

## Autism/Autism Spectrum Disorders

Autism spectrum disorders (ASDs) are a group of developmental disabilities that can cause significant social, communication and behavioral challenges. People with ASDs handle information in their brain differently than other people.

ASDs are "spectrum disorders." That means ASDs affect each person in different ways, and can range from very mild to severe. People with ASDs share some similar symptoms, such as problems with social interaction. But there are differences in when the symptoms start, how severe they are, and the exact nature of the symptoms.

There are three different types of ASDs:

- **Autistic Disorder** (also called "classic" autism)

This is what most people think of when hearing the word "autism." People with autistic disorder usually have significant language delays, social and communication challenges, and unusual behaviors and interests. Many people with autistic disorder also have intellectual disability.

- **Asperger Syndrome**

People with Asperger syndrome usually have some milder symptoms of autistic disorder. They might have social challenges and unusual behaviors and interests. However, they typically do not have problems with language or intellectual disability.

- **Pervasive Developmental Disorder – Not Otherwise Specified** (PDD-NOS; also called "atypical autism")

People who meet some of the criteria for autistic disorder or Asperger syndrome, but not all, may be diagnosed with PDD-NOS. People with PDD-NOS usually have fewer and milder symptoms than those with autistic disorder. The symptoms might cause only social and communication challenges.

