

# Whooping Cough

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Whooping cough can affect anyone of any age. The main symptom is bouts of intense coughing. In between bouts of coughing you can be perfectly well. Sometimes hours go by between bouts of coughing. Whooping cough can be a distressing illness which usually lasts several weeks. Full recovery is usual but serious complications occur in some cases. Whooping cough is uncommon in children in the UK, mainly due to immunisation. However, some adults and older children get whooping cough because the effect of whooping cough immunisation can wane over time in some people.

The number of people infected with whooping cough, including babies, has greatly increased in 2011 and 2012. Because of the increasing number of babies infected with whooping cough and the risk of severe illness in babies, a programme to offer whooping cough vaccination to pregnant women has been announced, starting in October 2012. Whooping cough vaccination has been shown to be safe for pregnant women and effective in helping to reduce the risk of the baby becoming infected with whooping cough.

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## What is whooping cough?

Whooping cough is an infection caused by a bacterium (germ) called *Bordetella pertussis*. This bacterium is spread to others through contaminated droplets in the air, produced during coughing and by close contact with an affected person. The bacterium attaches to cells which line the airways. It then multiplies and causes the symptoms.

*Bordetella pertussis* bacteria affect the lining of the airways in some way to cause symptoms (mainly a cough) to continue for a long time after the bacteria have gone.

## What are the symptoms of whooping cough?

The illness typically follows a pattern.

### Early stage (catarrhal phase)

At first there is often a sore throat. Within a day or so a mild, dry ordinary cough develops. At this stage you may feel mildly unwell and have a mild fever (high temperature). You may also have a runny nose. Over a few days the cough may become more productive with some sputum (phlegm) - but at first it still seems to be an ordinary cough.

### Main coughing stage (paroxysmal phase)

After several days, often as many as 10-14 days from the start of the illness, the cough gets worse and becomes paroxysmal. This means there are bouts (paroxysms) of intense coughing. They are sometimes called choking coughs.

- During a bout of coughing, you repeatedly cough over and over again. The face often goes red and the body becomes tense. Eventually, there is a desperate attempt to breathe in, which may cause a whooping sound. **Note:** the whooping sound at the end of a bout of coughing only happens in about half of cases.
- Some children may stop breathing at the end of a bout of coughing and go blue for a short time. This looks worse than it actually is, as breathing usually quickly resumes.
- Each bout of coughing typically lasts 1-2 minutes.
- Several bouts of coughing may occur together and last several minutes in total.

- It is common to vomit at the end of a bout of coughing.
- The number of coughing bouts per day varies from case to case. You may only have a few bouts each day but some people have up to 100 bouts per day. The average is about 12-15 bouts per day.

Between the bouts of coughing you are likely to be well (unless you develop a complication, which is not common). The symptoms of fever, runny nose and other symptoms of illness have usually gone by this main coughing stage. But, each bout of coughing can be distressing.

This main coughing stage of the illness usually lasts at least two weeks, and often longer.

### **Easing stage (convalescent phase)**

The bouts of coughing then ease gradually over a period which can last up to three months or more. (In some countries whooping cough is known as the cough of a 100 days.) As things seem to be easing, you may still get the odd bout of severe coughing.

Whooping cough can be very miserable, as the bouts of coughing can be distressing. However, in some cases the symptoms are milder than described above. There may be just intermittent bouts of coughing which are not too bad without any whooping or vomiting.

## **Who gets whooping cough?**

Anybody of any age can get whooping cough.

### **Children**

In countries with no immunisation, most children develop whooping cough at some stage. In the UK before immunisation was available there was an epidemic every 3-4 years. About 8 in 10 children had whooping cough by the time they were five.

After immunisation was introduced in the UK in the 1950s, the number of cases fell greatly. There was a slump in immunisation after a scare in the 1970s when there was concern about side-effects from the vaccine. This led to two further epidemics. Each epidemic affected an estimated 400,000 children. Immunisation rates then went up again and most children are now immunised. Whooping cough is now uncommon in UK children but remains a major cause of illness in children in countries with poor rates of immunisation.

### **Adults and older children**

Whooping cough is not just a childhood illness. Adults can get whooping cough. Indeed, because of immunisation, most cases in the UK now occur in older children and adults. This is because some adults have not been immunised. Also, the protection from whooping cough immunisation may wane over the years in some people. So, even if you were immunised as a young child, you may still get whooping cough as an older child or adult.

It is hard to prove the diagnosis of whooping cough definitely from tests (see below). Whooping cough is probably a common cause of many 'mystery coughs' which last for several weeks and which occur in adults and older children who appear otherwise well between bouts of coughing.

