

Patient information from the BMJ Group

H. pylori infection

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H. pylori infection

Helicobacter pylori (*H. pylori* for short) is one of the bacteria (germs) that can live in your stomach. If you are infected with *H. pylori* you may get an ulcer or indigestion.

H. pylori infection is very common, but it doesn't always cause health problems. Some people with *H. pylori* may never know they have it. If you do have *H. pylori* infection, and it's causing an ulcer or giving you indigestion, you can have treatment that will get rid of these bacteria.

We've brought together the best research about *H. pylori* infection and weighed up the evidence about how to treat it. You can use our information to talk to your doctor and decide which treatments are best for you.

What is H. pylori?

If you've been diagnosed with *H. pylori* infection, it means that you have *H. pylori* bacteria (germs) in your stomach. You may have symptoms of indigestion, such as stomach cramps, heartburn, or bloating, or you may have been told that you have an ulcer.

Doctors discovered *Helicobacter pylori* (*H. pylori* for short) nearly 25 years ago. Before then, if you had an ulcer in your stomach, you might have been given treatment to help with your symptoms. But this treatment wouldn't have treated the underlying cause of the ulcer that was causing your pain. Now, though, you can get rid of your symptoms for good by having treatment that kills *H. pylori*.

Key points for people with H. pylori infection

- *H. pylori* infection is common.
- Most people are infected with *H. pylori* in childhood. But because of better living standards these days, fewer children get infected now.
- If you have *H. pylori* you're more likely to get indigestion or an ulcer.
- Most people with *H. pylori* don't get any symptoms.

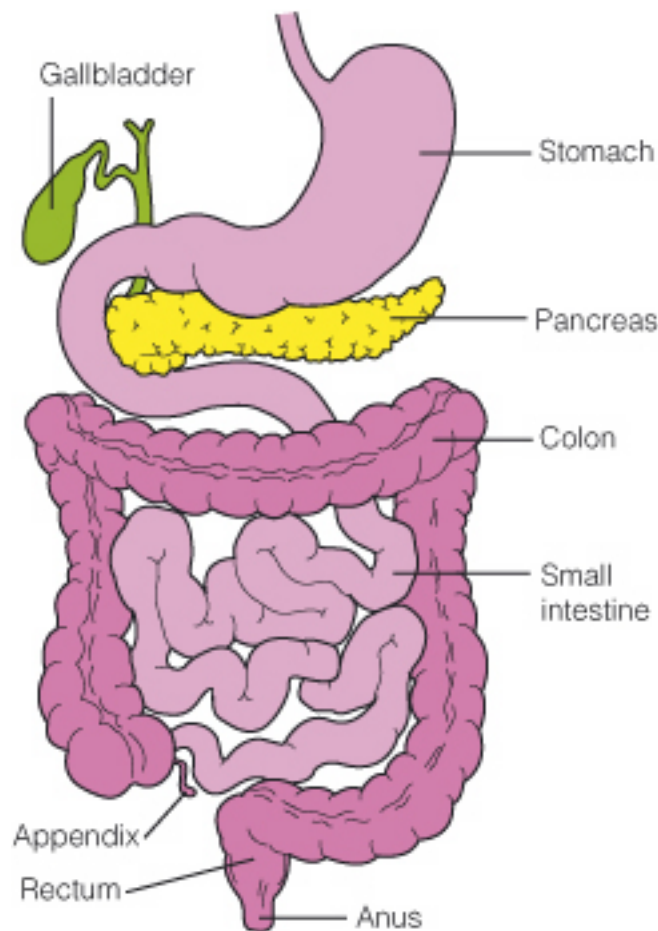
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- Besides *H. pylori*, some other things can cause indigestion too. These include eating too much food, eating spicy food, stress, **hiatus hernia**, taking aspirin, and drinking alcohol.
- If your indigestion is caused by an ulcer, getting rid of *H. pylori* usually cures it.

Your digestive system

To understand why *H. pylori* can cause problems, it helps to know something about your **digestive system** (the part of your body that helps break down food).

When you eat, food passes from your mouth to your stomach down a tube called the oesophagus.



H. pylori lives in your stomach.

Your stomach holds and breaks down the food you've eaten by producing chemicals. Your stomach has two parts.

- The upper part produces the **acid** that your stomach needs to break down the food.
- The lower part of the stomach produces other chemicals, called **enzymes**, which also help break down food.

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When you see, smell, or taste food, your brain sends signals to your stomach. Your stomach then starts making acid, ready for the arrival of your first mouthfuls of food. When the food arrives, more acid is made.

Your body has a system to stop the acid burning your stomach. The cells on the inside surface of your stomach produce a sticky fluid called **mucus**. This fluid coats the stomach and stops the acid damaging it. But if your stomach makes too much acid, it can be harmful. ^[1]

Food passes from your stomach into your **small intestine (gut)**. The part of your small intestine closest to your stomach is called the **duodenum**. It's in your duodenum and your stomach that you're most likely to get an ulcer, because acid can collect there. ^[1]

Your small intestine leads into your **large intestine** (which is also called the **colon**), which then leads into your **rectum**. Waste products from food are stored in your rectum before being passed out through your **anus**.

What is H. pylori?



This is what *H. pylori* looks like under a microscope.

H. pylori is one of the many types of **bacteria** that can live in your body. It looks like a spiral tube with thin hairs at one end.

If you've got *H. pylori*, the bacteria will be present in your stomach, your saliva, and your stools. But you can only see the bacteria by using a microscope.

H. pylori infection is hard to catch. Most people get it in childhood. For example, you may have put your finger in your mouth after touching some vomit or stools that were infected with *H. pylori*. Today, better hygiene in the home means that far fewer children catch the infection. And if you use basic hygiene, you needn't worry that you'll pass the bacteria on to anybody else.

Once *H. pylori* gets into your mouth, it travels down into your stomach. Usually, most of the different kinds of bacteria that reach your stomach are killed by the acid and other

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chemicals that your stomach makes. But *H. pylori* survives because it uses the mucus in your stomach to protect itself. *H. pylori* lives in the lining of your stomach. This makes it hard for your body's **immune cells** to find these bacteria and kill them.

Why is H. pylori harmful?

H. pylori can harm your **stomach** and your **duodenum** (the part of your gut just under your stomach) in several ways.

- *H. pylori* can damage the lining of your stomach. This means that the cells underneath the lining get damaged by the acid and other chemicals in your stomach.^[2] Or the lining of your stomach can become irritated or swollen.
- It can disrupt the cells in your stomach that make acid. The cells can start to make too much acid. This can damage your duodenum.^[3] Or the cells stop making enough acid. This can be harmful because you need acid to digest your food.
- *H. pylori* can cause changes in other cells in your stomach. This may lead to stomach cancer.^[3]

What problems does H. pylori cause?

Doctors and scientists are still learning about *H. pylori* and how it's linked to problems with your digestion. We know for certain that some problems are caused by *H. pylori*. But for some other problems, we're not certain whether there's a link with *H. pylori*. And other problems with similar symptoms are not caused by *H. pylori*.

We've listed what we know about different problems under the headings:

- Problems caused by *H. pylori*
- Problems that may be caused by *H. pylori*
- Problems not caused by *H. pylori*.

You'll find a brief description of each problem here.

Problems caused by H. pylori

- [Stomach ulcer](#) : This is a sore or hole in the lining of your stomach that causes a burning pain. It's also called a **gastric ulcer**.
- [Duodenal ulcer](#) : This is a sore or hole in the lining of your duodenum, the part of your gut just under your stomach. This might cause pain in your stomach or gut, plus bloating.

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About 15 in 100 people with *H. pylori* will get either a stomach ulcer or a duodenal ulcer in their lifetime. ^[4]

- [Gastritis](#) : This is swelling or irritation (inflammation) of the lining of your stomach. Gastritis may or may not give you any symptoms.
- [Stomach cancer](#) : This happens when cells in your stomach grow out of control, harming other cells around them. This problem is rare, but it's more common in people who have *H. pylori*.

Problems that may be caused by H. pylori

- [Non-ulcer dyspepsia](#) : This means you have the same symptoms as someone who has an ulcer, but you don't have an ulcer. This condition is also called **functional dyspepsia**.

Problems not caused by H. pylori

- [Gastro-oesophageal reflux disease](#) : This means that acid from your stomach flows back into your oesophagus (the tube that leads from your mouth to your stomach), causing a burning feeling. Doctors sometimes call this problem GORD for short.
- [Hiatus hernia](#) : This happens when part of your stomach gets pushed up into your chest, through a gap in your diaphragm (the large, thin muscle that separates your chest from your abdomen). A hiatus hernia can cause a burning feeling in your chest.
- [Oesophagitis](#) : This is irritation or swelling (inflammation) of the lining of your oesophagus (the tube that leads from your mouth to your stomach). It usually happens if you have GORD or hiatus hernia. You may or may not have pain.

Do I need to be tested for H. pylori?

If you have certain symptoms, your GP will advise you to have a test for *H. pylori*. To read more, see [What are the symptoms of H. pylori?](#)

If you have a [stomach ulcer](#) , a [duodenal ulcer](#) , or early [stomach cancer](#) , your doctor will usually advise you to have a test for *H. pylori*. ^[1] You may also have a test for *H. pylori* if you've had an ulcer in the past. If you have severe indigestion (burning or gnawing pain between your breastbone and belly button), you may also be tested for *H. pylori* to see if it's causing your symptoms.

If you have *H. pylori*, you're slightly more likely to get stomach cancer than people who don't have these bacteria. But there are many other reasons why you might get stomach cancer. Experts don't know whether getting rid of *H. pylori* reduces your chances of getting stomach cancer. ^[5]

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To read more, see [How do doctors diagnose H. pylori?](#)

Some people seem more likely than others to get *H. pylori* and become ill as a result. These things are called risk factors. Risk factors don't mean you'll definitely get problems from *H. pylori*. But they make it more likely. Here are some risk factors for getting problems from *H. pylori*:

- Living conditions in childhood. Children are more likely to pick up *H. pylori* if they are brought up in overcrowded living conditions, share a bed with a brother or sister, or don't have access to running water. ^[12] But in the UK, due to improved living standards, fewer people get *H. pylori* today than they used to.
- Your genes. Some doctors think that your chances of picking up *H. pylori* and whether these bacteria give you problems with your digestive system (the parts of your body that help break down food) depend on one or more **genes** that you've inherited from your parents. But other doctors disagree. ^[12]
- Your blood group. If you have type O blood, you're more likely to get an **ulcer** than someone who has type A blood, type B blood, or type AB blood. ^[12]

What are the symptoms of H. pylori?

Most people who have *Helicobacter pylori* (*H. pylori* for short) don't have any symptoms. *H. pylori* are bacteria (germs) that can live in your stomach. If you have symptoms, it's because *H. pylori* has damaged the lining of your stomach or the top part of your gut (your duodenum).

Here are some of the symptoms you may have.

Pain

- You're most likely to get a gnawing or burning pain between your breastbone and your belly button.
- You usually get the pain when your stomach is empty (between meals), or early in the morning. But it can happen at other times too.
- The pain may last a few minutes or much longer. If you eat something or take an **antacid** (such as Rennie or Tums) you may feel better. ^[6]

Heartburn

- Heartburn is a burning feeling in your chest.
- Some people also feel liquid coming up into their throat.

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- Heartburn is usually caused by [gastro-oesophageal reflux disease](#) (GORD for short).
- There's no evidence that *H. pylori* causes GORD. But you can get heartburn if you have a [stomach ulcer](#) , which may be caused by *H. pylori*.

Bloating

- You may feel uncomfortably full or bloated.
- You may also pass wind.

