Vaccine health scares

Parents face a tough choice when it comes to vaccinating a child. We separate the facts from the hype

Health scares about children's vaccinations frequently hit the headlines. The latest controversies have led some parents to delay vaccinating their children, or even put it off altogether. For instance, media reports have suggested that it's safer to give the measles, mumps and rubella (MMR) vaccine as three separate jabs spaced out over many months. In fact, there's no scientific proof this is safer, and the delay in immunising children puts their health at risk.

To check out the facts behind the headlines, we asked four experts for a no-nonsense guide, to help you make up your own mind. Our experts included a GP, a public health consultant, a consultant in child health and a nurse who researches vaccines.

HOW VACCINES WORK

Vaccines contain parts of organisms which cause a particular disease. In some vaccines, the organisms are dead (also called inactivated), in others they've been weakened. This is designed to stop them causing the full disease. When they enter your body, the cells stimulate your immune system, which reacts as if it's fighting the real disease. Your body then makes antibodies – proteins in your blood – which fight the disease if it enters your body again. Vaccines aren't 100 per cent effective. A few people won't develop antibodies despite vaccination, but this varies between vaccines.

In the UK, the government has recommended a timetable for vaccines (see 'Vaccination diary', opposite). The aim is to protect children from the time they start to lose the natural immunity they get from their mother and at the time they could suffer most from the disease. For example, babies have little natural protection against polio, diphtheria, tetanus, and whooping cough, so they're vaccinated against these from the age of two months.

If a child isn't immunised, his or her chance of catching a particular disease depends on how common and how infectious it is, the number of other people who are immunised, and how well the vaccine works. Measles is so infectious that unless 90 per cent of primary school and 95 per cent of secondary school children are protected, outbreaks are inevitable. If there were an epidemic of measles, almost everyone who wasn't immunised would get it.

One of the benefits of vaccines is that some diseases can be wiped out. The only one so far is smallpox, but it's hoped that polio will be wiped out by next year.

SIDE EFFECTS OF VACCINATION

Common side effects include a raised temperature, swelling, and tenderness around the jab area. These settle quickly but your doctor can advise you about what to do.

There's a slight chance your child may have a fit due to fever after an MMR or a DTP jab. Young children can have fits for no apparent reason, and they may follow immunisation by chance. Fits due to fever usually last less than ten minutes, and rarely cause problems in later life – but it's still vital that you get medical advice to check the cause.

Another possible side effect, which is even rarer, is a severe allergic reaction to a vaccine. This is called anaphylaxis. It's unpredictable, quick and potentially fatal. The baby can become out of breath, develop a rash and swelling. If this happens, get medical help immediately. You can take the precaution of staying in the clinic for 20 minutes after a vaccination.

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VACCINATION DIARY

2, 3 and 4 months	Polio	drop
	Hib, diphtheria, tetanus, whooping cough	injection
	Meningitis C (see box, below, for other ages)	injection
12 to 15 months	Measles, mumps and rubella	injection
3 to 5 years	Polio	drop
	Diphtheria, tetanus	injection
	Measles, mumps and rubella	injection
10 to 14 years	BCG (against tuberculosis)	injection
13 to 18 years	Diphtheria, tetanus	injection
	Polio	drop

Key

Vaccine by mouth

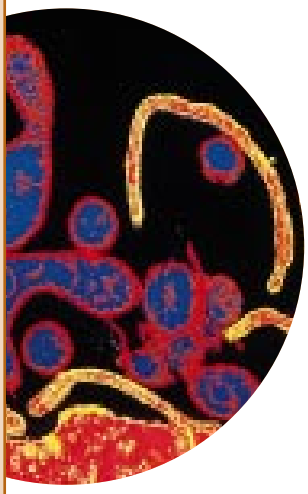
Vaccine by injection

Measles, mumps and rubella (MMR)

Measles, mumps and rubella (German measles) vaccine was introduced in the UK in 1988. In the previous year, 86,000 children caught measles and 16 died. After catching measles, one in 25 children develops a chest infection, one in 200 has a fit and one in 1,000 gets meningitis. Before the vaccine, mumps was the commonest cause of the brain disease viral meningitis in children. If a woman gets rubella in the first ten weeks of pregnancy, it can lead to miscarriage or it can leave the baby with a combination of sight, hearing and heart problems as well as brain damage.