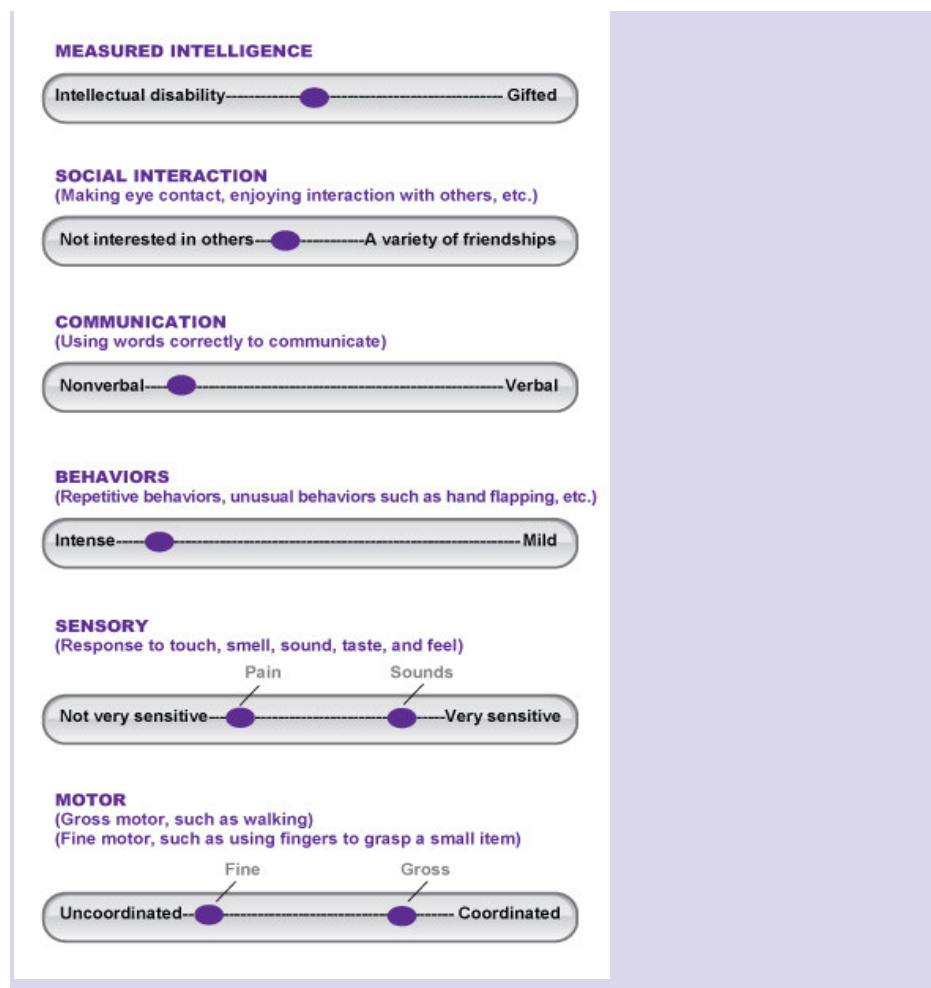
### Signs and Symptoms

ASDs begin before the age of 3 and last throughout a person's life, although symptoms may improve over time. Some children with an ASD show hints of future problems within the first few months of life. In others, symptoms might not show up until 24 months or later. Some children with an ASD seem to develop normally until around 18 to 24 months of age and then they stop gaining new skills, or they lose the skills they once had.

ASDs are "spectrum disorders." That means ASDs affect each person in different ways, and can range from very mild to severe. People with ASDs share some similar symptoms, such as problems with social interaction. But there are differences in when the symptoms start, how severe they are, and the exact nature of the symptoms.

### Example of Range of Symptoms

Following the chart below - a person might have average intelligence, have little interest in other people, use limited verbal language, experience intense self-stimulatory behaviors such as hand-flapping, under-react to pain and over-react to sounds, have very good gross motor skills, and have weaknesses in fine motor skills. These symptoms may vary widely from person to person.



ASDs begin before the age of 3 and last throughout a person's life, although symptoms may improve over time. Some children with an ASD show hints of future problems within the first few months of life. In others, symptoms may not show up until 24 months or later. Some children with an ASD seem to develop normally until around 18 to 24 months of age and then

they stop gaining new skills, or they lose the skills they once had. Studies have shown that one third to half of parents of children with an ASD noticed a problem before their child's first birthday, and nearly 80%–90% saw problems by 24 months of age.

It is important to note that some people *without* an ASD might also have some of these symptoms. But for people with an ASD, the impairments make life very challenging.

### **Possible "Red Flags"**

A person with an ASD might:

- Not respond to their name by 12 months of age
- Not point at objects to show interest (point at an airplane flying over) by 14 months
- Not play "pretend" games (pretend to "feed" a doll) by 18 months
- Avoid eye contact and want to be alone
- Have trouble understanding other people's feelings or talking about their own feelings
- Have delayed speech and language skills
- Repeat words or phrases over and over (echolalia)
- Give unrelated answers to questions
- Get upset by minor changes
- Have obsessive interests
- Flap their hands, rock their body, or spin in circles
- Have unusual reactions to the way things sound, smell, taste, look, or feel

### **Social Skills**

Social issues are one of the most common symptoms in all of the types of ASD. People with an ASD do not have just social "difficulties" like shyness. The social issues they have cause serious problems in everyday life.

Examples of social issues related to ASDs:

- Does not respond to name by 12 months of age
- Avoids eye-contact
- Prefers to play alone
- Does not share interests with others
- Only interacts to achieve a desired goal
- Has flat or inappropriate facial expressions
- Does not understand personal space boundaries
- Avoids or resists physical contact
- Is not comforted by others during distress
- Has trouble understanding other people's feelings or talking about own feelings

Typical infants are very interested in the world and people around them. By the first birthday, a typical toddler interacts with others by looking people in the eye, copying words and actions, and using simple gestures such as clapping and waving "bye bye". Typical toddlers also show interests in social games like peek-a-boo and pat-a-cake. But a young child with an ASD might have a very hard time learning to interact with other people.

Some people with an ASD might not be interested in other people at all. Others might want friends, but not understand how to develop friendships. Many children with an ASD have a very hard time learning to take turns and share—much more so than other children. This can make other children not want to play with them.

People with an ASD might have problems with showing or talking about their feelings. They might also have trouble understanding other people's feelings. Many people with an ASD are very sensitive to being touched and might not want to be held or cuddled. Self-stimulatory behaviors (e.g., flapping arms over and over) are common among people with an ASD. Anxiety and depression also affect some people with an ASD. All of these symptoms can make other social problems even harder to manage.

