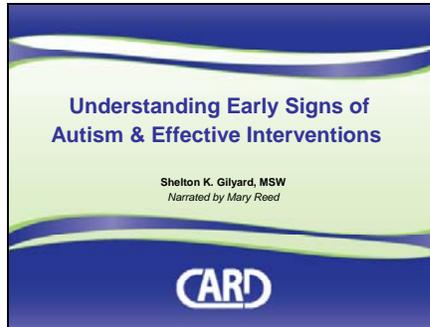
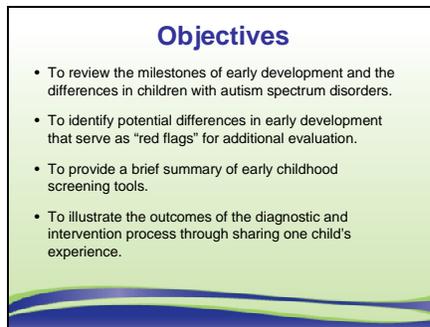


Slide 1



Understanding Early Signs of
Autism & Effective Interventions
The content of this tutorial was
originally developed by Shelton K
Gilyard and it is narrated by Mary
Reed.

Slide 2



There are four objectives to this
tutorial. They are:

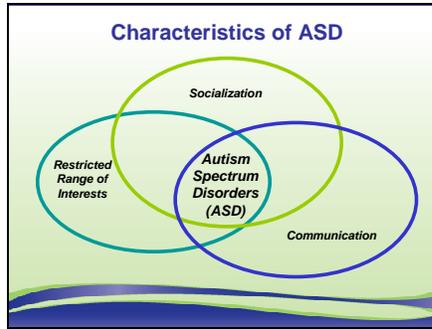
To review the milestones of early
development and the differences in
children with autism spectrum
disorders.

To identify potential differences in
early development that serve as “red
flags” for additional evaluation.

To provide a brief summary of early
childhood screening tools

To illustrate the outcomes of the
diagnostic and intervention process
through sharing one child's
experience

Slide 3



To meet diagnostic criteria for ASD, a child must present with significant concerns in socialization, communication, and behavior. While it's not uncommon for many young children to demonstrate delays in one of these areas, children who are eventually identified with and autism spectrum disorder begin to experience them in all three.

A great way to learn more about the characteristics of autism spectrum disorders and the diagnostic process for evaluating it is to view [Autism Spectrum Disorders: An Overview](#). This tutorial can also be found on the [CARD website](#).

Slide 4



5 weeks after conception, cells within the embryo specialize to form a nervous system. These cells move, and die as connections are formed until a network of 10 billion cells and 1 million billion connections are developed. In children with ASD the neurological connections responsible for typical development have formed differently. Biological reason for tantrums: Early brain development develops from the rear forward where higher order thinking occurs (impulse control, reasoning, etc). The brain adapts the body to the environment.

Slide 5

Brain Volume Increase
(Minshew et al., 2007; Lee et al., 2007; Bashat et al., 2007)

- Overgrowth or proliferation of white matter
- Increase in growth of cerebral white matter concentrated in areas of the brain controlling executive functioning
- Affects cognitive functioning that requires coordination of brain regions.



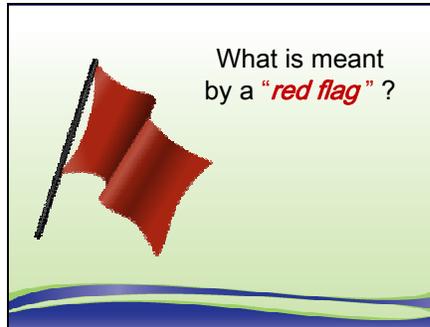
Recent studies have shown that many children with autism have an increase in brain volume, due at least in part to an overgrowth of white matter.

