

## A PATHOLOGICAL CONCERN

# Understanding the rise in oesophageal cancer



Rates of oesophageal cancer in England are amongst the worst in Europe, and the cause is not clear.

### KEY POINTS

- Oesophageal cancer is the sixth most common cause of cancer deaths in England and Wales. Every year, it kills over 6,000 people.
- Over the last two decades, the incidence of cancer of the oesophagus has gone up by 87% for men and 40% for women.
- These trends and patterns are unexplained.
- Parts of England (along with Scotland) have some of the highest rates of oesophageal cancer in Europe.
- At the same time, incidence has fallen sharply in some other European countries (for example, France).

Levels of oesophageal cancer in the population of England are amongst the worst in Europe. Whilst the rates in some other nations are falling, in England the situation is getting worse. Despite these trends, not enough is known about why this is happening.

Oesophageal cancer is the sixth most common cause of cancer deaths in England and Wales. More than 6,000 people die from it every year (see Figure 1). Men are almost twice as likely as women to develop oesophageal cancer. The risk of the disease increases as people get older, with very few cases occurring below the age of 40 years.

The risks of oesophageal cancer have been studied since the 1920s. Then certain occupations associated with drinking alcohol (publicans, brewers, innkeepers and beer bottlers) had higher rates of the disease. There are two types of oesophageal cancer: squamous cell carcinoma and adenocarcinoma.

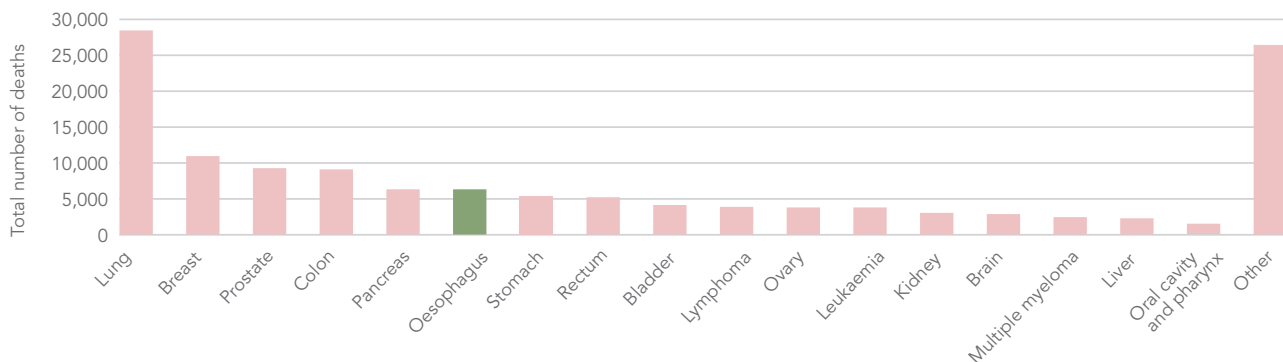
Each has its own risk factors. Smoking and low fruit and vegetable intake are risk factors for both. Excess alcohol is a risk factor for squamous cell carcinoma, particularly when combined with smoking. Obesity and gastro-oesophageal reflux, where acid from the stomach damages the oesophagus, are strongly associated with adenocarcinoma. The first symptoms of oesophageal cancer are usually pain, difficulty swallowing and weight loss. It is diagnosed by endoscopy or X-ray tests. This is confirmed by taking a biopsy (a sample of the growth) for laboratory testing and further tests, such as computerised tomography scanning.

Treatment includes surgery, chemotherapy and radiotherapy. In some cases, where palliative care is the best option, stents are used to hold the oesophagus open and reduce symptoms. Although significant advances have been made in its treatment, this aggressive cancer often presents at a late stage.

Prognosis is poor. Only 34% of men and 35% of women survive more than one year after diagnosis. At five years, only 9% of men and 12% of women are still alive.

Evidence from around the world suggests that patients receiving surgical treatment survive longer if they are treated in large centres, where the surgeons see more cases and are more experienced in the required techniques. Guidance from the Department of Health, informed by this evidence, suggests that operations should be performed in hospitals serving a population of at least 1 million people (except in sparsely populated areas), to ensure that people receive the highest quality care.

