

## Patient information from the BMJ Group

# Autism

In this section

[What is it?](#)

[What are the symptoms?](#)

[How is it diagnosed?](#)

[How common is it?](#)

[What treatments work?](#)

[What will happen?](#)

[Questions to ask](#)

## Autism

Finding out that your child has autism can be very upsetting. But getting treatment early on can help make a difference to your child's life.

We've brought together the best research about autism and weighed up the evidence about how to treat it. You can use our information to talk with your doctor and decide which treatments are best for your child.

## What is autism?

You may have noticed that your child was different, even as a small baby. Perhaps they seem less involved with the world around them than other children. And maybe your child doesn't show much interest in other people.

You may be trying to work out whether the differences you have noticed are autism. Or you may have been told that your child has autism and want to find out the best way to help them.

## Key points about autism

- If your child has autism, they may not learn to speak at the usual age. And they may have problems communicating in other ways too.
- Your child may not seem interested in other people. And they may have certain set ways of behaving and may do the same activity over and over again.
- Usually, these signs show up before your child is 3 years old.
- We don't know what causes most cases of autism. But it's linked to how your child's brain works. It's not caused by anything you as a parent might have done.
- About 6 in 1,000 children have an autistic spectrum disorder. That means they have autism or a related condition. Some children have only mild symptoms and some children have severe symptoms.

## Autism

- There isn't any cure for autism. Your child will always have it. But getting treatment early on can help make a difference to your child's life. <sup>[1]</sup>
- There hasn't been much research on which treatment works best.

### How children develop



Children with autism don't develop the skills to get on with other children.

Children change in many ways as they get older. They grow physically. For example, they put on weight and get taller and stronger. But they develop in other important ways. They learn how to interact with people by speaking and smiling, and how to get on with people in other ways, such as playing. Doctors call all of these changes **development**. These changes normally happen by specific ages. So you may hear them called **developmental milestones**. A 'milestone' means a way to tell how far someone has come.

Doctors watch for milestones to tell whether your child is developing properly. You can watch for them too. If you are worried about your child having autism, here are some milestones you can watch for: <sup>[2]</sup> <sup>[3]</sup> <sup>[4]</sup> <sup>[5]</sup>

- By the age of 2 months, most babies smile
- By 9 months, most babies follow your finger if you point to something
- By 1 year, most babies babble and point to things they want

## Autism

- By 2 years, most babies can speak phrases of two words on their own (not copying their parents) and can play pretend.

But children don't always exactly follow this pattern. Also, they can be slow to reach certain milestones but not others. Ask your doctor if you think your child is falling behind in any way.

Skills such as speaking, smiling, and getting on with others are controlled by your brain. It does this through several networks (pathways of nerves) that connect your brain to other parts of your body. As your child grows, their brain forms new pathways, so they develop more skills.

### What happens in autism?

With autism, your child's brain doesn't work as it should.<sup>[1]</sup> This affects how your child develops in many ways. So doctors call autism a **pervasive developmental disorder** (PDD for short).

On the outside, children with autism usually grow and look like other children. But they don't develop the skills they need to get on well with others or to keep up in school.

With autism, your child usually has problems with speaking. And they may not like being touched in any way, such as cuddling. Also, they may behave in odd ways. For example, your child may do the same activity over and over again. Or they may follow the same routine all the time.

Sometimes, children with autism are very good at a certain skill or subject, such as maths, technical drawing, or music. That's because they can focus very hard on just one thing. This is linked to their autism. But this happens rarely.

Autism affects different children in different ways. Some children never learn to speak and need help throughout their life. Other children can learn the skills they need to live on their own.

Autism belongs to a group of similar conditions. Doctors call this group **autistic spectrum disorder**. The group also includes a condition called **Asperger's syndrome**. To learn more, see [Autistic spectrum disorder](#) .

On these pages, we are looking at autism itself.

### Autism: why my child?

If your child has autism, you may worry that something you did caused it. But nothing you have done as a parent could have caused your child's autism.

In most children with autism, doctors don't know the exact cause for it.<sup>[8]</sup> All we know is that the brains of children with autism work in a different way from other people's.<sup>[1]</sup>

# Autism

Researchers have looked at many factors to see whether they are linked to autism. We've described some of these here.

## Genes and your family

Studies give us good evidence that autism is mainly caused by **genes**, rather than by any things your baby or child experiences. You get half of your genes from your father and half from your mother. Your genes control how your body develops. If you have a faulty gene, it can cause problems with growth and health. But this doesn't always happen.

A combination of certain faulty genes from both parents may increase a child's chances of getting autism. We're still not sure which genes are involved or how the faulty genes affect your child's brain. We have good evidence from research that autism is mainly caused by genes.

- Some studies have looked at autism in families. When a family has one child with autism, the chances of having another child with autism are about 1 in 20.<sup>[9]</sup> This is much higher than we would expect.<sup>[8]</sup>
- Other studies have looked at identical twins. Identical twins have the same genes. These studies have shown that if one twin has autism, there is a 6 in 10 to 9 in 10 chance that the other twin also has autism.<sup>[10]</sup> This is a much higher chance than for twins who aren't identical. Twins who aren't identical don't have the same genes.
- Autism is also more common in families where the mother has rheumatoid arthritis or coeliac disease, or where family members have had type 1 diabetes. These are all conditions related to the immune system.<sup>[11]</sup>

If you already have a child with autism, or you or your partner has an autistic spectrum disorder, you may worry about the chances of your future children also having autism. You can get advice about this from a genetic counsellor. A genetic counsellor will look closely at your family. Ask your GP about genetic counselling.

## Things your child goes through

The genes your child has may not be the only reason for autism. Things your child goes through in the womb, at birth or afterwards, might help bring on the condition. Autism probably happens because of a combination of genes and these other things.

Some studies have shown that babies born prematurely, or with very low birth weights, are more likely to have autism.<sup>[12]</sup> <sup>[13]</sup>

Complications in pregnancy and around the time of birth may also affect risk. Research shows the following things may increase the chances of a child having autism:<sup>[14]</sup> <sup>[15]</sup>  
<sup>[16]</sup>

- Older age in either the father or mother

# Autism

- The mother needing to take medicines during pregnancy
- The mother getting [diabetes](#) during pregnancy.

The first-born child in a family is more likely to have autism. Mothers of children with autism are more likely to have had high blood pressure during pregnancy (pre-eclampsia).

## Medical conditions

Sometimes autism is caused by a medical condition that your child gets. But this isn't common. <sup>[10]</sup> To learn more, see [Medical causes of autism](#) .

## MMR vaccine: no evidence of a link with autism

In the past, a small group of doctors and researchers suggested that vaccination with the MMR vaccine (a vaccine for measles, mumps, and rubella) might be linked to autism. The original research on which this was based has now been discredited, and other researchers who have done similar studies have been unable to find a link. <sup>[17]</sup> <sup>[18]</sup> <sup>[19]</sup> <sup>[20]</sup> <sup>[21]</sup> Because of the worry, some parents decided not to give their children this vaccine. But more than 20 studies, including several large research studies on thousands of children, have looked into this question. They have all said there isn't any evidence of a link between the MMR vaccine and autism. <sup>[22]</sup> <sup>[23]</sup> <sup>[24]</sup> <sup>[25]</sup> <sup>[26]</sup> <sup>[27]</sup>

Leading researchers and doctors who specialise in child health advise parents to give their children the MMR vaccine. <sup>[10]</sup> <sup>[28]</sup> <sup>[29]</sup>

To learn more, see [MMR vaccine and autism](#) .

## What are the symptoms of autism?

If your child has autism, you will probably notice things that are different about them between the ages of 18 months and 2 years. But the signs may become clear even sooner than that. Or you may not notice them until later, when your child starts school.

## Things you may notice early on

Even very early on, you may notice that your child: <sup>[37]</sup>

- Doesn't look when you call their name, even if they seem to hear other sounds
- Doesn't look you in the eye much or at all
- Doesn't notice when you enter or leave a room
- Seems to be in their own world
- Doesn't look where you are looking or follow your finger when you point to something

# Autism

- Doesn't point at things.

Usually, at about 9 months of age, children will follow your finger when you point to something. And, typically, children point to something they want at about 1 year of age.

[38]

Some other things you may notice are that your child: [37]

- Doesn't smile back at you
- Leads you by the hand to tell you what they want
- Can't do simple things you ask them to do
- Has a lot of tantrums
- May always want to hold a certain object, such as a torch
- Prefers to play alone
- Doesn't play with toys in the usual way
- Doesn't play pretend (children usually do this from 2 years of age).

## Signs doctors look for

Doctors look for three main problems if they think your child might have autism. [39] [6]

[40] Some children without autism have problems in these areas too. So your doctor will look at your child's overall pattern and how bad the problems are.

## Problems with social activities

Even small babies take part in social activities. Within the first few months, babies look at faces and begin to smile, especially when they are smiled at. Babies also like to be cuddled and comforted with words, sounds, and singing.

If your child has autism, they may be much less keen than normal about these activities.

[41] Some children don't like to be picked up or cuddled. [42] A child with autism may prefer to just lie in their cot or sit in a familiar chair rather than get attention. They usually won't want to play with other children.

Children normally become very close to the main person who cares for them, usually their mother. And they get upset when this person leaves them. But children with autism may not react in this way. In fact, they may not even have much interest in their parents. This can upset you a lot if you are a parent. So can having a child who doesn't seem to

# Autism

give or need affection in the usual way. Children with autism can show affection, but they do so in their own way.

## Problems with communication

Communication is a big word. It's just a term for telling other people what we mean. We tell others what we mean in lots of different ways.

One way we communicate is by speaking. How much children with autism speak varies a lot. Some children say just a few simple phrases over and over, while others speak almost normally. A few children with autism don't speak at all.

About 1 in 6 children with autism speak only a word or two, once in a while.<sup>[43]</sup> <sup>[44]</sup> And unlike children with some other kinds of problems, such as hearing problems, children with autism don't try to make signs either.

The other 5 in 6 children do learn to speak, but usually they learn at a slower pace than normal. Most children without autism can use simple phrases of two or more words by the age of 2 years.<sup>[45]</sup> But if your child has autism, this might take much longer. Children with autism who are going to speak usually begin to do so by the age of 5 years. But they may only talk about their interests, or say the same things over and over.<sup>[42]</sup>

A child with autism may often say back words or phrases they have heard you say. This can be straight after hearing it or later. (But some children without autism do this too.) And your child may also have problems using the words "I" and "you" in the right way.

Some children with autism learn to speak a bit in their first year. But then they lose that speech in their second year. In other words, they seem to go backwards. To learn more, see [Autism and speaking](#) .

