TOGAS

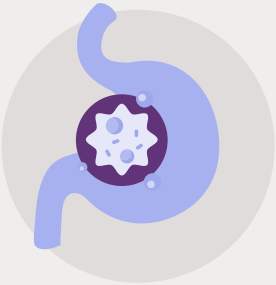
TOWARDS GASTRIC CANCER SCREENING IMPLEMENTATION IN THE EUROPEAN UNION

Information Booklet for Pilot Study Participants

H.PYLORI SCREEN AND TREAT STUDY IN YOUNG-AGE POPULATION

WHAT IS **GASTRIC CANCER?**

Gastric cancer (also known as stomach cancer) is a cancer of the stomach. The stomach is a J-shaped organ in the upper abdomen. It produces enzymes (substances that create chemical reactions) and acids (digestive juices). This mix of enzymes and digestive juices breaks down food.

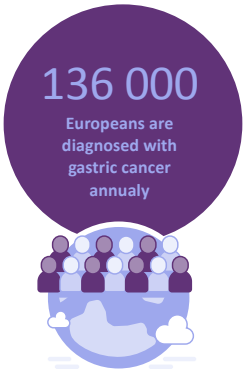


When cells lining the stomach begin to behave abnormally, they can turn cancerous and grow out of control. This can prevent the stomach from functioning properly, causing uncomfortable symptoms and/or asymptomatic diseases. Too often these symptoms go overlooked, and the cancer is only diagnosed once it has spread.

Gastric cancer begins in the cells of the stomach. Gastric cancer is the final step in several changes to the cells, most commonly triggered *H. pylori* infection[1] (please read on to find out more about *H. pylori*). Before gastric cancer develops, precancerous lesions can be present[2]. These lesions are made up of stomach cells that have changes to them, which make them more likely to develop into cancer. Clinical surveillance of these lesions is crucial for preventing them from developing into gastric cancer.

HOW COMMON IS **GASTRIC CANCER?**

Gastric cancer is the fourth most common cancer in the world. Annually, an estimated 136 000 Europeans are diagnosed with gastric cancer, and ~97000 die from this aggressive disease[3].



Once someone is diagnosed with gastric cancer, further examination and testing will be carried out to determine if the cancer has spread, and if yes, how far. This is called staging. The stage of cancer helps describe how serious it is and how best to treat it. The earlier the stage of the cancer at diagnosis, the better the chances of survival and successful treatment, which is why it is important to diagnose it at an early stage if possible.

References:
1. Schistosomes, liver flukes and Helicobacter pylori. IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Lyon, 7-14 June 1994. *IARC Monogr Eval Carcinog Risks Hum* **61**, 1 (1994).
2. Rugge, M., Capelle, L. G., Cappellesso, R., Nitti, D. & Kuipers, E. J. Precancerous lesions in the stomach: From biology to Clinical Patient Management. *Best Practice & Research Clinical Gastroenterology* **27**, 205–223 (2013).
3. Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer. Available from: https://gco.iarc.fr/today, accessed 10/07/2022.

WHO IS AT RISK OF **DEVELOPING GASTRIC CANCER?**

There are several known factors that can increase your risk of getting gastric cancer, these include[4]:

INFECTION WITH *HELICOBACTER PYLORI (H. PYLORI)*: A common bacterial infection, that can increase your risk of developing gastric cancer if left untreated[1].

GENDER: Men are around twice as likely to get gastric cancer than women[5].

AGE: There is a sharp increase in gastric cancer rates in people over age 50. Most people diagnosed with gastric cancer are between their late 60s and 80s[5].

SMOKING: Those who smoke have around double the risk of gastric cancer compared with those who don't[5,6].

WEIGHT: Being overweight or obese is associated with an increased risk of developing gastric cancer[5].

DIET: There is an increased risk of gastric cancer for those with diets h igh in salted meat, stewed meat, and smoked or pickled foods[5,6].

INDUSTRIAL CHEMICAL EXPOSURE: Individuals exposed to dusty and high-temperature environments in their daily life have an increased risk of several forms of cancer, including gastric cancer[5].

FAMILY HISTORY OF GASTRIC CANCER: People with family members who have had gastric cancer are more likely to develop it themselves as well[5].

WHAT CAN I DO TO REDUCE MY RISK OF DEVELOPING GASTRIC CANCER?

Several of the risk factors listed above are related to lifestyle. Making certain changes can lower your risk of developing gastric cancer.

