

Cancer in the UK 2020: Socio-economic deprivation

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Foreword

When we consider the UK's progress in improving cancer survival, there is much to be proud of – but we still have a long way to go. In the 1970s only 1 in 4 patients diagnosed with cancer would survive their disease for ten years or more. By 2010 this figure had risen to 2 in 4 and, thanks to research and the efforts of staff in the health service, survival continues to improve year-on-year.

Sadly, despite this improvement, there is still evidence of inequalities right across the cancer pathway. Tackling inequalities has been an ambition for the UK's health services[1,2,3,4] – but we haven't yet seen the level of progress we need. More than 30,000 extra cases of cancer in the UK each year are attributable to socio-economic variation and survival is worse for the most deprived groups.

Socio-economic deprivation is a major factor and for many, inequalities are getting worse rather than better. The evidence is clear: at every step of the pathway, the most deprived populations have higher risk, worse experiences and poorer outcomes than the least deprived. This is unacceptable.

The causes of these inequalities are complex and multi-faceted. But that isn't a reason not to act. We have enormous challenges to overcome, but huge gains to be made. If we don't level up, we will never succeed in our bold ambitions for improving cancer survival.

Facing challenges is a core tenet of Cancer Research UK's mission. We're committed to playing our part in reducing health inequalities, through investing in research and by working effectively with governments and our partners to drive improvements.

A critical aspect of our approach will be building the evidence base. We have good evidence of inequalities in cancer for many groups, but there is often insufficient data to tell us all we need to know, and sometimes this is to do with the size of some minority groups. However, we can't break down barriers to progress unless we have the evidence to show where they are.

The evidence we present here was collected before the COVID-19 pandemic hit the UK, but it is fair to say that the pandemic exposed the deep inequalities running through our society. COVID-19 has been shown to disproportionately affect people who are older, people with more comorbidities, people from ethnic minority groups and people who are more deprived.

As our cancer services, health services and society recover from COVID-19, we must not leave anyone behind. We must use it as a catalyst for change and build back better. This means understanding how the disruption to cancer services has impacted on inequalities.

Prior to COVID-19, the ambition of governments across all UK nations to tackle health inequalities, and particularly socio-economic variation, is well documented. NHS England published its intention in its Long Term Plan[5] to base funding allocations on more accurate assessment of health inequalities, requiring local systems to set out specific measurable goals and mechanisms for narrowing health inequalities. Referencing that 40% of health inequalities relate to socio-economic factors (education, employment, social support, community safety), Northern Ireland's Bengoa Report[6] on health and social care transformation highlights the challenge faced, as does Welsh Government's A More Equal Wales work[7].

Producing its cancer strategy refresh[8] earlier this year, Scottish Government outlined its commitment to take strong action to tackle inequalities in cancer outcomes, with a specific focus on people from the least well-off communities.

The imperative to mitigate any further inequalities exacerbated by COVID-19 is also shared by governments across the UK. NHS England's recent guidance[9] on COVID-19 restoration and recovery outlines a number of actions for local systems to take, in collaboration with local communities and partners, in order to catalyse progress in reducing health inequalities. These actions include protecting the most vulnerable from COVID-19, restoring NHS services inclusively, and developing digitally-enabled care pathways that increase inclusion. This is similarly reflected in NI's Rebuilding Health and Social Care Services[10], and the Scottish Government's COVID-19 Cancer Recovery Plan[11].

In our drive to improve the prevention, diagnosis and treatment of cancer, we must work collectively, with governments, health services, charities and other organisations and local communities, to see these plans deliver on tackling inequalities and address the wider determinants of health. This has been urgent for some time. Now it is critical.

Michelle Mitchell
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Inequalities

Health, access to care, and healthcare quality all vary between population groups, leaving some groups with significantly worse outcomes. This effect is strong, unjust and persistent, but also changeable, if underlying causes are addressed.

Life expectancy correlates strongly with social deprivation in the UK[12]. Worryingly, people in the most deprived groups are not only living much shorter lives, but are also spending more time in poor health than those from less deprived groups. This inequality is attributed to differences in the wider determinants of health: differences in money, power and resources between different groups.

This report focusses solely on socio-economic deprivation and cancer, which is just one part of the complex web of wider determinants and health inequalities. Lifespan, disability-free years and disease all vary with a range of other factors, including age, comorbidities, ethnicity, gender identity, geography, language, sex and sexual orientation. Inequalities affecting these groups are evident across the cancer pathway.

