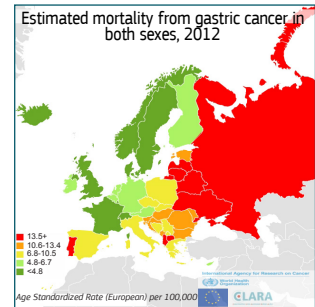
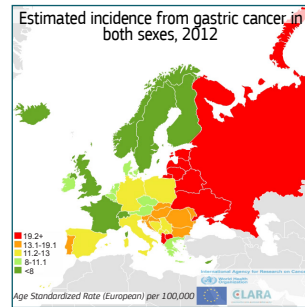
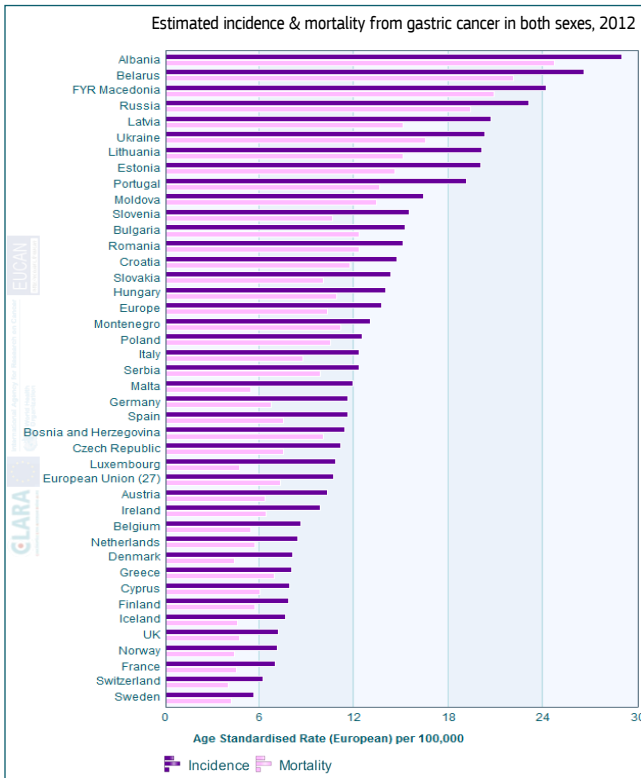




## Stomach cancer (SC) Factsheet



- Stomach cancer (SC), also called gastric cancer, is a cancer that starts in the stomach.
- There are two topographical categories: cardia and non-cardia stomach cancers.
- Most stomach cancers are malignant epithelial neoplasms<sup>1</sup>, usually adenocarcinomas developing from the lining of the stomach. Other malignancies which occur in the stomach are lymphomas, gastrointestinal stromal tumours (GIST), carcinoid tumours and other rare cancers.
- The age distribution patterns are similar in most countries and the disease mainly affects the elderly.<sup>2</sup>
- In almost all countries a steady decline in stomach cancer incidence and mortality rates has occurred in the past eight decades.<sup>1</sup>
- Worldwide SC is the 5<sup>th</sup> most common cancer with an estimated 952 000 new cases (7% of total cancer incidence) and 723 000 deaths (9% of total cancer mortality) in 2012.<sup>1</sup>
- Incidence rates in males are higher than those observed in females.<sup>1,3</sup>

The European Cancer Observatory data (<http://eco.iarc.fr>) were used for the production of this factsheet. A list of references is available (in PDF) at: [http://www.enccr.eu/images/docs/factsheets/ENCR\\_Factsheet\\_Stomach\\_2017\\_References.pdf](http://www.enccr.eu/images/docs/factsheets/ENCR_Factsheet_Stomach_2017_References.pdf).