## **How infectious is whooping cough?**

It is very infectious in the early stage of the illness. You will normally pass on the infection to most household members who are not immunised (or who have not previously had whooping cough). Symptoms develop 7-14 days after being infected.

If you have whooping cough you should stay away from others either:

- until you have finished a five-day course of antibiotics (see below); OR

- if you do not have antibiotics, for three weeks after symptoms of the paroxysms (bouts) of coughing start. After this, although you will probably still have bouts of coughing, you are not likely to be infectious.

## How is whooping cough diagnosed?

It is mainly diagnosed by the typical symptoms. There is a test that can identify the bacterium to confirm the diagnosis. This involves getting a sample of mucus from the back of the throat to send to the laboratory for testing. However, in many cases of 'cough for several weeks', the bacterium that causes whooping cough will have gone but the cough usually continues for several further weeks. Therefore, a negative test, with no bacteria found, does not rule out the diagnosis of whooping cough in someone who has been coughing for several weeks.

A blood test that can detect antibodies to the whooping cough bacterium has been available since 2001 and is being increasingly used, especially in adults.

## What are the possible complications?

Most people fully recover but some develop complications. Complications most commonly develop in babies under the age of six months. Possible complications include:

- Pneumonia (lung infection). Other bacteria can infect the lungs more easily if you have whooping cough. So, pneumonia caused by secondary infections sometimes occurs. Pneumonia is suspected in a baby or child if they become more ill, have a high temperature, breathe fast, or have difficulty breathing between bouts of coughing.
- Pressure effects of the severe coughing can, rarely, cause blood vessels to burst and cause nosebleeds, coughing up blood, or skin bruises. The increase of pressure in the abdomen during bouts of coughing may cause a hernia.
- Rarely, brain damage occurs.

Complications such as severe pneumonia or brain damage can sometimes cause death.

## What is the treatment for whooping cough?

### Antibiotics

The bacterium which causes whooping cough can be killed by **antibiotics**. However, once the bouts of coughing have started, treatment with antibiotics makes little impact on the course of the illness. In effect, the bacteria will have done what they need to do to the airways to set off the bouts of coughing for the next few weeks.

However, a course of antibiotics is still usually given if the disease is diagnosed in the first few weeks of the illness. This is because after five days of antibiotics you are no longer infectious. Without antibiotics, you can remain infectious for about three weeks after the bouts of coughing start.

### General measures include:

- General comforting. Being nursed in a sitting position seems to give some relief to babies.
- Clearing away any mucus and vomit during bouts of coughing to prevent them from being inhaled by the child.
- Looking out for complications such as pneumonia which should be treated with antibiotics.
- Making sure an ill child is getting enough food and drink.

## Can whooping cough be prevented?

### Antibiotics

A course of antibiotics may be given to non-immunised people who have come into contact with a person with whooping cough. This may prevent the illness from developing.

## Immunisation

In the UK, **immunisation** against whooping cough is routinely offered to all children. It is part of the triple vaccine. Three doses are usually given at ages 2, 3 and 4 months and then a preschool booster at ages 3-5 years. Immunisation is good but not 100%. This is why some immunised children still get whooping cough. Also, as mentioned above, the effect of the immunisation may wane over the years. This is the reason why some older children and adults who were immunised as a young child develop whooping cough.

In order to help protect young babies from becoming infected with whooping cough, a programme to offer whooping cough vaccination to pregnant women has been announced, starting in October 2012.

## What is the outlook (prognosis)?

Most people who develop whooping cough make a full recovery. However, it can be a miserable illness, as the relentless bouts of coughing can be distressing. The total length of the full illness is commonly 6-8 weeks but can be longer. Severe complications and death are uncommon but occur mostly in babies under six months of age. Serious illness is less common in older children and adults. Once recovered, you are usually then immune to whooping cough and so are very unlikely to get it again.

## Further information

### Whooping cough information

Web: [www.whoopingcough.net](http://www.whoopingcough.net)

A website maintained by a doctor in the UK who has particular expertise in whooping cough.

## Further reading & references

- [Whooping Cough \(Pertussis\)](#), Health Protection Agency
- [Guinto-Ocampo H et al](#), Pertussis, Medscape, Aug 2012
- [Campbell H, Amirthalingam G, Andrews N, et al](#); Accelerating control of pertussis in England and Wales. *Emerg Infect Dis.* 2012 Jan;18(1):38-47. doi: 10.3201/eid1801.110784.
- [Pregnant women to be offered whooping cough vaccination](#), Dept of Health, 28 September, 2012

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