Dyspepsia

- Doctors keep changing what they mean by dyspepsia. Nowadays, they use it as a way of grouping together all the main symptoms of [ulcers](#) . So when doctors say dyspepsia they mean pain in your stomach or in your gut, plus bloating.
- Dyspepsia isn't the same as heartburn, although some people with heartburn also have pain in their stomach or gut.

Your symptoms will depend on which part of your digestive system has been damaged by *H. pylori*. For example, your symptoms could be caused by problems in your stomach or your duodenum (the part of your gut just below your stomach). To learn more about your digestion system, see [What is H. pylori?](#)

Some of the symptoms are similar to the symptoms you get with other diseases, including some kinds of cancer. So you may need to have tests to find out what's causing your symptoms.

Warning symptoms

Some symptoms mean that you may have something more serious than an ulcer or GORD. These symptoms include:

- Vomiting blood
- Passing black stools
- Feeling that food sticks in your throat when you swallow
- Losing weight without trying
- Feeling tired or off-colour for no reason.

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If you have black stools or you are vomiting blood, you should see your doctor or go to an accident and emergency department in a hospital as soon as possible. These symptoms could be caused by bleeding in your stomach or your bowel.

Some of these warning symptoms may not be caused by anything serious. But If you are vomiting blood or passing black stools your doctor should send you to see a specialist to have an endoscopy the same day.^[10]

During an endoscopy a doctor uses a long tube with a camera on its end to look inside your throat and stomach. To read more, see our information on upper gastrointestinal endoscopy.

How do doctors diagnose H. pylori?

Your GP won't be able to tell by talking to you whether you definitely have *H. pylori* infection.

Helicobacter pylori (*H. pylori* for short) is one of the **bacteria** (germs) that can live inside your body. Here are some simple tests that can tell whether you have *H. pylori* in your stomach.

- **Breath test:** For this test you'll be given a drink that contains a chemical. In your stomach, *H. pylori* changes this chemical into a gas. After swallowing the drink, you breathe out into a bag and a machine looks at the air inside the bag. If you have the gas in your breath, it means you have *H. pylori*.
- **Blood test:** This test looks for **antibodies** to *H. pylori* in your blood. Antibodies are **proteins** that your body's **immune system** makes when you have an infection.
- **Stool test:** This test looks for chemicals called **antigens** in a sample of your stools. If you have antigens from *H. pylori* in your stools, it means that you have the infection.^[18]

You need to have only one of these tests. You are most likely to have a breath test or a stool test, because these are more accurate than the blood test.^[10]

Your GP may also refer you to hospital to have a test called an **endoscopy**. This might happen if you have **warning symptoms**.^[10] These are symptoms that could mean you have a more serious illness, such as stomach cancer. To read more, see [What are the symptoms of H. pylori?](#)

You may also need an endoscopy if you are older, if you are male, or if your doctor wants to check if you have a condition called Barrett's oesophagitis. This condition can cause discomfort and obstruction in the oesophagus (food pipe). It can also make someone more likely to get cancer in their oesophagus. So your doctor may recommend an endoscopy to rule this out.^[10]

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During an endoscopy a thin, flexible tube is passed through your mouth and down into your stomach. The tube has a camera at its end. This lets your doctor see whether there's anything wrong with your stomach or the part of your gut just below the stomach (your **duodenum**). Your doctor can also take small samples of tissue from your stomach. This is called a **biopsy**. Your tissue samples can then be tested for *H. pylori*. To read more, see our information on upper gastrointestinal endoscopy.

How common is H. pylori?

H. pylori is one of the most common bacteria (germs) that live inside our bodies. But it's becoming less common as living standards in the UK improve.

Most people who have *H. pylori* infection pick it up during childhood. In developed countries, about 8 in 10 people over 60 have it. ^[13] But only about 2 in 10 younger people are infected. ^[13] In countries with poor living standards, nearly 9 in 10 of all adults have *H. pylori*. ^[14]

No one knows for certain whether some people are more likely to pick up *H. pylori* than other people. Most people who have *H. pylori* never get any symptoms. Less than 1 in 5 people who have *H. pylori* get an **ulcer**. ^[4]

To read more about the damage that *H. pylori* can do to your digestive system, see [What is H. pylori?](#)

What treatments work for H. pylori?

Treatments for *H. pylori* work very well. The treatment gets rid of the bacteria in at least 8 in 10 people.

If you have a **stomach ulcer** or a **duodenal ulcer** and you're infected with *Helicobacter pylori* (*H. pylori* for short), getting rid of these **bacteria** (germs) should heal your ulcer.

Getting rid of *H. pylori* is also likely to help you:

- If you have indigestion that's not caused by an ulcer (doctors call this **non-ulcer dyspepsia**)
- If the lining of your stomach is irritated or slightly damaged (doctors call this **gastritis**).

Doctors use a combination of drugs to get rid of *H. pylori*. They call this **eradication treatment**.

Key points about treating H. pylori

- At least 8 in 10 people treated for *H. pylori* get rid of the bacteria.

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- Treatment involves taking a drug to suppress acid in the stomach, plus antibiotics to get rid of the bacteria.
- If you have an ulcer, treatment for *H. pylori* is likely to help it heal, get rid of your symptoms, and reduce your chances of getting another ulcer.
- If you are taking [non-steroidal anti-inflammatory drugs](#) (NSAIDs) to treat a condition such as [arthritis](#), treatment for *H. pylori* is likely to reduce your chances of getting an ulcer.
- If you don't have an ulcer, but still have indigestion (this is called non-ulcer dyspepsia), then treatment for *H. pylori* is likely to help your symptoms.
- If you have [gastro-oesophageal reflux disease](#) (GORD for short), treatment for *H. pylori* is unlikely to help.
- You will have to take between two and four drugs to get rid of the infection.
- Doctors are still trying to find out which combination of drugs works best.

Treatments for H. pylori

Which treatments work best? We've looked at the best research and given a rating for each treatment according to how well it works. We've divided this information into two parts.

- [Treatments to get rid of H. pylori](#)
- [Getting rid of H. pylori for different conditions](#)

For help in deciding which treatment is best for you, see [How to use research to support your treatment decisions](#).

Treatment Group 1

Treatments to get rid of H. pylori

Treatments that work

- [Drugs to get rid of H. pylori \(eradication treatment\)](#). You take a combination of a drug to suppress stomach acid, and two antibiotics. [More...](#)

Treatment Group 2

Getting rid of *H. pylori* for different conditions

Treatments that work

- [Getting rid of *H. pylori* for stomach ulcers](#) : You take drugs to get rid of *H. pylori* to heal your stomach ulcer and stop it coming back. [More...](#)
- [Getting rid of *H. pylori* for duodenal ulcers](#) : You take drugs to get rid of *H. pylori* to heal an ulcer in your duodenum (the part of your gut just under your stomach) and stop it coming back. [More...](#)
- [Getting rid of *H. pylori* for indigestion not caused by an ulcer](#) : You take drugs to get rid of *H. pylori* to ease your indigestion, even when doctors have told you that you don't have a duodenal ulcer or a stomach ulcer. Doctors call this condition non-ulcer dyspepsia. [More...](#)
- [Getting rid of *H. pylori* for indigestion when your doctor doesn't know whether you have an ulcer](#) : You take drugs to get rid of *H. pylori* to heal any ulcers that may be present and to help your indigestion, even though your doctor doesn't know whether you have an ulcer. [More...](#)

Treatments that are likely to work

- [Getting rid of *H. pylori* when you're taking NSAIDs](#) : You take drugs to get rid of *H. pylori* and prevent you from getting an ulcer when you're taking NSAIDs for treating your arthritis or another disease. [More...](#)

Treatments that need further study

- [Getting rid of *H. pylori* for lymphoma of the stomach](#) : This means taking drugs to get rid of *H. pylori* to treat a type of cancer (called lymphoma) that affects your stomach. [More...](#)
- [Getting rid of *H. pylori* to prevent stomach cancer](#) : This means taking drugs to get rid of *H. pylori* to stop you getting stomach cancer. [More...](#)

Treatments that are unlikely to work

- [Getting rid of *H. pylori* for gastro-oesophageal reflux disease](#) : This means taking drugs to get rid of *H. pylori* to treat heartburn caused by GORD. [More...](#)

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What will happen to me?

Treatment to get rid of *H. pylori* works really well. At least 8 in 10 people who are treated get rid of these bacteria (germs).

Getting rid of *H. pylori* usually cures [duodenal ulcers](#) , [stomach ulcers](#) , and some other problems caused by these bacteria , such as [gastritis](#) . (Your duodenum is the part of your gut just below your stomach.)

We found one small study in which people with duodenal ulcers had treatment to get rid of *H. pylori*. This study showed that treatment can: ^[15] ^[16]

- Reduce the pain and discomfort you have around your stomach, or get rid of the pain altogether
- Reduce your distress
- Help you get on with your daily life, including your sex life
- Reduce or get rid of wind
- Reduce [heartburn](#) .

Some people don't have an ulcer, but they have similar symptoms. Doctors call this [non-ulcer dyspepsia](#) . If you have non-ulcer dyspepsia, treatment for *H. pylori* is also likely to help your symptoms. ^[17]

H. pylori and cancer

People with *H. pylori* are at higher risk of getting [stomach cancer](#) . One in 100 people who have *H. pylori* will get stomach cancer during their lifetime. ^[4]

But doctors don't know whether getting rid of *H. pylori* reduces your risk of cancer. At the moment, doctors don't advise everyone to be tested and treated for *H. pylori*.

Questions to ask your doctor

If you think you could have one of the conditions caused by *H. pylori*, you may want to talk to your GP to find out more.

Here are some questions that you might want to ask.

When you first go to see your GP

- Why do you think I'm getting indigestion?
- What tests can I have to find out why I have indigestion?

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- Should I have an endoscopy?
- Should I have a test for *H. pylori*?

If you're advised to have a test for H. pylori

- Why should I have this test?
- How will it be done?
- How reliable is the test?
- What will happen if my *H. pylori* test is positive?
- What will happen if my *H. pylori* test is negative?

If your H. pylori test is positive

- Which treatment will I have?
- Why are you recommending this particular combination of drugs?
- How will the drugs make me feel?
- Will the treatment make my indigestion go away?
- What side effects do these drugs have?
- What should I do if I get any side effects?
- If I feel ill when I am taking these drugs, should I stop taking them?
- How soon will my indigestion go away?
- Will I have another test to see if my *H. pylori* infection has been cured?
- Can I get *H. pylori* again?
- What will you do if I still have indigestion after my treatment?

If you still have indigestion after your H. pylori treatment

- Why do I still have indigestion?
- Do I need more tests?

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- Do I need an endoscopy?
 - What other treatments can I have?
-

Treatments:

Drugs to get rid of *H. pylori* (eradication treatment)

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

This information is for people who have *H. pylori* infection. It tells you about drugs to get rid of *H. pylori* (eradication treatment). It is based on the best and most up-to-date research.

Does it work?

Yes, there's good evidence that taking antibiotics plus acid-suppressing drugs will get rid of *H. pylori*.

Doctors use lots of different combinations of drugs for this. Most seem to work equally well.

What is it?

If you have treatment to get rid of *H. pylori*, you'll probably be given three or four drugs. You'll take these drugs every day for up to two weeks. Doctors call this **eradication treatment** because it's meant to eradicate, or get rid of, *H. pylori* bacteria from your stomach.

The National Institute for Health and Care Excellence (NICE), which advises the government on which drugs should be available on the NHS, says people being treated to get rid of *H. pylori* should take a drug called a **proton pump inhibitor** plus two **antibiotics**.^[10]

Proton pump inhibitor drugs reduce the amount of acid made by the cells in your stomach. Antibiotics kill the *H. pylori* bacteria in your stomach.