- In 2012, it was estimated that 139 600 cases of SC were diagnosed with an age standardized (ASR-E)\* incidence rate of 13.7 per 100 000 person-years.<sup>4</sup>
- SC caused an estimated 107 000 deaths with a mortality (ASR-E)\* rate of 10.3 per 100 000 person-years.<sup>4</sup>
- SC was the 7<sup>th</sup> most commonly diagnosed cancer and the 5<sup>th</sup> most frequent cause of cancer deaths in Europe in 2012, in both sexes.<sup>5</sup>

### Gender differences in Europe in 2012<sup>4</sup>

- In 2012, with 84 200 new cases in men and 55 400 new cases in women, the estimated incidence in men was almost double that of women, (the ASR-E being 19.5 and 9.3 per 100 000 respectively).
- A similar picture was observed for mortality, with an estimated 63 600 stomach cancer deaths in men and 43 700 in women, (the ASR-E being 14.6 in men and 7.0 per 100 000 person years women).
- Stomach cancer accounted for an estimated 7% of all cancer deaths in men and 6% of all cancer deaths in women in 2012.

### Regional differences in Europe in 2012<sup>5</sup>

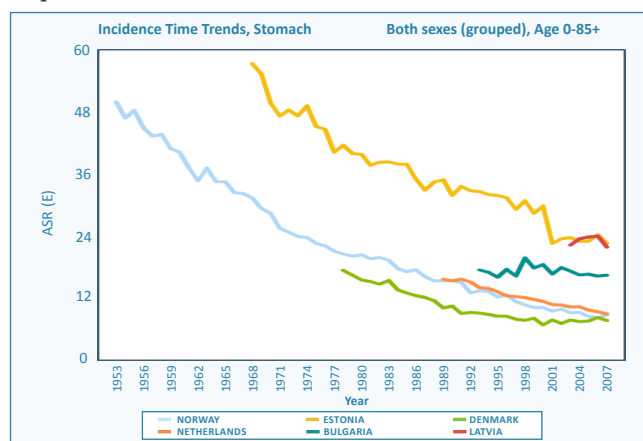
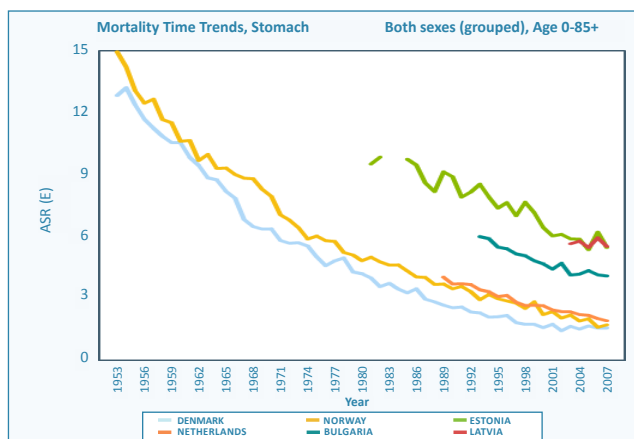
- There is variability in the incidence and mortality of SC across Europe, with the highest rates observed in Eastern Europe.
- The countries with the highest estimated incidence rates also showed the highest estimated mortality rates. Albania showed the highest values (ASR-E at 29 and 24.7 for incidence and mortality respectively), followed by Belarus with ASR-E incidence and mortality rates (26.6 and 22.1), FYR Macedonia (24.2 and 20.9), Russian Federation (23.1 and 19.4) and Latvia (20.7 and 15.1).
- The countries with the lowest ASR-E incidence and mortality rates were Sweden (5.6 and 4.2), Switzerland (6.2 and 4), France (7 and 4.5), Norway (7.1 and 4.4), UK (7.2 and 4.7).

\* ASR-E: age-adjusted rate to the old standard European population (Doll & Cook, Int J Cancer, 1967) to account for different age structures in various countries.