MMR is more than 90 per cent effective against measles and mumps, and about 95 per cent effective against rubella. Vaccine side effects include soreness, redness and swelling around the jab area. Mumps, measles and rubella viruses develop at different rates, so vaccine side effects, like fever and rash, can occur over three weeks. Between one in 1,000 and one in 3,000 children has a fit due to fever after the vaccine, but a fit is ten times more likely if children catch one of the illnesses (see 'Side effects of vaccination', opposite).

Press reports, sparked by unconfirmed research linking MMR with autism, have suggested that it's safer to give MMR as three separate jabs, with six months to a year between each. But there's no scientific evidence for this. Splitting the vaccines delays protection and increases the number of jabs. Last year the Medicines Control Agency curbed imports to the UK of single measles and mumps vaccines, saying combined MMR was better.



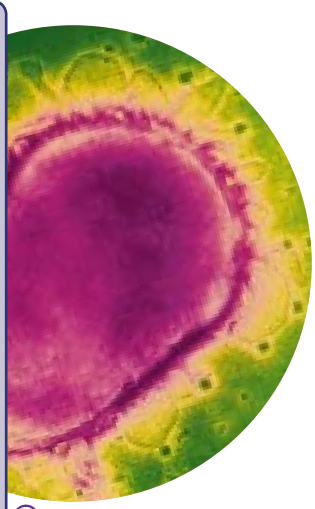
Meningitis C

There were more than 3,000 cases of the brain disease meningitis in the UK in 1998-99. Many germs can cause meningitis. Two bacteria are often behind it – they're known as meningococcus type B and C. Type B is the most common and can be fatal, but there have been problems developing a vaccine for type B. One is being trialled but probably won't be available for at least five years.

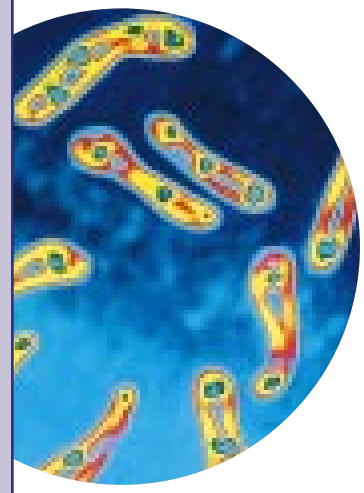
Type C is extremely dangerous – it causes more than half the deaths in the UK which are due to meningitis.There's a new vaccine against type C. Trials suggest it will protect more than 90 per cent of children. The same vaccine protects against a highly dangerous type of septicaemia (blood poisoning), which is caused by the same bug and occurs with or without meningitis.

The most common reactions to the vaccine are redness at the jab area, irritability, fever and headaches – but research has shown no serious side effects.

Until all children have had the meningitis C vaccine there will be a catch-up programme. The aim is to immunise all under-18s by the end of this year. Children aged five months to 11 months will get two doses. Children aged one year or more, and schoolchildren, will get one dose. New babies will get the meningitis C vaccine routinely at two, three and four months.



Diphtheria, tetanus, whooping cough and Hib (DTP-Hib)

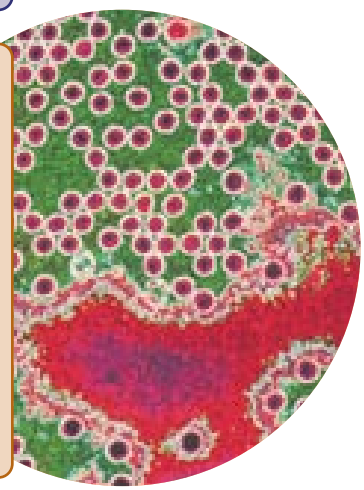


There are few cases of diphtheria or tetanus in the UK, but they're both serious diseases which can kill. Each year, there are more than 1,000 cases of whooping cough (pertussis), and about half of babies aged under one who catch it end up in hospital. Haemophilus influenzae type B (Hib) can lead to meningitis. Since the vaccine, Hib has almost been wiped out.

