risk patients	Additional studies are necessary before the SCQ can be used as a first-tier screen*. Non-verbal children may require different cut-off scores.
			Sensitivity: not reported Specificity: not reported 90 percent of children who failed (SCQ score ≥15) had a neurodevelopmental disorder	247 low-risk children from school or general population	
CAST	4 to 11 years	37 parent-report items	Accuracy varied with case definition	1925 children	Additional studies are necessary before the CAST can be recommended as a first-tier screen*.
ASSQ	7 to 16 years	27-item checklist to be completed by parents or teachers Takes about 10 minutes to complete	Varies depending upon the cut-off score; for cut-off score ≥17: Sensitivity: 91 percent Specificity: 86 percent	9430 children (7 to 9 years)	Validated as first-tier screen*. Designed as a first-tier screen for children with high-functioning ASD. Clinicians can individualize cut-off scores to meet their diagnostic needs.
AQ-Child	4 to 11 years	Parent-report measure	Sensitivity: 95 percent Specificity: 95 Percent	540 children with ASD, 1225 children from the general population	Additional studies are necessary before the AQ-Child can be recommended as a first-tier screening* tool.
DBC-ASA	4 to 18 years	29 parent-report items from the DBC-P	Sensitivity: 86 percent Specificity: 79 percent (with cut-off score of 17)	180 children with ASD and 180 controls (matched for age, sex, and IQ-range)	For use in children with intellectual disability
DBC-ES	18 to 48 months	17 parent-report items from the DBC-P	Sensitivity: 88 percent Specificity: 69 percent (with cut-off score of ≥10.5)	60 children with developmental delay and ASD and 60 controls (developmental delay without ASD)	For use in children with developmental delay
			Sensitivity: 83 percent Specificity: 40 percent (with cut-off score of 11)	207 children from the community	

Diagnosis

- ★ Comprehensive, multidisciplinary evaluation
- ★ Autism Treatment Network Protocol
 - ❖ Medical evaluation
 - ❖ Psychological evaluation
 - ❖ Autism Diagnostic Observation Schedule (ADOS), other autism specific diagnostic tools
 - ❖ Screening for common, related medical issues
 - ❖ Sleep problems, GI problems

Treatment: Getting Started

- ★ Speech/Language Therapy: social stories
- ★ Occupational Therapy
 - ❖ Sensory Integration
- ★ Behavior Management
- ★ Early Intervention/Pre-School/School-Age

Resources for parents

- University of Washington Autism Center for parents of children who have recently been diagnosed with ASD: "My Next Steps: A Parent's Guide to Understanding Autism."
<http://depts.washington.edu/uwautism/resources/autism-resource-dvd.html>
- Tool Kit <https://www.autismspeaks.org/family-services/tool-kits>

Behavioral therapy education

- UC Davis ADEPT (Autism Distance Education Parent Training) videos are a series of modules about ways to support children with ASD (e.g., teaching functional skills, positive behavior strategies). They are all available in English and Spanish.
- <http://www.ucdmc.ucdavis.edu/ddcenter/adept.html>

Common Comorbid Disorders

- ❖ Eczema
- ❖ Allergies
- ❖ Asthma
- ❖ Ear and respiratory infections
- ❖ Gastrointestinal problems
- ❖ Severe headaches/migraines
- ❖ Seizures

Common Comorbid Disorders

- ❖ ADHD
- ❖ Anxiety
- ❖ Increased risk of schizophrenia and bipolar disorder

Behaviors which may indicate an underlying comorbid illness include:

- ❖ Sudden change in behavior/Loss of previously acquired skills
- ❖ Irritability and low mood
- ❖ Tantrums
- ❖ Frequent night-waking or general sleep disturbance
- ❖ Heightened anxiety and/or avoidance behaviors

Comorbid Illness?

- Constant eating/drinking/ swallowing
- Facial grimacing, wincing, tics (requent clearing of throat,
- Mouthing behaviors, chewing on clothes
- Tapping behavior: finger tapping on throat
- Sobbing 'for no reason at all/ vocal expressions of moaning,
- groaning, sighing, whining
- Agitation: pacing, jumping up and down*
- Blinking, sudden screaming, spinning and fixed look
- Repetitive rocking or other new repetitive movement
- Walking on toes
- Heightened anxiety and/or avoidance behaviours
- Increase in self-injury

Common sources of pain and discomfort include:

- Headache | Earache
- Toothache | Sore Throat
- Sensory hyper-responsivity:
hyperacusis, tactile defensiveness,
sensitivity to light
- Covering ears with hands
- Teeth grinding

Treatment: More Intensive Approaches

APPLIED BEHAVIOR ANALYSIS

systematic program of positive and negative reinforcement to teach behavior skills.