To make a very simple analogy for this, think of an infant's brain as a computer, with the developing gray matter as the circuit boards, and the white matter as the chords or connections between the circuit boards. If there are too many chords making connections in the computer, sometimes the information being processed will go where it's supposed to go and at other times, it might not, or it will go to a different board.

These studies indicate the increase in growth of cerebral white matter is concentrated in areas of the brain that control what is known as executive functioning. Or the ability to integrate and associate new information or experiences with previous ones.

This leads to a problem with functional connectivity in language and cognitive development, or difficulty with coordinating those areas of the brain that need to be synchronized for higher order information processing and thought

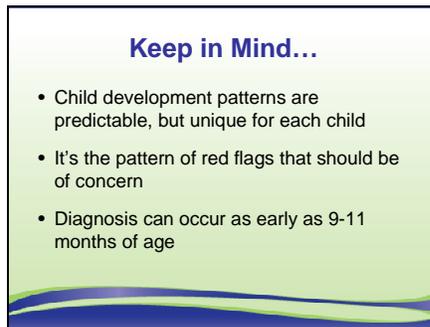
Slide 6



Throughout this tutorial, you'll hear me using the term "red flag" in our discussion of developmental milestones in young children. What do I mean by using the term?

Well, the term Red flag refers to things to be aware of at certain points in a child's development that could be a possible warning sign of a delay or even an indicator of an autism spectrum disorder. However, there are some important things to keep in mind with this term.

Slide 7



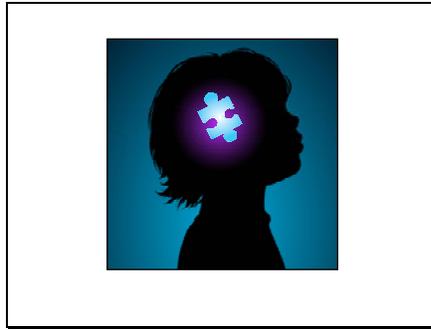
Children develop skills in a predictable sequence according to their developmental level, but how those skills are demonstrated and the specific age at which they may emerge has considerable range. So while we will be discussing child development in general and what you might expect a child to be capable of at a particular age, be sure to keep in mind that the presence or absence of a single red flag is not an indication of a problem in and of itself. It's the pattern or combination of these red flags that should be concern, particularly if they are apparent at a significant point in time beyond what's typical for general child development

Atypical development of communication, social, and behavior skills can be clinically noted as early as 6 months. However the youngest child diagnosed with autism is 9-11 months. A firm understanding typical developmental milestones is critical to identifying children at risk

for developing autism.

So now lets begin to discuss what you should expect to see at early points in a child's social, communication and behavior development and what some of the early red flags that could indicate areas of concern might be.

Slide 8



As a starting reference point, let's take a look at a typically developing baby. The little boy in this clip as about 6 months of age.

Slide 9

Social & Emotional Development
6 Months

What's Typical	Red Flags
<ul style="list-style-type: none">• <i>Communicate pain, fear, discomfort</i>• <i>Recognize, respond to and look for familiar voices or sounds</i>• <i>Focus on and reach for small objects</i>	<ul style="list-style-type: none">• May present with a flat affect or lack of social smile• May have limited interest in toys• Doesn't recognize himself in the mirror

As you saw, a typically developing baby as young as 6 months of age is already learning and demonstrating the foundations of social and emotional expression. Generally, babies of this age can usually:

Communicate pain, fear, discomfort through their own facial expressions, body language and cries

Recognize, respond to and look for familiar voices or sounds

Focus on and reach for small objects such as crib mobiles or baby toys.