## Communication

Each person with an ASD has different communication skills. Some people can speak well. Others can't speak at all or only very little. About 40% of children with an ASD do not talk at all. About 25%–30% of children with an ASD have some words at 12 to 18 months of age and then lose them. Others might speak, but not until later in childhood.

Examples of communication issues related to ASDs:

- Delayed speech and language skills
- Repeats words or phrases over and over (echolalia)
- Reverses pronouns (e.g., says "you" instead of "I")
- Gives unrelated answers to questions
- Does not point or respond to pointing
- Uses few or no gestures (e.g., does not wave goodbye)
- Talks in a flat, robot-like, or sing-song voice
- Does not pretend in play (e.g., does not pretend to "feed" a doll)
- Does not understand jokes, sarcasm, or teasing

People with an ASD who do speak might use language in unusual ways. They might not be able to put words into real sentences. Some people with an ASD say only one word at a time. Others repeat the same words or phrases over and over. Some children repeat what others say, a condition called echolalia. The repeated words might be said right away or at a later time. For example, if you ask someone with an ASD, "Do you want some juice?" he or she might repeat "Do you want some juice?" instead of answering your question. Although many children without an ASD go through a stage where they repeat what they hear, it normally passes by three years of age. Some people with an ASD can speak well but might have a hard time listening to what other people say.

People with an ASD might have a hard time using and understanding gestures, body language, or tone of voice. For example, people with an ASD might not understand what it means to wave goodbye. Facial expressions, movements, and gestures may not match what they are saying. For instance, people with an ASD might smile while saying something sad.

People with an ASD might say "I" when they mean "you," or vice versa. Their voices might sound flat, robot-like, or high-pitched. People with an ASD might stand too close to the person they are talking to, or might stick with one topic of conversation for too long. They might talk a lot about something they really like, rather than have a back-and-forth conversation with someone. Some children with fairly good language skills speak like little adults, failing to pick up on the "kid-speak" that is common with other children.

### **Unusual Interests and Behaviors**

Many people with an ASD have unusual interest or behaviors.

Examples of unusual interests and behaviors related to ASDs:

- Lines up toys or other objects
- Plays with toys the same way every time
- Likes parts of objects (e.g., wheels)
- Is very organized
- Gets upset by minor changes
- Has obsessive interests
- Has to follow certain routines
- Flaps hands, rocks body, or spins self in circles

Repetitive motions are actions repeated over and over again. They can involve one part of the body or the entire body or even an object or toy. For instance, people with an ASD might spend a lot of time repeatedly flapping their arms or rocking from side to side. They might repeatedly turn a light on and off or spin the wheels of a toy car. These types of activities are known as self-stimulation or "stimming."

People with an ASD often thrive on routine. A change in the normal pattern of the day—like a stop on the way home from school—can be very upsetting to people with an ASD. They might "lose control" and have a "melt down" or tantrum, especially if in a strange place.

Some people with an ASD also may develop routines that might seem unusual or unnecessary. For example, a person might try to look in every window he or she walks by a building or might always want to watch a video from beginning to end, including the

previews and the credits. Not being allowed to do these types of routines might cause severe frustration and tantrums.

### **Other Symptoms**

Some people with an ASD have other symptoms. These might include:

- Hyperactivity (very active)
- Impulsivity (acting without thinking)
- Short attention span
- Aggression
- Causing self injury
- Temper tantrums
- Unusual eating and sleeping habits
- Unusual mood or emotional reactions
- Lack of fear or more fear than expected
- Unusual reactions to the way things sound, smell, taste, look, or feel

People with an ASD might have unusual responses to touch, smell, sounds, sights, and taste, and feel. For example, they might over- or under-react to pain or to a loud noise. They might have abnormal eating habits. For instance, some people with an ASD limit their diet to only a few foods. Others might eat nonfood items like dirt or rocks (this is called pica). They might also have issues like chronic constipation or diarrhea.

