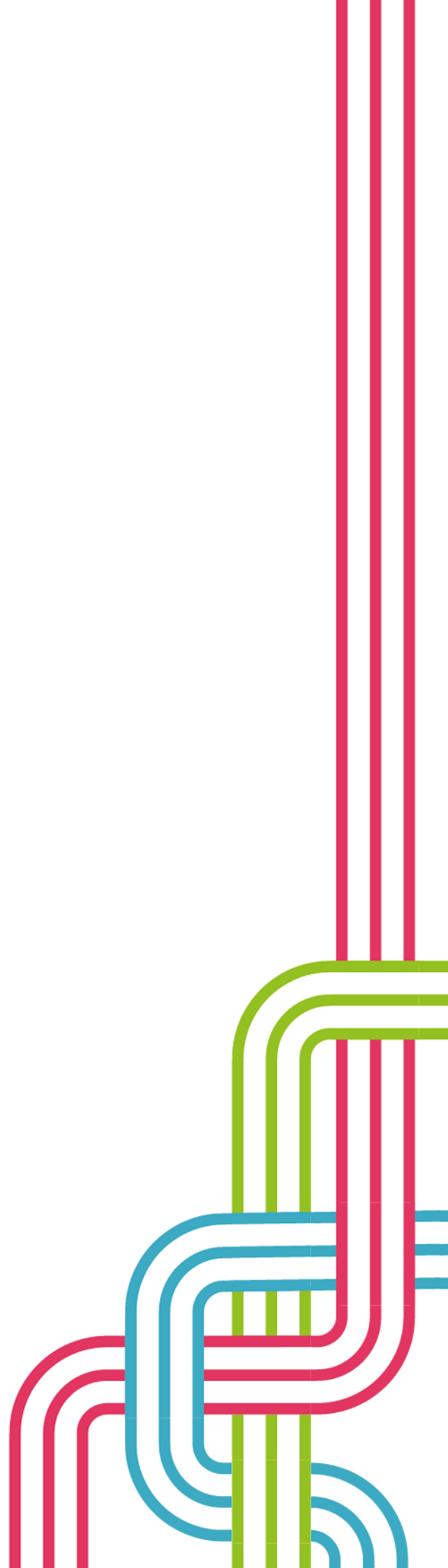


An introduction to cancer, risk factors and evidence



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Key points

1. Suffolk has an older population, with 23.6% of the population age 65 and over. Cancer is more common for older adults, and with Suffolk's older population projected to increase significantly – particularly if prevention opportunities are not undertaken - there will be increasing demand for cancer services in the county.
2. Core20PLUS5 is a national approach to reduce healthcare inequalities at both a national and health and care level. One of the '5' areas is improving early cancer diagnosis, with an aim 75% of all diagnoses at stage 1 and 2 by 2028.
3. There is opportunity to positively influence the modifiable risk factors for cancer in Suffolk. Suffolk performs statistically significantly better than England for two modifiable risk factors. Firstly, the prevalence of year 6 (11-year-old excess weight) (this is statistically similar to the East of England region average). However, over 1 in 3 Suffolk children are overweight, with this percentage increasing over the previous 5 years. Secondly, the proportion of the adult population meeting the 5-a-day recommendations. All other risk factors for Suffolk are statistically similar to the national average.

An introduction to cancer

What is cancer?

Cancer is a collection of related diseases in which abnormal cells can grow uncontrollably and spread across parts of the body. Cancer can start from almost anywhere in the human body, in almost any cell type, and is usually named according to the cancer's origin organ or tissue. Cancerous cells are characterised through their ability to ignore the essential systematic processes of a normal cell's life cycle, growing in the presence of signals telling them to die and in the absence of signals telling them to grow¹.

Ordinarily, our cells grow and multiply (through a process called cell division) to form new cells as the body requires. When cells mature or become damaged, they die (through a process called apoptosis) and new cells take their place. However, mutations can occur within these essential systematic processes, leading to the unwanted survival, growth, and multiplication of abnormal or damaged cells. These cells may accumulate, forming tumours. Tumours formed can be cancerous (malignant) or non-cancerous (benign). Benign tumours tend to grow slowly and do

not spread. Malignant tumours tend to grow rapidly and spread into, or invade, nearby tissue (through a process called metastasis)¹.

Cancerous cells, or tumours, are dangerous as they can disrupt the body's functions. They can destroy healthy cells in the organs, block vital nutrient or oxygen supply, and allow for the build-up of waste products. Therefore, if the cancer becomes advanced enough, it can impair or prevent crucial organ function, resulting in death¹.

Cancer is classified into stages and prognosis and treatment is often dependent on the classification. The stage of a cancer describes the size of a tumour and how far it has spread from its origin. Stages are reported using a numbering system as followed:

- **Stage 0:** the cancer is where it started (in situ) and hasn't spread.
- **Stage 1:** the cancer is small and hasn't spread anywhere else.
- **Stage 2:** the cancer has grown but hasn't spread.
- **Stage 3:** the cancer is larger and may have spread to the surrounding tissues and/or the lymph nodes (or "glands", part of the immune system).
- **Stage 4:** the cancer has spread from where it started to at least 1 other body organ, also known as "secondary" or "metastatic" cancer.