Proton pump inhibitors include the following:

- esomeprazole (brand name Nexium)
- lansoprazole (Zoton)
- omeprazole (Losec)

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- pantoprazole (Protium)
- rabeprazole (Pariet).

There are many different types of antibiotics. But the antibiotic combinations that are recommended by NICE are: ^[10]

- metronidazole and clarithromycin
- amoxicillin and clarithromycin.

Your doctor will choose the drugs most appropriate for you. Some people can't take amoxicillin because of allergies. And some people get worse side effects from metronidazole.

Also, if you've recently taken one of these antibiotics for another condition, the *H. pylori* bacteria in your stomach might be resistant to it. That means it no longer works. So your doctor will prescribe a different antibiotic.

H. pylori eradication treatment works for people with *H. pylori* infection who have stomach ulcers or duodenal ulcers, or long-term indigestion pain not caused by an ulcer. To find out more about who needs treatment, read [Who is treated for H. pylori?](#)

You might also take a fourth drug, called bismuth. This drug protects the lining of your stomach.

How can it help?

Eradication treatment is very likely to get rid of the *H. pylori* bacteria in your stomach. However, there's some uncertainty about how many drugs to take, which combinations work best, and how long you need to take them for.

This is what we know from research:

- Taking two antibiotics plus an acid-suppressing drug works better than taking one antibiotic plus an acid-suppressing drug. ^{[19] [20] [21]}
- If taking three drugs doesn't work, taking four drugs may work better. The fourth drug is bismuth. ^{[22] [23] [24]} But for most people three drugs is enough. ^[25]
- Taking drugs for two weeks may work better than for one week. ^{[26] [27]} About 8 in 10 people who take drugs for two weeks get rid of *H. pylori*, compared with only 7 in 10 people who take treatment for just one week. ^[26]
- We don't know which exact combination of drugs works best. Most of the commonly used combinations seem to work as well as each other. ^[28]

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- Taking two drugs for five days, then three drugs for five days, may work better than taking three drugs for one week. ^[29]

It's important to take your drugs in the way your doctor asks. Finish your course of antibiotics, even if you start to feel better before they're all gone. If you don't take all of the drugs correctly, your *H. pylori* probably won't go away, or may come back. And the bacteria (germs) may become resistant to the antibiotics in your treatment, which may make it harder to get rid of them. If you are troubled by bad side effects, speak to your doctor before you stop taking the drugs.

Doctors are still working out which drugs work best and how long you should take your tablets. So don't be surprised if your treatment isn't the same as someone else you know who's also being treated for *H. pylori*.

How does it work?

Eradication treatment includes antibiotics, which kill the *H. pylori* bacteria in your stomach.

Taking more than one type of antibiotic increases the chances that the bacteria will all be killed. Some strains of bacteria are more sensitive to one antibiotic than to another, so using more than one antibiotic gives a better chance that at least one will work.

The acid-suppressing drug in your treatment, usually a proton pump inhibitor, reduces the amount of acid that your stomach makes. This means that there's less acid to burn damaged parts of your stomach.

Can it be harmful?

You may feel sick and have **diarrhoea** while you're taking treatment for *H. pylori*. But these problems should go away when you finish your treatment.

The side effects of eradication treatment are caused by the antibiotics, the drugs that kill *H. pylori*. ^[19]

- About 40 in 100 people who take metronidazole get these side effects.
- About 20 in 100 people who take clarithromycin get these side effects.

But less than 2 in 100 people are so badly affected that they stop taking their treatments.

Also, bismuth can make your stools black.

Taking drugs for a longer time causes more side effects. So if you have treatment for two weeks, then you may be more likely to get side effects than if you take it for one week. You have to balance that with a better chance of getting rid of the infection if you take drugs for two weeks. ^[30]

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Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel. ^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest dose of these drugs for the shortest amount of time needed to treat your symptoms. ^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have diarrhoea while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away. ^[34]

How good is the research on eradication treatment?

There's a lot of good-quality evidence about treatments to get rid of *H. pylori* infection. Most of the research looks at which types of treatment work best. Here's what we found:

- We found three summaries of the evidence (systematic reviews) covering 44 studies looking at whether three drugs worked better than two drugs. ^{[19] [20] [21]}
- We found several good-quality studies including one large review that looked at how long treatment should last for the best chance of getting rid of the infection. ^{[26] [27]}
- We found eight good-quality studies which looked at taking four drugs instead of three drugs. ^{[25] [35] [22] [23] [24] [36] [37] [38]}
- We found one big summary of the evidence looking at taking two drugs for five days, then three drugs for five days, compared with taking three drugs for five or seven days. ^[29]

We also found many smaller studies looking at different combinations of antibiotics and proton pump inhibitors. But it's not possible to draw conclusions from these studies. What

H. pylori infection

we can say is that all the usual combinations seem to work well, and that no single combination seems much better than the others. ^[28]

Getting rid of *H. pylori* for stomach ulcers

In this section

[Does it work?](#)

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[How good is the research on getting rid of *H. pylori* for stomach ulcers?](#)

This information is for people who have stomach ulcers. It tells you about getting rid of *H. pylori*, a treatment used for stomach ulcers. It is based on the best and most up-to-date research.

Does it work?

Yes. Taking treatment to get rid of *H. pylori* helps your ulcer heal, prevents bleeding in your ulcer, and it also reduces the chance of your ulcer coming back.

What is it?

If you have treatment to get rid of *H. pylori*, you'll probably be given three or four drugs. You take these drugs every day for up to two weeks. Doctors call this **eradication treatment**.

One of the drugs, usually a drug called a **proton pump inhibitor**, will reduce the amount of acid that is made by the cells in your stomach. The other drugs are **antibiotics** that kill the *H. pylori* in your stomach. To read more, see [Drugs to get rid of *H. pylori* \(eradication treatment\)](#).

The National Institute for Health and Care Excellence (NICE) is the government body that decides which treatments should be available on the NHS. NICE says that you should have eradication treatment if you have a [stomach ulcer](#). ^[10]

It's important to take your drugs the way your doctor asks you to, even if you get some side effects. If you don't take all of the drugs correctly, your *H. pylori* probably won't go away. And the **bacteria** (germs) may become resistant to the antibiotics in your treatment. This could make it hard for your doctor to find a treatment that will get rid of your *H. pylori*.

How can it help?

If you take eradication treatment to get rid of *H. pylori*, your ulcer is likely to heal, although it may not heal any better than with acid-reduction drugs alone. But your ulcer is less likely to come back if you have treatment to get rid of *H. pylori*, than if your ulcer heals without treatment.

In studies, after one to two years, stomach ulcers come back in: ^[39]

H. pylori infection

- 6 in 10 people who don't have any treatment
- 1 in 10 people who have eradication treatment.

If you've had a bleeding ulcer, this treatment will reduce the chance of further bleeding. One summary of the research found that: ^[40]

- Between 4 in 100 and 5 in 100 people with a bleeding stomach ulcer who had eradication treatment had more bleeding
- Of the people who took only a drug to reduce the amount of acid in their stomach, almost 24 in 100 had more bleeding.

A bleeding ulcer can be dangerous and you may need to be treated in hospital. The bleeding can usually be stopped with drugs or surgery. If your bleeding ulcer isn't treated, you can have serious internal bleeding (a haemorrhage).

How does it work?

A stomach ulcer is a sore or hole in the lining of your stomach. It happens if the lining of your stomach is damaged and acid gets through to the cells underneath. This damage may be caused by *H. pylori* or by non-steroidal anti-inflammatory drugs (NSAIDs), such as aspirin.

Eradication treatment can only heal stomach ulcers caused by *H. pylori* infection. One drug, usually a proton pump inhibitor, reduces the amount of acid that your stomach makes. So there's less acid to burn any unprotected cells in your stomach. The other drugs are antibiotics that kill *H. pylori*. This stops the damage to your stomach caused by the bacteria.

Can it be harmful?

You may feel sick and you may have diarrhoea while you're taking treatment for *H. pylori*. But these problems should go away when you finish your treatment.

Side effects of eradication treatment are caused by antibiotics, the drugs that kill *H. pylori*. ^[19]

- About 40 in 100 people who take metronidazole get these side effects.
- About 20 in 100 people who take clarithromycin get these side effects.
- Less than 2 in 100 people stop taking their treatments because of these effects.

You may be given a drug that contains a chemical called bismuth. This drug may turn your stools black. About 40 in 100 people taking drugs that include bismuth get this side

H. pylori infection

effect. About 40 in 100 people also feel sick and get diarrhoea when they take bismuth. ^[19] But only 4 in 100 people choose to stop taking their treatment because of this side effect. ^[19]

Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel. ^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest dose of these drugs for the shortest amount of time needed to treat your symptoms. ^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have diarrhoea while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away. ^[34]

How good is the research on getting rid of H. pylori for stomach ulcers?

The evidence that getting rid of *H. pylori* prevents stomach ulcers comes from a large summary of the research (a **systematic review**). The summary looked at 14 studies of people with stomach ulcers. The people either took treatment to get rid of *H. pylori* along with drugs that reduce the amount of acid in your stomach (**eradication treatment**), or only took drugs that reduce the amount of acid. ^[39]

The summary also looked at whether people's stomach ulcers came back again after treatment.

Treating ulcers that bleed

Some people have ulcers that bleed. We looked at one summary of the research (a systematic review) that included six studies. A total of 355 people took part in these studies. ^[40]

Getting rid of H. pylori for duodenal ulcers

In this section

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[What is it?](#)

[How can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on getting rid of H. pylori for duodenal ulcers?](#)

This information is for people who have a duodenal ulcer. It tells you about getting rid of *H. pylori*, a treatment used for duodenal ulcers. It is based on the best and most up-to-date research.

Does it work?

Yes. If you take a combination of drugs that kill *H. pylori* and drugs that reduce the amount of acid in your stomach, your [duodenal ulcer](#) is likely to heal.

What is it?

If you have treatment to get rid of *H. pylori*, you'll probably be given three or four drugs. You take these drugs every day for up to two weeks. Doctors call this **eradication treatment**.

One of the drugs, usually a drug called a [proton pump inhibitor](#), will reduce the amount of acid that is made by the cells in your stomach. The other drugs are [antibiotics](#) that kill the *H. pylori* in your stomach. To read more, see [Drugs to get rid of H. pylori \(eradication treatment\)](#).

It's important to take your drugs in the way your doctor asks you to, even if you get some side effects. If you don't take all of the drugs correctly, your *H. pylori* probably won't go away. And the [bacteria](#) (germs) may become resistant to the antibiotics in your treatment. This could make it hard for your doctor to find a treatment that will get rid of your *H. pylori* infection and your symptoms.

The National Institute for Health and Care Excellence (NICE) is the government body that decides which treatments should be available on the NHS. NICE recommends that you should have eradication treatment if you have a duodenal ulcer. ^[10]

How can it help?

If you have a duodenal ulcer, having treatment that includes drugs that kill *H. pylori* can help you in the following ways.

- Your ulcer is more likely to heal. At least 8 in 10 people who take drugs that kill *H. pylori* get rid of their ulcer. ^[39] Your ulcer is less likely to heal if you take drugs that just reduce the acid in your stomach or if you don't take anything at all. ^[39]

H. pylori infection

- Your ulcer is less likely to come back. Only about 1 in 8 people who take drugs that kill *H. pylori* as part of their treatment get another ulcer.^[39] About 1 in 6 people who just take drugs that reduce the acid in their stomach get another ulcer.^[39]
- Your ulcer is less likely to bleed. In studies, between 4 in 100 and 5 in 100 people who had treatment to kill *H. pylori* and almost 24 in 100 people who only had treatment to reduce acid in their stomach had a bleed from their ulcer.^[40]

A bleeding ulcer can be dangerous and you may need to be treated in hospital. The bleeding can usually be stopped with drugs or surgery. If you have a bleeding ulcer and it isn't treated, you can have serious internal bleeding (a **haemorrhage**).