DIR / FLOORTIME

developmental play-based approach that follows the child's lead.

TEACCH

founded in 1972 at the University of North Carolina/Chapel Hill, which emphasizes structured teaching and visual supports.

EARLY START DENVER MODEL

play based intervention combining a developmental model with ABA. by Sally Rogers who co-founded it in the early 1980s with Geraldine Dawson.

JASPER

formal rigor of ABA combined with the play-based emphasis of DIR/Floortime in a therapy developed by Connie Kasari at UCLA that demonstrates the crucial role of joint attention in the treatment of autism.

OCCUPATIONAL THERAPY

One of the oldest methods of treating children with autism, founded by Dr. A. Jean Ayres in the 1960s and is now frequently combined with other approaches, such as sensory integration.

SPEECH THERAPY

One of the oldest and most common methods of intervention for children on the spectrum with language disorders, a method easily combined with other treatment approaches.

MEDICATIONS

Observe how psychiatrists and research scientists discuss with parents the use of drugs in treating severe autism and some of its related physical symptoms.

Treatment: Medical

- Regular follow-up recommended
 - Monitoring, screening of common medical issues
 - Sleep issues, GI issues, nutritional concerns
 - Medication management
- Medications
- Alternative medical treatments

Medications

- Target symptoms
 - Anxiety
 - Aggression
 - Obsessive/compulsive features
 - ADHD features
 - Sleep problems
 - Seizures
 - Mood lability
 - Repetitive behaviors

Medications

- Stimulants
- SSRIs
- Atypical antipsychotics
 - Risperidone, aripiprazole
- Melatonin
- Seizure medication

Alternative Treatments

- Diet
 - Gluten and casein free diet
- Vitamins
 - B6, Mg, B12, Omega-3 fatty acids
- Yeast treatments
- Manipulation
- Secretin, intravenous immune globulin (IVIg), steroids, antivirals, chelation

Autism and Vaccines

- Currently no evidence to support a relationship between vaccines and autism
- Theories continue to change
- Recent retraction of Lancet article
- Families still “caught in the middle” between research and media

Maintenance Treatment PCP

- A "practice" visit to familiarize the patient with the office setting, staff, and routine
- Having the family use a "social story" or visual topic board reviewing the expected parts of the visit, to help the child understand what to expect
- Allowing enough time to take the history and talk with the parent or caregiver before the examination
- Allowing the child to manipulate instruments and materials
- Keeping instructions simple
- Using simple language for those with lower-level language abilities, speaking clearly, and avoiding abstract language and figures of speech
- Using visual cues and supports
- Having family and/or familiar staff available
- Minimizing portions of the examination that might be overwhelming or overstimulating

Ongoing Surveillance

- Medical disorders (eg, seizures; potential genetic disorders; lead poisoning in children with pica)
- Developmental and mental health comorbidities (eg, hyperactivity, anxiety, depression, behavioral regulation)
- Sleep problems (eg, late onset, frequent waking, restlessness), which may affect daytime function
- Gastrointestinal, feeding, and nutrition problems (eg, constipation, restricted diet)
- Delays in acquisition of self-help skills (eg, toileting, dressing, hygiene)

Prognosis

- Previous studies summarized:
 - 10–15% with good outcomes
 - 15–25% with fair outcomes
 - 15–25% with poor outcomes
 - 30–50% with very poor outcomes
- Few current longitudinal studies exist
- Issues of diagnostic “shift,” diagnostic stability

Poorer Prognosis with

- Lack of joint attention by four years of age
- Lack of functional speech by five years of age
- IQ <70
- Seizures or other comorbid medical or neurodevelopmental conditions
- Severe ASD symptoms

Better Prognosis with

- Presence of joint attention
- Functional play skills
- Higher cognitive abilities
- Decreased severity of ASD symptoms
- Early identification
- Involvement in intervention
- A move toward inclusion with typical peers

Summary

- “ALARM”
 - Autism is prevalent (1/68)
 - Listen to parents
 - Act early (surveillance and screening)
 - Refer
 - Monitor

Resources

- ✦ Autism Society of America – www.autism-society.org
- ✦ Autism Speaks – 100 Day Kit – www.autismspeaks.org
- ✦ Centers for Disease Control and Prevention – www.cdc.gov
- ✦ American Academy of Pediatrics – www.aap.org