How do we quantitatively measure the burden of cancer and why is this important?

Collecting and measuring data regarding the burden of cancer in a population is vital for public health aiding the understanding of prevention, diagnosis and improving treatment, ongoing support, services, and outcomes. Reliable estimations of the cancer burden can offer a comprehensive picture of how the impact of cancer varies between specific regions and between populations. This data is used by commissioners and health professionals to assess the impact of cancer on local populations and guide commissioning and service improvement.

Cancer screening

Cancer screening is an activity that looks for early signs of cancer in people without symptoms. This can help spot cancers at an early stage when treatment is more likely to be successful. With specific cancers, such as cervical, the screening process can even prevent the cancer from developing. There are 3 national screening programmes in the UK:

- **Bowel cancer screening:** this is first offered to people between the ages of 50-60 up until 74 years of age, in England and Wales.
- **Breast cancer screening:** this is offered to women (including transgender women), some transgender men and some non-binary people aged 50-70 in the UK.
- **Cervical screening** is offered to women, some transgender men and some non-binary people aged 25-64 in the UK.

For more information on screening, and to identify your eligibility, follow the link provided: [Cancer Screening](#).

The Office for Health Improvement and Disparities (OHID) provide public health profiles using the large public health data collection tool: [Fingertips](#). Within Fingertips the [Cancer Services profile tool](#) contains data on cancer screening.

Two Week Wait referrals

The Two-Week Wait (TWW) appointment system was introduced so that anyone with symptoms that might indicate cancer could be seen by a specialist as quickly as possible. Attending this appointment within two weeks is vitally important and will give early reassurance that cancer has not been diagnosed, or rapid diagnosis and faster access to treatment, increasing chances of optimal outcomes. Once symptoms have been identified (through screening or through individual appointments with your GP or dentist), the TWW referral will provide the individual with a further appointment which may be to attend an outpatient clinic or a diagnostic test (such as an X-ray, CT scan or endoscopy) or a combination of both within two-weeks of symptom identification.

Additionally, a study regarding the factors associated with variation in emergency diagnoses of cancer at general practice level in England, showed that higher TWW referrals had a significant association with a lower proportion of emergency diagnosis of cancer². Cancer diagnosis as an emergency is often late stage and associated with poor outcomes. Those diagnosed with early (stage 1 or 2) cancers have a better 1-year survival than those diagnosed with late (stage 4) cancer³. While the NHS England TWW target is being retired, the clinical benefits of early referral and diagnosis clearly remain, and regional care networks should continue to focus their efforts on increasing the quantity and appropriateness of early referrals to help reduce the burden of disease².

Cancer incidence, survival & mortality

The measurement of incidence, survival and mortality show the chance of a single event occurring at a given point in time. These measures provide a 'snapshot' of the time dependent long-term development of disease. These terms are defined as:

- **Incidence** - means how many people get a particular type of cancer. It is often written as the number of cancer cases per 100,000 people in the general population.
- **Prevalence** - means the number of people in the population who have had a diagnosis of cancer. There are more than 2 million people living with cancer in the UK. Some of these people were diagnosed some time ago. They may now be cancer free. Other people were diagnosed more recently and are living with cancer. So prevalence means all the people who have a type of cancer at a particular time
- **Survival** – means the percentage of people still alive after a particular amount of time, and are usually written as 1 year, 5 year or 10 year survival. These statistics are usually estimates.
- **Mortality** – means the number of people who have died and is often written as a number per 100,000 people in the general population⁴.

Incident cases are counted for each separate primary tumour. Therefore, an individual could be diagnosed with more than one tumour, appearing more than once in the incidence statistics. Recurrences of a previous cancer are not included in new incident cases, or population incidence rates for particular tumours.

Incidence data is collected by the National Cancer Registration and Analysis Service (NCRAS) on all people living in England who are diagnosed with cancer. The data is recorded at Primary Care Network (PCN), sub-ICB, ICB, and at national level and collated by the National Disease Registration Service (NDRS). While the data is updated on an annual basis, the most recently reported data in the public domain is the October 2022 update, providing counts and crude rates of people living with and beyond a cancer diagnosis on December 31st, 2020. However, cancer registration is not mandatory, and individuals can remove their details at any time, leading to under-reporting.

Cancer survival estimates show the number of people diagnosed with cancer still alive after a particular amount of time. Cancer survival statistics are given as 1-year survival, 5-year survival and 10-year survival. It is important to note that this data does not mean that people lived for exactly 1, 5 or 10 years after their diagnosis. Additionally, it does not mean individuals were cured either. The state of the development of cancer is specific to each person, dependent on their health, previous treatments, and the type and stage of the cancer. Within these estimates some individuals will be cured, and the cancer will never come back, others may have had recurrence of their cancer, and are living with it, and for some the cancer may reappear after the period of time that has been reported. Cancer survival rates are important as they can show the impact of existing cancer services, by capturing both how good the system is at detecting the disease and whether individuals have rapid access to effective treatment. Cancer survival data is also collected by NCRAS, recorded at PCN, sub-ICB, ICB and at national level and collated by the NDRS. Cancer data is also reported in a consistent format for tumour types, and split by certain demographics to allow for international comparison.

