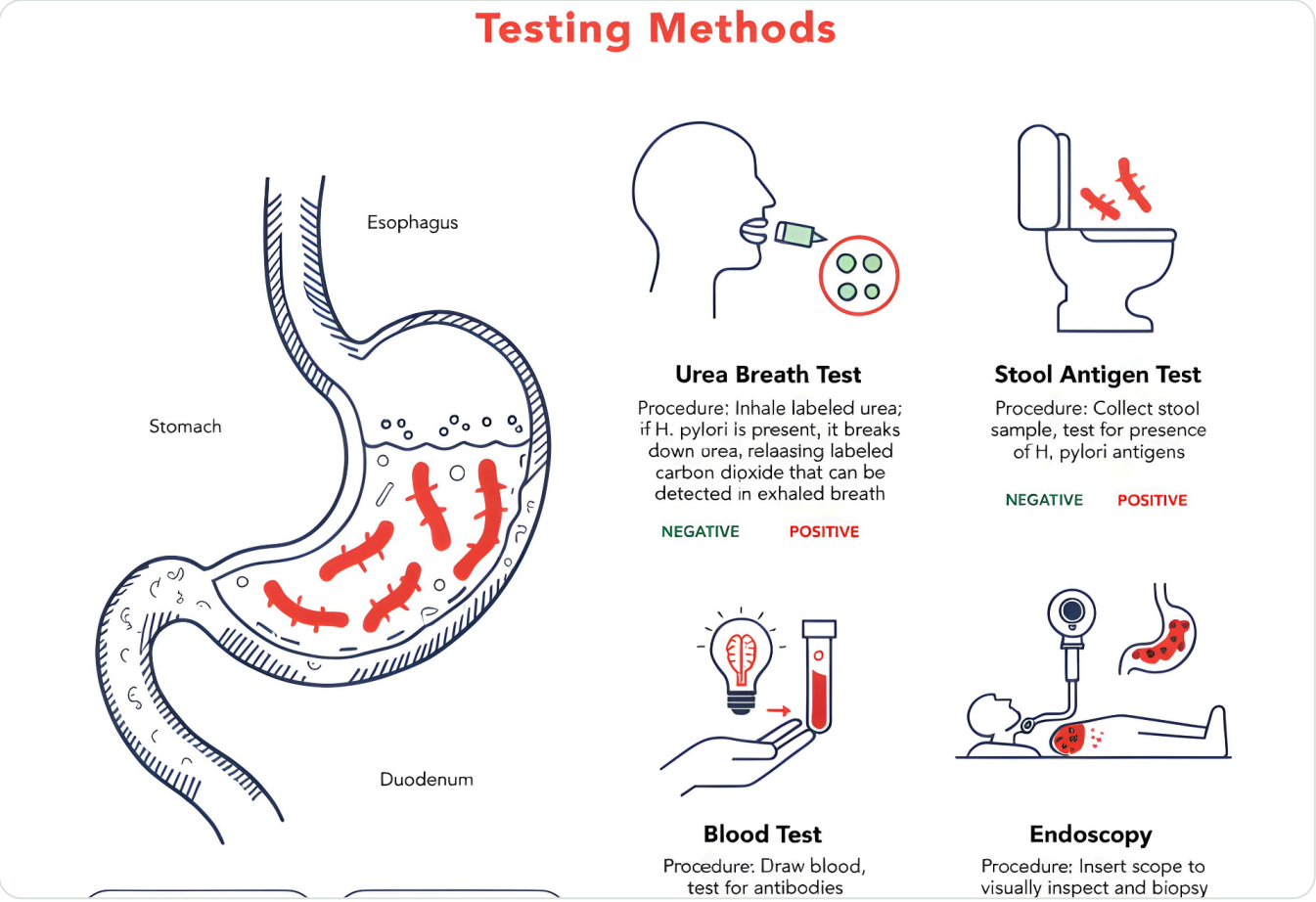
Content from /en/blog/helicobacter-pusteproeve/

Helicobacter pylori breath test: the simplest test for peptic ulcer



The **Helicobacter pylori breath test** (^{13}C-urea breath test, UBT) is the **most accurate non-invasive test** for active Helicobacter pylori infection - the bacterium responsible for up to **70 % of all peptic ulcers** and a major risk factor for gastric cancer [1]. UBT has sensitivity and specificity **>95 %** [2] and is first-line for both primary diagnosis and post-eradication confirmation.

How does the breath test work?

1. You exhale into a test bag (baseline).
2. You drink a small volume of liquid containing ^{13}C-labelled urea (non-radioactive).

3. You wait 20-30 minutes.
4. You exhale into a second test bag.

Principle: *H. pylori* produces the enzyme **urease**, which splits urea into CO_2 and ammonia. If the bacterium is present, your exhaled breath contains elevated $^{13}CO_2$ - measured by mass spectrometry or infrared spectrophotometry.

When is the breath test indicated?

- **Dyspepsia** without alarm symptoms (test-and-treat) in patients under 55
- **Previous peptic ulcer** without documented prior eradication
- **Family history of gastric cancer** (first-degree)
- **Iron-deficiency anaemia** without other cause
- **ITP** (idiopathic thrombocytopenic purpura)
- **Confirmation 4 weeks after** eradication therapy - to verify success

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Important - preparation

To avoid false-negative results:

Substance	Washout period
Proton pump inhibitors (PPIs) - omeprazole, pantoprazole	**Stop 2 weeks before**
Antibiotics	**Stop 4 weeks before**
Bismuth compounds	**Stop 4 weeks before**
H2 blockers (ranitidine)	Stop 24 hours before
Antacids	Stop 24 hours before
Fasting	At least 6 hours before

Alternatives to the breath test

Test	Pros	Cons
Breath test (UBT)	Simple, high accuracy, validated for follow-up	PPI washout required
Stool antigen test	As accurate as UBT	Sample handling inconvenient
Gastroscopy + CLO/biopsy	Direct visualisation + bacteriology	Invasive, more expensive
Serology (blood test)	Fast	Cannot distinguish active from past infection - **unsuitable for follow-up**

Treatment if positive

Triple therapy 14 days (first-line):

- PPI (omeprazole 20 mg / pantoprazole 40 mg) twice daily
- Amoxicillin 1 g twice daily
- Clarithromycin 500 mg twice daily

Bismuth quadruple therapy for penicillin allergy or suspected clarithromycin resistance.

Eradication reduces ulcer recurrence from ~60 % to <10 % [3] and halves long-term gastric cancer risk.

Follow-up after treatment

- **Breath test or stool antigen test** 4 weeks after completed therapy (after 2-week PPI washout).
- If still positive: second-line therapy with new antibiotic combination.

Testing at Kirurgen.dk

We offer **^{13}C-urea breath testing** in our outpatient clinic, both for primary diagnosis and post-treatment confirmation. If a peptic ulcer or alarm symptoms are present, we combine it with oral or nasal gastroscopy in the same visit. See also: Helicobacter pylori, Peptic ulcer, GERD, Black stool.

References

1. Malfertheiner P, Megraud F, Rokkas T, et al. *Management of Helicobacter pylori infection: the Maastricht VI/Florence consensus report.* Gut 2022;71(9):1724-62.
2. Gisbert JP, Pajares JM. *13C-urea breath test in the diagnosis of Helicobacter pylori infection - a critical review.* Aliment Pharmacol Ther 2004;20(10):1001-17.
3. Ford AC, Gurusamy KS, Delaney B, Forman D, Moayyedi P. *Eradication therapy for peptic ulcer disease in Helicobacter pylori-positive people.* Cochrane Database Syst Rev 2016;(4):CD003840.