GET TESTED FOR *H. PYLORI:*

H. Pylori is a type of **bacterium that infects lining of the stomach.**

H. pylori infection is the most significant risk factor for gastric cancer[1].

Getting tested for *H. pylori* and, if the bacteria are present, having the infection treated can greatly reduce your risk of developing gastric cancer.

STOP SMOKING:

Tobacco increases the risk of gastric cancer and many other diseases.

Cigarette smoke contains more than **7000 toxic compounds,** out of which at least 70 of which have been proven to be carcinogenic[7]. When you smoke, you expose your body to all these compounds that have a detrimental effect on your digestive system, among several other parts of your body.

REDUCE SALT INTAKE:

Protect your stomach lining by limiting the amount of **salty** and **smoked foods** you eat[5,6].

You can consult your healthcare provider for information on how to reduce risk factors related to lifestyle choices.

References:

1. Schistosomes, liver flukes and Helicobacter pylori. IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Lyon, 7-14 June 1994. *IARC Monogr Eval Carcinog Risks Hum* **61**, 1 (1994).
4. Stomach Cancer: Risk Factors | Cancer.Net. https://www.cancer.net/cancer-types/stomach-cancer/risk-factors.
5. Zali, H., Rezaei-Tavirani, M. & Azodi, M. Gastric cancer: prevention, risk factors and treatment. *Gastroenterol Hepatol Bed Bench* **4**, 175 (2011).
6. Rawla, P. & Barsouk, A. Epidemiology of gastric cancer: global trends, risk factors and prevention. *Prz Gastroenterol* **14**, 26 (2019).
7. Harmful Chemicals in Tobacco Products | American Cancer Society. https://www.cancer.org/cancer/risk-prevention/tobacco/carcinogens-found-in-tobacco-products.html

WHAT ARE THE **SYMPTOMS OF GASTRIC CANCER?**

The progression of gastric cancer usually takes several years, and symptoms can be mild, sometimes even unnoticeable, and easily confused with general digestive problems, viruses, or ulcers, until the disease has advanced. This is why it is important that you consult your healthcare provider if you have persistent symptoms that resemble the ones described below.

When symptoms do appear, they often affect your digestion and can include:

Indigestion, such as frequent burping

Nausea and vomiting, particularly vomiting up solid food shortly after eating

Persistent stomach pain

Bloating of the stomach after meals.

Symptoms of more advanced gastric cancer can include:

Blood in your stools, or black stools

Loss of appetite or feeling full after eating small amounts

Losing significant weight without trying – significant weight is defined as losing more than 10% of your body weight.

WHY SHOULD I TAKE PART IN **GASTRIC CANCER PREVENTION?**

Gastric cancer treatment is most likely to be successful if the cancer is detected in its early stage, making it easier to treat, and resulting in significantly improved outcomes.

Unfortunately, most gastric cancers are found at later stages when symptoms are already present. In these cases, a cure is less likely. Hence, taking part in gastric cancer screening, even if you are not experiencing any symptoms, can prove to be lifesaving.

However, in most countries, there is no screening for gastric cancer. Therefore, it is important that individuals at high-risk are aware of the symptoms and can recognise even the initial symptoms, in order to increase their chances to be diagnosed at an early stage. Anyone with a family history of the disease or other risk factors should speak with their doctor about getting screened for gastric cancer.

HOW IS **GASTRIC CANCER TESTING RISK CARRIED OUT?**

There are several methods that are used to test for gastric cancer. Since there is no standardised screening method or programme for gastric cancer, generally the doctor decides based on the patient's medical history, symptoms, and other factors what method to use to screen for gastric cancer.

The following methods are most common[8]:

UPPER ENDOSCOPY
(WITH OR WITHOUT BIOPSY)

PEPSINOGEN TEST FOR ATROPHIC GASTRITIS

IMAGING TESTS

UREA BREATH TEST FOR *H.PYLORI*

WHAT IS **THE TOGAS PROJECT?**

TOGAS stands for TOwards GAstric cancer Screening implementation in the European Union. Currently, there is no effective screening method widely available in Europe for the early detection of gastric cancer. The general objective of TOGAS is to provide the missing evidence-based knowledge that can be used to design, plan, and implement appropriate gastric cancer prevention and screening across the EU.

For more information on the TOGAS project, please visit the TOGAS website: https://www.togas.lu.lv/

TOGAS comprises three pilot studies (a pilot study is an initial study that is done to help inform and improve the design, process, and preparedness of a full-scale study) across Europe.

You are being invited to take part in pilot study 1.