Cancer mortality estimates show the numbers of people who died because of cancer. It does not include people who were diagnosed with cancer but died from an unrelated cause of death. Cancer mortality data is collected by the NCRAS, recorded at, PCN, sub-ICB, ICB and at national level and collated by the NDRS. Cancer mortality rates are age-standardised, meaning the rate is a weighted average of the age-specific mortality rates per 100,000 persons. This is because the numbers of deaths per 100,000 population are influenced by the age distribution of the population. Two populations with the same age-specific mortality rates for a particular cause of death will have different overall death rates if the age distributions of their populations are different. Age-standardised mortality rates adjust for differences in the age distribution of the population by applying the observed age-specific mortality rates for each population to a standard population.

When interpreting these concepts, it is important to consider the dynamic nature of the long-term process. Gauging the development in cancer care with statistics on incidence, survival and mortality for the same chronological year may be deceptive, because the cancer mortality rate for a particular year depends on both the incidence and survival over the past 5, 10, etc. years.

Why is cancer an important public health issue?

Across England in 2020, age-standardised cancer mortality rates were 303 deaths per 100,000 people for males and 214 deaths per 100,000 people for females, decreasing by 1%, for both males and females, from 2019⁵. Although a decrease has been shown, cancer continues to be a leading cause of death from disease, causing more than one in four of all deaths in England⁶.

Furthermore, one in every two people in England will be told that they have cancer during their life. However, the Covid-19 pandemic has had a negative impact on cancer diagnosis rates, disproportionately affecting individuals in terms of sex, age, and deprivation⁷⁻⁹. Some patients could not access care, and many chose not to seek medical care or partake in cancer screening programmes during the pandemic, due to various medical and non-medical reasons¹⁰.

- In 2020, over half (51%) of all registered cancer diagnoses in England were found in the breast, prostate, lung, or bowel. The largest number of all registered cancer diagnoses were found in the prostate (24%, 36,016) for males, and in the breast (28%, 39,871) for females. However, between 2019 and 2020, new cancer diagnosis rates dropped by 12% (from 327,174 to 288,753 new cases). This is likely to be due to the pandemic limiting access to screening and diagnostic care, rather than a decline in the underlying rate of disease. In

2020, the number of cancers diagnosed and registered for males (148,210) was larger compared to females (140,543). Males in England have had a higher number of tumours compared to women in each of the last 5 years.

- Age-specific incidence rates of all malignant cancer (excluding non-melanoma skin cancer) in 2020 increased with age for both males and females, with higher rates for females aged between 15 and 59 than for males, and from age 60 onwards, age-specific incidence rates of cancer were higher for males compared to females.
- For both males and females, the numerical fall in age-standardised rates of cancer diagnoses between 2019 and 2020 was largest in the most deprived quintile. The rate decreased consistently for each deprivation quintile (from the most to the least deprived). Males living in the least deprived areas still had a higher rate (554 per 100,000 people) than females living in the most deprived areas (550 per 100,000 people)⁵.
- Additionally, the fall in diagnoses was also spread unevenly amongst cancer types. For males, the largest proportionate change in cancer diagnoses registered was in prostate cancer, falling by 24% (from 47,479 to 36,016 new cases). For females, the largest proportionate change in cancer diagnoses registered was for melanoma of skin, falling by 18% (from 7,479 to 6,160)⁵.
- Overall, since March 2020, around 34,000 fewer people in England have been diagnosed with cancer and started treatment compared to predictions¹¹, thought to be due to the lack of access to screening and diagnostic services during the pandemic. Moreover, from the time of the pandemic, the number of people whose cancer has been diagnosed at a later stage has increased¹².

Early detection of cancer and appropriate treatment and care of cancer patients can increase the chances of survival¹³. Additionally, between 30 and 50% of cancers can currently be prevented by reducing risk factors and implementing existing evidence-based prevention strategies¹⁴. Therefore, after the effects of the pandemic, there is an urgent need to strengthen, and integrate, health and social care services to tackle inequalities, improve screening rates particularly in more deprived populations, reduce the impact of risk factors, and increase awareness among the public in order to reduce this burden of disease for the future.

What current public health strategies are in place?

At the beginning of 2019, health and care leaders came together to develop 'The NHS Long Term Plan'¹⁵ to make the NHS fit for the future, and to get the most value for patients out of every pound of taxpayers' investment. At the time of publication of the 'Long Term Plan', cancer survival was the highest it had ever been in England¹⁶. For patients diagnosed in 2018, one year survival was nearly 74%- over 10% percentage points higher than in 2003¹⁷. Although improvements in cancer survival have been made, it is still a priority and diagnosing cancer in its earliest stages is one of the main actions the NHS can take to achieve the best chances of curative treatment and long-term survival. Therefore, the plan set the ambition of improving the uptake of screening and early cancer diagnosis as a clinical area of focus which requires accelerated improvement. This was done by setting a target of 75% of cancer cases to be diagnosed at stage 1 or 2 by 2028. Attaining this would mean that, from 2028, 55,000 more people each year will survive their cancer for at least 5 years after diagnosis¹⁷. Several commitments were outlined to achieve this target in England, including:

- Building on work to raise greater awareness of symptoms of cancer.
- Lowering the threshold for referral by GPs to specialist services.
- Accelerating access to diagnosis and treatment.