Exploring the full range of health determinants is beyond the scope of this report. However, socio-economic deprivation is uniquely connected to many other factors, and is arguably the most influential factor driving differences in incidence, screening and cancer outcomes in the UK. It is also a relatively well-researched aspect of cancer inequalities, which means that there is more evidence to weigh-up the potential impact of interventions. Throughout this report, illustrative examples are given from the four nations of the UK, however similar patterns generally exist across all UK countries.

To reduce inequalities, we must focus more attention on those who are at greater risk of developing cancer, and who are less likely to survive the disease.

Overview

Across the UK, the most deprived populations have worse experiences and outcomes than the least deprived.

Generally, populations with higher deprivation have higher prevalence of cancer risk factors[13], are less aware of symptoms of cancer and report more barriers to seeking help[14]. Their participation in screening programmes is lower[15,16,17] and they have higher proportions of cancer diagnosed through routes with worse survival[18]. People from more deprived populations report worse experiences of care and experience inequalities in treatment options[19]. They have worse outcomes.

It is estimated that across the UK, there are more than 30,000 extra cases of cancer attributable to socio-economic deprivation[20]. That's more than 80 extra new diagnoses per day that could be avoided if the rates of cancer in sites where it is higher for the most deprived were the same rates as for the least deprived.



The deprivation gap in incidence rates for the most deprived compared to the least deprived varies from 32% in Scotland[21], to 13% in Northern Ireland[22]. The largest differences between the most and least deprived populations are seen in smoking-related cancers, with lung and laryngeal cancer incidence around 3 times higher for the most deprived in England[20].

A similar inequality is seen for mortality. For example, in England, the mortality rate for all cancers combined is 53% higher in the most deprived compared to the least deprived[23].

More deprived patients also have worse survival. Of the most common cancers in England, all showed worse 5-year net survival for the most deprived of up to 7.5 percentage points lower for males and 8.6 percentage points lower for females[24]. In Wales, survival for the most deprived has also been shown to be up to 9 percentage points lower[25]. This is reflective of the many inequalities evident across the patient pathway.

There is clear variation between socio-economic groups in the determinants of both cancer incidence and outcomes in the UK. Urgent action is required to address this and reduce the disproportionate burden of cancer on those most deprived. We must not leave anyone behind.

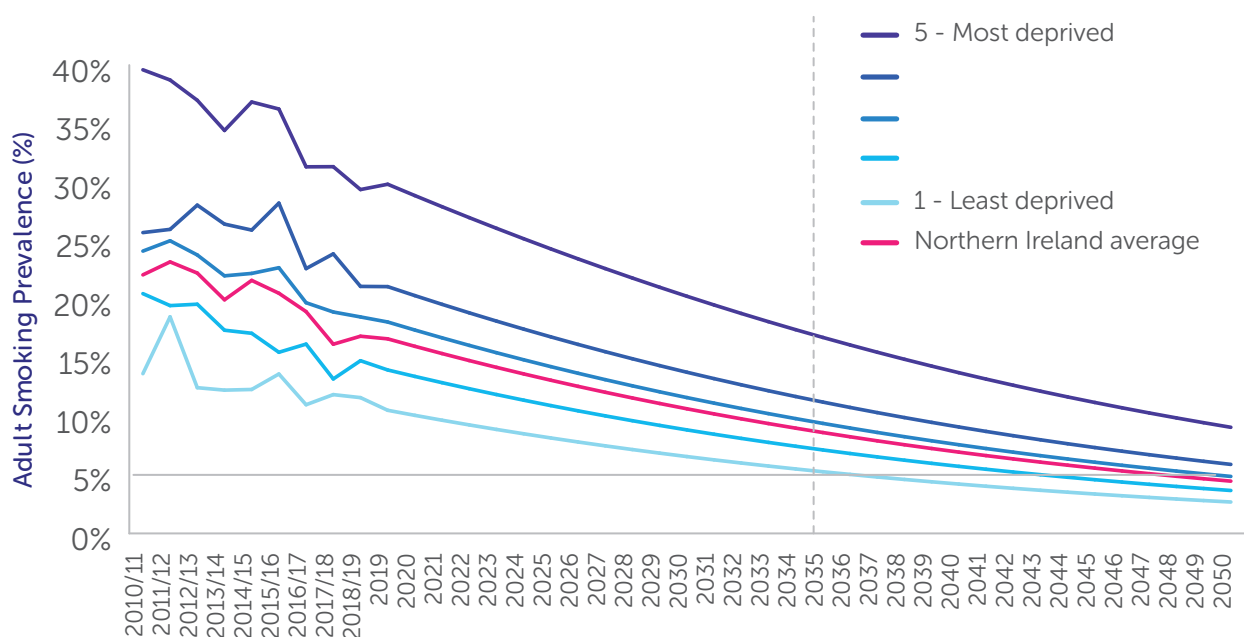
Smoking prevalence rates are far higher in the most deprived populations