The vaccine, DTP-Hib, protects about 95 per cent of those who have it against diphtheria and Hib, and more than 90 per cent against whooping cough and tetanus. Fever and irritability are common side effects, and sometimes the child will continuously cry or scream. There's a slight risk – about one in 12,500 – of a fit (see 'Side effects of vaccination', p16).

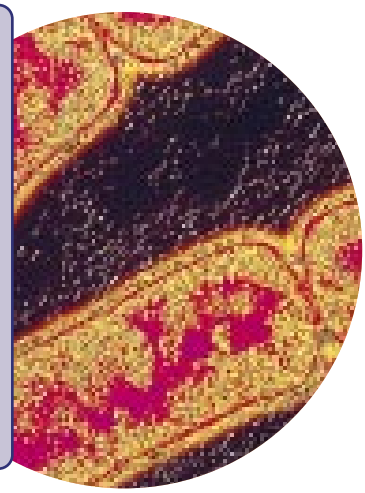
Since last December, DTP-Hib has been available in two forms. One, known as acellular, contains only part of the germ, and the other, more traditional, form contains the whole germ. The first type is now available because of a scarcity of the second – recent batches failed an effectiveness test and couldn't be used. Acellular vaccines are used routinely in the US and parts of Europe. They may not protect quite as effectively but side effects are slightly rarer. If your baby has started a course of the traditional whooping cough vaccinations, it can be completed with the newer type.

Polio



Polio is highly infectious and can lead to meningitis, paralysis and death. It's now very rare in the UK – only two cases were reported in 1998 (both of which were due to the vaccine) and the World Health Organisation hopes it will be wiped out soon. There are two types of vaccine: live, which is given by mouth and contains the weakened virus, and inactivated (dead), which is injected. The live vaccine used in the UK is at least 90 per cent effective. There's a tiny risk of catching polio from a baby's faeces for six weeks after the live vaccination if you're not already immune, so wash your hands after changing a nappy (inactivated is used in the US to avoid this risk). If you know that you've never been immunised against polio, you can ask to be vaccinated at the same time as your baby. There's a tiny risk a baby could get polio from the vaccine.

BCG against tuberculosis



Reported cases of tuberculosis (TB) have dropped dramatically over the last 50 years, but the rate is now rising. The disease starts with coughing and attacks your lungs. In the UK, there are 5,000 to 6,000 cases a year, and about 400 of those die.

A doctor or nurse does a skin test, called the Heaf test, before giving the vaccine to check whether the child is already immune to TB (although this test isn't done on babies under three months old). The bacille Calmette Guérin (BCG) vaccine, named after the scientists who discovered it, is given to children who aren't already immune. The vaccine protects 70 to 80 per cent of children who have it. Drug companies are trying to make a more efficient vaccine.

Vaccine side effects include a small blister or sore around the jab spot after two to six weeks and, more rarely, ulcers and raised scarring.

ADVICE FOR SPECIAL GROUPS

If your child has a serious illness, you should delay immunisation until they've recovered. If they have a minor illness with no fever or general upset, the immunisation can go ahead – always ask your doctor if you're unsure.

Live vaccines (which contain the weakened disease), such as MMR, oral polio vaccine or BCG, shouldn't normally be given to a child who has serious problems with their immune system. A child who's reacted badly to a particular vaccine in the past shouldn't have another dose of it. If it's a combination vaccine, it may be possible to work out which part is the most likely cause of the problem and leave it out. Again, you will need to discuss this with your GP or a specialist children's doctor.

Some health conditions increase the risk of complications from diseases. These conditions include asthma, chronic lung diseases, congenital heart disease, Down's syndrome and sickle cell disease. Children with conditions such as these, and babies born prematurely, should be immunised as a matter of priority – your doctor can advise you about this.