- Maximising the number of cancers that are identified through screening, including the expansion of genomic testing to deliver personalised and risk stratified screening and beginning to test the family members of cancer patients where they are at increased risk of cancer.

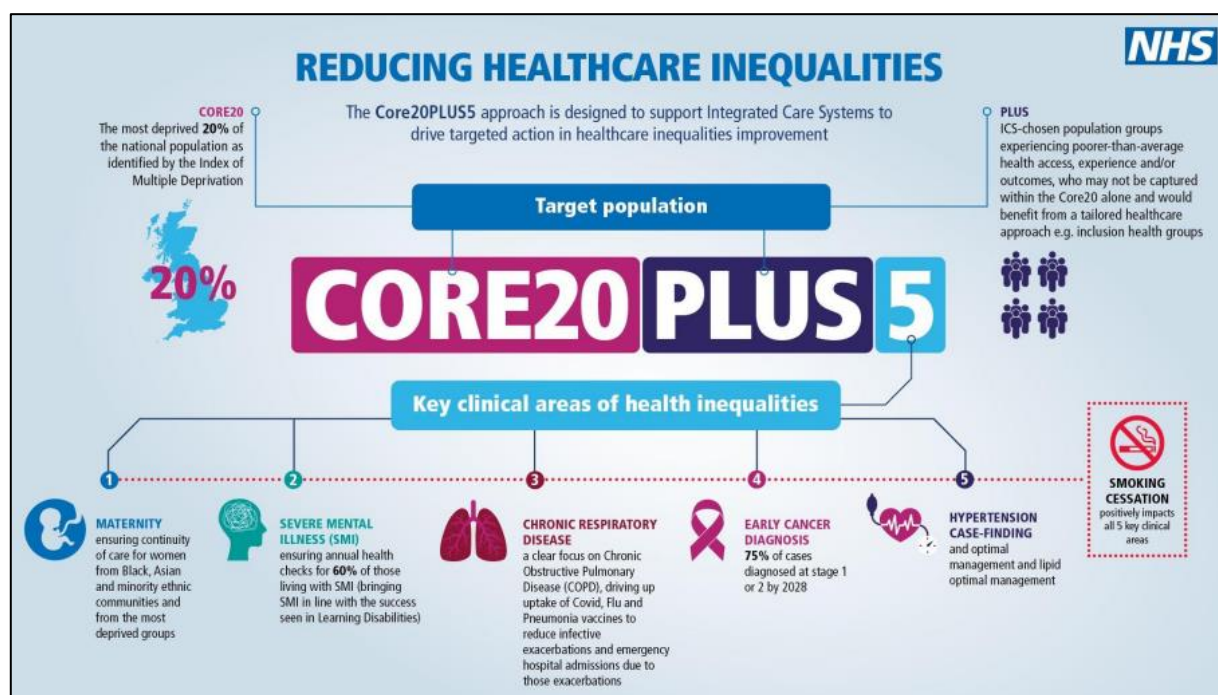
During the pandemic, the Cancer Alliance was asked to prioritise elements of the plan to help with recovery. This included the roll-out of faster diagnosis non-specific pathways¹⁸, intended to cover the cohort of patients who do not fit clearly into a single 'urgent cancer' referral pathway, but are at risk of being diagnosed with cancer. These 'non-specific' symptoms include unexplained weight loss, fatigue, abdominal pain or nausea, and a GP 'gut feeling' about cancer.

Additionally, the re-starting of Targeted Lung Health Checks has been prioritised, with operations occurring in 23 places across the country (but not currently in Suffolk¹⁹), with a further 20 places planned to join²⁰. In June 2023, targeted lung cancer screening has been committed to rolled out to the rest of the country. This will reach 40% of the eligible population by March 2025, with 100% coverage by March 2030²¹. This is all contributing towards 'The 10-Year Cancer Plan for England'¹⁷. This plan will end in 2032 with aims to:

- Take stock of the innovations and improvements which the pandemic has helped to accelerate, especially in life sciences, and how to incorporate them into work moving forward.
- Identify what additional interventions and innovations to adopt to support the delivery of existing ambitions.
- Look beyond the end date for 'The NHS Long Term Plan', and to consider what can be done to shape and improve cancer services into the next decade, including through a pipeline of innovations through research and development.

Local delivery of 'The NHS Long Term Plan' is refined through the Core20PLUS5 approach to reducing healthcare inequalities launched in 2022, shown in figure 5. The approach is designed to tackle health inequalities in clear and focused areas which have the biggest opportunities to narrow the health inequality gap. Core20PLUS5 is designed as the NHS contribution to a wider system effort by Local Authorities, communities and the Voluntary, Community and Social Enterprise (VCSE) sector. This approach aims to support integrated care systems (ICSs) to effectively prioritise energy, attention and resources enabling optimal impact.

Figure 1. CORE20PLUS5 infographic, an approach to reducing healthcare inequalities.