How does it work?

Your stomach normally makes acid to help break down your food. But *H. pylori* makes your stomach produce too much acid. The extra acid travels down into your duodenum (the part of your gut just under your stomach), where it damages the lining.^[3]

Treatment aims to tackle both parts of this problem. One drug, usually a proton pump inhibitor, makes your stomach produce less acid. So less acid reaches your duodenum. The other drugs are antibiotics. They kill the *H. pylori* bacteria that makes your stomach produce too much acid.

If you take only a drug that reduces the amount of acid made in your stomach, your duodenal ulcer may heal in the short term. But when you stop taking the drug, *H. pylori* will still be present in your stomach. So your stomach will start to make too much acid again. If this happens, your ulcer is likely to come back.

Can it be harmful?

You may feel sick and you may have **diarrhoea** while you're taking treatment for *H. pylori*. But these problems should go away when you finish your treatment.

The side effects of eradication treatment are caused by the antibiotics in your treatment, the drugs that kill *H. pylori*.

- About 40 in 100 people who take metronidazole get these side effects.
- About 20 in 100 people who take clarithromycin get these side effects.
- Less than 2 in 100 people stop taking their treatments because of these effects.^[19]

You may be given a drug that contains a chemical called bismuth. This drug may turn your stools black. About 40 in 100 people taking drugs that include bismuth get this side effect. About 40 in 100 people also feel sick and get diarrhoea when they take bismuth.^[19] But only 4 in 100 people stop taking their treatment because of this side effect.^[19]

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Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel. ^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest dose of these drugs for the shortest amount of time needed to treat your symptoms. ^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have diarrhoea while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away. ^[34]

How good is the research on getting rid of H. pylori for duodenal ulcers?

There's strong evidence that getting rid of *H. pylori* helps duodenal ulcers heal and stops them coming back.

We looked at a large summary of the research (called a systematic review). ^[39] It included 34 studies involving nearly 4,000 people.

We looked at another summary of the research on bleeding ulcers. It included six studies covering 355 people. ^[40]

Getting rid of H. pylori for indigestion not caused by an ulcer

In this section

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[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on getting rid of H. pylori for indigestion not caused by an ulcer?](#)

This information is for people who have indigestion not caused by a stomach ulcer. It tells you about getting rid of *H. pylori*, a treatment sometimes used for this condition. It is based on the best and most up-to-date research.

H. pylori infection

Does it work?

Yes. If you have painful indigestion but you don't have an **ulcer**, it's called **non-ulcer dyspepsia**. Your symptoms are more likely to get better if you take treatment to get rid of *H. pylori* than if you don't take anything. It may not be a big improvement, but you may find it worthwhile.

What is it?

If you get indigestion, your doctor may do a test called an **endoscopy** to find out what's causing your symptoms.

But most people who have indigestion don't need to have this test. That's because, if you have *H. pylori*, the treatment you'll have for your non-ulcer dyspepsia will be the same as that for someone who does have an ulcer. So the doctor doesn't need to know whether you have an ulcer. And research has shown that it's safe for most people to have *H. pylori* treatment without having an endoscopy test first. ^[10]

If you do have an endoscopy, your doctor will pass a thin tube through your mouth down into your stomach. The tube has a camera at the end. This lets your doctor see whether there's anything wrong with your stomach or the part of your gut just below the stomach (your **duodenum**). To read more, see our information on upper gastrointestinal endoscopy.

If there's no sign of an ulcer, you may be diagnosed with non-ulcer dyspepsia. It can only be diagnosed by looking inside your stomach and duodenum. If you have non-ulcer dyspepsia, your symptoms are just as real as those in someone who has an ulcer, but there's no definite sore or hole in the lining of your stomach or duodenum.

If you have treatment to get rid of *H. pylori*, you'll probably be given three or four drugs. You take these drugs every day for up to two weeks. Doctors call this **eradication treatment**.

One of the drugs, usually a drug called a **proton pump inhibitor**, will reduce the amount of acid that is made in your stomach. The other drugs are **antibiotics** that kill the *H. pylori* in your stomach. To read more, see [Drugs to get rid of H. pylori \(eradication treatment\)](#).

The National Institute for Health and Care Excellence (NICE) is the government body that decides which treatments should be available on the NHS. NICE says that you should have eradication treatment if you have non-ulcer dyspepsia. ^[10]

It's important to take your drugs the way your doctor asks you to, even if you get some side effects. If you don't take all of the drugs correctly, your *H. pylori* probably won't go away. And the **bacteria** (germs) may become resistant to the antibiotics in your treatment. This could make it hard for your doctor to find a treatment that will get rid of your *H. pylori*.

H. pylori infection

How can it help?

If you have non-ulcer dyspepsia and you take treatment to get rid of *H. pylori*, you are less likely to have symptoms three months to 12 months later. In one large study, the symptoms of indigestion came back in: ^[17]

- 7 in 10 people who took a dummy treatment (a placebo)
- 6 in 10 people who had eradication treatment.

This may not sound like a big difference, but the study was so large that we're sure it's a real difference rather than a chance difference. And *H. pylori* eradication treatment is a one-off cure. You only have to take a short course of tablets, lasting no more than two weeks (and often lasting much less than this). You don't have to take it all the time like other treatments for indigestion.

In one other study, about 400 people were asked how much their symptoms had improved after treatment or placebo.

- About half of the people who had eradication treatment said they felt much improved or cured.
- About one-third of the people who took a placebo felt much improved or cured. ^[41]

How does it work?

Doctors aren't sure whether *H. pylori* causes indigestion in people who don't have ulcers, but the germ is common in people with indigestion.

Eradication treatment includes a drug, usually a proton pump inhibitor, that reduces the amount of acid in your stomach. So you should get less pain. Eradication treatment also includes one or two antibiotic drugs that kill *H. pylori*. This is because the bacteria may be damaging the lining of your stomach and making it easier for the acid to burn and hurt you.

Can it be harmful?

You may feel sick and you may have diarrhoea while you're taking treatment for *H. pylori*.

The side effects of your eradication treatment are caused by the antibiotics that kill *H. pylori*. They should go away when you finish your treatment. ^[19]

- About 40 in 100 people who take metronidazole get these side effects.
- About 20 in 100 people who take clarithromycin get these side effects.

H. pylori infection

- Less than 2 in 100 people stop taking their treatment because of these effects.

You may be given a drug that contains a chemical called bismuth. This drug may turn your stools black. About 40 in 100 people taking drugs that include bismuth get this side effect.^[19] About 40 in 100 people also feel sick and get diarrhoea when they take bismuth.^[19] But only 4 in 100 people stop taking their treatment because of this side effect.^[19]

If you've got non-ulcer dyspepsia, there's a small chance that getting rid of *H. pylori* will cause a problem called [oesophagitis](#). This is when the tube that runs from your mouth to your stomach (the oesophagus) becomes sore.

In one study, 7 in 100 people who had eradication treatment had signs of oesophagitis one year after treatment. But 2 in 100 people who had just the drugs to reduce the amount of acid had the problem.^[42]

Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel.^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest dose of these drugs for the shortest amount of time needed to treat your symptoms.^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have diarrhoea while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away.^[34]

How good is the research on getting rid of *H. pylori* for indigestion not caused by an ulcer?

The evidence for getting rid of *H. pylori* for people with indigestion not caused by an ulcer ([non-ulcer dyspepsia](#)) is not as strong as it is for people with a [duodenal ulcer](#) or a [stomach ulcer](#). Some studies show that treatment helps, but other studies don't.

H. pylori infection

We found one quite large summary of the research. ^[17]

Getting rid of *H. pylori* for indigestion when your doctor doesn't know whether you have an ulcer

In this section

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[How good is the research on getting rid of *H. pylori* for indigestion when your doctor doesn't know if you have an ulcer?](#)

This information is for people with indigestion that may be caused by an ulcer. It tells you about getting rid of *H. pylori* infection, a treatment sometimes used when your doctor doesn't know whether you have an ulcer. It is based on the best and most up-to-date research.

Does it work?

Yes. Treatment to get rid of *H. pylori* can help if you have indigestion that causes bloating and pain between your breastbone and your belly button (**dyspepsia**). This treatment will probably reduce your symptoms over a year.

What is it?

If you have indigestion, you may have a [stomach ulcer](#), a [duodenal ulcer](#), or [gastritis](#) (when the lining of your stomach is irritated or slightly damaged). Your symptoms, such as pain, are probably caused by the acid in your stomach passing into the lining of your stomach or your **duodenum** (the part of your gut just below your stomach). This may happen because *H. pylori* has damaged the lining of your stomach.

Some people with indigestion have a test called an **endoscopy** to find out what's causing the symptoms. (An endoscopy is a test that lets your doctor look inside your stomach and bowels. To read more, see our information on upper gastrointestinal endoscopy.) But most people who have indigestion don't need to have this test. That's because, if you have *H. pylori*, the treatment you'll have for your non-ulcer dyspepsia is the same as the treatment for someone who does have an ulcer. So your doctor doesn't need to know whether you have an ulcer. Research has shown that it's safe for most people with indigestion to have *H. pylori* treatment without having an endoscopy test first. ^[10]

If you have indigestion, your GP may advise you to have a test for *H. pylori*. To read more, see [How do doctors diagnose *H. pylori*?](#)

If your test shows that you have *H. pylori*, your GP may give you treatment to get rid of the bacteria. Doctors call this **test and treat**. If you have treatment to get rid of *H. pylori*, you'll probably be given three or four drugs. You take these drugs every day for up to two weeks. Doctors call this **eradication treatment**.

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One of the drugs, usually a drug called a **proton pump inhibitor**, will reduce the amount of acid that is made by the cells in your stomach. The other drugs are **antibiotics** that kill the *H. pylori* in your stomach. To read more, see [Drugs to get rid of H. pylori \(eradication treatment\)](#).

The National Institute for Health and Care Excellence (NICE) is the government body that decides which treatments should be available on the NHS. NICE recommends that, if you have dyspepsia, you should take a proton pump inhibitor on its own for a month. If that doesn't help, or your symptoms come back, you should be tested for *H. pylori*. If your test is positive, you should have eradication treatment.^[10]

NICE says most people with indigestion don't need an endoscopy. But it advises doctors that people with indigestion should have an endoscopy if they have these symptoms:^[10]

- Passing black stools
- Losing weight without trying to
- Finding it hard to swallow
- Vomiting regularly.

See [What are the symptoms of H. pylori?](#) for more details.

It's important to take your drugs the way your doctor asks you to, even if you get some side effects. If you don't take all of the drugs correctly, your *H. pylori* probably won't go away. And the **bacteria** (germs) may become resistant to the antibiotics in your treatment. This could make it hard for your doctor to find a treatment that will get rid of your *H. pylori*.

How can it help?

If you've had a test for *H. pylori* but you haven't had an endoscopy, getting rid of *H. pylori* will probably reduce your symptoms. This treatment is likely to work as well as for people who have had an endoscopy.^{[43] [44] [45] [46]}

Between 3 in 10 and 8 in 10 people who have eradication treatment to get rid of *H. pylori* (without having an endoscopy) have no indigestion symptoms after a year.^{[43] [44]}

One summary of the evidence found a small improvement for people who had endoscopy, compared with people who had eradication treatment. But the summary didn't look at the risks of endoscopy, and the difference was very small.^[47]

How does it work?