People communicate in other important ways too. For example, we look each other in the eye and show an interest in what others are saying. If your child has autism, they may not be able to do this naturally. And they may speak with a flat voice. Also, your child may cut in when someone is talking or may not know when to give others a turn.

## Problems with behaviour

If your child has autism, they may have set ways of behaving that they do over and over. And they may be interested in only a few things. You can see this in the way that your child plays. For example, your child may want to send a toy car up and down the ramp of their toy garage over and over. But they won't want to play pretend. So they won't want to imagine going on a trip with their toy car.

If your child has autism, they may also need to have the same routines every day. The routine can have many steps, and they have to be done in the same order. Changing the routine in any way can upset your child a lot, more than you expect.

Some children with autism are fascinated with things that work in complex ways, such as toys that are like machines. Drawing, playing computer games, or building with Lego

# Autism

may be fun for some children with autism. But they often do or make the same thing over and over.

Older children with autism may be unusually interested in very detailed facts. For example, they may get very focused on train timetables or on topics such as astronomy. Many children without autism have particular interests too. But in children with autism, the interest is more than you expect.

## Other signs

There are other ways your child might be affected by autism too.

### Problems with learning

More than 1 in 4 children with autism have intelligence that is below normal.<sup>[46]</sup> This means they have problems with learning.<sup>[47]</sup> Some children do well on intelligence tests, but they may not be able to pay attention, to hold on to an idea while doing something else, or to make a decision quickly.<sup>[47]</sup>

### Odd reactions to sounds, smell, or pain

Some children with autism are very sensitive to sound. Your child may get upset by everyday noises, such as the sound of a vacuum cleaner. Or they may be able to hear sounds, such as planes in the sky, long before others in the same room.

Your child may have a strong sense of smell or taste. And they may be a very picky eater, eating only a few foods or only foods made in a certain way.

Some children with autism don't seem to feel pain. But this may be because they don't know how to tell you when they are hurt or they won't come for comfort.

### Odd movements

If your child gets excited, they may flap their hands and arms. Or they might move their arms with their elbows bent and fingers in front of their face. Your child may be a bit clumsy. And they may rock, spin, or bounce over and over.

### Other problems with mental health

Many children with autism are very active. You may hear this called **hyperactive**. This means it's hard for your child to focus or pay attention for very long. Your child may not be able to sit still and may act before thinking. They may have problems sleeping too.

Some children with autism get anxious or depressed. Usually, this happens in older children and young adults. Also, some children with autism hurt themselves. For example, they may bang their heads against a wall or bite their wrists.<sup>[40]</sup>

All these problems can upset you and tire you out.



# Autism

## Problems with writing

Children with autism find it difficult to write with a pen or pencil. This can be very frustrating for your child. Using a computer may help them get past this. <sup>[46]</sup>

## Problems with physical health

About 1 in 4 people with autism get seizures. <sup>[40]</sup> But there are good treatments that can usually keep seizures under control.

## How do doctors diagnose autism?

It may be hard to work out the diagnosis of autism. Your doctor will look for signs of autism in the way your child behaves and how they have developed.

You may think that the name for your child's problems doesn't matter. This may be especially so if your child gets upset by seeing doctors or being examined.

But if your child has autism, they need the care and treatment that suits them. And the sooner, the better. So it's important to get autism diagnosed properly and early on.

This is done by a health professional who specialises in autism, usually a doctor. <sup>[55]</sup> But your child may have to see other professionals too before your doctor can make the diagnosis.

## Signs of autism

The three main signs of autism that doctors look for in your child are. <sup>[6]</sup> <sup>[56]</sup>

- Having problems with speaking, as well as seeming to not understand what others are saying
- Having problems getting on with people socially (for example, not looking people in the eye, not using facial expressions or body language, and not having many interests in common with other children)
- Having problems with behaviour (for example, having only a few activities or interests, constantly doing actions over and over, and perhaps needing to have a strict routine all the time).

These problems usually start before the age of 3 years. So doctors can typically diagnose autism between the ages of 2 years and 3 years. <sup>[57]</sup> But they can look for signs earlier, especially if you notice something is wrong, or if you have another child who has autism.

## Tests

Some reliable tests can help your doctor and other professionals tell whether your child has autism.

## Autism

- Your doctor will ask you, as the main carer, about your child. These questions focus on how your child behaves and has developed from birth. Your doctor will probably take notes on a special form.
- Your doctor may spend time with your child, watching how they play and communicate, and checking how well they do certain things.<sup>[58]</sup> This should be done in a situation your child knows (for example, at school or playing a game they like). Your doctor may also test how your child does in a new situation, such as meeting new people or visiting a new place.

Your doctor may also do tests for the medical conditions that are linked to autism in a few children.<sup>[55]</sup> <sup>[59]</sup> To learn more, see [Medical causes of autism](#) .

### National Autism Plan

In the UK, experts have drawn up the National Autism Plan for children with this condition.<sup>[60]</sup> It helps health professionals:

- Recognise autism
- Examine your child
- Meet with you regularly to talk about your child
- Work out a plan for caring for your child
- Work with other professionals
- Make sure that preschool children can get the care they need (15 hours a week is recommended).

You can read more about this plan on the National Autistic Society website ( <http://www.autism.org.uk> ).

### Your child's health care team

If your child has autism, many different professionals will be involved in caring for and treating them. They work together as a team. Each one helps in a certain way.

For example, teachers or **psychologists** may give your child tests to help work out the best programme for them. And special therapists may help your child with speaking.

To learn more, see [Autism professionals](#) .

## How common is autism?

You may think that there aren't many children like your child with autism. But this condition may be more common than you think.

In countries such as the UK and the United States, about 4 in 1,000 to 6 in 1,000 children have autism. <sup>[49]</sup> <sup>[50]</sup> <sup>[51]</sup>

About 1 in 90 children may have any type of [autistic spectrum disorder](#) (a group of conditions that includes autism, Asperger's syndrome, and similar conditions). <sup>[51]</sup>

Autism affects about four times as many boys as girls. <sup>[50]</sup> And it happens in children from all ethnic backgrounds, and in people in all countries around the world.

Doctors once thought autism was rare. But newer studies show it seems to be getting more common. It's hard to say why. This may be just because the newer studies have been better at finding children with autism. Or it may be because the way doctors define autism has become wider. We need more research before we can say for sure what's causing the increase in autism. <sup>[49]</sup>

## What treatments work for autism?

If you have found out that your child has autism, you may be very upset. But getting treatment for your child early on can help make a difference.

If your child has autism, they may have problems speaking and getting on with people. And they may behave in unusual ways some or all of the time.

All of these problems can be hard on you as a parent or carer. But the good news is that treatments can help your child lead a more normal life.

Different children need different types of treatment. This is because the type of treatment a child needs depends on their abilities and problems. For example, a child who doesn't speak may need different treatment from another child who does speak. Your doctor should look at your child's strengths and weaknesses before suggesting a particular treatment.

## Key points about treating autism

- There isn't any cure for autism. But treatments may help your child speak and communicate better and do better at school.
- The main treatments use special ways to teach your child and help change how they behave.
- These treatments seem to help the most if you start them while your child is still young. Doctors call this early intervention.

## Autism

- Treatments for autism can cost a lot. And you may not be able to get some of them where you live. You may be offered ones that are simpler.
- If your child is also **hyperactive** or has problems such as tantrums, you can get drugs to help.
- There haven't been many studies comparing different treatments. But most experts agree that treatment early in life can help.

### Treatments for autism

There are several treatments for autism. But which treatment works best? We've looked at the best research and given a rating for each treatment according to how well it works. We've looked separately at different types of treatments.

- [Education treatments for autism](#)
- [Medicine treatments for autism](#)
- [Other kinds of therapy for autism](#)

For help in deciding which treatment is best for your child, see [How to make the best decisions about treatment](#).

### Treatment Group 1

#### Education treatments for autism

##### Treatments that are likely to work

- [Early teaching by parents](#) : This type of programme aims to help children with autism before they start school. It involves many hours every week. As a parent or carer, you need training. [More...](#)
- [Applied behavioural analysis](#) : This is called ABA for short. Therapists work with your child to help them learn, often by breaking tasks into small steps. It usually means many hours of therapy each week. [More...](#)
- [TEACCH](#) : This is a programme that teaches your child at home or in school in a planned way. TEACCH stands for **T**reatment and **E**ducation of **A**utistic and related **C**ommunication-handicapped **C**hildren. You need to be trained in how to do it. [More...](#)
- [Child's Talk](#) : This programme aims to help you communicate better with your child. You watch videos of the way you play with your child, to see if you can understand their signals. [More...](#)

# Autism

- [More Than Words](#) : This programme helps parents create more opportunities for their children to communicate. You take part in weekly training sessions with other parents. [More...](#)
- [Picture Exchange Communication System](#) : This is called PECS for short. In this treatment, therapists use symbols or pictures to help your child communicate. [More...](#)

## Treatments that need further study

- [Other education programmes](#) : There are many different education programmes for children with autism. [More...](#)

## Treatment Group 2

### Medicine treatments for autism

#### Treatments that are likely to work

- [Methylphenidate](#) : This drug is a kind called a stimulant. The brand names for methylphenidate include Ritalin, Concerta XL, and Equasym XL. It may help if your child is hyperactive. But there are side effects. [More...](#)

#### Treatments that work, but whose harms may outweigh the benefits

- [Risperidone](#) : This drug is a type of antipsychotic drug. The brand name is Risperdal. It may calm your child if they have tantrums, fight, or try to hurt themselves. But there are side effects. [More...](#)
- [Selective serotonin reuptake inhibitors \(SSRIs\)](#) : These are drugs mainly used to treat depression. They include fluoxetine (Prozac), citalopram (Cipramil), and fluvoxamine (Faverin). [More...](#)

#### Treatments that need further study

- [Immunoglobulin](#) : This is a protein that your immune system uses to identify germs such as bacteria. [More...](#)
- [Memantine](#) : This drug is more commonly used to treat older people with Alzheimer's disease. The brand name is Ebixa. [More...](#)

#### Treatments that are unlikely to work

- [Secretin](#) : This is a hormone. In the past, some researchers said secretin helped symptoms of autism. But studies don't show any evidence of this. [More...](#)

## Treatment Group 3

### Other kinds of therapy for autism

#### Treatments that need further study

- [Special diets and supplements](#) : With these treatments, your child doesn't eat certain foods or they take extra vitamins and minerals. For example, your child may not eat anything with wheat in it or they may take fish oil. [More...](#)
- [Auditory integration training](#) : This is called AIT for short. Your child listens to special music. This training tries to change your child's hearing so that he or she isn't bothered as much by certain sounds. [More...](#)
- [Sensory integration training](#) : This programme aims to help children who are over-sensitive to sounds, lights, or touch. The treatment may include listening to music or watching coloured lights. [More...](#)

#### Treatments that are likely to be ineffective or harmful

- [Chelation](#) : This treatment is based on the idea that metals such as mercury and lead cause autism. You are given chemicals that help the body get rid of these metals. [More...](#)

### What will happen to my child?

For many parents of children with autism, the future is one of their biggest worries. In particular, you may worry what will happen if you can't care for your child any more.