Ask the vaccine experts

We've put readers' questions to our specialists

Q Why does my child need more than one dose of a vaccine?

A For many vaccines, especially those that are inactivated (dead cells), more than one dose is necessary to protect the child properly. Even though one dose of a live vaccine usually gives long-lasting protection, there will always be a small number of children in whom the first dose of a vaccine didn't work. It's difficult to identify these unprotected children, so everyone gets a second dose to be on the safe side. Over time, protection from some vaccines wears off and booster doses may be necessary just before starting school or at school-leaving age (see 'Vaccination diary', p17).

Q Are there any natural alternatives to vaccines that will protect my child?

A No. Some complementary health practitioners suggest alternatives to vaccines but there are no proven, effective alternatives to immunisation. The Council of the Faculty of Homoeopathy, which represents medically-trained homeopaths, supports the government's immunisation programme. The Society of Homoeopaths says that homeopathy works quite differently from vaccination and stimulates the body's immune system in general, rather than protecting against specific illnesses.

Q Isn't it better for my child to catch the disease instead of having the vaccination?

A Some people believe that having measles benefits children by strengthening their immune system. Vaccines teach the immune system to fight the disease without risking the complications of the disease. Although catching the disease also gives immunity, research has shown that there is a significantly greater risk of serious complications from the disease.

Q Aren't vaccines full of chemicals that I might want my child to avoid?

A Vaccines contain antigens – this is the name for anything which triggers the immune system. These include dead bacteria, parts of bacteria, and weakened viruses.

There are some chemicals in vaccines to preserve or stabilise them but the amounts are extremely small. In the quantities used, these chemicals haven't been shown to cause any harm. However, the Department of Health (DOH) has recently advised vaccine makers not to use a preservative called thiomersal, as it contains mercury. The DOH says that this is just a precaution. None of the live vaccines, such as MMR or oral polio, contains thiomersal, nor do many vaccines in single-dose containers.

Q What new vaccines are on the horizon for children in this country?

A A vaccine against chicken pox has been used in the US since 1995 but it's not routinely available here. Medical opinion is split over whether it's appropriate to vaccinate all children against chicken pox.

The hepatitis B virus can linger in the body and make the person a carrier, which could eventually lead to fatal liver disease. Infected babies are more likely to become a carrier than those infected as adults. From next month, all pregnant women will be offered a test for hepatitis B. If it's positive, the baby can have hepatitis B vaccine. This has minor side effects but cuts the chance of infection by more than 90 per cent.

Rotavirus causes diarrhoea and is common in babies under 18 months old. Worldwide, it kills 800,000 a year. Trials of a vaccine showed 80 per cent protection but supplies were recently withdrawn from the US and the European Union because of a possible link with bowel obstruction. More research is underway.

Where to find out more

There's a lot more information on vaccines which is readily available. Your GP, health visitor or practice nurse are good sources. Local libraries can help you research the subject and so can specialist organisations for parents. Some of these, and a lot of other sources, are listed on our factsheet, code WCV300.

There is a factsheet to accompany this report. See p2 for details.

WHICH? SAYS

When you're deciding whether to have your child vaccinated, there are some key points to consider. Problems caused by vaccines are most likely to be minor – a fever, say, or pain near the jab spot. Serious side effects are extremely rare. Independent medical and scientific evidence backs the benefits of vaccinating. For the vast majority of children, the benefits of vaccination outweigh the risks.

On the other hand, most of the diseases that vaccines protect against are becoming rarer in the UK, so there's less chance of getting them. And vaccinating is not without risk, however small. But if your child isn't vaccinated and does come into contact with an infectious disease, they're likely to catch it. Foreign travel, even within Europe, can put children who aren't vaccinated at risk wherever diseases such as measles, tuberculosis or diphtheria are prevalent.

You may also want to consider the immunity of the population. If lots of people aren't immunised, an infection which was under control can spread. Anyone not immunised – including babies – is then at greater risk.