Smoking is the biggest cause of cancer in the UK, responsible for 3 in 20 cases[26]. Smoking prevalence has been falling across the UK for decades, thanks mainly to improved awareness of the harms of smoking, and policies to discourage smoking, including increased taxation, advertising bans, and standardised packaging. But smoking rates in the most deprived populations are still much higher than in the least deprived.

Ambitions of achieving a 'smokefree' target of 5% average adult smoking prevalence have been set in some UK nations. Cancer Research UK would like to see these in all nations, but they will not be met without a specific and sustained effort to reduce smoking in more deprived populations.

In Northern Ireland, smoking prevalence for 2020 is estimated to be nearly 30% for the most deprived compared to 10% for the least deprived. Projections indicate smoking prevalence will only have reached 17% by 2035 for the most deprived. Unless bold action is taken, smoking prevalence for the most deprived may not even fall to 10% for another 25 years.

Rates of smoking by deprivation quintile for adults, Northern Ireland[27], projected to 2050



A similar picture is seen in other UK nations and these differences will manifest in higher rates of cancer among more deprived populations for many decades to come.

We need to strengthen action to reduce smoking now. Protected funding, ideally raised through a levy on the tobacco industry, is required to ensure comprehensive national, regional and local action can be delivered to reduce the impact of tobacco across the UK. A particular focus is required to increase smoking cessation and reduce smoking initiation for the more deprived areas.

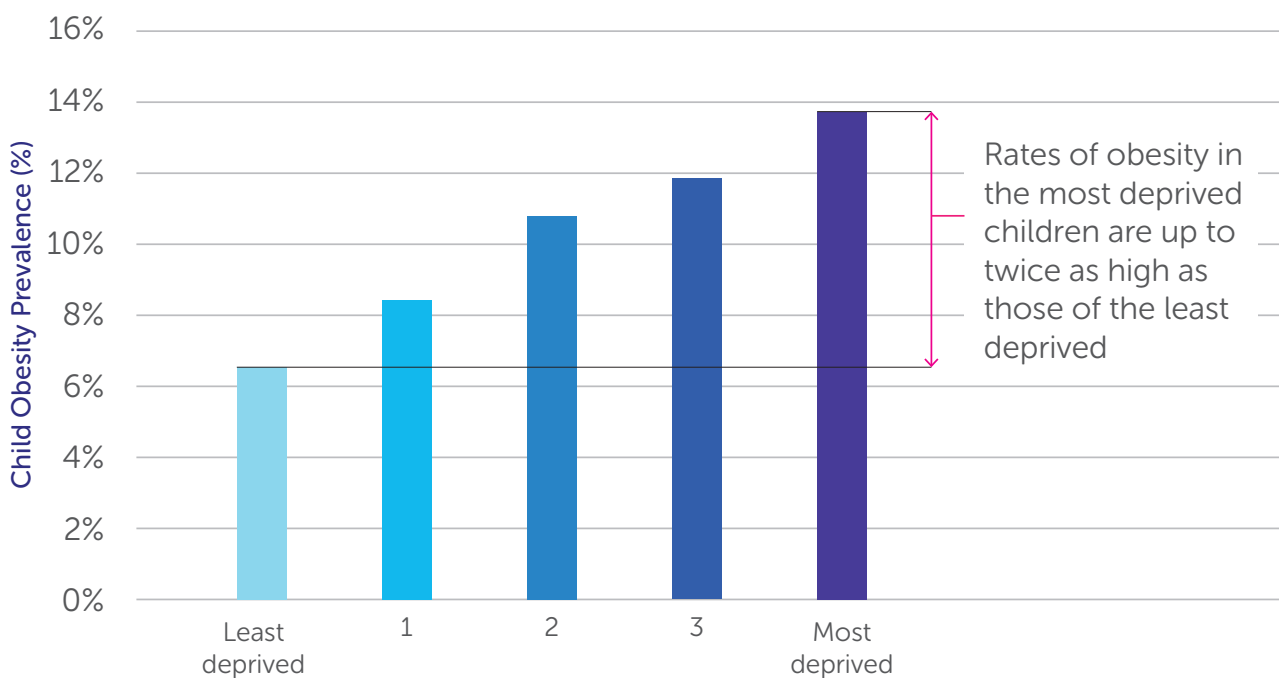
Children and adults from more deprived populations are more likely to be obese

Overweight and obesity is the second largest preventable risk factor for cancer after smoking, with around 23,000 cases of cancer in the UK each year caused by excess weight[26].