It's hard to say what will happen to your child. This is because autism affects different children in different ways. Some can live on their own. But others will always need a lot of help. <sup>[52]</sup> <sup>[53]</sup>

Bear in mind that the right support, education, and training now may help your child have fewer problems later on. <sup>[54]</sup> Here's what we know from research: <sup>[52]</sup>

- About 15 in 100 children with autism grow up to live on their own
- About 15 in 100 to 20 in 100 live alone but with help
- Many adults with autism need full-time care for the rest of their life.

How well your child can do on their own is linked to whether they can speak and learn. <sup>[53]</sup> <sup>[54]</sup> Some children have a good chance of living alone and holding down a job later on. <sup>[54]</sup> But others have worse symptoms and need a lot of support in all areas of their

# Autism

life, including housing, work, and social activities.<sup>[53]</sup> Many adults with autism need to live in special places that provide care for the long term.

## Autism in adults

One study looked at 75 people with autism.<sup>[54]</sup> They were 29 years old, on average. This study was small. It's also a bit out of date, from 1994. But what the study found gives us some idea of how adults with autism get on.

### Living

- Eight of the 75 people were living on their own or partly on their own.
- About 25 were living with their parents.
- About 30 were living in special communities, most built specially for people with autism.
- About 10 were living in long-stay places.

### Working

- About 15 of the 75 people had got qualifications in school.
- Seven worked in regular jobs for pay, and one worked for himself.
- Four had volunteer jobs.
- About 50 went to day centres or living centres. These centres didn't offer much chance to learn skills that would help the young people find regular jobs.

### Social life

- About 25 of the 75 people had some friends.
- One was married.
- About 50 didn't have any friends at all.

## Autism in older children and teenagers

Autism doesn't go away. But certain kinds of behaviour often get better as your child gets older. In a study of about 200 families, more than one-third of parents said that their children had got better between the ages of 10 years and 15 years.<sup>[54]</sup> But about one-quarter of parents said that their children's behaviour had got worse.

Certain types of behaviour may get better, while other types get worse.

# Autism

Some young people with autism may realise that they are different. This can be a good thing, especially if they learn new skills to help them cope better. But young people with autism need a lot of support. If your child realises they don't fit in, they may get depressed or have other problems with their mental health. <sup>[53]</sup>

## What does it feel like?

You may wonder what it feels like to have autism. To get an idea, you can read books written by people with this condition. Here are some examples:

- *Nobody Nowhere: The Extraordinary Autobiography of an Autistic* by Donna Williams
- *Somebody Somewhere: Breaking Free From the World of Autism* by Donna Williams
- *Thinking in Pictures and Other Reports From My Life With Autism* by Temple Grandin.

## Questions to ask your doctor

You will probably need to see several different professionals to get the advice, support, and treatment that your child needs.

Your doctor may be able to answer many of your questions about autism. But you may need to turn to other professionals too.

Here are some questions that you may want to ask:

- How do you know that my child has autism? Can you be sure?
- How do you know it's not something else?
- How will my child develop?
- Will my child be sent to a specialist or to a department with lots of experience in caring for children with autism?
- Is there any treatment that will help my child? Can I get it where I live?
- Can this treatment be harmful for my child?
- Are there other treatments that I would have to pay for?
- What sort of help can I get with caring for my child at home?
- Are there programmes to help me pay for child care, treatment, or equipment?
- Are there any local support groups for families who have children with autism?



- How can I help my other children to understand about autism? And how can I help them cope with having a brother or sister with autism?
- 

## Treatments:

### Early teaching by parents

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on early teaching by parents?](#)

This information is for people who have a child with autism. It tells you about early teaching by parents, a treatment used for autism. It is based on the best and most up-to-date research.

#### Does it work?

Yes. Experts agree that programmes that train parents how to teach their child skills when they are very young are likely to help with autism. But there hasn't been much good research on this.

Teaching parents about autism and how to connect with their child may help the child speak better. <sup>[61]</sup>

#### What is it?

Early teaching by parents gives your child extra help with learning basic skills such as speech before they start school. It starts working on your child's problems early on. Doctors call this early intervention.

The extra help comes mainly from you (the parents) or other daily carers. You get training in how to help a child with autism. <sup>[61]</sup> <sup>[62]</sup>

There are different kinds of training programmes for parents. The kind you have may depend on where you live. You might join a group of other parents and carers each week to learn more about autism and how a child with autism sees the world.

The trainers leading your group may also visit you at home to give you more support. And you learn certain skills. For example, you learn how to recognise different types of behaviour in your child and how to help them to communicate.

#### How can it help?

There hasn't been much research on early teaching by parents. But studies so far suggest that it can: <sup>[63]</sup>

## Autism

- Help children understand language better
- Help children and parents interact better
- Reduce the severity of some signs and behaviours of autism.

However, the studies didn't find that early teaching by parents helped in other ways, such as helping children adapt to new environments and situations, and improving other aspects of their communication.

### How does it work?

Young children usually learn how to speak and get on with others simply by the daily contact they have with their parents, carers, and other children. But your child with autism may not pick these skills up so easily. They probably need a much more planned way to learn them. This is the aim of early intervention programmes, such as early teaching by parents.

There haven't been many good-quality studies ( randomised controlled trials ) into what works best for children with autism. But experts agree that taking steps early can help your child with the problems caused by autism.

All the programmes that help seem to have some things in common. <sup>[64]</sup>

- Your child spends many hours each week having special lessons or help with their learning. This can be hard on you as parents.
- All the lessons are planned out in detail ahead of time. The aim is to give your child lots of instruction.
- Your family gets involved. This is because your family spends the most time with your child.

### Can it be harmful?

The studies we found didn't look at whether this programme could be harmful.

Early teaching trains parents and carers how to help a child with autism to learn. It seems unlikely that it would physically harm your child.

But programmes like this can ask a lot of you as parents. And they might last only a short time. The ones we looked at trained parents for just three months. You may feel you need more support. <sup>[62]</sup>

## How good is the research on early teaching by parents?

We found one summary of the research (a [systematic review](#)) that looked at having parents provide teaching early on in their child's life.<sup>[63]</sup> Doctors call this early intervention.

The summary included 17 studies with 919 children in total. It found that children having this early teaching from their parents seemed to understand language better, had improvement in some autism behaviours and signs, and interacted better with their parents. However, the research wasn't strong enough to be certain of these findings. We need more good-quality studies.

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## Applied behavioural analysis

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on applied behavioural analysis?](#)

This information is for people who have a child with autism. It tells you about applied behavioural analysis, a treatment used for autism. It is based on the best and most up-to-date research.

### Does it work?

Yes. Experts agree this programme is likely to help children with autism. But we need more good research on it.

Applied behavioural analysis is called ABA for short. It is also known as **Lovaas therapy** (named after the doctor who developed it) or **early intensive behavioural intervention** (EIBI for short).

### What is it?

Behaviour analysis involves watching and measuring how people behave. Doing this can help you better understand why someone behaves a certain way and how to change it. ABA is used to teach children with autism.<sup>[65]</sup>

ABA works best if it starts when your child is young, usually before they are 5 years old.<sup>[66]</sup> It starts working on your child's problems early on. Doctors call this early intervention.

A programme of early intensive behavioural intervention (EIBI) teaches your child skills they need to be able to learn. This programme was developed by a doctor called Dr O. Ivar Lovaas. That's why it is also known as Lovaas therapy.

Things that other children learn naturally, such as how to copy and understand, may have to be taught to a child with autism. ABA uses an individual programme to teach your child. Each skill is broken down and taught in small steps. After your child works on

## Autism

a skill for a while, there is often a test to see whether your child has learned that skill. This is known as **discrete trial teaching** (DTT for short).

Your child may be given good things called rewards (also known as reinforcement). These are things that they enjoy or that make them feel good. Praise may not help a child with autism very much at first. So things your child likes a lot are used as rewards. This could be playing with a favourite toy or eating a favourite food. But as your child gets better at learning, they probably won't need these rewards so often.

During ABA, a trained therapist usually works one-to-one with your child for 20 to 40 hours a week over one to four years. <sup>[66]</sup>

Most ABA programmes also try to make sure your child can use the new skills they learned in other places. This is known as generalisation. And ABA may work on any bad behaviour (known as challenging behaviour) your child may have by first looking at why your child behaves that way.

There are different sorts of ABA programmes. One is called verbal behaviour. It uses fun ways to get your child to speak. Another one is called pivotal response training. It focuses on a few key behaviours that may help your child in a wider way.

Some children do an ABA programme at home. Other children go to schools that use ABA to teach children with autism.

### How can it help?

Studies suggest that children who do many hours of ABA with therapists do better on tests measuring: <sup>[66]</sup>

- Language and communication skills
- Intelligence
- Social skills
- Ability to adapt to different environments and situations
- Quality of life.

But there haven't been many good-quality studies on ABA programmes. We need more good research and bigger studies.

### How does it work?

Young children usually learn how to speak and get on with others simply by the daily contact they have with their parents, carers, and other children. But a child with autism may not pick these skills up so easily. They probably need a much more planned way to learn them. This is the aim of early intervention programmes, such as ABA.

## Autism

There haven't been many good-quality studies ( randomised controlled trials ) into what works best for children with autism. But experts agree that taking steps early can help your child with the problems caused by autism.

All the programmes that help seem to have some things in common. <sup>[67]</sup>

- Your child spends many hours each week having special lessons or help with their learning. This can be hard on you as parents.
- All the lessons are planned out in detail ahead of time. The aim is to give your child lots of instruction.
- Your family gets involved. This is because your family spends the most time with your child.

ABA done for many hours each week has these things.

### Can it be harmful?

The studies we found didn't look at whether ABA could be harmful.

This programme is based on special ways of teaching to help children with autism. So it seems unlikely that it could physically harm your child.

Programmes like this can ask a lot from parents, and may have indirect effects on other children in the family. And they can cost a lot of money.

### How good is the research on applied behavioural analysis?

We found a summary of the research (a systematic review ) that looked at applied behavioural analysis (ABA) programmes for autism that start early on in your child's life.

<sup>[66]</sup> Doctors often call this early intensive behavioural intervention.

The summary found five studies with 203 children. It concluded that children who had ABA-type programmes did better than children who had more general special education programmes in schools. They scored more highly on tests of intelligence, social skills, language and communication, quality of life, and ability to adapt to different environments and situations.