Source: [NHS England](https://www.nhs.uk)

The approach defines a target population referred to as the 'Core20'. Core20 refers to the most deprived 20% of the national population as identified by the national index of multiple deprivation (IMD). The PLUS population groups should be identified at local levels across the health care system. At the level of Suffolk as a whole, based on data and evidence the recommendations for the PLUS populations include:

- People from minority ethnic communities
- Coastal communities
- Rural communities
- People and groups facing the sharpest health inequalities in Suffolk (such as groups at risk of disadvantage).

Core20PLUS5 also identifies the '5' nationally defined focus clinical areas requiring accelerated improvement, one being 'Early Cancer Diagnosis' with a target of 75% of cases to be diagnosed at stage 1 or 2 by 2028.

For more information on regarding the PLUS population and recommendations for Suffolk following CORE20PLUS5 follow the link provided: [Annual Public Health Report: CORE20PLUS5, Suffolk 2022](#)

Building on 'The NHS Long Term Plan', Steve Barclay (Secretary of State for Health and Social Care) released a statement on the 24th of January 2023. The statement announced the production of a national strategy focused on the major conditions which contribute to the burden of disease in England, including cancer. This strategy will push forward the notion of whole-person care, building on measures that have already been taken forward through 'The NHS Long Term Plan'. Interventions set out in the strategy will aim to alleviate pressure on the health system. Tackling this is critical to achieving the government's commitment of gaining five extra years of

Healthy Life Expectancy by 2035, and the levelling up mission to narrow the gap in healthy life expectancy by 2030. An interim report on the strategy is set to be published by summer 2023²².

How can a person reduce their risk of cancer?

Risk factors

Cancer is a disease caused by changes (mutations) to genes that control the way cells function, specifically how they grow and divide. These changes are the result of the interaction amongst genetic factors and external agents, specifically physical, chemical, and biological carcinogens²³. Carcinogens refers to any substances capable of causing cancer in living tissues. Examples of some external agents are listed below:

- **Physical carcinogens:** Ultraviolet (UV) light and ionising radiation.
- **Chemical carcinogens:** Asbestos, components of tobacco smoke and alcohol.
- **Biological carcinogens:** Infections from certain viruses, bacteria, or parasites.

There is growing evidence that cancer is not one single disease and consists of more than 100 different diseases. These diseases are characterised by the uncontrolled growth and spread of abnormal cells^{24,25}. No single factor is likely to be the cause of cancer, nor can a single piece of research gives all the answers. Therefore, it is not possible to know exactly why one person develops cancer and another does not. But research has shown that there are certain risk factors that may increase the chances of developing cancer²⁶. These include:

Smoking

Tobacco smoking is the leading cause of cancer worldwide, causing more than 7 million deaths each year. Tobacco smoke comprises of many known carcinogens. Passive smoking (being exposed to someone else's tobacco smoke) also increases the risk of lung cancer and is particularly dangerous for children²⁷. People who use smokeless tobacco (such as chewing tobacco) have increased risks of cancers of the mouth, oesophagus, and pancreas²⁸.

Age

The age structure of Suffolk is an important consideration in relation to cancer. Cancer is more common in older populations - because our cells can get damaged over time. This damage can then build up as we age and can sometimes lead to cancer²⁹. Older people are more likely to die from cancer, as they are less likely to survive. In 2021 over 86.0% of cancer deaths in Suffolk were for adults over the age of 65.

Being obese or overweight

Being overweight or obese has been shown to increase the risk of developing 13 different types of cancer including three of the hardest to treat- pancreatic, oesophageal and gallbladder cancers^{30,31}. Storing excess fat can cause insulin resistance (where insulin becomes inefficient at controlling blood sugar levels), this can promote the production of growth hormones increasing your risk of cancer³². Moreover, body fat encourages an inflammatory response which can stimulate abnormal cell division increasing the risk of cancer³³. Additionally, fat cells release hormones such as oestrogen, excess oestrogen increases the risk of specific cancers such as breast and womb³⁴.

Being inactive

Being physically inactive has been shown to increase the risk of developing bowel, breast, and womb cancers. Being inactive can affect the regulation of health hormone levels across the body increasing the risk of cancer³⁵. Additionally, being inactive slows digestion increasing the amount

of time that any carcinogens are in contact with the lining of the bowel³⁶. Furthermore, being inactive can contribute to being overweight and obese, increasing the risk of cancer³⁵.

Poor diet

Diet can have a big impact on the risk of developing cancer.

- Diets lacking fibre can slow digestion, increasing your risk of bowel cancer³⁷.
- Diets lacking a variety of fruit and vegetables can lead to deficiencies in micro-nutrients such as vitamins and minerals, reducing cells protection from damage that could lead to cancer³⁸.
- Eating too much red meat can increase your intake of Haem (a precursor to haemoglobin), known to trigger the formation of carcinogens associated with bowel cancer³⁹.
- Processed meat also contains carcinogenic additives such as nitrites and nitrates⁴⁰.
- Excess alcohol consumption can lead to liver cirrhosis, known to cause liver cancer⁴¹. Additionally, when alcohol is consumed, the body breaks it down (metabolises) which can produce carcinogens increasing the risk of cancer⁴².
- Eating in excess, and consumption of fatty, sugary, and salty foods can all contribute to weight gain. Being obese or overweight is associated with an increased risk of 13 different types of cancer^{30,31}.