In England, adults from the most deprived populations are more likely to be obese than those from the least deprived populations[28]. Rates of obesity in children are up to twice as high for the most deprived compared to the least deprived[29,30,31,32] and furthermore, obese children are around five times more likely to be obese in adulthood than non-obese children[33].

In Scotland, obesity rates are twice as high among children living in the most deprived areas compared with those in the least deprived areas. Over the last 20 years, the proportion of children who are overweight or obese in Scotland has increased for the most deprived and decreased for the least deprived[31]. This could lead to a greater excess burden of cancer amongst the more deprived in future.

Percentage of children aged 4-6 (Primary 1) who are obese (epidemiological category), by deprivation quintile, Scotland, school year 2018/19



Reducing obesity levels requires a comprehensive approach that addresses the environmental causes, improves availability of healthy options, empowers people to make and maintain healthier habits, and provides evidence-based treatment to those who need it. We need the UK Government to fully implement the measures outlined in its obesity strategy, including restricting advertising and price promotion offers on unhealthy food and drink, and for devolved governments to do likewise.

Screening uptake is lower amongst more deprived populations

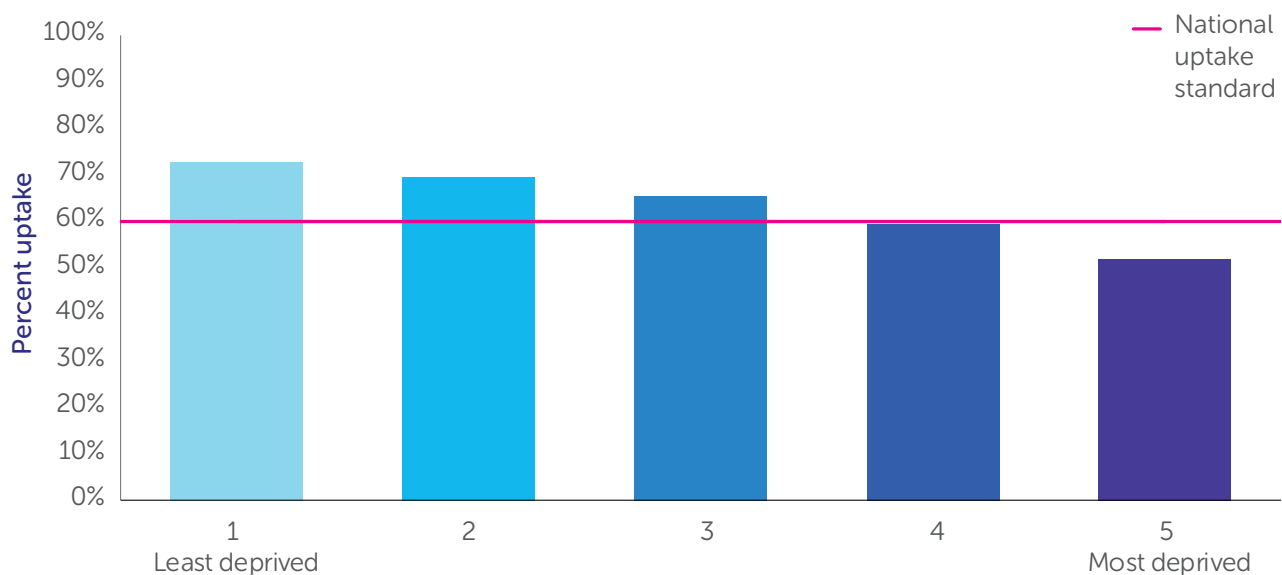
Around 5% of all cancer cases are diagnosed through the breast, bowel and cervical screening programmes in England and Northern Ireland[18,34]. Cancer screening programmes save thousands of lives each year in the UK. Screening can help prevent cancers developing as well as detect cancers at an early stage, when treatment is more likely to be successful. There is a large discrepancy, however, in participation in screening by socio-economic deprivation.