At this point in the child's

development, some red flags for concern could be if the baby:

Has a flat affect. This means they don't respond to or offer up a social smile or if they don't respond to pleasant or unpleasant sounds and sensations like laughing when tickled or crying at a loud sudden noise

Has little or no interest in the usual baby toys such as rattles, noise makers, stuffed animals or other things that make engaging sounds and movements

Doesn't seem to recognize him or herself or other familiar people like mom or dad when looking in a mirror

Slide 10

Communication Development
6 Months

What's Typical	Red Flags
<ul style="list-style-type: none">• Coos and/or makes vocalizations• Loves to be touched and held close	<ul style="list-style-type: none">• Not making different pitched sounds• Doesn't look in the direction of a parent's voice• Doesn't reach for toys or parent slightly out of reach

Early language and communication skills should also begin to emerge around the time a baby is 6 months of age. Typically, babies begin to coo and make vocalizations at this point. You may hear them playing with sounds and experimenting with sound production and patterns, just like the little boy on the previous video clip.

Most babies of this age love to be held, cuddled and touched, which is the basis for the development of nonverbal expressive and receptive communication skills.

Some red flags that could be cause for concern in early communication development could be if the child: If the child is not making a variety of sounds in different pitches and patterns

Doesn't look in the direction of a parent's voice
Or doesn't reach for interesting things or people such as toys, bottles or parents when they are slightly out of reach

Slide 11

Social & Emotional Development
12 Months

What's Typical

- Becomes upset when separated from parents
- Recognizes self in the mirror or pictures
- Enjoys an audience and applause

Red Flags

- Difficult to soothe or uncontrollable for extended periods of time
- Doesn't respond to attempts to play
- make no attempt to imitate even simple adult actions or sounds

At 12 months of age, children are beginning to move from infancy to toddlerhood.

They recognize that parents are their caregivers and often become upset with they are separated from them.

They recognize themselves in held to a mirror or shown a picture

And they enjoy the attention and reaction they receive from adults, such as excited praise and applause, for things they do.

On the other hand, some red flags for concern at this developmental stage could be if the child:

If the child is difficult to soothe or cries uncontrollably for extended periods of time

Or doesn't imitate adult actions or respond to attempts by adults to play

Or if they make no attempt to imitate even simple adult actions or sounds.

Slide 12

Communication Development
12 Months

What's Typical

- Follows 1 step directions
- Consistently uses one word other than mama or dada
- Appropriately uses gestures

Red Flags

- Avoids eye contact
- Doesn't follow 1 step directions
- Only uses gestures to communicate

By 12 months of age, a child's early communication skills should be emerging and expanding rapidly. Typically a one year old can

Follow simple 1 step directions like "Wave bye-bye" or "don't touch"

Consistently uses one word other than mama or dada, such as "Uh-Oh" or "baba" as a word for "bottle"

Appropriately uses gestures, such a pushing something that is unwanted away or reaching for an item that has dropped on the floor.

Red flags that communication abilities aren't developing in a typical fashion include when the child:

Avoids eye contact and doesn't seem to be aware that another person is attempting to talk with them

Doesn't follow 1 step directions like "sit down"

Only uses gestures to communicate, without also pairing simple words or sounds with them

Slide 13

Behavior 12 Months	
What's Typical	Red Flags
<ul style="list-style-type: none">• Play alone on the floor with toys• Enjoy opening & closing things• Look at the person talking to him/her	<ul style="list-style-type: none">• Doesn't show an interest in toys• Lacks reciprocal play skills• Obsessive interest in opening & closing things• Lacks eye contact

Also at about one year, babies typically begin to explore their world through play and close observation of things happening around them. It's not unusual to find the children of this age can:

Play by themselves with toys or other small objects they can manipulate

Enjoy opening & closing things like cabinet doors or pots and pans with lids

And they Look at the person talking to him/her then often respond with their own facial expressions or reactions

On contrast to these typical signs of early play development children who eventually are diagnosed with ASD may begin to show so differences in their behavior at this age. Some of these behavioral red flags could be if the child:

Doesn't show an interest in common sorts of baby toys or if they show an unusual interest in a particular object, such as the television remote or a pet's collar

Lacks reciprocal play skills – that is if, they don't respond or react to an adult's attempt to play a simple game with them

Appears to have an obsessive interest in repetitive actions such opening & closing doors or turning the light switch on and off