If you have indigestion, you may or may not have an **ulcer** or **gastritis**. Your symptoms, such as pain, are probably because of acid burning into the lining of your stomach or duodenum (the part of your gut just under your stomach). This happens possibly because of damage to the lining of your stomach caused by *H. pylori*.

H. pylori infection

Eradication treatment includes a drug, usually a proton pump inhibitor, that reduces the amount of acid in your stomach. So you should get less pain. Eradication treatment also includes one or two antibiotic drugs that kill *H. pylori*. The germ may be damaging the lining of your stomach and making it easier for the acid to burn and hurt you.

Can it be harmful?

You may feel sick and you may have **diarrhoea** while you're taking treatment for *H. pylori*. But these problems should go away after you've finished your treatment.

The side effects of your eradication treatment are caused by the antibiotics, the drugs that kill *H. pylori*.^[19]

- About 40 in 100 people who take metronidazole get these side effects.
- About 20 in 100 people who take clarithromycin get these side effects.
- Less than 2 in 100 people stop taking their treatments because of these effects.

You may be given a drug that contains a chemical called bismuth. This drug may turn your stools black. About 40 in 100 people taking drugs that include bismuth get this side effect.^[19] And about 40 in 100 people also feel sick and get diarrhoea when they take bismuth.^[19] But only 4 in 100 people stop taking their treatment because of this side effect.^[19]

In two of the studies we looked at, about 1 in 10 people with dyspepsia stopped taking *H. pylori* eradication treatment because of short-term side effects.^[48] ^[49]

Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel.^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest dose of these drugs for the shortest amount of time needed to treat your symptoms.^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD

H. pylori infection

after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have **diarrhoea** while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away. ^[34]

How good is the research on getting rid of H. pylori for indigestion when your doctor doesn't know if you have an ulcer?

There's good evidence that getting rid of *H. pylori* without having an endoscopy (called 'test and treat') will help get rid of your indigestion.

We found two summaries of the research (called **systematic reviews**) covering more than 2,000 people in total. ^[47] ^[44]

Getting rid of H. pylori when you're taking NSAIDs

In this section

[Does it work?](#)

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[Can it be harmful?](#)

[How good is the research on getting rid of H. pylori when you're taking NSAIDs?](#)

This information is for people who need to take a long course of non-steroidal anti-inflammatory drugs (NSAIDs). It tells you about getting rid of *H. pylori* infection, which is sometimes recommended before you start taking NSAIDs long-term. It is based on the best and most up-to-date research.

Does it work?

Probably. Getting rid of *H. pylori* before you start treatment with a **non-steroidal anti-inflammatory drug** (NSAID) may stop you getting an **ulcer**. NSAIDs are used to treat many conditions (such as osteoarthritis), but they can cause ulcers.

If you already have an ulcer caused by an NSAID, taking drugs to get rid of *H. pylori* probably won't help any more than drugs that reduce the acid in your stomach.

What is it?

Non-steroidal anti-inflammatory drugs (NSAIDs) are used to treat conditions in which you get pain and swelling. However, NSAIDs can damage your stomach and the top part of your gut (the **duodenum**), causing ulcers. People who take NSAIDs regularly are four to six times more likely to get a duodenal ulcer than people who don't take these drugs.

^[50] ^[51]

H. pylori infection

Doctors think that getting rid of *H. pylori* before treating people with NSAIDs can help prevent ulcers. This means that if you're going to be treated with NSAIDs, your doctor may suggest that you have treatment to get rid of *H. pylori* first.

To get rid of *H. pylori*, you'll probably be given three or four drugs. You take these drugs every day for up to two weeks. Doctors call this **eradication treatment**.

One of the drugs, usually a drug called a **proton pump inhibitor**, will reduce the amount of acid that's released by your stomach. The other drugs are **antibiotics** that kill the *H. pylori* in your stomach. To read more, see [Drugs to get rid of H. pylori \(eradication treatment\)](#).

The National Institute for Health and Care Excellence (NICE) is the government body that decides which treatments should be available on the NHS. NICE says if you get indigestion (**dyspepsia**) when you are taking an NSAID, you should take a proton pump inhibitor on its own for two months. If you have a test for *H. pylori* and it's positive, you should be offered eradication treatment. ^[10]

It's important to take your drugs the way your doctor asks you to, even if you get some side effects. If you don't take all of the drugs correctly, your *H. pylori* infection probably won't go away. And the **bacteria** may become resistant to the antibiotics in your treatment. This could make it hard for your doctor to find a treatment that will get rid of your *H. pylori*.

How can it help?

If you haven't had an ulcer before

Here is what the research shows if you take treatment to get rid of *H. pylori* before you start taking NSAIDs.

- Your chance of getting an ulcer may reduce by about two-thirds. ^[52] In one study, only 7 in 100 people who got rid of *H. pylori* before taking NSAIDs got an ulcer after taking NSAIDs for eight weeks. But 26 in 100 people who didn't get rid of *H. pylori* before taking the NSAIDs got an ulcer. ^[52]
- It probably doesn't matter which type of eradication treatment you have. ^[53]
- Taking a medicine to reduce the amount of acid that your stomach makes may work just as well as getting rid of *H. pylori*. ^[53]

If you already have an ulcer

If you have an ulcer caused by NSAIDs, taking medicines to get rid of *H. pylori* won't heal your ulcer any better than taking medicine to reduce the amount of acid that your stomach makes. ^[54] Both treatments heal ulcers 8 to 9 times out of 10. ^[54]

H. pylori infection

If you've had an ulcer in the past

If you take medicines to get rid of *H. pylori* before you start taking NSAIDs, your risk of getting another ulcer is about two-thirds less than if you take medicines that reduce the amount of acid that your stomach makes. ^[55]

In one study, 12 in 100 people who got rid of their *H. pylori* got an ulcer within six months of taking NSAIDs. ^[55] Among the people who instead took a drug (called omeprazole) to reduce acid in their stomach, 34 in 100 got another ulcer within six months of taking NSAIDs. ^[55]

If you've had a bleeding ulcer in the past

Getting rid of *H. pylori* before you start taking an NSAID to prevent another bleeding ulcer may not work as well as taking a medicine (called omeprazole) to reduce the amount of acid that your stomach makes. ^[56]

This is especially so if you will be taking an NSAID called naproxen. ^[56] In one study, about 4 in 20 people who got rid of *H. pylori* before taking NSAIDs got another bleeding ulcer within six months, compared with 1 in 20 who took omeprazole. ^[56]

How does it work?

A stomach ulcer is a sore or hole in the lining of your stomach. It happens if the lining of your stomach is damaged and acid can get through the lining. This damage may be caused by *H. pylori* or by NSAIDs.

If you're taking an NSAID and you are infected with *H. pylori*, you're nearly twice as likely to have a stomach problem than if you take an NSAID but don't have *H. pylori*. ^[57] Taking eradication treatment to get rid of *H. pylori* before you start taking an NSAID might reduce your risk of getting an ulcer or indigestion.

Eradication treatment can only prevent ulcers caused by *H. pylori* infection. One drug, usually a proton pump inhibitor, reduces the amount of acid that your stomach makes, so there's less acid to burn any unprotected cells in your stomach. The other drugs are antibiotics that kill *H. pylori*. This stops the damage to your stomach caused by the bacteria.

Can it be harmful?

You may feel sick and you may have **diarrhoea** while you're taking treatment for *H. pylori*. But these problems should go away when you finish your treatment.

The side effects of eradication treatment that you get are caused by the antibiotics, the drugs that kill *H. pylori*. ^[19]

- About 40 in 100 people who take metronidazole get these side effects.

H. pylori infection

- About 20 in 100 people who take clarithromycin get these side effects.
- Less than 2 in 100 people stop taking their treatments because of these effects.

You may be given a drug that contains a chemical called bismuth. These drugs may turn your stools black. About 40 in 100 people taking drugs that include bismuth get this side effect.^[19] About 40 in 100 people also feel sick and get diarrhoea when they take bismuth.^[19] But only 4 in 100 people stop taking their treatment because of side effects.

Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel.^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest dose of these drugs for the shortest amount of time needed to treat your symptoms.^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have diarrhoea while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away.^[34]

How good is the research on getting rid of H. pylori when you're taking NSAIDs?

There hasn't been a lot of research on getting rid of *H. pylori* before having treatment with non-steroidal anti-inflammatory drugs (NSAIDs).

In people who haven't had an ulcer before

We found two good-quality studies that looked at more than 900 people infected with *H. pylori*.^[52] ^[53]

H. pylori infection

In people who have an ulcer linked with taking NSAIDs

We found one good-quality study of 195 people.^[54] Some people in the study had *H. pylori* eradication treatment and then treatment to reduce the amount of acid in their stomach. The others had just the treatment to reduce the amount of acid in their stomach.

In people who have had an ulcer before

We found two good-quality studies that looked at whether taking medicines to get rid of *H. pylori* before taking NSAIDs can help. They covered 250 people.^[55] ^[56]

Getting rid of *H. pylori* for lymphoma of the stomach (stomach cancer)

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 getting rid of *H. pylori* for lymphoma of the stomach \(stomach cancer\)?](#)

This information is for people who have a type of stomach cancer called gastric B-cell lymphoma. It tells you about getting rid of *H. pylori* infection, which is sometimes tried for this condition. It is based on the best and most up-to-date research.

Does it work?

We don't know. **Gastric B-cell lymphoma** is a rare form of [stomach cancer](#). Some studies have looked at whether getting rid of *H. pylori* helps people with gastric B-cell lymphoma. But the results of these studies weren't clear.

What is it?

If you have treatment to get rid of *H. pylori*, you'll probably be given three or four drugs. You take these drugs every day for up to two weeks. Doctors call this **eradication treatment**.

One of the drugs, usually a drug called a **proton pump inhibitor**, will reduce the amount of acid made by the cells in your stomach. The other drugs are **antibiotics** that kill the *H. pylori* in your stomach. To read more, see [Drugs to get rid of *H. pylori* \(eradication treatment\)](#).

It's important to take your drugs the way your doctor asks you to, even if you get some side effects. If you don't take all of the drugs correctly, your *H. pylori* probably won't go away. And the **bacteria** (germs) may become resistant to the antibiotics in your treatment. This could make it difficult for your doctor to find a treatment that will get rid of your *H. pylori*.

H. pylori infection

How can it help?

We don't know if it can help. There haven't been any good-quality studies looking at this treatment, or at how it compares with other types of treatment for gastric B-cell lymphoma.

Some studies have been carried out in people with early stage cancer, which suggest it may help reduce the size of the cancers. But the studies were not reliable enough to be sure.

How does it work?

People with gastric B-cell lymphoma are often also infected with *H. pylori*. Occasionally, this kind of cancer happens in people with [stomach ulcers](#). So it's possible that *H. pylori* causes gastric B-cell lymphoma. But we don't know for sure.

Can it be harmful?

You may feel sick and you may have [diarrhoea](#) while you're taking treatment for *H. pylori*. But these problems should go away when you finish your treatment.

The side effects of eradication treatment are caused by the antibiotics in your treatment, which kill *H. pylori*.^[19]

- About 40 in 100 people who take metronidazole get these side effects.
- About 20 in 100 people who take clarithromycin get these side effects.
- Less than 2 in 100 people stop taking their treatments because of these effects.

You may be given a drug that contains a chemical called bismuth. This drug may turn your stools black. About 40 in 100 people taking drugs that include bismuth get this side effect. About 40 in 100 people also feel sick and get diarrhoea when they take bismuth.^[19] But only 4 in 100 people stop taking their treatment because of this side effect.

We didn't find any information about any specific harmful effects of eradication treatment in people with gastric B-cell lymphoma.

Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel.^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest

H. pylori infection

dose of these drugs for the shortest amount of time needed to treat your symptoms. ^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have diarrhoea while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away. ^[34]

How good is the research on getting rid of *H. pylori* for lymphoma of the stomach (stomach cancer)?

We don't know if getting rid of *H. pylori* helps people with a type of cancer called gastric B-cell lymphoma. There haven't been any good-quality studies (called randomised controlled trials).

Getting rid of *H. pylori* to prevent stomach cancer

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 getting rid of *H. pylori* to prevent stomach cancer?](#)

This information is for people who have *H. pylori* infection. It tells you about getting rid of *H. pylori* to prevent stomach cancer. It is based on the best and most up-to-date research.

Does it work?

We don't know for sure whether getting rid of *H. pylori* helps prevent [stomach cancer](#). There hasn't been enough research to tell us.

What is it?

If you have treatment to get rid of *H. pylori*, you'll probably be given three or four drugs. You take these drugs every day for up to two weeks. Doctors call this **eradication treatment**.

One of the drugs, usually a drug called a **proton pump inhibitor**, will reduce the amount of acid made by the cells in your stomach. The other drugs are **antibiotics**, which kill the *H. pylori* bacteria in your stomach. To read more, see [Drugs to get rid of *H. pylori* \(eradication treatment\)](#).

H. pylori infection

It's important to take your drugs the way your doctor asks you to, even if you get some side effects. If you don't take all of the drugs correctly, your *H. pylori* probably won't go away. And the **bacteria** (germs) may become resistant to the antibiotics in your treatment. This could make it difficult for your doctor to find a treatment that will get rid of your *H. pylori*.

How can it help?

There still isn't enough good evidence to say for sure that getting rid of *H. pylori* will reduce your risk of getting stomach cancer.

We found one review of evidence that looked at six studies. Five of the studies found that getting rid of *H. pylori* reduced people's chances of getting stomach cancer. All five of these studies were done in Asia. The only study done outside Asia found that getting rid of *H. pylori* didn't help prevent stomach cancer. We don't know why this is. For now, it means that we can't say that getting rid of *H. pylori* will help prevent stomach cancer in all parts of the world. ^[58]

How does it work?

The most common type of stomach cancer is called **adenocarcinoma**. This is a lump (or tumour) that starts in the lining of your stomach. Some people who have **gastritis** get an extra problem called **gastric atrophy**. This seems to be an important step towards adenocarcinoma, and is closely linked with *H. pylori* infection.

Eradication treatment includes one or two antibiotics that kill *H. pylori*. Some researchers think that getting rid of *H. pylori* may stop gastric atrophy turning into cancer in some people.

Can it be harmful?

You may feel sick and you may have **diarrhoea** while you're taking treatment for *H. pylori*. But these problems should go away when you finish your treatment.

The side effects of eradication treatment are caused by the antibiotics in your treatment, which kill *H. pylori*. ^[19]

- About 40 in 100 people who take metronidazole get these side effects.
- About 20 in 100 people who take clarithromycin get these side effects.
- Less than 2 in 100 people stop taking their treatments because of these effects.

You may be given a drug that contains a chemical called bismuth. This drug may turn your stools black. About 40 in 100 people taking drugs that include bismuth get this side effect. ^[19] About 40 in 100 people also feel sick and get diarrhoea when they take bismuth.

^[19] But only 4 in 100 people stop taking their treatment because of side effects.

H. pylori infection

We didn't find much information about any specific harmful effects of eradication treatment in people at risk of getting stomach cancer. One study found that eradication treatment caused a skin rash in about 3 in 100 people. ^[58]

Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel. ^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest dose of these drugs for the shortest amount of time needed to treat your symptoms. ^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have diarrhoea while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away. ^[34]

How good is the research on getting rid of H. pylori to prevent stomach cancer?

There hasn't been enough research to show whether getting rid of *H. pylori* can prevent stomach cancer. We found one review of six studies. But five of these studies were done in Asia, which limits what we can say about how well treatment would work for non-Asian people. We really need more good-quality research from other parts of the world. ^[58]

Getting rid of H. pylori for gastro-oesophageal reflux disease

In this section

[Does it work?](#)

[What is it?](#)

[Can it help?](#)

[How does it work?](#)

[Can it be harmful?](#)

[How good is the research on getting rid of H. pylori for GORD?](#)

H. pylori infection

This information is for people who have gastro-oesophageal reflux disease (GORD). It tells you about getting rid of *H. pylori* infection, which is sometimes used to treat this condition. It is based on the best and most up-to-date research.

Does it work?

No. If you have [gastro-oesophageal reflux disease](#) (GORD), getting rid of *H. pylori* is unlikely to help with your symptoms.

What is it?

Treatment to get rid of *H. pylori* involves taking three or four drugs every day for up to two weeks. Doctors call this **eradication treatment**. But it's not recommended for GORD.

One of the drugs, usually a drug called a [proton pump inhibitor](#), will reduce the amount of acid made by the cells in your stomach. The other drugs are [antibiotics](#), which kill the *H. pylori* in your stomach.

The National Institute for Health and Care Excellence (NICE) is the government body that decides which treatments should be available on the NHS. NICE doesn't recommend that you have eradication treatment if you've got GORD.^[10] Instead, it says that you should take a proton pump inhibitor on its own for one or two months to get rid of your symptoms. If your symptoms come back, NICE recommends that you take a small amount of a proton pump inhibitor just when you need it.^[10]

Can it help?

If you have GORD, drugs that kill *H. pylori* won't help with your symptoms.^[59] ^[60]

How does it work?

Getting rid of *H. pylori* is a good way of healing [duodenal ulcers](#) and [stomach ulcers](#). And having eradication treatment also reduces the risk that your ulcers will come back.

But unlike ulcers, GORD isn't caused by too much acid in the stomach or by infection with *H. pylori*. In GORD, acid from your stomach goes up into the tube that links your mouth to your stomach (your oesophagus). This usually happens because the ring of muscle between your oesophagus and your stomach doesn't close fully after you've eaten. So some acid escapes from your stomach and travels back up your oesophagus.

If you have GORD, you may also have *H. pylori*, but there's no evidence that the *H. pylori* causes your GORD.

Can it be harmful?

There isn't very much information about the side effects of eradication treatment in people with GORD. Some research suggests eradication treatment may give you more [heartburn](#) if you have GORD.^[61]

H. pylori infection

You may feel sick or have **diarrhoea** while you're taking treatment for *H. pylori*. But these problems should go away when you finish your treatment.

The side effects of eradication treatment are caused by the antibiotics that kill *H. pylori*.

- About 40 in 100 people who take metronidazole get these side effects.
- About 20 in 100 people who take clarithromycin get these side effects.
- Less than 2 in 100 people stop taking their treatments because of these effects. ^[19]

You may be given a drug that contains a chemical called bismuth. This drug may turn your stools black. About 40 in 100 people taking drugs that include bismuth get this side effect. About 40 in 100 people also feel sick and get diarrhoea when they take bismuth. ^[19] But only 4 in 100 people stop taking their treatment because of this side effect. ^[19]

Proton pump inhibitors (PPIs) may prevent a heart drug called clopidogrel (brand name Plavix) from working properly. Clopidogrel is an antiplatelet drug, similar to aspirin, which stops the blood from clotting too easily. It's used for some heart conditions: for example, to prevent heart attacks. But PPIs may prevent the body from breaking clopidogrel down properly, so it doesn't work as well. Doctors have been advised to avoid using PPIs along with clopidogrel. ^[31]

Proton pump inhibitors (PPIs) may increase the risk of broken bones in the hip, wrist, and spine. Studies have found a higher risk of these fractures among people taking high doses of these drugs or using them for a year or more. Most of the people with fractures were aged 50 or older. To help minimise this risk, doctors recommend taking the lowest dose of these drugs for the shortest amount of time needed to treat your symptoms. ^[32]
^[33]

Proton pump inhibitors (PPIs) may increase the risk of a type of diarrhoea called *Clostridium difficile*-associated diarrhoea (CDAD). *Clostridium difficile*, sometimes called *C. difficile*, is a bacterium (germ) that can cause diarrhoea that doesn't get better without treatment. If you have CDAD, you will need special antibiotics. It is rare to get CDAD after taking PPIs, but older people and people with long-term health problems may be more likely to be affected.

Remember, many people feel sick and have **diarrhoea** while taking treatment for *H. pylori*. Just having these symptoms doesn't mean you have CDAD. But you should talk to your doctor if you have taken PPIs and then have diarrhoea that doesn't go away. ^[34]

How good is the research on getting rid of *H. pylori* for GORD?

There's not much evidence for or against getting rid of *H. pylori* in people with gastro-oesophageal reflux disease (GORD for short).

H. pylori infection

Two good-quality studies (called [randomised controlled trials](#)) didn't show any benefit. [\[60\]](#) [\[59\]](#) The studies covered more than 1,700 people in total. The studies showed people with GORD got no benefit from getting rid of *H. pylori*.

Further informations:

Stomach ulcers

A stomach ulcer is a sore or hole inside your stomach. It happens when the lining of your stomach gets damaged.

Your stomach normally contains acid, which helps break down food. If the lining of your stomach is damaged, this acid can seep through the lining and damage the cells underneath.

About 8 in 10 stomach ulcers are caused by *H. pylori*. [\[6\]](#) *H. pylori* lives in your stomach and may damage its lining.

You may also get stomach ulcers if you're taking [non-steroidal anti-inflammatory drugs](#) (NSAIDs), such as aspirin. These drugs can also damage the lining of your stomach. NSAIDs are commonly used to treat aches and pains, including some serious conditions, such as arthritis.

If you're taking NSAIDs and you have *H. pylori* you are more likely to get an ulcer than if you're taking NSAIDs but you don't have *H. pylori*. One large study looked at how many people taking NSAIDs got a stomach ulcer. It found that: [\[7\]](#)

- 42 in 100 people who had *H. pylori* got a stomach ulcer
- 26 in 100 people who didn't have *H. pylori* got a stomach ulcer.

Duodenal ulcers

Your duodenum is the part of your gut just below your stomach. A duodenal ulcer is a sore or hole in the lining of your duodenum. It happens when your stomach makes too much acid. This extra acid travels down into your duodenum, where it kills the cells in the lining.

More than 9 in 10 duodenal ulcers are caused by *H. pylori*. [\[8\]](#)

H. pylori infection

Gastritis

If you have gastritis, it means that part of the lining of your stomach has become irritated or slightly damaged (doctors call this **inflammation**).

Gastritis usually happens because your stomach has been damaged by acid. Your stomach makes acid to break down food. But in some people, the acid can damage the lining of their stomach. ^[9]

Many people have mild gastritis but don't get any symptoms. But if you have more severe gastritis, your symptoms will depend on which part of your stomach is affected. ^[3]

If the lower part of your stomach is affected your stomach starts making too much acid. This can make your gastritis worse, and it may cause a [duodenal ulcer](#) .

If you get gastritis in the upper part of your stomach you may get a [stomach ulcer](#) . The lining of your stomach may stop working properly. Doctors call this **gastric atrophy** . When this happens, your stomach doesn't make enough acid or **enzymes** to break down your food. This can lead to [stomach cancer](#) .

More than 8 in 10 people with long-term gastritis have *H. pylori* infection. ^[9]

Stomach cancer

Stomach cancer is more common in people who have *H. pylori* than in those who don't have these bacteria (germs). About 1 in 100 people who have *H. pylori* get stomach cancer in their lifetime. ^[4]

The most common type of stomach cancer is **adenocarcinoma**. This is a lump (a tumour) that grows in the lining of your stomach. If you have a condition called [gastritis](#) , some of the cells in the lining of your stomach may not work properly. Doctors call this **gastric atrophy** . It can lead to adenocarcinoma. ^[5]

H. pylori is common in people with gastritis, so some doctors think that *H. pylori* probably causes this type of stomach cancer.