However, all of these studies were fairly small, and only one was a randomised controlled trial , which is the best type of study for finding out the effects of a treatment. We need more good-quality studies to know for certain how well these treatments work.

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## TEACCH

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

# Autism

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on TEACCH?](#)

This information is for people who have a child with autism. It tells you about TEACCH, a treatment used for autism. It is based on the best and most up-to-date research.

## Does it work?

Yes. Experts agree this type of teaching given at home or in school is likely to help children with autism. But there hasn't been much research on it.

One study showed that this type of teaching is likely to help your child with autism pick up new skills more quickly. <sup>[68]</sup>

You can't get full TEACCH services in the UK. But many schools use TEACCH methods. Some British teachers have had TEACCH training in the United States.

## What is it?

TEACCH comes from the name of a programme from California. It stands for **T**reatment and **E**ducation of **A**utistic and related **C**ommunication-handicapped **C**hildren.

This programme starts working on your child's problems early on. Doctors call this early intervention. In the study we looked at, the children were 2 years old to 6 years old.

TEACCH aims to help children with autism get over their problems with learning, especially their problems with communicating. Usually, children are taught in a room where they can't be easily distracted. There is a clear routine for the day's activities. And it's the same every day.

Teachers use things you look at (called visual aids), such as flash cards or posters, rather than spoken words, to get meaning across. Flash cards are just cards with words, numbers, or pictures on them.

You can use TEACCH at home. The time your child spends at home is a chance for them to learn, in addition to any day care or special schooling they get. You can find out more about TEACCH from the people who developed it ( <http://www.teacch.com> ).

In the study of TEACCH we found, parents were trained in the methods at a special clinic. <sup>[68]</sup> Then the parents were asked to spend half an hour a day using the same methods at home.

## How can it help?

One study showed that children who had TEACCH at home did better on a test of how they were picking up new skills than children who did not get this programme. <sup>[68]</sup> In four months, the children who got TEACCH had learned skills that they would have learned over nearly 10 months if they didn't have autism.

The children who had TEACCH were better at:

## Autism

- Copying actions (this is often hard for children with autism)
- Using their hands (for example, handling objects gently)
- Taking in information (doctors call this **cognitive performance**).

But this study was small and had problems. So we can't say for sure that TEACCH can help, as the results of the study aren't reliable.

### How does it work?

Young children usually learn how to speak and get on with others simply by the daily contact they have with their parents, carers, and other children. But your child with autism may not pick these skills up so easily. They probably need a much more planned way to learn them. This is the aim of early intervention programmes, such as TEACCH.

There haven't been many studies into what works best for children with autism. But experts agree that taking steps early can help your child with the problems caused by autism.

All the programmes that help seem to have some things in common.<sup>[69]</sup>

- Your child spends many hours each week having special lessons or help with their learning. This can be hard on you as parents.
- All the lessons are planned out in detail ahead of time. The aim is to give your child lots of instruction.
- Your family gets involved. This is because your family spends the most time with your child.

The TEACCH programme we looked at had some of these things. The home teaching was in addition to day therapy or special schooling given by professionals.

### Can it be harmful?

The study we found didn't look at whether TEACCH therapy could be harmful.

This programme is based on special methods of teaching to help children with autism. So it seems unlikely that it could physically harm your child.

Programmes like this can ask a lot from parents. And they can cost a lot.

### How good is the research on TEACCH?

We didn't find any good-quality studies ( randomised controlled trials ) on TEACCH in children with autism. But we did find one study of another type.<sup>[70]</sup> It compared 11 children who were given TEACCH at home with another 11 children who weren't given TEACCH.

# Autism

The children were 2 years old to 6 years old. All the children also had their usual day therapy at their special school or preschool.

This study showed that after four months, the children who got TEACCH did better on a test of how they were picking up new skills than the children who didn't have TEACCH. [70]

But we can't say for sure whether the two groups were similar to start with. So it's hard to tell whether the differences were really down to TEACCH. Also, the study was quite small. This means that some of the results may be down to chance instead.

We need more good-quality studies of programmes for early intervention, such as TEACCH.

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## Child's Talk

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on Child's Talk?](#)

This information is for people who have a child with autism. It tells you about Child's Talk, a treatment used for autism. It is based on the best and most up-to-date research.

### Does it work?

Yes. The Child's Talk programme seems to help parents communicate better with their child with autism. But we need more research to be sure.

### What is it?

In the Child's Talk programme, you work with a therapist to improve the way you and your child communicate from an early age. Children with autism often have problems communicating with other people.

Researchers say that children with autism try to communicate, but their 'signals' are different and harder to notice than those of children without autism. So you may not spot their signals, and miss the chance to communicate when your child has something to say.

In the Child's Talk programme, you are taught to look for more subtle signals from your child. You watch videos of yourself playing with your child, to see if you can spot the signals. The therapists in the programme will help you find ways to respond to these signals so that you can communicate better.

In the studies we looked at, parents of children with autism met their therapists once or twice a month for six months, then every one or two months for another six months. The



# Autism

parents spent 30 minutes a day with their child, putting into practice what they had learned at the therapy sessions. <sup>[71]</sup> <sup>[72]</sup>

## How can it help?

In one small study of 28 children and their families, those children who took part in the Child's Talk programme for a year: <sup>[71]</sup>

- Were more likely to respond to their parents
- Were better able to express themselves in words
- Showed fewer symptoms of autism overall.

A larger study with 152 children also found that parents and children who had this therapy were better able to communicate than those who just had standard treatment. <sup>[72]</sup> However, this study found only a slight improvement in children's symptoms of autism. This was small enough that it could have been down to chance.

## How does it work?

Young children usually learn how to speak and get on with others simply by the daily contact they have with their parents, carers, and other children. But if your child has autism, they may not pick these skills up so easily. Not being able to communicate can be very frustrating for children. It can also lead to problems with their behaviour.

By helping parents and children to communicate better, the Child's Talk programme may help children with autism to learn how to talk and listen to other people. This may also help them with learning, behaviour problems, and fitting in to the wider world.

## Can it be harmful?

The studies we found didn't look at whether this therapy could be harmful.

This programme uses special methods of helping parents and children with autism. So it seems unlikely that it could physically harm your child.

But programmes like this can ask a lot from parents. And they can cost a lot.

## How good is the research on Child's Talk?

We found two good-quality studies ( randomised controlled trials ) that looked at the Child's Talk treatment programme in autism. In total, the studies included 180 children. <sup>[71]</sup> <sup>[72]</sup> They showed that taking part in the Child's Talk programme made a difference to how well children with autism communicated. However, the treatment may not help much with the symptoms of autism.

But we need more studies, looking at a greater number of children, to be certain that Child's Talk works.

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## More Than Words

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on More Than Words?](#)

This information is for people who have a child with autism. It tells you about More Than Words, a treatment used for autism. It is based on the best and most up-to-date research.

### Does it work?

Many doctors who specialise in autism think the More Than Words programme can be helpful. But there hasn't been much research to show this.

### What is it?

In this programme, you attend weekly group training sessions with other parents. You learn ways to play and to communicate more with your child. For example, you learn about:

- Doing action songs with your child
- Encouraging your child to take turns
- Using simplified language to talk to your child.

Your therapist also visits you and your child at home to see how you are doing.

In the study we looked at, the parents attended weekly classes for three months. <sup>[73]</sup>

### How can it help?

One small study looked at whether parents attending More Than Words sessions helped children with autism. At the end of the study, children whose parents went for training had a bigger vocabulary (used about 50 more words) than the children whose parents hadn't done the training. <sup>[73]</sup>

But parents doing the More Than Words training didn't make much difference to their child's behaviour or to their symptoms of autism overall.

## How does it work?

Children with autism often find it hard to pay attention to something with another person. For example, they may find it hard to play games or sing songs with a parent or another child. So they could miss opportunities to learn through copying, in the way many children do.

The More Than Words programme helps you find ways to play and do activities with your child. This may help your child to learn new skills.

## Can it be harmful?

The study we found didn't look at whether taking part in the More Than Words programme could be harmful. It seems unlikely that if parents take part in the programme, it will harm their child. This is because the programme aims to help parents learn ways of playing and communicating with their children.

But the programme may be asking quite a lot of parents.

## How good is the research on More Than Words?

Very little research has looked at how the More Than Words training programme can help in autism. We found just one small study, with 51 children.<sup>[73]</sup> But there were problems with the design of this study. Not all the children in the study had been diagnosed with autism. So the results may not be reliable.

Many doctors think that it's helpful for children with autism if their parents do More Than Words training. But we need more, better-quality, research to be certain.

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## Picture Exchange Communication System

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on PECS?](#)

This information is for people who have a child with autism. It tells you about the Picture Exchange Communication System, a treatment used for autism. It is based on the best and most up-to-date research.

## Does it work?

Yes. The Picture Exchange Communication System (called PECS for short) may help children learn to speak better. But we need more research to be sure.

## What is it?

PECS is based on the idea that children with autism have problems telling you what they want and what they mean in the usual way. They have a hard time learning with spoken words. But they can learn well from things they see.

So instead of words, PECS uses pictures or symbols of objects, such as your child's favourite foods or toys. The system slowly trains your child so that they can swap a picture of the thing that they want for the real thing.

To start with, two people work with your child. They teach your child one new object at a time. Some children with autism can learn to speak through communicating in this way.

In the studies we looked at, children had PECS training three times a week for six months. Each session lasted 20 minutes.

## How can it help?

In one study, children taught with the PECS system learned to use more words and were more likely to speak than children who were taught using another type of system.<sup>[74]</sup> But by six months the children who'd had the other type of treatment caught up. So we don't know how long the effects of having PECS last.

## How does it work?

Young children usually learn how to speak simply by the daily contact they have with their parents, carers, and other children. But if your child has autism, they may not pick up these skills so easily. They will probably need a much more planned way to learn. Early intervention programmes, such as PECS, aim to help your child learn in a planned way.

Using pictures or symbols may help children to make sense of the world, if they have problems using words.

## Can it be harmful?

There's no evidence that this treatment can be harmful. And it seems unlikely that it could physically harm your child.

## How good is the research on PECS?

We found two studies that compared having PECS with having another type of early language teaching, called Responsive Education and Prelinguistic Milieu Teaching.<sup>[74]</sup>  
<sup>[75]</sup>

- In one study, children who had PECS sessions were more likely to ask for what they wanted, more likely to speak, and likely to use more words.

# Autism

- In the other study, children who did the other type of training were more likely to ask for things and take turns when playing.

But these studies were small, with just 36 children. So we need more research to know whether PECS works.

