

Title: Autism Spectrum Disorders (Pervasive Developmental Disorders) and vitamin D

Author: Barrie Miller

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Abstract: The Autism Spectrum Disorders (ASD's) are a group of neurodevelopmental disorders that result in abnormalities of socialization, communication and behavior. There has been an apparent increase in the prevalence of ASD's in the last 20 years. While the exact etiologies of the ASD's are not known, scientists believe that gene/environment interactions are involved in the development of ASD's. Genes make some individuals more susceptible to environmental factors. One environmental factor that could be involved in the development of ASD's is vitamin D deficiency during pregnancy and early childhood development. Vitamin D is an important neurosteroid involved in brain development. Animal studies have shown that gestational vitamin D deficiency results in offspring with anatomical abnormalities similar to those found in autism. Developmental vitamin D deficiency has been found to dysregulate 36 proteins involved in mammalian brain development. Vitamin D supplementation during pregnancy and throughout childhood could possibly help prevent some cases of ASD.

This document was created by a medical student enrolled in the Primary Care Clerkship at the University of Minnesota Medical School as part of the course project. The aim of the project is to present information on a medical topic in the format of a patient education handout. It does not necessarily reflect the views of the University of Minnesota Medical School physicians and faculty. These materials are provided for informational purposes only and are in no way intended to take the place of the advice and recommendations of your personal health care provider. The information provided may no longer be up to date since it has not been reviewed since the date of creation. The information provided should not be used to diagnose a health problem or disease, or as a means of determining treatment. In the event of a medical emergency, immediately contact a doctor or call 911.

## Whom do ASD's affect?

In the United States, about one in every 150 children have an ASD. ASD's occur in all socioeconomic, racial and ethnic groups. People with darker skin are at a slightly increased risk for developing ASD's. Boys are 4 times more likely than girls to have an ASD.

## What should I do if I think my child might have an ASD?

Talk to your child's doctor if you think your child might have symptoms of ASD. Your child's doctor might recommend further evaluation by a professional who specializes in ASD.

## What should I do if my child is diagnosed with an ASD?

There is no single best treatment for ASD's. However, it is very important to get help as soon as your child is diagnosed with an ASD. Early intervention and treatment can help improve your child's development.

Your child's doctor or ASD specialist can help you find resources to help treat and care for your child with an ASD. If you are not sure who to contact, the National Dissemination Center for Children with Disabilities can help get you started. They can be contacted at 1-800-695-0285 or [www.nichcy.org](http://www.nichcy.org).

Recommended resources to learn more about the Autism Spectrum Disorders:

National Institute of Mental Health at <http://www.nimh.nih.gov/health/publications/autism/index.shtml>

Centers for Disease Control and Prevention at <http://www.cdc.gov/ncbddd/autism/index.html>

Recommended resources to learn more about Autism and Vitamin D:

American Academy of Pediatrics at <http://www.aap.org/pressroom/nce/nce08vitamin.htm>

Vitamin D Council at <http://www.vitamincouncil.org/health/autism/>

# Autism Spectrum Disorders

(Pervasive Developmental Disorders)





## What are the Autism Spectrum Disorders?

Autism Spectrum Disorders (ASD's) are a group of developmental disorders. These disorders result in abnormalities of socialization, communication and behavior. Included in the ASD's are:

- Autistic Disorder
- Asperger Syndrome
- Pervasive Developmental Disorder Not Otherwise Specified, including Atypical Autism
- Rett Syndrome
- Childhood Disintegrative Disorder

## How can I tell if my child might have an ASD?

People with ASD's can share a variety of symptoms. Since ASD's are "spectrum disorders", the same symptoms can range from mild to severe in each individual. These symptoms often appear between the ages of 12 and 36 months. A person with ASD might:

- Not babble, point, or make meaningful gestures by 1 year of age
- Not respond to name by 1 year of age
- Not point at objects to show interest (point at an airplane flying over) by 14 months
- Not speak one word by 16 months of age
- Not play "pretend" games (pretend to "feed" a doll) by 18 months
- Not combine two words by 2 years of age
- Not smile
- Not respond to name
- Lose language or social skills
- Have poor eye contact
- Be hyperactive (very Active) and/or impulsive (acting without thinking)
- Flap their hands, rock their body, or spin in circles
- Repeat words or phrases over and over
- Avoid or resist physical contact
- Get upset by minor changes
- Not be comforted by others during distress
- Have trouble understanding other people's feelings or talking about own feelings

## What causes ASD's?

Scientists do not know all of the causes of ASD's. It is known that a person's genes can make him more likely to develop an ASD. However, genes alone do not cause ASD's. Varieties of environmental factors interact with the genes of susceptible individuals resulting in the ASD's.

An overwhelming amount of scientific evidence shows that vaccinations do not cause ASD's. In addition, poor parenting practices do not cause the ASD's.

## How can I prevent ASD's?

Since the specific genetic and environmental causes of the ASD's are not known, prevention is complicated. Scientists do think that taking Vitamin D during pregnancy and throughout childhood might help protect against the development of ASD's. Check with your doctor to determine if you and your child might benefit from taking a Vitamin D supplement.