Another kind of cancer that can affect your stomach is **lymphoma**. A lymphoma is a lump that grows in a part of your **lymphatic system** . (Your lymphatic system is the network of tubes that your body uses to get rid of waste products and infections.)

One type of lymphoma is **gastric B-cell lymphoma** (also known as mucosa-associated lymphoid tissue lymphoma, or MALT lymphoma for short). B cells are part of your body's immune system and they normally fight infections. If you have gastric B-cell lymphoma, these cells cluster together in the lining of your stomach and form a tumour. If you have *H. pylori*, you may be more likely to get this type of stomach cancer.

H. pylori infection

Non-ulcer dyspepsia

If you have a burning or gnawing pain in your chest, it may be a sign that you have an ulcer. But you may also get the pain because of a less serious condition called **non-ulcer dyspepsia**. Doctors also call this condition **functional dyspepsia**.

The only way your doctor can tell if you have an ulcer is by doing a test called an endoscopy. In this test, the doctor passes a thin tube down your throat and into your stomach. There is a camera at the end of the tube. This lets your doctor see if you have an ulcer in your stomach or in the part of your gut just below the stomach (your duodenum).

But most people don't need to have an endoscopy. That's because if you have *H. pylori* the treatment for your non-ulcer dyspepsia will be same as for someone who does have an ulcer. So your doctor doesn't need to know whether you have an ulcer. And research has shown that it's safe for most people to have *H. pylori* treatment without having an endoscopy first. ^[10]

If you do have endoscopy, and there's no sign of an ulcer, you may be diagnosed with non-ulcer dyspepsia. This means your symptoms are just as real as those in someone who has an ulcer, but there's no definite sore or hole in the lining of your stomach or duodenum.

H. pylori infection is common in people with non-ulcer dyspepsia, but we don't know whether *H. pylori* causes the condition.

Gastro-oesophageal reflux disease

If you have gastro-oesophageal reflux disease (GORD for short), acid in your stomach flows back into your oesophagus (the tube that leads from your mouth to your stomach). Your stomach makes acid to break down the food you eat, but if this acid gets into your oesophagus, your oesophagus can get damaged.

GORD usually happens when the ring of muscle between your oesophagus and your stomach doesn't work properly. Normally, after you eat a meal, this muscle stops food going back into your oesophagus. But if you have GORD, this muscle may not work properly, allowing acid to escape from your stomach into your oesophagus.

Some people with GORD have *H. pylori*, but there's no evidence that *H. pylori* causes this condition.

To learn more about the symptoms and treatment of GORD, see our information on [Heartburn](#).

Hiatus hernia

About one-third of people over 50 have a hiatus hernia.

Between your abdomen and your chest is a thin, dome-shaped muscle called the **diaphragm**. It sits just below your lungs. Your diaphragm tightens and relaxes as you breathe in and out.

Before your oesophagus (the tube that carries food to your stomach) reaches your stomach, it passes through an opening in your diaphragm. (Doctors call this opening a **hiatus**.) In some people, the upper part of their stomach bulges up through the opening in their diaphragm and into their chest. When this happens, it's called a hiatus hernia.

You're more likely to get a hiatus hernia if: ^[11]

- You're a woman and you're pregnant
- You're overweight
- You smoke.

A hiatus hernia can be caused by:

- Coughing
- Vomiting
- Straining at stool (when passing faeces).

Sudden physical exertion can also cause a hiatus hernia.

If you have a hiatus hernia, it is easier for acid to get into your oesophagus because the bulging part of the stomach can form a pouch that traps acid. Also, if part of your stomach is in your chest, your chest can no longer press down on your stomach to stop acid flowing back up. ^[11]

Most people with hiatus hernia don't get any symptoms. Symptoms usually start when acid in your stomach pushes up through the hiatus hernia and causes a burning feeling in your chest. This may make your oesophagus **inflamed** and painful. Doctors call this [oesophagitis](#) .

There's no evidence that hiatus hernia is caused by *H. pylori*, although many people with hiatus hernia also have *H. pylori*.

H. pylori infection

Oesophagitis

Your oesophagus is the tube that leads from your mouth to your stomach. When the lining of your oesophagus becomes irritated or slightly damaged, doctors call this **oesophagitis**.

Oesophagitis usually happens when you have [gastro-oesophageal reflux disease](#) or [hiatus hernia](#) .

If you don't get treatment, the part of your oesophagus that's damaged may start to bleed.

There's no evidence that oesophagitis is caused by *H. pylori*, although many people with oesophagitis may also have *H. pylori*.

Who is treated for H. pylori?

Your GP will prescribe drugs to get rid of *H. pylori* only if:

- You've had a test that shows you have *H. pylori*, and
- You have a problem (such as an [ulcer](#)) that's probably caused by *H. pylori*.

The National Institute for Health and Care Excellence (NICE) is the government body that decides which treatments should be available on the NHS. NICE recommends that you should have eradication treatment if you have tested positive for *H. pylori* and you have one of the following: ^[10]

- A [stomach ulcer](#) or a [duodenal ulcer](#) (your duodenum is the part of your gut just under your stomach)
- [Non-ulcer dyspepsia](#) diagnosed by an **endoscopy** (an endoscopy is a test that lets your doctor look inside your stomach or intestines)
- Indigestion (dyspepsia) that hasn't been investigated by an endoscopy.

You shouldn't have eradication treatment if you only have gastro-oesophageal reflux disease (GORD). ^[10]

Glossary:

ulcer

An ulcer is an open sore. Ulcers can happen in many parts of your body, such as in your stomach, and the skin of your legs, mouth, or genitals.

hiatus hernia

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A hiatus hernia is when parts of the body just below the chest push through a hole in the diaphragm into the chest. Your diaphragm is a large muscle inside your body that helps you breathe. It also serves as a wall between your abdomen and your chest.

enzymes

Enzymes are chemicals in your body. They have lots of different functions, including playing a part in helping to digest food and starting other chemical reactions that keep the body working.

anus

The anus, which is at the end of the rectum, is where stools leave your body when you go to the toilet. Part of the anus is a muscle that helps you hold in the stool until you are on the toilet.

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.

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.

inflammation

Inflammation is when your skin or some other part of your body becomes red, swollen, hot, and sore. Inflammation happens because your body is trying to protect you from germs, from something that's in your body and could harm you (like a splinter) or from things that cause allergies (these things are called allergens). Inflammation is one of the ways in which your body heals an infection or an injury.

NSAIDs

NSAID stands for nonsteroidal anti-inflammatory drug. NSAIDs help with pain, inflammation and fever. They are called 'nonsteroidal' because they don't contain any steroids. Aspirin and ibuprofen are both NSAIDs.

lymphatic system

The lymphatic system is your body's way of clearing unwanted materials from your blood and tissues. It includes a network of lymph nodes that filter these materials to detect if there is an infection that needs to be dealt with by your immune system.

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.

antacids

Antacids are medicines you can buy over the counter. They counteract the acid in your stomach. Antacids can make you feel better if you have heartburn.

antibodies

Antibodies are an important part of your immune system. They are proteins made by white blood cells (another part of your immune system). They help destroy bacteria and other agents that cause infections.

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.

stomach ulcer

A stomach ulcer is a break in the surface that covers the inside of your stomach.

arthritis

Arthritis is when your joints become inflamed, making them stiff and painful. There are different kinds of arthritis. Osteoarthritis is the most common type. It happens when the cartilage at the end of your bones becomes damaged and then starts to grow abnormally. Rheumatoid arthritis happens because your immune system attacks the lining of your joints.

proton pump inhibitors

A proton pump inhibitor is a type of medicine you can take to treat heartburn or stomach ulcers. It cuts down on the amount of acid in your stomach. It works by blocking the release of acid from the cells that line your stomach.

antibiotics

These medicines are used to help your immune system fight infection. There are a number of different types of antibiotics that work in different ways to get rid of bacteria, parasites, and other infectious agents. Antibiotics do not work against viruses.

diarrhoea

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Diarrhoea is when you have loose, watery stools and you need to go to the toilet far more often than usual. Doctors say you have diarrhoea if you need to go to the toilet more than three times a day.

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.

haemorrhage

Haemorrhage is a word doctors use for bleeding. Any time blood escapes from a vessel, it's called a haemorrhage.

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.

gastric B-cell lymphoma

Gastric B-cell lymphoma is a rare type of cancer that happens only in the stomach. Lymphoma means cancer of the lymph glands, small groups of cells that help the body fight infection.

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.

heartburn

Heartburn is a painful, burning sensation in the chest. It happens, often after meals, when the contents of the stomach pass back up into the oesophagus. The oesophagus is the tube that runs from the mouth to the stomach.

Sources for the information on this leaflet:

1. Martini FH, Ober WC, Garrison CW, et al. Fundamentals of anatomy and physiology. 5th edition. Prentice Hall, New Jersey, NJ; 2001.
2. Bandolier. Focus on H. Pylori. Available at <http://www.medicine.ox.ac.uk/bandolier/band2/b2-3.html> (accessed on 27 October 2014).
3. McColl KE, El-Omar E, Gillen D. Helicobacter pylori gastritis and gastric physiology. Gastroenterology Clinics of North America. 2000; 29: 687-703.
4. Graham DY. Can therapy ever be denied for Helicobacter pylori infection? Gastroenterology. 1997; 113 (supplement 6): S113-S117.
5. Imrie C, Rowland M, Bourke B, et al. Is Helicobacter pylori infection in childhood a risk factor for gastric cancer? Pediatrics. 2001; 107: 373-380.
6. National Digestive Diseases Information Clearinghouse. H. pylori and peptic ulcers. August 2014. Available at <http://digestive.niddk.nih.gov/ddiseases/pubs/hpylori/> (accessed on 27 October 2014).
7. Huang J-Q, Sridhar S, Hunt RH. Role of Helicobacter pylori infection and non-steroidal anti-inflammatory drugs in peptic ulcer disease: a meta-analysis. Lancet. 2002; 359: 14-22.
8. Anderson SH, Davies G, Dalton HR. Key topics in gastroenterology. Bios Scientific, Oxford, UK; 1999.
9. Sipponen P. Natural history of gastritis and its relationship to peptic ulcer disease. Digestion. 1992; 51 (supplement 1): S70-S75.
10. National Institute for Health and Care Excellence. Dyspepsia: managing dyspepsia in adults in primary care. August 2004. Clinical guideline 17. Available at <http://guidance.nice.org.uk/CG17> (accessed on 26 September 2014).
11. National Institute of Diabetes and Digestive and Kidney Diseases. Heartburn, gastroesophageal reflux (GER), and gastroesophageal reflux disease (GERD). May 2014. Available at <http://digestive.niddk.nih.gov/ddiseases/pubs/gerd> (accessed on 26 September 2014).