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## Other education programmes

In this section

[Do they work?](#)

[What are they?](#)

[How can they help?](#)

[How do they work?](#)

[Can it be harmful?](#)

[How good is the research on other education programmes?](#)

This information is for people who have a child with autism. It tells you about some of the education programmes used for autism. It is based on the best and most up-to-date research.

### Do they work?

We don't know. There are lots of education programmes for children with autism. But there hasn't been much research to say whether they work.

### What are they?

There are many education programmes for children with autism. We've described some of them here.

- The **Early Bird Programme**. This programme uses group training sessions, home visits, and video recording to help you communicate better with your child. It lasts for three months.
- **Floor time**. This means you spend 20 minutes to 30 minutes every day playing with your child on the floor.
- The **Portage Scheme**. In this programme, specialist teachers help you with a play-based educational programme. The teachers visit you once a week.
- The **Relationship Development** intervention. This programme helps you to build relationships with your child.
- **Social Skills Training**. This programme teaches children and teenagers with autism to handle social situations and improve communication.
- **Social Stories**. This programme uses stories to teach children appropriate social behaviour.

## Autism

- **Son-Rise.** In this programme, you spend quality time with your child in a specially designed play room.

### How can they help?

We don't know whether these programmes can help. Some people may find them helpful, but there hasn't been enough good-quality research to say.

### How do they work?

The programmes use different teaching styles to help children with autism and their parents to cope with their condition.

### Can it be harmful?

We don't know. There hasn't been enough research to say.

### How good is the research on other education programmes?

There hasn't been enough research to say how the different education programmes help children with autism.

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## Methylphenidate

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on methylphenidate?](#)

This information is for people who have a child with autism. It tells you about methylphenidate, a treatment used for autism. It is based on the best and most up-to-date research.

### Does it work?

Yes. If your child with autism is also [hyperactive](#), this medication may help them be less restless and irritable.

### What is it?

Methylphenidate is a type of stimulant drug. It makes certain parts of the brain more active, such as the parts that are involved in concentration.

Doctors usually prescribe it for children who have a condition called attention deficit hyperactivity disorder. You may know that condition by its short name, ADHD. To learn more, see our information on [Attention deficit hyperactivity disorder](#).

# Autism

Some children with autism are also hyperactive. They may find it hard to pay attention and sit still. And they act without thinking.

It may seem strange to treat hyperactivity with a stimulant. But drugs such as methylphenidate have been used for many years to treat ADHD. And research shows that they work. <sup>[76]</sup>

The brand names of methylphenidate include Ritalin, Concerta XL, and Equasym XL. This drug comes as tablets or capsules.

## How can it help?

Studies show that children with autism who take methylphenidate get less active and less irritable. <sup>[77]</sup> <sup>[78]</sup>

In one study, almost half of the children taking the drug got much less active. <sup>[77]</sup>

## How does it work?

We don't know exactly how methylphenidate might calm down children with autism who are hyperactive. But this drug affects chemicals in your brain called **neurotransmitters**. <sup>[79]</sup> These chemicals help signals travel between nerve cells. Doctors think that methylphenidate may work by increasing the level of a neurotransmitter called **dopamine**. <sup>[79]</sup> <sup>[80]</sup>

## Can it be harmful?

Yes. Methylphenidate can have side effects. Almost 1 in 5 children dropped out of one study because they had problems from the drug. <sup>[78]</sup>

One small study compared two doses of this drug in children with autism or similar conditions. <sup>[78]</sup> Children taking the higher dose were more irritable and wanted to be alone more than the children taking the lower dose.

Larger studies have looked at using methylphenidate to treat hyperactivity in children who do not have autism. In those studies, about half of all children got mild side effects. <sup>[81]</sup> These included:

- Not feeling like eating
- Losing weight
- Having a hard time falling asleep.

These side effects often go away after a few weeks, or if your child takes a lower dose. But about 3 in 100 children get more serious side effects, such as **depression**, worrying, and being irritable.

## Autism

If your child takes this drug, your doctor will closely watch their growth and blood pressure. This is to make sure these things stay in the normal range.

### How good is the research on methylphenidate?

There hasn't been much research on using methylphenidate in children with autism who are hyperactive. If your child is hyperactive, they may be restless and may have a hard time sitting still. Also, they may act without thinking.

We found three good-quality studies ( [randomised controlled trials](#) ). <sup>[82]</sup> <sup>[83]</sup>

- One study included 72 children with autism or a similar disorder. <sup>[82]</sup> They were aged 5 years to 14 years. Almost half of the children who stayed in the study until the end were less hyperactive after taking methylphenidate. But 1 in 5 children dropped out of the study because of side effects from the drug.
- A second study included 10 children with autism. <sup>[83]</sup> They were aged 7 years to 11 years. The study showed that the children were less hyperactive and less irritable when they were taking methylphenidate. But this study was small. So we can't be sure about the results.
- The third study included 13 children aged 5 years to 11 years. <sup>[84]</sup> This study also showed that methylphenidate helped compared with a dummy tablet. The children were less irritable while taking the drug. But they also got side effects with higher doses. This study isn't as reliable as the others because it included some children with conditions other than autism.

There have been many more studies of methylphenidate for children with attention deficit hyperactivity disorder (ADHD for short). Those studies can give us some idea about how safe this drug is. To learn more, see the information on treatment for [Attention deficit hyperactivity disorder](#) .

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## Risperidone

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on risperidone?](#)

This information is for people who have a child with autism. It tells you about risperidone, a treatment used for autism. It is based on the best and most up-to-date research.

### Does it work?

Yes. Children with autism who take risperidone are likely to be less irritable. This drug works as a short-term treatment for children who have tantrums, fight, or hurt themselves.



# Autism

But risperidone can cause side effects. These include putting on weight, having shaking you can't control (called tremors), and feeling sleepy.

In the UK, only specialists such as child psychiatrists and paediatricians prescribe risperidone for children with autism.

## What is it?

Risperidone is an **antipsychotic drug**. It's usually used to treat mental health problems such as schizophrenia. But some specialists may prescribe it for children with autism if they think it might help.

Risperidone is a newer type of antipsychotic drug. It may have fewer side effects than older drugs of this kind.

One brand name is Risperdal. It comes as tablets, a liquid, or injections.

## How can it help?

Taking risperidone reduces symptoms of autism in about 7 in 10 children who have tantrums, fight, or hurt themselves.<sup>[85]</sup> The drug can also help if your child is very irritable or hyperactive.

One summary of the evidence said risperidone helped children with autism to:<sup>[86]</sup>

- Be less irritable
- Be less likely to withdraw socially (for example, not talking or interacting with people around them)
- Reduce the amount of time they spent repeating words, phrases, or actions.

## How does it work?

Risperidone works by calming down activity in your brain. It does this by blocking certain chemicals called **neurotransmitters**. These chemicals help signals travel between nerve cells. Risperidone blocks the ones called serotonin and dopamine.

Your child may have symptoms such as having tantrums, fighting, and trying to hurt themselves, because there is too much serotonin or dopamine in their brain. So blocking these chemicals might help.

## Can it be harmful?

Yes. Risperidone may make your child put on weight. In one study, children taking the drug gained on average 2.7 kilograms (about 6 pounds) over eight weeks.<sup>[85]</sup> Children who took a dummy treatment (a placebo) for comparison gained only 0.8 kilograms (about 2 pounds).

## Autism

Children taking risperidone can also have tremors.<sup>[85]</sup> That means they have shaking they can't control. And the drug can make your child sleepy too. One study found that more than 7 in 10 children taking risperidone got sleepy.<sup>[85]</sup> Your doctor may suggest your child take this medicine in the afternoon rather than in the morning. That way, your child's school day won't be so affected if they get drowsy.<sup>[87]</sup>

Risperidone can also make your child's **blood pressure** go up a bit and make their heart beat faster.<sup>[87]</sup> About 1 in 10 children who take risperidone get a fast heartbeat.

Children taking risperidone also get more colds and sore throats. And they tend to want to eat more too.

But the studies we found were short. They lasted only eight weeks. So they don't tell us anything about side effects in the long term.

We know from studies of risperidone used for schizophrenia that it may cause serious side effects. It can cause you to move, sit, and stand in odd ways.

In the UK, experts in the safety of drugs do not generally recommend risperidone for children under 15 years.<sup>[88]</sup> One summary of the evidence found that, because of its side effects, risperidone should only be given to children with severe autism or to those who might hurt themselves.<sup>[89]</sup>

### How good is the research on risperidone?

We found two good-quality studies ( **randomised controlled trials** ) of risperidone in children with autism.<sup>[85]</sup> <sup>[90]</sup> The studies had a total of 180 children. They were given either risperidone or a dummy treatment (a **placebo** ).

The studies showed that symptoms of autism got better with risperidone. But both studies also showed that some children got side effects, such as weight gain.

A summary of the evidence (a **systematic review** ) looked at three studies, but they were quite small. They measured different things, so it's hard to know overall how well the drug works.<sup>[86]</sup>

All these studies were short. They lasted only eight weeks. We need longer studies, especially to find out whether there are side effects in the long term.

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## Selective serotonin reuptake inhibitors

In this section

[Do they work?](#)

[What are they?](#)

[How can they help?](#)

[How do they work?](#)

[Can they be harmful?](#)

[How good is the research on selective serotonin reuptake inhibitors?](#)

# Autism

This information is for people who have a child with autism. It tells you about selective serotonin reuptake inhibitors, a treatment used for autism. It is based on the best and most up-to-date research.

## Do they work?

Selective serotonin reuptake inhibitors (called SSRIs for short) are often used to treat depression. Many doctors agree that SSRIs can also be helpful for autism. But there hasn't been much good-quality research ( randomised controlled trials ) on SSRIs for treating symptoms of autism in children.

In the UK, most SSRIs are not recommended for children under 18. Studies looking at children with depression have found that these drugs may make young people more likely to think about killing themselves.

## What are they?

SSRIs are a type of drug usually used to treat depression . They are also prescribed for some other conditions. Those conditions are panic attacks, obsessive-compulsive disorder , and anxiety.

Doctors may prescribe them for a child with autism if they also have depression or anxiety, or do the same actions over and over.

SSRI drugs include fluoxetine (Prozac), citalopram (Cipramil), and fluvoxamine (Faverin). They come as tablets or capsules.

## How can they help?

Many doctors agree these drugs can help children with autism. But there isn't enough research to be sure.<sup>[91]</sup> Some studies have looked at using these medicines in children with a range of disorders affecting their development, including autism.<sup>[92] [93] [94]</sup> These studies showed that these drugs might help your child to become less anxious. The studies also suggest that SSRIs might help reduce the extent to which some people with autism do the same thing again and again. But these studies weren't good enough to be reliable.