For further information all of these dietary factors and their effects on the risk of cancer follow the link provided: [Poor Diet and Cancer Risk](#)

Exposure to the sun and UV

The majority of skin cancer cases are a result of excess exposure to ultraviolet (UV) radiation from the sun or from sunbeds. The two main types of sun rays are UVA and UVB. Both can damage the DNA in skin cells, increasing your risk of cancer. Children, individuals with fair skin, and individuals with red or light-coloured hair are at higher risk upon exposure⁴³. Additionally, sunburn increases the risk of skin cancer dramatically. In fact, attaining sunburn just once every two years can triple the risk of developing melanoma⁴⁴.

Infections

Around 20% of malignant cancers worldwide are related to microbial infections⁴⁵. Infections most commonly linked with an increased risk of cancer include the human papillomavirus (HPV), hepatitis B (HBV) and C (HCV), human immunodeficiency virus (HIV) and the bacterium *Helicobacter pylori* (H pylori).

- **HPV** is a common infection; however, there are specific high-risk types of the virus which are associated with cervical and anal cancers. This viral infection is spread through close skin-to-skin contact, usually during sexual activity⁴⁶.
- **HBV and HCV** can be passed through blood and other bodily fluids, usually during sexual activity or sharing needles to inject drugs. These infections are most commonly associated with liver cancer⁴⁷.
- **H pylori** refers to a type of bacterium that grows in the inside layer of the human stomach. This infection is usually acquired in childhood and is spread through contaminated food and water, or through direct mouth-to-mouth contact. The infection is most commonly associated with stomach cancer⁴⁸.

- **HIV** is spread through blood and other bodily fluids, most commonly distributed through sexual activity, or sharing needles to inject drugs. People living with HIV have an increased risk of Kaposi sarcoma, lymphoma, liver and lung cancer⁴⁹.

Contraceptive pill

Oral contraceptives are a widespread form of birth control in the UK. These pills prevent pregnancy through altering hormone levels within the body. There are two main forms of oral contraceptive, the combined pill (this pill contains both oestrogen and progestogen) and the progestogen-only pill. Taking either pill has been shown to slightly increase the risk of breast and cervix cancer compared to individuals who are not taking it⁵⁰. However, both types have also been shown to reduce the risk of ovarian and womb cancer⁵¹. It is important to note that other risk factors, such as being overweight or obese, increase the risk of cancers (such as breast) much more significantly than the oral contraceptive pill. For many women, the protective effects will outweigh the risks. However, every person's risk will be different.

Inherited genes and family history

5-10% of all cancer cases are associated with specific inherited genes⁵². Scientists have identified some inherited gene mutations linked to specific cancer including the BRCA1 and BRCA2 genes. These genes have been shown to increase the risk of breast and ovarian cancers. However, these mutations are relatively rare⁵³. Generally, people who inherit gene mutations have a higher-than-average risk of developing specific cancers; however, this doesn't mean individual carriers of these mutations will definitely get cancer⁵⁴.

Radiation and pollution

Air pollution caused by vehicle fumes, smoke from burning fuels, or natural pollutants such as desert dust or radon gas have been shown to increase the risk of cancer⁵⁵. Specifically, diesel and petrol exhaust fumes, and tobacco smoke (particulate matters) have been shown to damage healthy lung cells, increasing the risk of lung cancer⁵⁶. Levels of radiation and pollution are relatively low in the majority of the UK, though levels are higher in some cities and can vary according to a variety of factors including traffic density and weather conditions⁵⁷.

Modifiable risk factors

Although exposure to the factors above can increase the risk of cancer, it is clear from scientific literature that there are also many simple practices that can reduce risk. Studies have identified modifiable cancer risk factors such as the use of tobacco, not completing enough physical activity and excess weight, dietary improvements, limitation of alcohol consumption, and sun protection/medications⁵⁸.

Over 40% of cancers diagnosed each year are linked to a combination of major health behaviours and environmental factors⁵⁹. Using this statistic, it can be estimated that in Suffolk (2020/21) over 4,700 new cases of cancer could be attributed to these factors at a population level - it is not possible to identify these individuals.

Another study investigated the proportion of cancer cases attributable to health behaviours and environmental factors in Denmark (2018)⁶⁰. The study examined 12 risk-factor groups classified as class I carcinogens by the World Cancer Research Fund. Exposure data was delivered from national studies and surveys and were linked to cancer incidence in 2018 based on the nationwide Danish Cancer Registry. The data estimated that 32.2% of cancer cases were attributable to avoidable class I carcinogens, and tobacco smoking accounted for 14.6% of total cancers, followed by UV-radiation at 5.8%.

Although the UK statistics will slightly differ due to differences in national health policies and trends in risk factors, studies have still found that, considering 17 cancer types across 69 countries, 42% of cancer cases would have been avoidable if known environmental risk factors had been eliminated⁶¹. Therefore, the findings may still be utilised to identify modifiable risk factors with greatest influence. The modifiable risk factors investigated included tobacco, radiation (UV), overweight and obesity, infections, radiation (ionising), alcohol, occupation, processed meat, air pollution, post-menopausal hormones, insufficient physical activity, and oral contraceptives.