H. pylori infection

12. Nguyen TN, Barkun AN, Fallone CA. Host determinants of *Helicobacter pylori* infection and its clinical outcome. *Helicobacter*. 1999; 4: 185-197.
13. Harvey RF, Spence RW, Lane JA, et al. Relationship between the birth cohort pattern of *Helicobacter pylori* infection and the epidemiology of duodenal ulcer. *QJM: Monthly Journal of the Association of Physicians*. 2002; 95: 519-525.
14. Axon AT. *Helicobacter pylori* infection. *Journal of Antimicrobial Chemotherapy*. 1993; 32 (supplement A): S61-S68.
15. Wilhelmsen I. Quality of life and *Helicobacter pylori* eradication. *Scandinavian Journal of Gastroenterology Supplement*. 1996; 221: S18-S20.
16. Phull PS, Ryder SD, Halliday D, et al. The economic and quality of life benefits of *Helicobacter pylori* eradication in chronic duodenal ulcer disease: a community based study. *Postgraduate Medical Journal*. 1995; 71: 413-418.
17. Soo S, Moayyedi P, Deeks J, et al. Eradication of *Helicobacter pylori* for non-ulcer dyspepsia (Cochrane review). In: *The Cochrane Library*. Wiley, Chichester, UK.
18. McNulty C, Teare L, Owen R, et al. Test and treat for dyspepsia: but which test? *BMJ*. 2005; 330: 105-106.
19. Penston JG, McColl KE. Eradication of *Helicobacter pylori*: an objective assessment of current therapies. *British Journal of Clinical Pharmacology*. 1997; 43: 223-243.
20. Gisbert JP, Khorami S, Calvet X, et al. Pantoprazole based therapies in *Helicobacter pylori* eradication: a systematic review and meta-analysis. *European Journal of Gastroenterology and Hepatology*. 2004; 16: 89-99.
21. Gisbert JP. Esomeprazole-based therapy in *Helicobacter pylori* eradication: a meta-analysis. *Digestive and Liver Diseases*. 2004; 36: 843-849.
22. Lee JM, Breslin NP, Hyde DK, et al. Treatment options for *Helicobacter pylori* infection when proton pump inhibitor-based triple therapy fails in clinical practice. *Alimentary Pharmacology & Therapeutics*. 1999; 13: 489-496.
23. Magaret N, Burm M, Faigel D, et al. A randomized trial of lansoprazole, amoxicillin, and clarithromycin versus lansoprazole, bismuth, metronidazole and tetracycline in the retreatment of patients failing initial *Helicobacter pylori* therapy. *Digestive Diseases*. 2001; 19: 174-178.
24. Peitz U, Sulliga M, Wolle K, et al. High rate of post-therapeutic resistance after failure of macrolide-nitroimidazole triple therapy to cure *Helicobacter pylori* infection: impact of two second-line therapies in a randomized study. *Alimentary Pharmacology & Therapeutics*. 2002; 16: 315-324.
25. Gene E, Calvet X, Azagra R, et al. Triple vs. quadruple therapy for treating *Helicobacter pylori* infection: a meta-analysis. *Alimentary Pharmacology & Therapeutics*. 2003; 17: 1137-1143.
26. Yuan Y, Ford AC, Khan KJ, et al. Optimum duration of regimens for *Helicobacter pylori* eradication (Cochrane review). In: *The Cochrane Library*. Wiley, Chichester, UK.
27. Zagari RM, Bianchi-Porro G, Fiocca R, et al. Comparison of 1 and 2 weeks of omeprazole, amoxicillin and clarithromycin treatment for *Helicobacter pylori* eradication: the HYPER Study. *Gut*. 2007; 56: 475-479.
28. Leontiadis GI, Ford AC, Moayyedi P. *Helicobacter pylori* infection. October 2009. *Clinical Evidence*. (Based on September 2007 search). Available at <http://clinicalevidence.bmj.com/ceweb/conditions/dsd/0406/0406.jsp> (accessed on 27 October 2014).
29. Gatta L, Vakil N, Vaira D, et al. Global eradication rates for *Helicobacter pylori* infection: systematic review and meta-analysis of sequential therapy. *BMJ*. 2013; 347: f4587.
30. Calvet X, Garcia N, Lopez T, et al. A meta-analysis of short versus long therapy with a proton pump inhibitor, clarithromycin and either metronidazole or amoxicillin for treating *Helicobacter pylori* infection. *Alimentary Pharmacology and Therapeutics*. 2000; 14: 603-609.

H. pylori infection

31. European Medicines Agency. Public statement on possible interaction between clopidogrel and proton pump inhibitors. May 2009. Available at <http://www.ema.europa.eu> (accessed 27 October 2014).
32. Regional Drug and Therapeutics Centre. Can Proton Pump Inhibitors Increase the Risk of Osteoporotic Fracture? Safer Medication Use. December 2009. Available at <http://rdtc.nhs.uk/proton-pump-inhibitors-%E2%80%93-can-they-increase-risk-osteoporotic-fracture> (accessed on 27 October 2014).
33. U.S. Food and Drug Administration. Proton pump inhibitors (PPI): class labeling change. March 2011. Available at <http://www.fda.gov> (accessed on 27 October 2014).
34. U.S. Food and Drug Administration. FDA Drug Safety Communication: Clostridium difficile-associated diarrhea can be associated with stomach acid drugs known as proton pump inhibitors (PPIs). February 2013. Available at <http://www.fda.gov/Drugs/DrugSafety/ucm290510.htm> (accessed on 27 October 2014).
35. Gene E, Calvet X, Azagra R, et al. Triple vs quadruple therapy for treating Helicobacter pylori infection: an updated meta-analysis. *Alimentary Pharmacology & Therapeutics*. 2003; 18: 543-544.
36. Katelaris PH, Forbes GM, Talley NJ, et al. A randomized comparison of quadruple and triple therapies for Helicobacter pylori eradication: The QUADRATE study. *Gastroenterology*. 2002; 123: 1763-1769.
37. Laine L, Hunt R, El-Zimaity H, et al. Bismuth-based quadruple therapy using a single capsule of bismuth biscaltrate, metronidazole, and tetracycline given with omeprazole versus omeprazole, amoxicillin, and clarithromycin for eradication of Helicobacter pylori in duodenal ulcer patients: a prospective, randomized, multicenter, North American trial. *American Journal of Gastroenterology*. 2003; 98: 562-567.
38. Wong B, Wang W, Wong W, et al. Three-day lansoprazole quadruple therapy for Helicobacter pylori-positive duodenal ulcers: a randomised controlled study. *Alimentary Pharmacology and Therapeutics*. 2001; 15: 843-849.
39. Ford AC, Delaney BC, Forman D, et al. Eradication therapy in Helicobacter pylori positive peptic ulcer disease (Cochrane review). In: *The Cochrane Library*. Wiley, Chichester, UK.
40. Gisbert JP, Khorrani S, Carballo F, et al. Meta-analysis: Helicobacter pylori eradication therapy vs. antisecretory non-eradication therapy for the prevention of recurrent bleeding from peptic ulcer. *Alimentary Pharmacology and Therapeutics*. 2004; 19: 617-629.
41. Mazzoleni LE, Sander GB, Francesconi CF, et al. A randomized study comparing levofloxacin, omeprazole, nitazoxanide, and doxycycline versus triple therapy for the eradication of Helicobacter pylori. *American Journal of Gastroenterology*. 2011; 106: 1970-1975.
42. Blum AL, Talley NJ, O'Morain C, et al. Lack of effect of treating Helicobacter pylori infection in patients with nonulcer dyspepsia. *New England Journal of Medicine*. 1998; 339: 1875-1881.
43. Chiba N, Van Zanten SJ, Sinclair P, et al. Treating Helicobacter pylori infection in primary care patients with uninvestigated dyspepsia: the Canadian adult dyspepsia empiric treatment-Helicobacter pylori positive (CADET-Hp) randomised controlled trial. *BMJ*. 2002; 324: 1012-1016.
44. Delaney BC, Moayyedi P, Forman D. Initial management strategies for dyspepsia (Cochrane review). In: *The Cochrane Library*. Wiley, Chichester, UK.
45. Hu WHC, Lam SK, Lam CLK, et al. Comparison between empirical prokinetics, Helicobacter test-and-treat and empirical endoscopy in primary-care patients presenting with dyspepsia: a one-year study. *World Journal of Gastroenterology*. 2006; 12: 5010-5016.
46. Jarbol DE, Bech M, Kragstrup J, et al. Economic evaluation of empirical antisecretory therapy versus Helicobacter pylori test for management of dyspepsia: a randomized trial in primary care. *International Journal of Technology Assessment in Health Care*. 2006; 22: 362-371.
47. Ford AC, Qume M, Moayyedi P, et al. Helicobacter pylori "test and treat" or endoscopy for managing dyspepsia: an individual patient data meta-analysis. *Gastroenterology*. 2005; 128: 1838-1844.

H. pylori infection

48. Heaney A, Collins JS, Watson RG, et al. A prospective randomised trial of a 'test and treat' policy versus endoscopy based management in young Helicobacter pylori positive patients with ulcer-like dyspepsia, referred to a hospital clinic. *Gut*. 1999; 45: 186-190.
49. Lassen AT, Pedersen FM, Bytzer P, et al. Helicobacter pylori 'test and eradicate' or prompt endoscopy for management of dyspeptic patients: a randomised controlled trial with one year follow-up. *Lancet*. 2000; 356: 455-460.
50. Fries JF, Williams CA, Bloch DA, et al. Nonsteroidal anti-inflammatory drug-associated gastropathy: incidence and risk factors model. *American Journal of Medicine*. 1991; 91: 213-222.
51. Langman MJ. Non-steroidal anti-inflammatory drugs and peptic ulcer. *Hepato-Gastroenterology*. 1992; 39 (supplement 1): S37-S39.
52. Chan FK, Sung JJ, Chung SC, et al. Randomised trial of eradication of Helicobacter pylori before nonsteroidal anti-inflammatory drug therapy to prevent peptic ulcers. *Lancet*. 1997; 350: 975-979.
53. Labenz J, Blum AL, Bolten WW, et al. Primary prevention of diclofenac associated ulcers and dyspepsia by omeprazole or triple therapy in Helicobacter pylori positive patients: a randomised double blind, placebo controlled, clinical trial. *Gut*. 2002; 51: 329-335.
54. Chan FK, Sung JJ, Suen R, et al. Does eradication of Helicobacter pylori impair healing of nonsteroidal anti-inflammatory drug associated bleeding peptic ulcers? A prospective randomized study. *Alimentary Pharmacology and Therapeutics*. 1998; 12: 1201-1205.
55. Chan FK, To KF, Wu JC, et al. Eradication of Helicobacter pylori and risk of peptic ulcers in patients starting long-term treatment with non-steroidal anti-inflammatory drugs: a randomised trial. *Lancet*. 2002; 359: 9-13.
56. Chan FK, Chung SC, Suen BY, et al. Preventing recurrent upper gastrointestinal bleeding in patients with Helicobacter pylori infection who are taking low-dose aspirin or naproxen. *New England Journal of Medicine*. 2001; 344: 967-973.
57. Huang JQ, Sridhar S, Chen Y, et al. Meta-analysis of the relationship between Helicobacter pylori seropositivity and gastric cancer. *Gastroenterology*. 1998; 114: 1169-1179.
58. Ford AC, Forman D, Hunt RH, et al. Helicobacter pylori eradication therapy to prevent gastric cancer in healthy asymptomatic infected individuals: systematic review and meta-analysis of randomised controlled trials. *BMJ*. 2014; 348: g3174.
59. Harvey RF, Lane JA, Murray LJ, et al. Randomised controlled trial of the effects of Helicobacter pylori infection and its eradication on heartburn and gastroesophageal reflux. Bristol Helicobacter project. *BMJ*. 2004; 328: 1417.
60. Moayyedi P, Bardhan C, Young L, et al. Helicobacter pylori eradication does not exacerbate reflux symptoms in gastroesophageal reflux disease. *Gastroenterology*. 2001; 121: 1120-1126.
61. Labenz J, Blum AL, Bayerdorffer E, et al. Curing Helicobacter pylori infection in patients with duodenal ulcer may provoke reflux esophagitis. *Gastroenterology*. 1997; 112: 1442-1447.

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