Lacks or have only fleeting eye contact, especially with familiar

adults

Slide 14

Social and Emotional Development
18 Months

What's Typical	 Red Flags
<ul style="list-style-type: none">• Knows names of familiar people and body parts• Engages in simple pretend games such as feeding doll• Becomes upset when separated from mother	<ul style="list-style-type: none">• Engages in rigid, non-functional play• Shows no sign of distress when caregiver leaves• Does not play pretend games

By 18 months, typically developing toddlers know and can do many new things, such as

Knowing names of familiar people and body parts

Engaging in simple pretend games such as feeding a doll or pushing a car

Becoming upset when separated from mother

At this age, some red flag warnings for possible developmental delays or ASD can be if the child

Engages in rigid, repetitive or non-functional play with toys and objects

Shows no reaction or sign of distress with caregiver leaves an area

Does not play simple pretend games

Communication Development
18 Months

What's Typical

- Uses gestures and words to get needs met
- Has a vocabulary of approximately 5-20 words
- Follows 2 step directions

Red Flags

- Does not use words, sounds, and/or gestures to get needs met
- Has difficulty following 1-2 step directions
- Lacks a 5 word vocabulary

Communication skills by the age of 18 months should be rapidly developing. Some signs that language and communication development are on course include when the child:

Uses gestures and words to get needs met, such as when he or she points to a cup and says “juice!”

Has a vocabulary of approximately 5-20 words that are used consistently

Follows 2 step directions like “come her and sit down”

if there is concern about child’s language abilities by 18 months of age, look closely for the following red flags. Indicators of possible autism spectrum disorder in language development area may be evident if the child:

Does not use words, sounds, and/or gestures to get needs met

Has difficulty following 1-2 step directions

And does not have a spoken vocabulary of at least 5 words

Slide 16

Behavior
18 Months

<p>What's Typical</p> <ul style="list-style-type: none">• Feeds self with spoon• Becomes picky with some types of food• Independently takes off one article of clothing	 <p>Red Flags</p> <ul style="list-style-type: none">• Resistance to different types of food• Becomes agitated if repetitious behaviors are interrupted• Does not exhibit or show an interest in gaining self help skills
--	--

Around the time a toddler is a year and half old, they typically begin to show early signs of emerging self care abilities. These will be noticed most prominently with feeding and dressing skills. For instance, typical children of 18 months begin to:

Feed themselves with their fingers and also by grasping a spoon and placing it in their mouth

Children of this age show a great deal of variability when it comes to the amount and types of food they will eat. Many toddlers can be described as picky eaters. Quite often children will learn how to express their preferences through situations involving new foods with a range of tastes, textures and smells.

It's also at about this time that children are typically able to remove or at least assist with taking off a piece of clothing like socks or a diaper.

In the case of children who become identified with Autism Spectrum disorders, other red flags in these emerging skill early self care skills may become apparent. Things to take notice of at this age is if the child:

Shows extreme resistance to different types of food and will only eat a few specific ones

Becomes agitated if repetitious behaviors like lining toys or crayons, are interrupted

Does not exhibit or show an interest

in beginning dressing and feeding activities

Slide 17

Social and Emotional
24 Months

What's Typical

- Engages in pretend games with more than 1 action
- Resists change
- Beginning to gain sense of personal identity

Red Flags

- Shies away from peers
- Engages with toys or objects in a rigid, non-functional manner
- Trouble relating to others

Anyone who's ever had the experience of dealing with a two year old for much time clearly understands that children of this age are beginning to enter a new stage of their growth and development.

Typically developing two year olds are able to engage in pretend play and games that have more than one action or step to them.

Two year olds also begin to recognize that they have the ability to influence what happens around them. They learn to use the word "No!" as a way of resisting changes in activities or demands they would prefer to avoid.

Through this, they begin to gain a sense of personal identity as their own unique person.