WHAT IS **THE AIM OF THE STUDY?**

This study is part of the TOGAS project, and it aims to screen for and treat *H.pylori* infections in a young-age (30-35 years old) population.

Please read on to learn more.

30-35
years old

References:
8. Tests for Stomach Cancer | Diagnosis of Stomach Cancer | American Cancer Society. (n.d.). Retrieved July 20, 2023, from https://www.cancer.org/cancer/types/stomach-cancer/detection-diagnosis-staging/how-diagnosed

WHY SHOULD I **TAKE PART IN THE STUDY?**

Your participation can be beneficial to your health, as you might be infected with *H. pylori*. (Please read on to learn more about *H. pylori* infection and its associated health risks). Your participation will also aid in the success of the TOGAS project, by contributing knowledge that can be used to design, plan, and implement appropriate gastric cancer prevention and screening across the EU and screening across the EU.

WHAT IS ***H. PYLORI*****?**

Helicobacter pylori *(H. pylori)* is a type of bacterium that infects the stomach. *H. pylori* commonly causes peptic ulcers, which are sores of the stomach (gastric ulcer) or the duodenum (duodenal ulcer). Furthermore, *H. pylori* was characterised as a class I carcinogen (meaning that it can cause cancer in humans) by the World Health Organisation in 1994[1] due to the fact that it is the main contributor to gastric cancer development[9].

H. pylori infection may be present in half the people in the world or more.

WHY SHOULD I **GET TESTED FOR *H. PYLORI* INFECTION?**

Most people don't realise they have *H. pylori* infection because it is often asymptomatic (meaning that they don't feel sick from it). If you develop signs and symptoms of a peptic ulcer, your health care provider will probably test you for *H. pylori* infection.

***H. pylori* infection can cause several complications, including:**

Inflammation of the stomach lining: *H. pylori* infection can affect the stomach, which can lead to irritation and swelling (gastritis).

Ulcers: *H. pylori* can damage the protective lining of the stomach and small intestine. Consequently, stomach acid can create an ulcer (an open sore). Up to 20% of people with *H. pylori* can develop an ulcer[10].

Gastric cancer: *H. pylori* infection is a significant risk factor for stomach cancer.

This is why it is important to have your *H. pylori* infection treated if you find out that you have it[10].

References:

1. Schistosomes, liver flukes and Helicobacter pylori. IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Lyon, 7-14 June 1994. *IARC Monogr Eval Carcinog Risks Hum* **61**, 1 (1994).
9. Ishaq, S. & Nunn, L. Helicobacter pylori and gastric cancer: a state of the art review. *Gastroenterol Hepatol Bed Bench* **8**, S6 (2015).
10. Malfertheiner, P. et al. Management of Helicobacter pylori infection: *the Maastricht VI/Florence consensus report*. Gut **0**, 1–39 (2022).

WHAT DOES NON-INVASIVE TESTING INVOLVE?

There are different ways to test for *H. pylori* infection. They include blood, stool, and breath tests. In general, your healthcare provider will decide which testing method is the most appropriate one, please consult them if you would like to find out more about this.

Blood test: This is performed to check for antibodies (infection-fighting molecules) against *H. pylori* in your blood. A blood sample will be taken from you for this. The test could be positive also if you had the infection beforehand.

Stool tests: There are two common forms of stool tests, a stool antigen test, which looks for antigens (substances that cause an immune response) to *H. pylori* in your stool. Usually, you will be asked to collect a stool sample yourself for this, which will be sent to a laboratory for testing.

Breath test (also known as a urea breath test): Checks for infection by measuring certain substances in your breath. You will provide a sample of your breath by breathing into a collection bag or tube. Then you will swallow a pill or liquid containing a urea (also called carbamide, an organic compound) labelled with carbon-13. After that, you will provide another sample of your breath.

Your doctor will compare the two samples. If the second sample has higher than normal carbon-13 levels, it is a sign of an *H. pylori* infection.

WHAT HAPPENS **IF I FIND OUT THAT I HAVE AN *H. PYLORI* INFECTION?**

If your results show that you have an *H. pylori* infection, you will be prescribed treatment for it[10]. It is important to treat *H. pylori* infections as it heals (cures) inflammation of the lining of the stomach which are associated risks of developing ulcers and gastric cancer.

As part of the TOGAS project, you will be asked to fill out a questionnaire designed to assess your experience throughout the study, you can access this questionnaire via this link or via the following QR code:

References:
10. Malfertheiner, P. et al. Management of Helicobacter pylori infection: *the Maastricht VI/Florence consensus report.* Gut **0**, 1–39 (2022).

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