Figure 1: Oesophageal cancer is the sixth highest cause of cancer death in England and Wales in 2004



Source: World Health Organization Statistical Information System

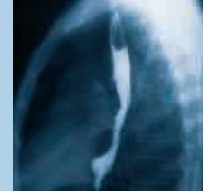
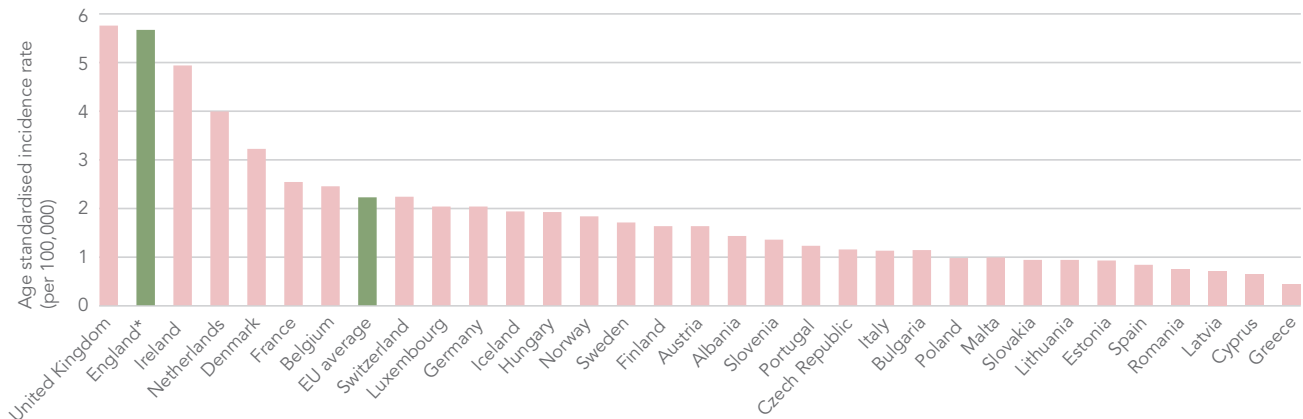
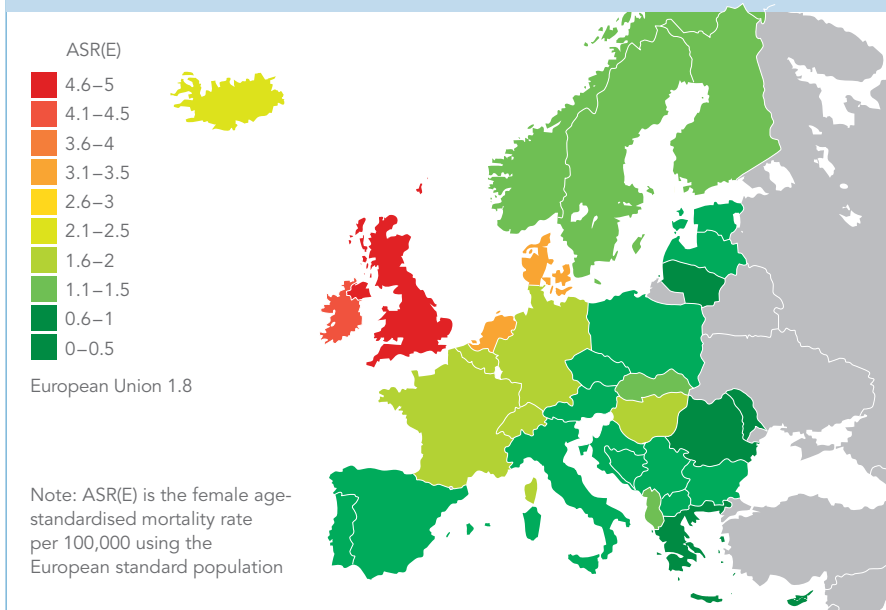


Figure 2: Incidence rates of oesophageal cancer in English women are some of the highest in Europe