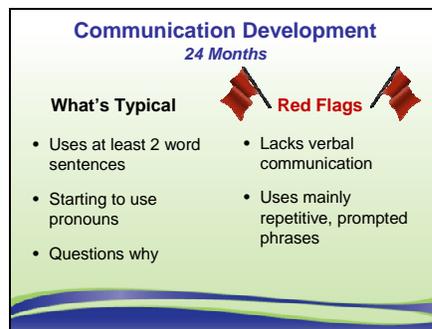
On the other hand, some developmental red flags at this age would be if the child:

Shies away from peers and unfamiliar people or seems unaware of them

Engages with toys in a rigid, non-functional manner or familiar objects in a repetitive, rigid manner

Trouble relating to others in that he or she seems aware or interested in the activities of others, but doesn't interact directly

Slide 18



Communication Development
24 Months

What's Typical

- Uses at least 2 word sentences
- Starting to use pronouns
- Questions why

Red Flags

- Lacks verbal communication
- Uses mainly repetitive, prompted phrases

By the age of 2 years or 24 months, the language development of most children is well underway.

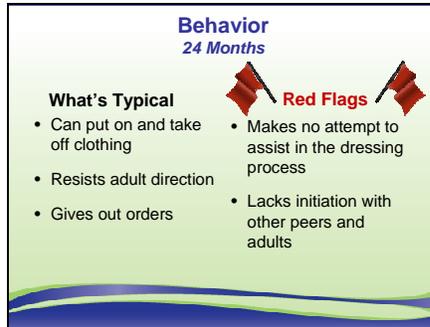
Most 2 year olds can create and use sentences of at least 2 or more words.

They start using pronouns including me, you and mine

And they learn how to ask “why” as a reflection of their reasoning abilities and conceptual thinking

Delays in communication skills at this age should be fairly obvious. Indications of a delay in communication and language development at this point are evident if the child relies heavily on gestures, leading or other motoric means of communication or if they exhibit very little spontaneous speech, relying mainly on repetitive, prompted phrases and dialogue

Slide 19



Behavior
24 Months

What's Typical

- Can put on and take off clothing
- Resists adult direction
- Gives out orders

Red Flags

- Makes no attempt to assist in the dressing process
- Lacks initiation with other peers and adults

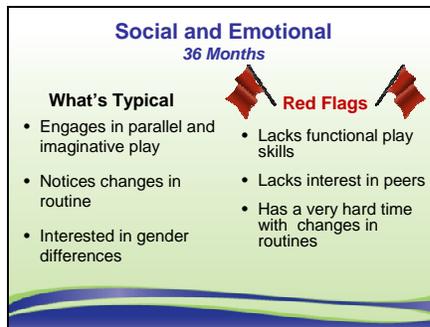
Turning two is a time when children typically learn to exert both greater personal independence and control over their immediate environment. It's not unusual for them to be able to

put on and take off clothing

Resist adult direction or assistance

Give out orders and react strongly to interference

Slide 20



Social and Emotional
36 Months

What's Typical

- Engages in parallel and imaginative play
- Notices changes in routine
- Interested in gender differences

Red Flags

- Lacks functional play skills
- Lacks interest in peers
- Has a very hard time with changes in routines

By the time a child is 36 months of age, or three years old, they're typically learning and growing at an amazing rate

They begin to play side by side with other children and exhibit a great deal of imaginative play with toys

They notice and react to changes in routine and appear to be interested in gender differences between boys and girls

You probably won't notice these things going on, at least to the same degree, with children who are diagnosed with an autism spectrum disorder. Instead, some of the red flags you may notice at this age include:

A Lack functional play skills as well as a lack of interest in peers

It's also not uncommon for children with ASD to begin experiencing a great deal of difficulty with changes in routine or transitions between activities, especially if they are sudden or hurried.