We also found a fairly large, high-quality study that compared an SSRI drug with a dummy treatment ( placebo ) in children with autism who had symptoms of doing the same thing again and again. It found that the effects of an SSRI and placebo were similar.<sup>[95]</sup>

## How do they work?

SSRIs work on certain chemicals in your brain. Doctors call these chemicals **neurotransmitters**. They carry signals between nerve cells. The chemical in your brain that SSRIs work on is called serotonin .

We know that if you have depression, boosting the level of serotonin in your brain can give you a better mood and help in other ways.

## Autism

Children with autism often behave a lot like people with obsessive-compulsive disorder. People with this condition feel they must follow a strict routine. They may also have anxiety. SSRIs can be used to treat obsessive-compulsive disorder and anxiety. So some doctors think they may also help children with autism who want to follow strict routines.

### Can they be harmful?

There isn't any reliable evidence to tell us whether giving SSRIs to children with autism may be harmful. But in the UK, most SSRIs are not recommended for children under 18. This is because doctors worry that these drugs may be more harmful than helpful. Studies on children with depression have found that these drugs may make young people more likely to think about killing themselves.

SSRIs can have other side effects too.<sup>[96]</sup> For example, your child may have a hard time sleeping and may lose weight.

In one study of the SSRI citalopram, in children with autism, those in the group given citalopram had more unwanted side effects than those given a dummy pill.<sup>[95]</sup> The children with autism taking citalopram were more likely to have:

- Impulsive behaviour
- Reduced concentration
- Hyperactivity
- Diarrhoea
- Sleep problems
- Dry skin
- Itchiness.

Doctors are advised that the SSRI best for people under 18 is fluoxetine (Prozac). But some specialists may prescribe other SSRIs if they feel they may help your child.

For more about the side effects of SSRIs, see [Depression in children](#) .

### How good is the research on selective serotonin reuptake inhibitors?

Selective serotonin reuptake inhibitors are called SSRIs for short. We found a review of the research (a [systematic review](#) ) that included five good-quality studies ( [randomised controlled trials](#) ) on using SSRIs to treat children with [autistic spectrum disorder](#) .<sup>[91]</sup> (Autistic spectrum disorder includes autism, Asperger's syndrome, and similar conditions). The researchers found no strong evidence that SSRIs helped the children.

# Autism

The best-quality study in the review included 149 children. It found that the SSRI citalopram had similar effects to a dummy pill ( placebo ). In particular, this study looked at the SSRI's effect on symptoms of doing the same thing again and again. The study found that doctors' overall impression of whether the children were getting better was much the same, regardless of whether the children were taking the SSRI or the placebo. [95]

We also found three studies of another kind that aren't as good or reliable as a randomised controlled trial. They looked back at children with autism or related conditions who were given SSRIs in the past. [97] [98] [99] They included 70 children altogether. These studies showed that SSRIs may help children with autism. But this type of research isn't very reliable.

We need more good-quality studies before we can say whether SSRIs work and are safe as a treatment for some symptoms of autism in children.

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## Immunoglobulin

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on immunoglobulin?](#)

This information is for people who have a child with autism. It tells you about immunoglobulin, a treatment used for autism. It is based on the best and most up-to-date research.

### Does it work?

We don't know. There hasn't been enough research to say whether this treatment can be helpful.

### What is it?

Immunoglobulin is a **protein** made by your body. It's used by your **immune system** to recognise germs such as **bacteria** .

### How can it help?

There hasn't enough research on how taking immunoglobulin might help children with autism.

### How does it work?

Some people think that taking tablets of immunoglobulin can help boost the immune system in children with autism. This may help improve the symptoms. But there isn't any evidence to show that this happens.

## Can it be harmful?

We don't know. There hasn't been any research about this.

## How good is the research on immunoglobulin?

We didn't find any good-quality studies ( [randomised controlled trials](#) ) that looked at whether immunoglobulin can help children with autism.

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## Memantine

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on memantine?](#)

This information is for people who have a child with autism. It tells you about memantine, a treatment used for autism. It is based on the best and most up-to-date research.

## Does it work?

We don't know. There hasn't been enough research on taking memantine for autism.

## What is it?

Memantine is a medicine that has been used for treating people with [Alzheimer's disease](#) . The brand name is Ebixa. It can only be prescribed by a specialist.

## How can it help?

We don't know if it can help. There hasn't been enough research to say.

## How does it work?

Memantine works on the way nerves in your body pass on signals (for example, sending sounds from your ears to your brain). It's sometimes used in Alzheimer's disease. This is because one theory is that the nerves of a person with Alzheimer's are triggered too easily. This confuses their brain, as there are too many signals being sent to it. Memantine works to stop the nerves from being triggered so easily. <sup>[100]</sup>

Some doctors think children with autism also get too many signals from their senses. But we don't know whether taking memantine can help children with autism. There hasn't been enough research to say.

## Can it be harmful?

We don't know what side effects memantine has on children with autism. Adults with Alzheimer's disease get [constipation](#) , [high blood pressure](#) , and headaches. They may

# Autism

also feel dizzy and drowsy.<sup>[101]</sup> Less commonly, some people taking memantine develop heart failure, and there have been rare reports of people having seizures.

## How good is the research on memantine?

We didn't find any good-quality research studies ( [randomised controlled trials](#) ) that looked at whether taking memantine helps children with autism.

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## Secretin

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on secretin?](#)

This information is for people who have a child with autism. It tells you about secretin, a treatment used for autism. It is based on the best and most up-to-date research.

### Does it work?

No. Research has shown that having treatment with secretin doesn't work any better than having a dummy treatment (a [placebo](#) ) to help children with autism.

### What is it?

Secretin is a hormone your body makes. Its job is to help your body break down food properly.

Doctors sometimes use secretin to help them diagnose problems with your digestive system. For this purpose, it's made in the laboratory.

Some doctors have tried using injections of secretin to treat children with autism.

### How can it help?

It doesn't help. Several studies have shown that secretin doesn't help with any of the symptoms of autism.<sup>[102]</sup> <sup>[103]</sup>

### How does it work?

Some doctors think there is a link between autism and the way the digestive system works. So they thought secretin might help. But research shows that it doesn't help.

### Can it be harmful?

In studies, children who had injections of secretin had a range of minor side effects. These included being bad-tempered, being over-active, and vomiting.<sup>[102]</sup>

## How good is the research on secretin?

The evidence that secretin doesn't work is quite strong.

We found two summaries of the research ( [systematic reviews](#) ). <sup>[102]</sup> <sup>[103]</sup> The first summary looked at 16 good-quality studies ( [randomised controlled trials](#) ) of secretin for children with autism. All of the studies showed that giving children secretin injections didn't work any better than giving dummy ( [placebo](#) ) injections for any symptoms of autism.

The second summary also found that secretin didn't work. <sup>[103]</sup>

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## Special diets and supplements

In this section

[Do they work?](#)

[What are they?](#)

[How can they help?](#)

[How do they work?](#)

[Can they be harmful?](#)

[How good is the research on special diets and supplements?](#)

This information is for people who have a child with autism. It tells you about special diets and supplements used for autism. It is based on the best and most up-to-date research.

### Do they work?

We don't know. Several types of diets and supplements have been suggested as treatments for autism. But there hasn't been enough good research to tell us whether they work.

You should always talk to your doctor or a dietitian before changing what your child eats or giving your child supplements.

### What are they?

A diet is just a special way of eating. It can mean eating less food. Or it can mean staying away from certain kinds of foods.

Supplements are extra vitamins, minerals, and other substances that you take in addition to the food you eat. They come as tablets, capsules, powders, or liquids.

Here are the special diets and supplements for children with autism that we looked at.

### Diets that don't have any gluten or casein

Gluten is a [protein](#) found in wheat. Casein is a protein found in milk. Children on a gluten-free and casein-free diet don't eat these foods. This means no normal bread, pasta, or other foods with wheat in them, and no milk, yoghurt, cheese, or other dairy products.



# Autism

## Fish oil

Oily fish and substances taken from fish liver (such as cod liver) have lots of a chemical called omega 3. Your body can't make this for itself. It must get it from the food you eat. Supplements of fish oil usually come as capsules or as a liquid you take from a spoon.

## Vitamin A

You need vitamin A to grow and to keep your skin, bones, and eyes healthy. Good natural sources of vitamin A include fish, meat (especially liver), eggs, and vegetables that are yellow or orange. Supplements of vitamin A usually come as tablets or capsules.

## Vitamin B6 plus magnesium

Vitamin B6 is also called pyridoxine. It is one of several B vitamins. Your body needs these to turn carbohydrates (starchy foods) you eat into a sugar called glucose. Glucose is the main fuel for your muscles and brain. Magnesium is a mineral. You need tiny amounts. Dark leafy vegetables are a good source. Supplements of vitamin B6 and magnesium usually come as tablets or capsules.

## Vitamin C

You need vitamin C to grow and to help your body make repairs when it has to. It is found naturally in fruits and vegetables. Supplements of vitamin C usually come as tablets or capsules.

## Probiotics

These are often called 'friendly bacteria'. They are similar to the harmless **bacteria** that live naturally in your gut. They may help your **immune system** by keeping out harmful bacteria that can cause disease. You can buy yoghurts and fermented milk drinks that contain probiotics, or you can take these as capsules and tablets.

## Digestive enzymes

Digestive enzymes are proteins that your body produces to help break down food in the gut. Some dietary supplements contain digestive enzymes such as amylase and lipase.

There are many other types of diets and supplements that parents and some professionals try for children with autism. For example, some parents give supplements of zinc to their children. Some have tests done to see whether their child is low on any vitamins or minerals and then use supplements. Some parents don't give their children foods that have substances such as aspartame and monosodium glutamate. Others give their children diets that don't have much **yeast**.

## How can they help?

We don't know if they can help. There isn't enough evidence. Here is what we found when we looked for studies in children with autism.

## Autism

- One summary of the evidence looked at diets without gluten and casein. The diet seemed to help with some symptoms of autism, including social isolation and communication. But the summary authors said the research was not good enough to rely on. <sup>[104]</sup>
- Two studies looked at vitamin B6 plus magnesium. <sup>[105]</sup> <sup>[106]</sup> It didn't seem to help. But these studies were too small to be reliable.

One summary of the evidence looked at two small, good-quality studies of fish oil. The studies didn't find that fish oil helped. We need bigger studies to say for sure. <sup>[107]</sup>

- There haven't been any good-quality studies of vitamin A, vitamin C, probiotics, and digestive enzymes.

### How do they work?

We don't know the exact cause of autism. So we can't say how any of these treatments might work. In some cases, researchers have ideas about how they might work. For example, with casein and gluten, researchers think that maybe children with autism can't break down these proteins properly. The idea is that they build up in your child's body. Then they begin to affect your child's brain in a way that makes autism worse. <sup>[104]</sup>

### Can they be harmful?

It's hard to say whether any of these diets or supplements can be harmful, because they haven't been studied enough in the treatment of autism.