Source: Cancer Incidence and Mortality in Europe 2006, International Agency for Research on Cancer; \*Office for National Statistics, 2005

Figure 3: Mortality rates for oesophageal cancer in women in the United Kingdom are much worse than mainland Europe



Source: Cancer Incidence and Mortality in Europe 2006, International Agency for Research on Cancer

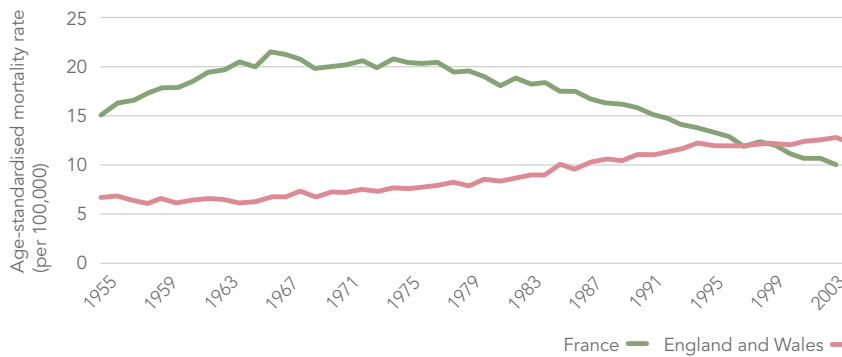
### Trends around the world

The incidence of oesophageal cancer varies around the world. It is highest in China, Japan, India and around the Caspian Sea. The incidence is also very high in England. Compared with other European countries, the rate in England is well above average (14.0 cases per 100,000 men compared with a European average of 9.3, and 5.6 cases per 100,000 women compared with an average of 2.2). Taking the entire United Kingdom population, women have the highest reported incidence of oesophageal cancer in Europe (see Figure 2), 14 times higher than the rates reported for Greek women (who have the lowest incidence). Mortality rates in the United Kingdom are also higher than in other European countries, particularly amongst women (see Figure 3).

If the mortality rate in England and Wales was the same as the average for the European Union, there would potentially be 3,215 fewer deaths per annum.



**Figure 4: Mortality rates from oesophageal cancer for men in England and Wales rise as French rates fall**



Source: World Health Organization Statistical Information System

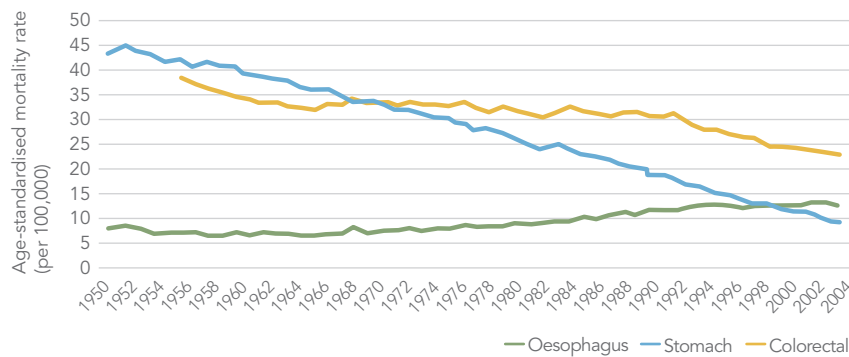
### Trends over time

Not only are incidence rates of oesophageal cancer in England higher than many surrounding countries, but they have also been climbing in recent years. The male age-standardised incidence rate in England increased from 7.5 per 100,000 in 1971 to 14.0 in 2005 (a rise of 87%) with the corresponding female rates rising from 4.0 to 5.6 per 100,000 (a rise of 40%). At the same time, mortality rates in England and Wales increased by 74% for men and by 20% for women.

This contrasts with the situation in France, another country that used to have a high rate of oesophageal cancer. In the early 1980s, mortality rates from oesophageal cancer in French men were twice as high as for men in England and Wales. Now this has been reversed (see Figure 4).

Oesophageal cancer has behaved differently over time to other cancers of the gastro-intestinal tract. In the last half century, mortality rates for stomach and bowel cancer have been consistently falling. Over the same period, deaths from oesophageal cancer in England have risen (see Figure 5).