Bowel screening uptake varies hugely by socio-economic group in England[17], Wales[15], and Scotland [16]. For example, in Scotland, uptake is over 20 percentage points lower in the most deprived populations (52%) compared to the least deprived (73%)[16].

Similar inequalities are seen in the breast screening programme [35,36], and for cervical screening [36].

The introduction of the faecal immunochemical test (FIT) may help reduce the deprivation gap in bowel screening uptake[16,37,38] but there is still more work required to eradicate this inequality and to address variation for breast and cervical screening.

Uptake of bowel screening by deprivation, Scotland, Nov 2017-April 2019



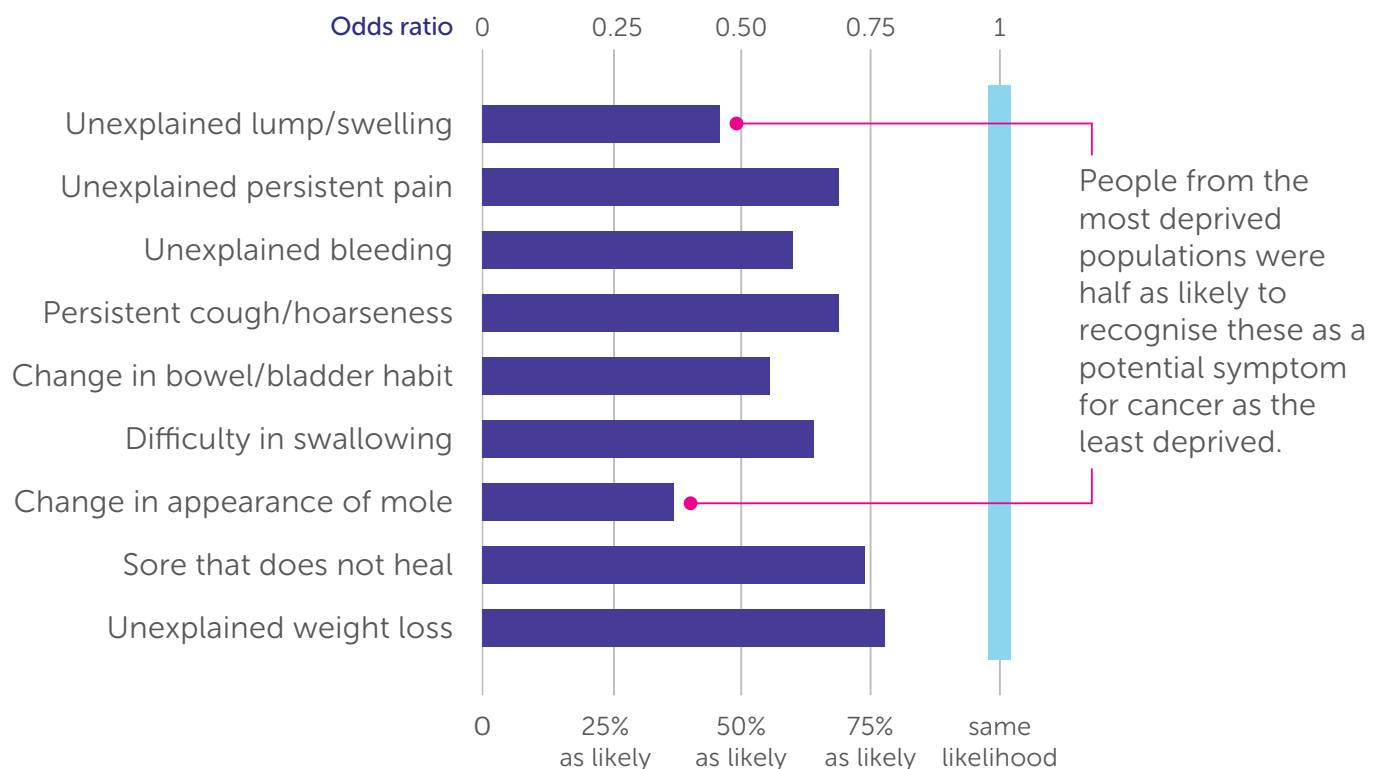
Barriers to taking part in screening programmes vary depending on each programme so we would welcome efforts to improve uptake, both at a local and national level. The provision of accurate information is key to reducing barriers to screening and needs to be accessible to all groups. Those from more deprived groups may benefit from easier-to-read information and community service-led activities to reduce barriers and support higher informed uptake.