Table 1 describes the prevalence of an array of modifiable risk factors across Suffolk local authorities, and England. None of the listed modifiable risk factors for Suffolk are statistically significantly different to the national average, apart from statistically significantly better values for Year 6 excess weight (36.0% - although still very concerning with over 1 in 3 11-year olds classified as overweight), and the proportion of adults eating the recommended '5-a-day' portion of fruit and vegetables (61.0%) than national averages.

Ipswich conversely has several modifiable risk factors that are statistically significantly worse than national averages, such as for adult smoking prevalence (22.0%), adults classified as overweight or obese (68.2%), 4/5-year-old excess weight (including obesity) (24.7%), the percentage of physically inactive adults (34.2%) and the percentage of physically active adults (54.1%). Both Babergh and Mid Suffolk report statistically significantly better scores than national averages for Year 6 excess weight including obesity, the percentage of adults meeting '5-a-day' guidelines and lower percentages of physically inactive adults.

Table 1. Prevalence of modifiable risk factors of cancer, Suffolk, local authorities, and England.

Risk Modifiers	England	Suffolk	Babergh	East Suffolk	Ipswich	Mid Suffolk	West Suffolk
Smoking Prevalence in adults (18+) - current smokers (APS), 2021	13.0	13.2	9.8	12.1	22.0	11.7	10.6
Smoking prevalence in adults in routine and manual occupations (18-64) - current smokers (APS), 2020	24.5	27.2	15.1	26.8	36.4	25.8	27.6
Percentage of adults (18+) classified as overweight or obese, 2020/21	63.5	62.9	63.8	61.9	68.2	60.4	60.7
Reception: Prevalence of overweight (including obesity) (4-5 yrs), 2021/22	22.3	22.3	21.4	24.0	24.7	16.7	20.9
Year 6: Prevalence of overweight (including obesity) (10-11 yrs), 2021/22	37.8	36.0	32.6	39.0	39.4	33.7	31.9
Proportion of the population meeting the recommended '5-a-day' on a 'usual day' (adults/16+ yrs),	55.4	61.0	60.0	64.8	51.9	60.3	63.3
Percentage of physically inactive adults (19+ yrs), 2020/21	23.4	23.8	16.6	19.5	34.2	19.5	28.7
Percentage of physically active adults (19+ yrs), 2020/21	65.9	65.2	73.6	67.4	54.1	68.7	63.8
Percentage of physically active children and young people (5-16 yrs), 2021/22	47.2	48.3	58.0	45.9	*	*	45.9

Compared to England average:
 Better ■ Similar ■ Worse ■

Source: [Fingertips Public Health Data](#)

Additionally, '[The Time is Now: A Prevention Strategy for Suffolk to reduce demand in the health and care sector by improving health 2016-2021](#)'⁶², outlines some primary prevention priorities and activity within Suffolk. Whilst this strategy is now out of date, the messages within the strategy are still applicable within Suffolk. It is important to note that prevention and the early detection and treatment of cancer remain a priority for the Suffolk system. The Suffolk and North East Essex ICB

Joint Forward Plan published in July 2023 sets out a series of commitment to deliver improved physical and mental wellbeing for SNEE's population⁶³.

The World Cancer Research Fund have previously collated a list of 'Cancer Prevention Recommendations' to support people in reducing their risk of developing cancer, and to assist in the formation of policies to reduce the incidence of cancer more widely, shown in figure 6. The recommendations are based of the most current scientific data available⁶⁴.

Figure 2. Summary diagram highlighting the Cancer Prevention Recommendations set by the World Cancer Research Fund.



Source: [World Cancer Research Fund International](https://www.wcrf.org/)

For more information use the link provided: [Cancer Prevention Recommendations](https://www.wcrf.org/cancer-prevention-recommendations/)

Recommendations include:

Maintain a healthy weight

- Ensure that body weight during childhood and adolescence projects towards the lower end of the healthy adult Body Mass Index (BMI) range.
- Avoid weight gain throughout adulthood.

Be physically active

- Be at least moderately physically active and follow or exceed national guidelines.
- Limit sedentary habits.

Eat wholegrains, vegetables, fruit, and beans

- Consume a diet that provides at least 30g per day of fibre from food.
- Include foods containing wholegrains, non-starchy vegetables, fruit, and pulses (legumes) such as beans and lentils in most meals.
- Eat a diet high in all types of plant foods including at least five portions or servings (at least 400g or 15oz in total) of a variety of non-starchy vegetables and fruit every day.

- If you eat starchy roots and tubers as staple foods, eat non-starchy vegetables, fruit, and pulses (legumes) regularly too if possible.

Limit 'fast foods'

- Limit consumption of processed foods high in fat, starches, or sugars – including 'fast foods'; many pre-prepared dishes, snacks, bakery foods and desserts; and confectionery.

Limit red and processed meat

- If you eat red meat, limit consumption to no more than about three portions per week. Three portions are equivalent to about 350–500g (about 12–18oz) cooked weight. Consume very little, if any, processed meat.

Limit sugar sweetened drinks

- Do not consume sugar sweetened drinks.