**Figure 5: Colorectal and stomach cancer mortality rates fall as oesophageal cancer rates rise in England and Wales**

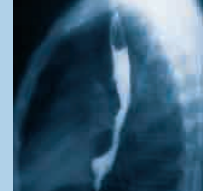


Source: World Health Organization Statistical Information System

### Variation in England

There is variation in the rates of oesophageal cancer around the country. Incidence and mortality are higher than average in the North West and generally low in the East and South East of England. There is little variation in survival around the country.

There is a clear link between social deprivation and oesophageal cancer, with incidence rates 30% higher in the most deprived groups. This association with deprivation is likely to be related to different behavioural patterns across socioeconomic groups, with levels of smoking, drinking and obesity higher in more deprived groups. This may also account for some of the geographical variation.



### Prevention

Screening programmes have been considered, but the disease is not common enough for endoscopic screening of the whole population to be viable. Only patients with Barrett's oesophagus, where acid reflux causes pre-cancerous changes to the cells of the oesophagus, are considered for regular surveillance tests because of their high risk of developing the disease. Exciting new work is currently being done to develop simple screening tests that could be carried out at general practice surgeries, without the need for more risky and expensive endoscopy, but this remains in its early stages.

Preventive medicines may be an option: research suggests that use of aspirin and non-steroidal anti-inflammatory medications may act to reduce the likelihood of developing cancer of the oesophagus, but again more work is needed on this.

### Explanations

The reasons for these high levels of oesophageal cancer in England are not absolutely clear. Understanding and preventing this cancer is made more difficult because there are two distinct types, each with different risk factors. The rate of adenocarcinoma appears to be increasing more rapidly than the rate of squamous cell carcinoma, and therefore probably accounts for most of the current increase (see Figure 6), although this figure must be interpreted cautiously because many oesophageal cancers are not classified into either type.

This differential rise in adenocarcinoma, compared with other oesophageal cancers, is striking but unexplained. Understanding the cause of this rise is vital if progress is to be made to reverse these trends.

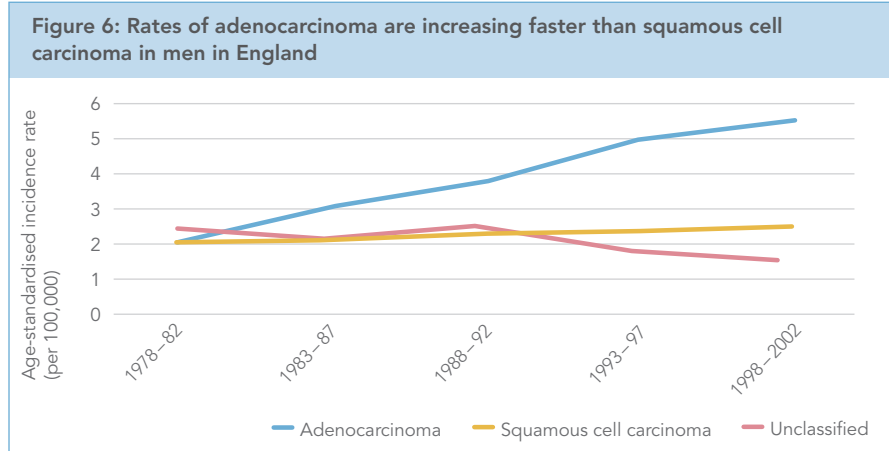
Evidence suggests that gastric reflux is a major risk factor for adenocarcinoma, as

stomach acid damages the cells at the base of the oesophagus and makes them more likely to become cancerous. Any factor that causes acid reflux may therefore be a contributing factor. People with obesity have a higher risk of oesophageal cancer, probably because they also have a higher rate of gastric reflux. The increasing levels of obesity seen in the English population may therefore be a significant factor driving the rates upwards.

By a similar mechanism, certain medicines that act to relax the lower oesophageal sphincter and allow acid to flow from the stomach and into the oesophagus also increase cancer risk. Several common medications, including nitrates used to treat heart attacks, have this effect and may be contributing towards the trend.