Putting your child on a special diet that doesn't have basic foods such as wheat and milk can mean your child does not get some of the nutrients they need. This can be a particular problem if your child is already a picky eater.

Some supplements can be harmful in high doses. These include vitamin A and vitamin B6.

To be safe, always talk to your doctor or see a dietitian before putting your child on a special diet or giving them supplements.

### How good is the research on special diets and supplements?

There hasn't been much good research on changing what your child eats or giving him or her supplements to treat autism.

We found one summary of the research (a **systematic review**) of diets that cut out casein and gluten. The review found just two small studies. The studies showed the diets seemed to help with some symptoms of autism, but not others. The review's authors said there was not enough good-quality evidence to say whether or not the diets work. <sup>[104]</sup>

## Autism

We found two good-quality studies on vitamin B6 plus magnesium.<sup>[108]</sup> <sup>[109]</sup> It didn't seem to help. But the studies were small. Together, they had only 27 children. So the results aren't reliable.

We found one systematic review of fish oil, which looked at two small studies. The review found that fish oil didn't help. But the studies only contained 37 children, so we really need more research.<sup>[107]</sup>

We didn't find any good-quality studies of vitamin A, vitamin C, probiotics, and digestive enzymes as treatments for children with autism.

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### Auditory integration training

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on auditory integration training?](#)

This information is for people who have a child with autism. It tells you about auditory integration training, a treatment used for autism. It is based on the best and most up-to-date research.

#### Does it work?

We don't know. There haven't been any good-quality studies of auditory integration training. You may hear it called AIT for short.

A group of experts on child health, called the American Academy of Pediatrics, says that AIT should only be used for research.<sup>[110]</sup> In the UK, it's hard to get AIT for your child.

#### What is it?

Sound comes in different levels. These levels are called frequencies. AIT is based on the idea that children with autism have problems with behaviour and learning because they are too sensitive to certain levels of sound.

Treatment with AIT involves listening to music through headphones. A child listens to the music twice a day, for 10 days. Each session lasts for 30 minutes. The music is adjusted to change certain sound levels or make them not as loud.

#### How can it help?

We don't know if it can help. There haven't been many studies of AIT.<sup>[111]</sup>

One summary of the research said there was no reliable evidence that it worked.<sup>[112]</sup>

## How does it work?

Some people say AIT works by training your child's hearing all over again so that they are less sensitive to certain levels of sound. But there isn't much evidence for this. <sup>[111]</sup>

## Can it be harmful?

Doctors worry that the machines used to give AIT can give off levels of noise that may harm your child's hearing. <sup>[111]</sup> Usually, you can only get AIT from a private professional. Also, AIT can cost a lot.

## How good is the research on auditory integration training?

There haven't been any good-quality studies ( randomised controlled trials ) of auditory integration training (called AIT for short). So there isn't any reliable evidence to tell us if it works and if it's safe in children with autism. <sup>[113]</sup>

One summary of the research found six small studies. But three of them said it didn't work, and the other three were not reliable. The summary authors said there was no good evidence to use AIT. <sup>[112]</sup>

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## Sensory integration training

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on sensory integration training?](#)

This information is for people who have a child with autism. It tells you about sensory integration training, a treatment used for autism. It is based on the best and most up-to-date research.

## Does it work?

We don't know. There hasn't been enough research to say whether sensory integration training works.

## What is it?

Sensory integration training aims to help children whose hearing, sight, or sense of touch is over-sensitive.

Children with autism are often over-sensitive to sounds, lights, and touch. In sensory integration training, therapists assess your child's responses to these triggers. They then design a programme to help your child deal with their problems.

Treatment may include listening to music, being wrapped in blankets, or watching coloured lights.

## How can it help?

We don't know if it can help. There hasn't been enough research to say.

## How does it work?

Some doctors think that children with autism have nerves that trigger too easily, sending too many messages to their brain. The brain becomes overwhelmed with all the different messages. Sensory integration training aims to help children deal with the many messages.

## Can it be harmful?

We don't know. There hasn't been enough research to say.

## How good is the research on sensory integration training?

We didn't find any good-quality research ( randomised controlled trials ) that looked at sensory integration training for children with autism.

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## Chelation

In this section

[Does it work?](#)

[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on chelation?](#)

This information is for people who have a child with autism. It tells you about chelation, a treatment used for autism. It is based on the best and most up-to-date research.

## Does it work?

We don't know. There hasn't been enough research to say whether chelation works for autism. But we do know that some children have died after one type of chelation treatment.

## What is it?

Chelation is a treatment that reduces the amount of metals in your body. People are given this treatment if they have been accidentally exposed to unsafe levels of heavy metals (for example, if they have lead poisoning).

Doctors use different types of drugs for this treatment. Usually, the drugs are given as tablets or liquids. The one used most often is called succinate.

## How can it help?

We don't know if it can help. Chelation therapy isn't likely to help people who don't have abnormally high levels of heavy metals in their body. There haven't been any good-quality

## Autism

studies ( randomised controlled trials ) that have looked at whether children with autism might benefit from this treatment.

### How does it work?

Some people think that autism may be caused by a build-up of certain types of metal in the body, such as mercury and lead. But we don't know whether this is the case.

### Can it be harmful?

**Yes.** We know people have died after being given chelation therapy. Two children and an adult died in the United States after having chelation therapy.<sup>[114]</sup> The drug used was thought to be edetate disodium, given through a drip (also called an IV or an intravenous infusion). This drug can decrease the amount of calcium in your body too much. Calcium is important to keep your heart working properly. If the amount of calcium gets too low, your heart may stop working. This can be fatal.

Chelation therapy mostly doesn't use edetate disodium. The reports on the deaths said that this drug may have been used by mistake, instead of another very similar drug.

As there isn't any evidence to say whether chelation therapy works, parents should be wary of its dangers.

### How good is the research on chelation?

We didn't find any good-quality studies ( randomised controlled trials ) that looked at whether chelation can help children with autism.

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## Further informations:

### Autistic spectrum disorder

A group of conditions affects how your child develops in similar ways. Doctors call this group **autistic spectrum disorder**. A spectrum just means a range.

Autistic spectrum disorder includes autism and several other conditions.

### Asperger's syndrome

In Asperger's syndrome, your child has intelligence at the normal level and starts to speak at the usual age. But they still have problems communicating and getting on with people.

Asperger's syndrome is often called **atypical autism** or **high-functioning autism**. You may also hear this called a **pervasive developmental disorder not otherwise specified** or PDD-NOS for short.

# Autism

## Atypical autism

Children with atypical autism may have problems speaking and getting on with people. But they don't have all the signs of autism. For example, they may not do the same activity over and over.

The problems that children with atypical autism have may not be clear until they are older than 3 years. With autism, the problems are usually clear before this age. <sup>[6]</sup>

Some doctors think atypical autism and Asperger's syndrome are the same thing. But other doctors think they are different. <sup>[7]</sup>

## Other conditions

Other conditions can also affect how your child develops. For example, some children have learning problems that seem like autism. It may be hard to tell the difference. This is especially so if your child has a learning problem that involves speaking or using numbers.

## Medical causes of autism

Here are some of the medical conditions that can lead to autism in a small number of children. <sup>[30]</sup>

### Rubella (German measles)

Rubella is an infection. If a pregnant woman catches it, her baby's brain may get damaged. This can lead to autism. <sup>[31]</sup> But this usually doesn't happen nowadays. That's because now most people get a vaccine that protects against rubella.

### Tuberous sclerosis

This condition runs in some families. It causes hard patches in your brain. It can also cause learning problems and [epilepsy](#). People with epilepsy get [seizures](#).

### Phenylketonuria

This condition is called PKU for short. Babies born with PKU can't break down a substance called phenylalanine. This substance is found in many foods that have lots of protein, such as meat, fish, and eggs. So phenylalanine builds up in your body. This can cause brain damage.

All babies are tested for PKU about three days after they are born. If they have it, they can eat foods that don't have much protein. That stops the symptoms coming on.

## Problems with chromosomes

Chromosomes carry the information that you got from your parents. You get half of your chromosomes from your mother and half from your father. They control how your body grows and develops. If you have too many or too few chromosomes, or they are damaged, you can get health problems. Parts of your body, such as your brain, may not develop as they should.

Here are some of the chromosome problems that can cause autism:

- **Down's syndrome.** This is the most common cause of learning problems that you get from your parents
- **Fragile X syndrome.** This is the second most common one
- **Turner's syndrome.** This condition affects only girls.

## MMR vaccine and autism

In the past, a small group of doctors and researchers suggested that vaccination with the MMR vaccine might be linked to autism. But there isn't any good evidence of this.

Here is some more information about this vaccine and autism.

### About the vaccine

MMR stands for measles, mumps, and rubella (German measles). Measles and mumps are infections that can make your child very ill. German measles causes severe problems in an unborn baby if the mother gets it while she is pregnant.

Usually, with the MMR vaccine, your child gets one injection when they are about 13 months old and another one when they are between 2 years and 4 years old.

The MMR vaccine protects your child from all three infections.

### Why the worry?

A small study in 1998 raised questions about the MMR vaccine and autism.<sup>[32]</sup> The researchers thought there might be a link between having the vaccine and getting a problem with your bowels. They thought this bowel problem might cause a kind of autistic spectrum disorder. However, this study was small, looking at only 12 children, and other researchers said it wasn't done well.<sup>[33]</sup> Later studies have shown that there is no link. The study has now been discredited and withdrawn by the medical journal that published it.<sup>[17]</sup>



But the study showed up in newspapers and on television. Then many parents decided not to give their children the MMR vaccine. <sup>[34]</sup>

### What does the evidence say?

It can be hard to prove beyond any doubt that a vaccine is safe. This is because millions of children get vaccines. And some of these children later get diseases. But this doesn't mean the vaccine caused the diseases.

To prove a link between the MMR vaccine and autism, we would need to do a type of study called a randomised controlled trial. In this study, some children would get the vaccine and some wouldn't.

But this study would be hard to do, for several reasons. We know that vaccines help a lot in stopping infections. So it wouldn't be fair to keep some children from getting vaccines. Also, the study would have to go on for many years, to spot any problems that take time to show up.

Other types of study can give us reliable evidence about the MMR vaccine and autism. Two important types are called cohort studies and case control studies.

- In a cohort study, researchers look at a large group of people, usually many thousands, to see how many get autism. Then they check how many of these people got the MMR vaccine.
- In a case control study, researchers look at two groups. One group has autism. The other group doesn't. Otherwise, the two groups are very similar. The researchers then check which people had the MMR vaccine.