Slide 21

Communication
36 Months

<p>What's Typical</p> <ul style="list-style-type: none">• Uses at least 50 words• Uses in 3-5 word sentences• Talks about interests and feelings in the past and in the future.	 <p>Red Flags</p> <ul style="list-style-type: none">• Language is restricted to interests• Language lacks emotional intent• Difficulty following directions
--	---

Three year olds are typically well on their way with language development. Most children this age have a vocabulary of at least 50 they use appropriately and on a regular basis. They can construct sentences of 3-5 words and eh can talk about their interests and feelings in both the past and in the future.

In contrast to this, children who by this age are exhibiting other signs of ASD will also demonstrate delays or differences in their language development. You may notice that often their language, when it is present, is used primarily to express wants or needs, or it may be restricted to the child's interests Often their language lacks emotional intent – that is, they do not use it to express their feelings or respond to the feelings of others. They may also experience difficulty following spoken directions.

Slide 22

Behavior
36 Months

<p>What's Typical</p> <ul style="list-style-type: none">• Eats and drinks independently• Increased attention span• Imitates others	 <p>Red Flags</p> <ul style="list-style-type: none">• Engages in few, if any, independent self help skills• Difficulty imitating others
---	--

Most 3 year olds are also gaining further independence in their self care and cognitive abilities. Usually a 3 year old child is able to feed themselves and drink from a cup or glass without help. They are able to sustain the focus of their attention for increasing lengths of time and can imitate the activities and movements of peers and adults.

Children who only engage in few, if any, independent self help skills, or who seem very passive or disinterested in participating in self care activities may be at a higher risk for developing ASD. Also be

aware of those 3 year who are not actively imitating the things they see other children and adults doing.

Slide 23



How Many Red Flags?
Weatherby et al., 2004

- Repetitive gaze, gesture, or hand or finger movements
- Lack of sharing enjoyment or interest
- Repetitive play with objects
- Little or no response to name when called

So how do you know if a child is displaying enough red flags to warrant a more extensive formal diagnostic evaluation? In general, it's a good idea to consider referring children over the age of 3 who are demonstrating a consistent pattern of behaviors, including combinations of the following:

Inappropriate gaze – those children who do make or avoid eye contact or those who look at movement or objects with their peripheral visual rather than straight on

Lack of sharing enjoyment or interest - those children who do not seem interested in joining the activities of others or who only seem interested in repetitive activities they engage in by themselves

Little or no response to name when called

Lack of coordinated facial expression, gesture, and sound

Lack of showing - either by bringing an object to another person's attention or by directing

their attention to it

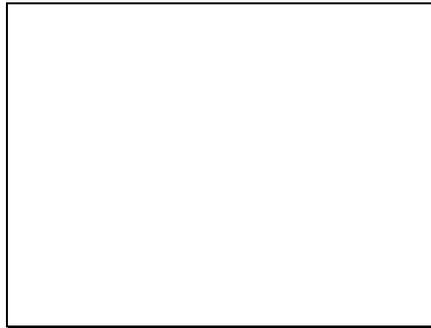
Unusual intonation and/or pitch of voice – *do they make peculiar, repetitive noises or have an odd quality to tone of voice?*

Repetitive movements of posturing of body, arms, hands, or fingers

Repetitive movements with objects

Now let's watch a quick video clip of Jamal. How many of these red flags do you observe in it?

Slide 24



Children who are socially isolated, do not respond their name, and present with significant repetitive behaviors at 36 months are at risk for developing an ASD and should have a full assessment completed.

Slide 25

Absolute Indications for Immediate Evaluation

- No babbling pointing or other gesture by 12 months
- No single words by 16 months
- No 2-word spontaneous (not echolalic) phrases by 24 months
- Loss of language or social skills at any age

And finally, you should refer a child for a diagnostic evaluation immediately whenever the following red flags are present:

If the child is not babbling pointing or using other gestures to communicate, by 12 months

If the child is not using single words by 16 months of age

If the child has no 2-word spontaneous (not echolalic) phrases by 24 months of age

Or if there is ANY loss of ANY language or social skills at ANY age

Slide 26

Early Screening: Why?

