

Patient information from BMJ

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6-in-1 vaccine (diphtheria, hepatitis B, Haemophilus influenzae type B, polio, tetanus, whooping cough)

The 6-in-1 vaccine is a single injection designed to protect against six diseases. It is given to babies in several doses in the first few months of life.

What is the 6-in-1 vaccine?

The 6-in-1 vaccine is a single injection that protects against **six different infections**.

But vaccination schedules can vary between countries. So children in some countries might be vaccinated against these six infections in different ways (for example, with several different vaccines) and at different ages.

But in countries with established vaccination programmes, it is common to vaccinate against all of these infections in some way.

In the UK, the 6-in-1 vaccine is one of the first vaccinations given to babies when they are very young. It is designed to protect against six diseases that can cause serious illness or death. These are:

- diphtheria
- hepatitis B
- Hib (Haemophilus influenzae type B)
- polio
- tetanus, and
- pertussis (whooping cough).

What is diphtheria?

Diphtheria is a bacterial infection that can cause breathing problems, heart failure, paralysis, and death.

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Because of vaccination programmes it has almost disappeared from developed countries including the UK, the US, and Western Europe. But it is still common in developing countries where vaccination rates are low.

What is hepatitis B?

Hepatitis B is a virus that affects the liver. In adults it can often be fairly harmless (although some people develop long-term problems). In children it can cause serious liver damage and even liver failure.

In developed countries with successful vaccination programmes, hepatitis B is much less common than it used to be. But it is still widespread in parts of Asia, South America, and Africa.

What is Hib (Haemophilus influenzae type B)?

Hib is a bacterial infection that can cause various life-threatening conditions, including **meningitis**, **sepsis**, and **pneumonia**.

Vaccination programmes have made Hib extremely rare in developed countries. But it is more common where vaccination rates are lower.

What is polio?

Polio is a viral infection that can cause muscle weakness and paralysis. It used to be common all over the world.

Because of successful vaccination programmes, polio is now only found in a few countries in Asia.

What is tetanus?

Infection with **tetanus** causes symptoms including muscle pain and breathing problems. You might sometimes hear it called **lockjaw**, because it can make it hard to open your mouth.

You can become infected with tetanus if bacteria get into a wound. Vaccination programmes have made tetanus very rare in developed countries.

What is pertussis?

Pertussis is more commonly known as **whooping cough**. It is an infection that causes symptoms like those of a cold, as well as coughing that's followed by a gasping sound.

Pertussis can lead to serious problems, such as dehydration, pneumonia, and seizures (fits).

While vaccination programmes have made whooping cough much less common, it is still sometimes found in developed countries.

- If your child has symptoms of whooping cough **seek medical advice immediately**.

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- If your child seems to be having trouble breathing, or if your child's lips turn blue, **call an ambulance or go to the nearest emergency department.**

Who needs the 6-in-1 vaccination?

Vaccination schedules can vary between countries.

For example, in the UK, babies have three doses of the 6-in-1 vaccine. These doses are when babies are:

- 8 weeks old
- 12 weeks old, and
- 16 weeks old.

This schedule of three doses is the best way to build up strong immunity in babies. With each dose, your baby is better protected.

Older children should also receive **booster injections** against some of the diseases covered by the 6-in-1 vaccine. For example, in the UK, children receive boosters at age 3 years, and at age 14 years.

You can read more about these boosters in our leaflets: *DTP vaccination (diphtheria, tetanus, polio)* and *DTaP vaccination (diphtheria, tetanus, polio, and pertussis)*.

Is there anyone who shouldn't have the vaccine?

Your baby should not have the vaccine if he or she:

- has a **fever**. You should wait until your baby has recovered and make another appointment
- is allergic to the vaccine or any of its ingredients. You should tell the medical staff giving the vaccine about any **allergies** your baby has
- has a neurological (nervous system) problem that is getting worse, including poorly controlled **epilepsy**. Your baby should see a specialist before having the vaccine.

Is it safe?

The 6-in-1 vaccine has been in use for a long time and is very safe. It's also safe for your baby to have this vaccine at the same time as other vaccinations.

But, like all vaccines, it can cause side effects in some babies. Common side effects include:

- pain, redness, and swelling where the injection was given (called the injection site)
- a high temperature (fever). This is more common after the second and third doses
- vomiting
- irritability. This is because your baby might feel a bit unwell just after having the vaccine
- loss of appetite.

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Less-common side effects are:

- high-pitched crying, and
- seizures (fits).

Very rarely, a baby has a severe allergic reaction to the vaccine. But the medical staff giving the vaccination will be trained how to deal with this.

How is the vaccination given?

This vaccine is given as an injection into your baby's thigh.

How well does the vaccine work?

The vaccine works very well.

The diseases that this vaccine protects against used to be common all over the world. But successful vaccination programmes have made most of them extremely rare, especially in developed countries.

For example, diphtheria and tetanus are now almost unheard of in developed countries, and polio has disappeared from all but a few countries.

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