There have now been many of both of these types of study on the MMR vaccine and autism. One summary of the research looked at 12 of the best of these studies. It found that there wasn't any evidence of a link between the MMR vaccine and autistic spectrum disorder. <sup>[33]</sup>

- The number of children given the MMR vaccine who get autism isn't any higher than the number of children not given the vaccine but who get autism.
- The number of children getting autism has not gone up since doctors began giving the MMR vaccine.
- The age when the signs of autism show is the same for children who get the MMR vaccine and for those who don't. This also suggests the vaccine is not the cause.

Several good-quality studies have looked at blood levels of measles virus or antibody in children with autism who'd had the MMR vaccine. These studies found that the levels of measles virus or antibody in these children's blood were no higher than in children without

# Autism

autism. This shows that the MMR vaccine doesn't cause problems in the way some doctors thought it might. <sup>[19]</sup> <sup>[21]</sup> <sup>[35]</sup>

## What about single vaccines?

You can get single vaccines for measles, mumps, and rubella. But there isn't any evidence that these are safer than the combined MMR vaccine. And they haven't been tested as much as the MMR. <sup>[36]</sup>

Also, the full course of single vaccines involves six injections, instead of two injections with MMR. This means more visits to your doctor and more pain for your child, which probably means some children don't get the full course. It also means your child could get one of these infections while waiting for the next single injection.

In the UK, experts recommend that children get the MMR vaccine instead of the single vaccines for measles, mumps, and rubella. The MMR vaccine is available on the NHS, but the single vaccines are not.

## Autism and speaking

Some children with autism learn skills, such as speaking their first few words, at the usual age. But then they either stop learning more or they go backwards and lose the skills they have. Doctors call this **regression**. It happens in about 1 in 4 of autistic children.

<sup>[48]</sup> Usually, it happens in the second year of your child's life.

Besides losing speech, your child may also:

- Stop looking people in the eye
- Want to spend less time with others
- Not want to play as much any more.

Even if your child does learn to speak, they may still find it hard to talk in social ways. For example, they may find it hard to chat or meet new people. Your child will have a hard time in social situations. People may think your child isn't friendly.

## Autism professionals

If your child has autism, many different professionals will help with their care and treatment. These professionals make up what doctors call a multidisciplinary team (MDT).

Here we've explained who these professionals are and what they do.

# Autism

## Health visitor

Your health visitor begins visiting you and your baby at home soon after birth. Health visitors are trained to look out for problems in young children. If they think there's a problem, they will tell you to see your GP. They aren't trained to diagnose autism. But they often help link together all the people who give advice and care for your child.

## GP

Your GP may be the first doctor you see if you are worried about your child. This doctor will check your child and may send them to a doctor who specialises in child development.

## Paediatrician

A paediatrician is a doctor who specialises in children's health. Your paediatrician may work in a centre that focuses on child development. This is a place where you can see different health professionals under one roof.

## Psychiatrist

Psychiatrists are doctors who specialise in mental health. Doctors who have a special interest in learning problems are often psychiatrists. A psychiatrist who specialises in children's problems is called a **child psychiatrist** or a **paediatric psychiatrist**.

## Psychologist

A psychologist has special training in diagnosing psychological problems and in giving treatments that can help people with autism with communication and other skills. They aren't medical doctors and don't prescribe drugs. Psychologists who work in hospitals or clinics are usually **clinical psychologists**. You may also meet an **educational psychologist**. This is a professional who is specially trained in helping your child learn and get on at school.

## Speech therapist

Speech therapists help you speak properly. Your child may need to see a speech therapist during the diagnosis of autism or as part of the treatment.

## Other specialists

Your child may also need support and treatment from other professionals as well. For example, your child may need to see **physiotherapists** for help with physical skills and **occupational therapists** for help with work skills.

## Glossary:

### genes

Your genes are the parts of your cells that contain instructions for how your body works. Genes are found on chromosomes, structures that sit in the nucleus at the middle of each of your cells. You have 23 pairs of chromosomes in your normal cells, each of which has thousands of genes. You get one set of chromosomes, and all of the genes that are on them, from each of your parents.

### infection

# Autism

You get an infection when bacteria, a fungus, or a virus get into a part of your body where it shouldn't be. For example, an infection in your nose and airways causes the common cold. An infection in your skin can cause rashes such as athlete's foot. The organisms that cause infections are so tiny that you can't see them without a microscope.

## **seizure**

A seizure (or fit) is when there is too much electrical activity in your brain, which results in muscle twitching and other symptoms.

## **proteins**

A lot of your body's tissues are made out of proteins. Proteins can be made in your cells. Proteins are also part of the food you eat, particularly meat and dairy products. Your body breaks down the protein you eat into amino acids. Your cells then use these amino acids to build new proteins, which make up muscles, joints, hair and other parts of your body.

## **vaccination**

A vaccination is an injection a doctor can give you to protect you from getting an infectious illness (an illness that spreads between people).

## **randomised controlled trials**

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

## **cohort study**

A cohort study follows a group of people (a cohort) and records the different things that happen to them. For example, a cohort study could find out whether lung cancer is more common in people in the cohort who smoke. Prospective cohort studies (which begin at a certain time and then look at what happens to the people in the study) are more reliable than retrospective cohort studies (which look at groups of people after events have happened to them).

## **case control studies**

A case control study matches patients in the case group with a control group. Only the case group receives the treatment that's being looked at. Both groups are followed over time to see if there are any differences in their outcomes. Retrospective case control studies compare the exposures of patients who developed a certain disease (such as cancer) with those who did not. Case control studies are considered a weak form of evidence.

## **psychologist**

A psychologist is trained to study the human mind and human behaviour. A clinical psychologist provides mental health care in hospitals, clinics, schools or to private patients.

## **physiotherapist**

A physiotherapist is a health professional who is trained to use physical activity and exercises to help people's bodies heal.

## **hyperactivity**

Hyperactivity means having difficulty controlling your movements. Children with hyperactivity may 'wiggle', tap a pencil, tap their feet, talk a lot, or run unexpectedly around a room.

## **systematic reviews**

A systematic review is a thorough look through published research on a particular topic. Only studies that have been carried out to a high standard are included. A systematic review may or may not include a meta-analysis, which is when the results from individual studies are put together.

## **randomised controlled trials**

Randomised controlled trials are medical studies designed to test whether a treatment works. Patients are split into groups. One group is given the treatment being tested (for example, an antidepressant drug) while another group (called the comparison or control group) is given an alternative treatment. This could be a different type of drug or a dummy treatment (a placebo). Researchers then compare the effects of the different treatments.

## **dopamine**

Dopamine is a neurotransmitter, which is a chemical that helps messages pass between brain cells and other cells. Dopamine plays a role in your mood, and your physical movements.

## **depression**

Depression is a mental illness in which your mood is low and you feel sad most of the time. It can range from a mild illness through to a severe one in which you lose interest in life and may be suicidal.

## **psychiatrist**

A psychiatrist is a doctor who specialises in psychiatry. Psychiatry is the branch of medicine that covers mental, emotional or behavioural problems.

## **schizophrenia**

# Autism

Schizophrenia is a mental illness that causes delusions and hallucinations.

## **serotonin**

Serotonin is a neurotransmitter, which is a chemical that helps to send information from a nerve cell to other cells. It is thought to play a role in learning, sleep and control of mood.

## **placebo**

A placebo is a 'pretend' or dummy treatment that contains no active substances. A placebo is often given to half the people taking part in medical research trials, for comparison with the 'real' treatment. It is made to look and taste identical to the drug treatment being tested, so that people in the studies do not know if they are getting the placebo or the 'real' treatment. Researchers often talk about the 'placebo effect'. This is where patients feel better after having a placebo treatment because they expect to feel better. Tests may indicate that they actually are better. In the same way, people can also get side effects after having a placebo treatment. Drug treatments can also have a 'placebo effect'. This is why, to get a true picture of how well a drug works, it is important to compare it against a placebo treatment.

## **blood pressure**

Blood pressure is the amount of force that's exerted by your blood on to your blood vessels. You can think of it like the water pressure in your home: the more pressure you have, the faster and more forcefully the water flows out of the shower. Blood pressure is measured in millimetres of mercury (written as mm Hg). When your blood pressure is taken, the measurement is given as two numbers, for example 120/80 mm Hg. The first, higher, number is called the systolic pressure, and the second, lower, number is the diastolic pressure. The systolic number is the highest pressure that occurs while your heart is pushing blood into your arteries. The diastolic number is the lowest pressure that happens when your heart is relaxing and is not pushing your blood.

## **obsessive-compulsive disorder**

Obsessive-compulsive disorder is a psychological illness. People who have it can't keep certain thoughts out of their minds. Or they feel they have to do certain things all the time, such as washing their hands. This makes it hard for them to live a normal life.

## **immune system**

Your immune system is made up of the parts of your body that fight infection. When bacteria or viruses get into your body, it's your immune system that kills them. Antibodies and white blood cells are part of your immune system. They travel in your blood and attack bacteria, viruses and other things that could damage your body.

## **bacteria**

Bacteria are tiny organisms. There are lots of different types. Some are harmful and can cause disease. But some bacteria live in your body without causing any harm.

## **Alzheimer's disease**

People who have Alzheimer's disease slowly lose their memory and ability to think clearly. As the disease gets worse, they get more confused and start acting differently. Several changes happen in the brain that stop it working properly. Small lumps called amyloid plaques grow in the parts of the brain used for memory and thinking. And bundles of twisted threads called 'neurofibrillary tangles' form inside brain cells. These stop brain cells communicating with each other, and they can cause cells to die. Also, in Alzheimer's disease, the brain does not have enough chemical messengers (neurotransmitters), and holes or gaps appear where brain cells have died.

## **constipated**

When you're constipated, you have difficulty passing stools (faeces). Your bowel movements may be dry and hard. You may have fewer bowel movements than usual, and it may be a strain when you try to go.

## **high blood pressure**

Your blood pressure is considered to be high when it is above the accepted normal range. The usual limit for normal blood pressure is 140/90. If either the first (systolic) number is above 140 or the lower (diastolic) number is above 90, a person is considered to have high blood pressure. Doctors sometimes call high blood pressure 'hypertension'.

## **yeasts**

Yeasts are a type of fungus. They can cause infections in your body, such as thrush.

## **intravenous infusion**

When a medicine or a fluid, such as blood, is fed directly into a vein, it's called an intravenous infusion (or IV). To give you an intravenous infusion, a nurse, technician or a doctor places a narrow plastic tube into a vein (usually in your arm) using a needle. The needle is then removed and the fluid is infused (or dripped) through the tube into the vein.

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