Intensive early intervention before age 3 results in greater impact after age 5
(Wetherby et al., 2004).

- Presence of neurologic plasticity at younger ages
- Better school placement outcomes *(Harris & Handelman, 2000)*
- Better chance of graduating from high school
- Higher likelihood to live independently
- Positive economic impact over a life-time with early intervention

Why is early screening for developmental delays or autism spectrum disorders so important? One of the most compelling reasons is that children who receive an early diagnosis and begin intervention at a young age have a much better prognosis for their future. Current research in early intervention indicates that intensive early intervention before age 3 results in greater impact after age 5. specifically:

The brains of young children are still growing and expanding at a rapid rate. Because of this, intervention during those critical years is most effective at addressing delays as they develop and preventing them from intensifying.

There's also documented evidence that children who receive early intervention services have better school placement outcomes

And they also have a better chance of graduating from high school

As they move into adulthood there is higher likelihood that they will live independently and the cost of

those early services has a significant positive economic impact over a life-time.

Slide 27

**Modified Checklist
for Autism in Toddlers**
(MCHAT)

- Relies on information from parents
- Consists of 23 yes/no questions
- Scored by the person completing the checklist
- Takes 10-15 minutes to complete
- Screens for developmental problems

One simple screening tool that is of great use for identifying young children in need of a more formal diagnostic evaluation is the Modified Checklist for Autism in Toddlers, otherwise referred to as the MCHAT. The MChat Relies on information gathered from parents. It consists of 23 yes/no questions and is designed to be scored by the individual who is completing it. It takes 10-15 to complete and can be a very good starting point for identifying developmental problems in young children.

If you would like to know more about the MCHAT, you might want to view the CARD tutorial “Modified Checklist for Autism in Toddlers” (MCHAT). Contact us to request a copy of this tutorial.

Slide 28

Autism Screening Tools

- The Checklist for Autism in Toddlers (CHAT) (Baron-Cohen, 1992)
- Pervasive Developmental Disorder Screening Test (PDDST) (Siegel, 1998)

In addition to the MCHAT, there are other screening tools that can be helpful for identifying children in need of a more formal diagnostic evaluation. These include:

The Checklist for Autism in Toddlers (CHAT) (Baron-Cohen, 1992)

Pervasive Developmental Disorder Screening Test (PDDST) (Siegel, 1998)

Slide 29

“If you’ve seen one child with Asperger’s Syndrome or Autism, you have seen one child with Asperger’s Syndrome or Autism.”

Brenda Smith Myles

Regardless of the final outcome of a diagnostic evaluation, it’s really more important to understand that a diagnosis is just the starting point. Now comes the time to develop an individualized plan of interventions and supports that will extend the child’s current skills and strengths, address areas of deficit and extent support strategies across environments. For every child with autism spectrum disorder, what this looks like and how it is done will be a little bit different in every case.

Slide 30

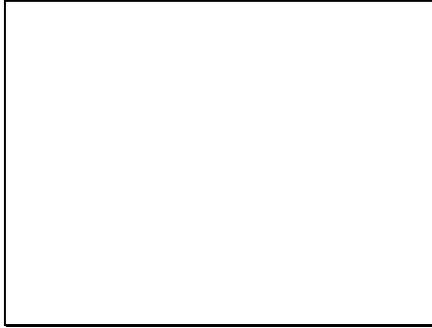


Having said that, let’s meet a young man named Diego, who received a diagnosis of autism at the age of 20 months.! He was Diagnosed with classic symptoms of autism at 20 months

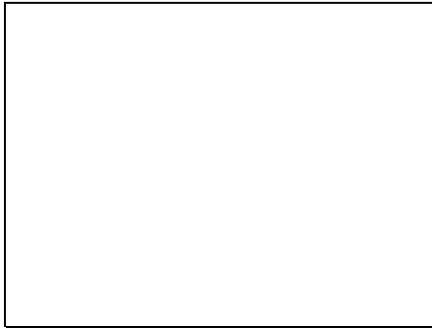
At the time of Diego’s diagnosis, he had no communication, significant behaviors concerns, and impaired social/play skills such that he could not tolerate a preschool placement. Diego’s progress is an example of the benefits of early screening, diagnosis, and intervention. Let’s see what supports were put in place

for him.