Infection with *Helicobacter pylori*, the bacterium which leads to stomach ulcers, also affects the rate of oesophageal cancer. Infection with *H. pylori* tends to lead to lower levels of acid production in the stomach. While this has health risks in itself, it is protective against cancer of the oesophagus. It is therefore possible that increasing levels of treatment to eradicate *H. pylori* are contributing towards rising rates of oesophageal cancer.

**Figure 6: Rates of adenocarcinoma are increasing faster than squamous cell carcinoma in men in England**



Source: Cancer Incidence in Five Continents vol. I-IX, International Agency for Research on Cancer

Dietary factors have been implicated too. A low intake of fruit, vegetables and cereal fibres have all been demonstrated to increase risk, although the mechanism is unclear.

Tobacco smoking is known to be an important risk factor, but its contribution to the rising rate is unlikely to be significant, because smoking rates are falling. Another potential explanation is alcohol consumption. The trends in mortality from oesophageal cancer partly reflect the patterns of alcohol drinking in England and France, where French consumption rates have declined over the past decades, while English consumption rates have increased. Rates of adenocarcinoma are, however, not associated with alcohol consumption, suggesting that alcohol is not the main cause of the increase in England.

While rates of many cancers in England are decreasing, oesophageal cancer appears to be bucking the trend and going the wrong way. At the moment, we do not know enough about why this is happening. If this disease is to be controlled and this worrying trend reversed, it is vital that more is done to understand the disease process and the complicated mix of factors that cause it. More also needs to be done to develop effective treatments and better diagnostic tests, and to raise awareness of this condition and its symptoms.

## Case study



Ben Chandler is a 32-year-old Senior Aircraftman in the Royal Air Force. In the past few years, he has served in Iraq and Afghanistan, ensuring that troops and equipment get through to the front line and back again safely. After the tsunami in 2003, he was one of the first members of the British troops to be deployed in Indonesia, bringing emergency supplies into Banda Aceh to help the relief effort.

In late 2007, while working at an RAF base in Cyprus, he noticed some unusual pains in his stomach. As a normally fit and healthy person, who had been boxing for the RAF only a few weeks before, he went to see his doctor to get it checked out. He was prescribed medication to reduce stomach acid and at first the symptoms got better. However, over time, his symptoms started to get worse and he found it became difficult to swallow. He went back for more tests. An endoscopy showed a small lump in his oesophagus. A biopsy confirmed that it was cancer. Computerised tomography scans showed that it had already spread to his liver.

While he was being investigated, his new son, Tyler, was born. A few hours after he had cut the cord, Ben began to feel unwell. He started bleeding internally, needed emergency blood transfusions, and required resuscitation after his heart stopped beating.

Since these events, Ben's condition has improved, and he has now started chemotherapy and radiotherapy. He has been discharged home and is spending time with his wife and children.

Today, Ben is determined that other patients and their families should be aware of the symptoms of this cancer, and that more should be done to find out about its causes.



“Levels of oesophageal cancer in the population of England are amongst the worst in Europe. Whilst some other nations’ rates are falling, in England the situation is getting worse. Despite these worsening trends, not enough is known about why this is happening.”

## RECOMMENDATIONS

- A large-scale national research study should be commissioned to investigate the risk factors contributing to rising rates of cancer of the oesophagus.
- Research should be supported to explore the possibilities of new diagnostic techniques, including potential minimally invasive screening tests.
- Better education programmes must be developed to improve public awareness of the symptoms of oesophageal cancer, and the risk factors.
- The work of the new National Oesophago-Gastric Cancer Audit, to measure the quality of current service provision, should be supported and efforts made to improve reporting of data to the Public Health Observatories.
- All oesophageal cancer surgery should be performed in units serving a population of at least 1 million (or 500,000 in rural areas).
- The Chief Medical Officer should issue a public alert in circumstances where there is an unexplained increase of a serious disease and this should lead to an expert standing panel reviewing the situation and giving advice on any action.