People with an ASD might have odd sleeping habits. They also might have abnormal moods or emotional reactions. For instance, they might laugh or cry at unusual times or show no emotional response at times you would expect one. In addition, they might not be afraid of dangerous things, and they could be fearful of harmless objects or events.

### **Development**

Children with an ASD develop at different rates in different areas. They may have delays in language, social, and learning skills, while their ability to walk and move around are about

the same as other children their age. They might be very good at putting puzzles together or solving computer problems, but they might have trouble with social activities like talking or making friends. Children with an ASD might also learn a hard skill before they learn an easy one. For example, a child might be able to read long words but not be able to tell you what sound a "b" makes.

Children develop at their own pace, so it can be difficult to tell exactly when a child will learn a particular skill. But, there are age-specific developmental milestones used to measure a child's social and emotional progress in the first few years of life.

## **Diagnosis**

Diagnosing ASDs can be difficult since there is no medical test, like a blood test, to diagnose the disorders. Doctors look at the child's behavior and development to make a diagnosis. ASDs can sometimes be detected at 18 months or younger. By age 2, a diagnosis by an experienced professional can be considered very reliable. However, many children do not receive a final diagnosis until much older. This delay means that children with an ASD might not get the help they need.

## **Treatment**

There is currently no cure for ASDs. However, research shows that early intervention treatment services can greatly improve a child's development. Early intervention services help children from birth to 3 years old (36 months) learn important skills. Services can include therapy to help the child talk, walk, and interact with others. Therefore, it is important to talk to your child's doctor as soon as possible if you think your child has an ASD or other developmental problem.

In addition, treatment for particular symptoms, such as speech therapy for language delays, often does not need to wait for a formal ASD diagnosis.

## **Causes and Risk Factors**

We do not know all of the causes of ASDs. However, we have learned that there are likely many causes for multiple types of ASDs. There may be many different factors that make a child more likely to have an ASD, including environmental, biologic and genetic factors.

- Most scientists agree that genes are one of the risk factors that can make a person more likely to develop an ASD.



- Children who have a sibling or parent with an ASD are at a higher risk of also having an ASD.
- ASDs tend to occur more often in people who have certain genetic or chromosomal conditions. About 10% of children with ASDs also have been identified as having Down syndrome, fragile X syndrome, tuberous sclerosis, or other genetic and chromosomal disorders.
- When taken during pregnancy, the prescription drugs valproic acid and thalidomide have been linked with a higher risk of ASDs.
- We know that the once common belief that poor parenting practices cause ASDs is not true.
- There is some evidence that the critical period for developing ASDs occurs before birth. However, concerns about vaccines and infections have led researchers to consider risk factors before and after birth.
- A small percentage of children who are born prematurely or with low birthweight are at greater risk for having ASDs.

ASDs continue to be an important public health concern.

### **Who is Affected**

ASDs occur in all racial, ethnic, and socioeconomic groups, but are almost five times more common among boys than among girls. CDC estimates that about 1 in 88 children has been identified with an autism spectrum disorder (ASD).

More people than ever before are being diagnosed with an ASD. It is unclear exactly how much of this increase is due to a broader definition of ASDs and better efforts in diagnosis. However, a true increase in the number of people with an ASD cannot be ruled out. We believe the increase in ASD diagnosis is likely due to a combination of these factors.

### **References**

1. Lord C, Risi S, DiLavore PS, Shulman C, Thurm A, Pickles A. Autism from 2 to 9 years of age. *Arch Gen Psychiatry*. 2006 Jun;63(6):694-701.
2. Handleman, J.S., Harris, S., eds. *Preschool Education Programs for Children with Autism* (2nd ed). Austin, TX: Pro-Ed. 2000.

3. National Research Council. *Educating Children with Autism*. Washington, DC: National Academy Press, 2001.
4. Johnson, C.P. Early Clinical Characteristics of Children with Autism. In: Gupta, V.B. ed: *Autistic Spectrum Disorders in Children*. New York: Marcel Dekker, Inc., 2004:85-123.