Slide 31

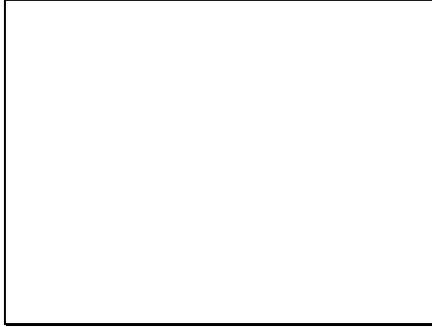


Slide 32



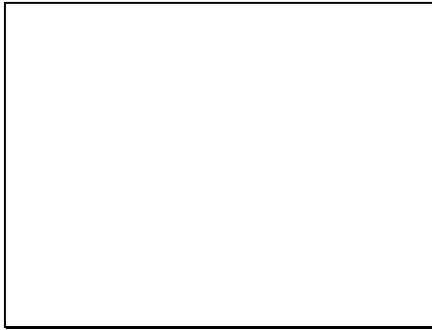
A simple picture exchange system with vocabulary that was most relevant to Diego's communicative needs and interests was created for him.

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As Diego began to learn that using his picture exchange board as an effective, easy means of communication, his skills he also started generalizing his new skills in different ways at home. As this happened, he did not need to rely on problem behaviors to get his communication needs met. As a result, behavior concerns decreased as communication skills increased.

Slide 34



AS Diago grew and became more competent and comfortable communicating with his picture exchange system, his skills were generalized in to other situations and settings outside his home. Here's a clip of him using his communication support in one of his one of Diego's favorite places.

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So you can see that anything is possible when a child receives a thorough diagnostic evaluation and is provided the appropriate supports and interventions. Here's proof – this clip is of Diego now, using age appropriate communication skills and playing “Go Fish with his mom.

Slide 36

Resources

- First Signs www.firstsigns.org/
- Education in Quality Improvement for Pediatric Practice www.eqipp.org
- Institute for Healthcare Improvement www.ihl.org
- National Initiative for Children's Healthcare Quality www.nichq.org
- Agency for Healthcare Research and Quality www.ahrq.gov

The following resources will provide additional information pertaining to child development issues and early signs of autism spectrum disorders.

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Contact CARD- USF

University of South Florida
Louis de la Parte Mental Health Institute
Department of Child & Family Studies
13301 Bruce B. Downs Blvd.
MHC 2113A
Tampa, FL 33612-3899

(813) 974-2532
In Florida (800) 333-4530
FAX: (813) 974-6115

<http://card-usf.fmhi.usf.edu>

Making decisions about intervention options should be a thoughtful and deliberate process that is based on a thorough understanding of the intervention itself and reflection of its potential impact on your child and family. If you still have questions or feel you would like further information or support, please feel free to contact the CARD Center in your area directly.

Slide 38

Resources

- American Academy of Pediatrics (2001). The pediatrician's role in the diagnosis and management of autistic spectrum disorder in children. *Pediatrics*, 107, 1221-1226.
- Committee on Children with Disabilities (1994). Screening infants and young children for developmental disabilities. *Pediatrics*, 93, 863-865.
- Filipek, P.A. et al., (2000). Practice parameter: Screening and diagnosis of autism. Report of the Quality Standards Subcommittee of the American Academy of Neurology and the Child Neurology Society. *Neurology*, 55, 468-479.

If you are interested in learning more, you might like to look at the following information and resources.

Slide 39

Resources

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