Limit alcohol consumption

- For cancer prevention, it is best not to drink alcohol.

Do not use supplements for cancer prevention

- High-dose dietary supplements are not recommended for cancer prevention – aim to meet nutritional needs through diet alone.

For mothers: breastfeed your baby if you can

- The UK government in 2019 recommends infants to be exclusively breastfed for six months, and then for up to two years or beyond alongside appropriate complementary foods where possible⁶⁵. There are special situations where breastfeeding is recommended with caution or is not advised, such as for mothers with HIV/AIDS.

The evidence of cancer risk

Across the internet and media platforms there is a large amount of misleading or false information relating to risk factors and the causes of cancer. This hyperlink provides some quick tips on how to identify fake news⁶⁶: [Learning to Identify 'Fake News' Cornell University Library](#)

The following areas are often discussed in relation to cancer risks. The current evidence base relating to these factors is as follows. Note that the evidence base may evolve over time.

Microplastics: plastic bottles, containers, and cling film

Microplastics can be digested through use of plastic drink bottles, cling film and food containers. These items do contain carcinogenic chemicals such as bisphenol A. However, studies examining the risk through usage have highlighted that the amount of these compounds within foods are well within safe limits, and the process of food packaging is heavily regulated in the UK to avoid any risk. The study of these pollutants is at early stages and is of evolving concern but there is currently a lack of evidence and feasible links regarding their link to an increased link of cancer. Therefore, there is no reliable evidence to suggest that consumption of microplastics from plastic bottles or using cling film, or using plastics specifically made for cooking can cause or increase your risk of cancer^{67,68}.

Food additives and artificial sweeteners

Food additives refers to the ingredients added to enhance properties of foods such as enhancing colour, flavours, and shelf-life. All additives, including artificial sweeteners are regulated and must pass safety tests before use in the UK⁶⁹.

The only additives linked with an increased cancer risk are nitrates and nitrites used as preservatives in processed meat. Therefore, eating processed meat is strongly associated with increased cancer risk, specifically bowel cancer⁴⁰.

The World Health Organisation (WHO) in July 2023 released assessments of the health impacts of the non-sugar sweetener aspartame. The WHO cited limited evidence for carcinogenicity in humans, with the International Agency for Research on Cancer (IARC) classifying aspartame as possibly carcinogenic to humans⁷⁰.

Studies referring to artificial sweeteners such as saccharin and aspartame (commonly used in soft drink products) have produced no reliable evidence to assume an association with cancer^{71,72}. Earlier research linked with sweeteners have since been discredited.

Psychological stress

Psychological stress is defined as what a person encounters when under mental, physical, or emotional pressure. There is no strong evidence that psychological stress can increase your risk of cancer⁷³. However, it has been shown that individuals experiencing psychological stress are more likely to follow unhealthy behaviours associated with an increased risk in cancer such as smoking, drinking, or overeating⁷⁴⁻⁷⁶.

Cosmetics and toiletries

Studies have shown links between talcum powder and ovarian cancer; however, there is not enough evidence to confirm this⁷⁷. Other chemicals used in moisturisers, shampoos, deodorants, and toothpastes have been found to have no link to an increased risk of cancer⁷⁸. The UK has strict regulations to ensure all these products are safe⁷⁹.

Breast implants and underwired bras

No evidence has been found which proves the possibility that silicone leakage from breast implants, or the use of underwired bras can cause an increased risk of breast cancer^{80,81}.

Pesticides and hormones in cattle

Legislation regarding the use of pesticides and hormones in cattle are strictly regulated^{82,83}. Both organic and conventional foods must meet the same legal food safety requirements⁸⁴, specifically, the use of hormones used to increase milk or meat production are banned in the UK. Antibiotic growth-promoting feed additives have also been banned due to the potential spread of antibiotic resistance⁸³. Pesticide residues in the food chain are also strictly monitored to maintain safe limits. Use is restrained to legal limits ensuring consumption never exceeds safe levels⁸².

Burned or browned foods

Acrylamide is an organic compound present in many different types of food. Acrylamide is a natural by-product of the cooking process, formed when starchy foods, such as potatoes and bread are cooked at high temperatures (above 120°C) visible when food has been browned or burnt. Although it is advised that starches are cooked to a golden yellow, rather than a brown to reduce the formation of acrylamide and the risk of cancer, studies linking this compound to cancer have only been carried out in animals. Studies completed in people have shown no link between acrylamide and risk of cancer⁸⁵.

Tap water

Contaminated water has been shown to cause cancer. For example, arsenic has been shown to increase your risk of skin, lung, and bladder cancer⁸⁶. Additionally, hexavalent chromium exposure

has been shown to increase your risk of lung and nasal cancer⁸⁷. However, the Drinking Water Inspectorate regulates and monitors the levels of contamination within water⁸⁸. Therefore, contamination is not a public health concern in the UK. In some parts of the UK, fluoride is added to the water supply (through a process known as fortification), this is to support the prevention of tooth decay. The Office for Health Improvement and Disparities (OHID) monitors the effects of water fluoridation on health⁸⁹. There is no current evidence suggesting that water fluoridation increases your risk of cancer⁹⁰.

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