## Temporal trends in selected European countries<sup>5</sup>

- Since the 1930s, the incidence and mortality rates of SC have shown a remarkable decline in almost all countries, beginning in the Western Hemisphere.<sup>3</sup> A study carried out in the Netherlands, United Kingdom, France and four Nordic European countries showed that SC mortality rates declined between 1980 and 2005 at about the same rate (3.6-4.9%).<sup>6</sup>
- Reasons for this decrease are probably due to improvements in dietary patterns and standards of living, control of *Helicobacter pylori* infection and changes in environmental exposures.<sup>1,6,7,8</sup> Refrigerating food has improved storage and reduced the need for salt preservation.<sup>3</sup>
- However, there is growing evidence that two topographical categories, cardia and non-cardia SC, are showing diverging trends, with the cardia SC, becoming increasingly prominent.



## Stomach cancer aetiology

- SC has multifactorial aetiology, both environmental and genetic.<sup>2</sup>
- Infection with the bacterium *Helicobacter pylori* is considered the major risk factor.<sup>1,7</sup>
- Research indicates a transient increase in risk for people in European countries born during the 1940s and affected by World War II. This may be due to diet in early life.<sup>3</sup>
- There is sufficient evidence that exposure to chemicals in the rubber production industry, tobacco smoke, X-radiation and gamma radiation are associated with this site.<sup>9</sup>
- There is limited evidence of an association with asbestos, Epstein-Barr virus, lead compounds, ingested nitrate or nitrite, pickled vegetables, salted fish and processed meat.<sup>9,10,11</sup>
- The European Prospective Investigation into Cancer and Nutrition (EPIC) project showed an association between intensity and duration of cigarette smoking and SC risk.<sup>12</sup>
- About 10% of SCs show evidence of a genetic link.<sup>1</sup> First degree relatives of patients have triple the risk of developing the disease compared with the general population.<sup>1</sup>
- There is growing evidence of aetiological differences between cardia and non-cardia stomach cancers. The former is increasing and is linked to growing obesity and gastro-oesophageal reflux disease (GORD). The latter is decreasing due to the reduction in the prevalence of *Helicobacter pylori*.

## Prevention

- Control of the bacterium *Helicobacter pylori*, by eradication, (antimicrobial treatment) or by immunization is regarded as a main strategy to reduce the risk of SC.<sup>1,7</sup>
- Increasing the intake of fresh fruit and vegetables and reducing the intake of processed or smoked meat has been shown to be protective.<sup>1</sup> An European study found a positive association between high intake of dietary antioxidants in the Mediterranean diet and reduced risk of SC.<sup>13</sup>
- Refrigerating food and reducing the intake of salt-preserved foods reduces the risk because salt-preserved foods enhance *Helicobacter pylori* colonization.<sup>7</sup>
- Studies have shown that consumption of black and green tea is protective.<sup>14,15</sup>

## Screening

- Screening programmes have been organised in Japan and South Korea.<sup>16</sup> Endoscopy is a sensitive and specific diagnostic test for SC in these high incidence countries.<sup>1</sup>
- Testing for serum pepsinogen is being evaluated for screening to identify high-risk patients and detect early cancers.<sup>1</sup>
- Current genomic and proteomic technologies could help identify high risk groups, target pre-cancerous lesions and personalise treatment.<sup>7</sup>

## Stomach cancer survival

- SC has a poor prognosis. The EUROCORE-5 study estimating survival in Europe from 1999-2007 reported an overall Europe-wide 5-year relative survival of 25%. Southern Europe had the best with 30% and Eastern Europe had the poorest with 19%.<sup>17</sup>

## Conclusions

- SC was the 7th most commonly diagnosed cancer and the 5th most frequent cause of cancer deaths in Europe.
- Incidence and mortality rates have declined in Europe in the past decades. However two subtypes, cardia and non-cardia SC, show diverging trends. There is an increasing prominence of the former sub-type and growing evidence of a linkage with obesity. The latter type is declining due to the control of *H. pylori*.
- Unfortunately, SC is usually detected at an advanced stage because there are no specific symptoms or early signs. Treatment options depend on the size and location of the tumour, the physical condition of the patient, and the cancer stage. Treatment is largely ineffective at this stage.<sup>16</sup>