More deprived groups have lower recognition of signs and symptoms

Diagnosing cancer at an earlier stage leads to better survival[39]. It is crucial to receiving potentially curative treatment options such as surgery to remove the tumour. Improving the public's recognition of symptoms of cancer is one of the many factors that could support earlier diagnosis. In England, there is an ambition to diagnose 75% of cancers at stage 1 or 2 by 2028[40]. Currently, around 55% of cancers are diagnosed at an early stage.

People from more deprived populations are less likely to recognise signs and symptoms of cancer than those in the least deprived[14]. For some signs and symptoms such as 'unexplained lump or swelling' or 'change in appearance of a mole', people from the most deprived populations were half as likely to recognise these as a potential symptom for cancer[14]. Cancer Research UK is currently surveying members of the public to understand their awareness of the signs/symptoms of cancer. We will be looking at variations by deprivation and how this changes over time.

Recognition of cancer symptoms, most deprived compared to least deprived, England, 2009-2011



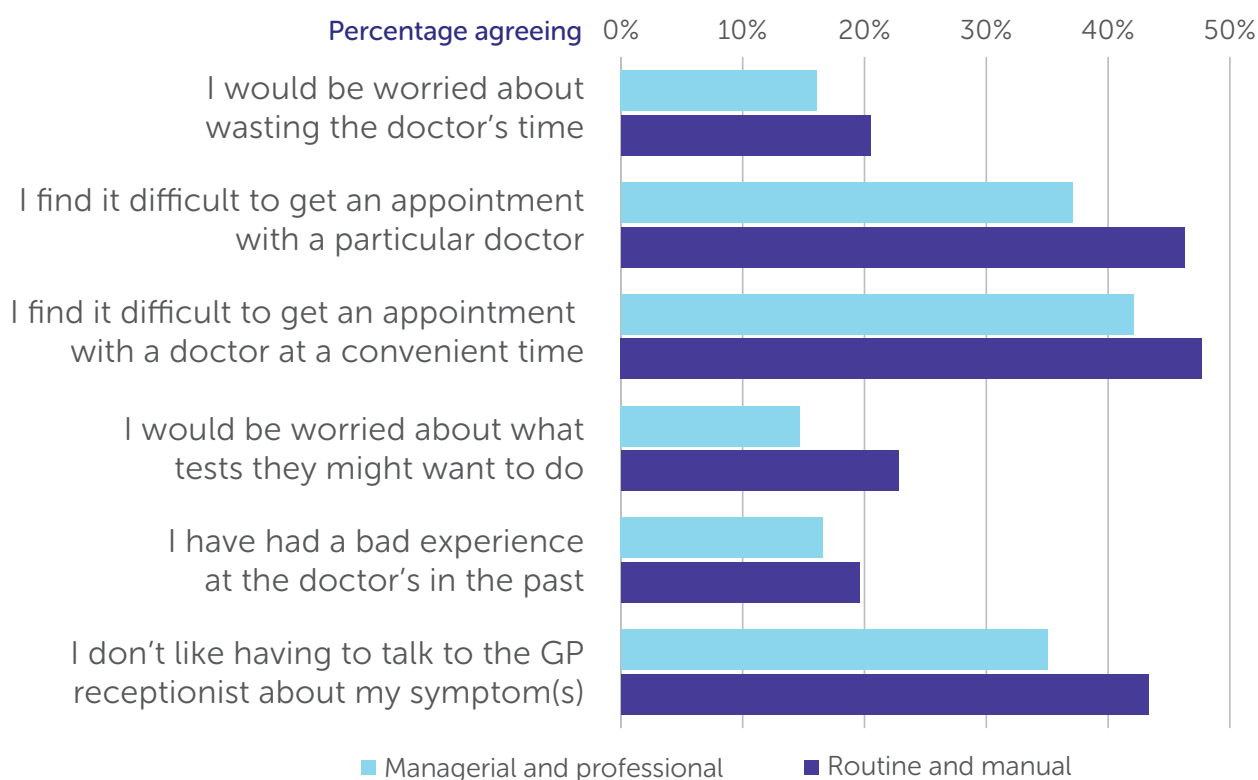
Targeted campaigns, activities and information to raise awareness of cancer signs and symptoms need to be accessible, engaging and relevant to those most in need. This requires evidence-based interventions which are designed for (and with) specific communities. We cannot rely on awareness alone to encourage people to seek help, we also need to tackle the main barriers, both emotional and practical.

People from more deprived areas report more barriers to seeking help

There are many reasons why people feel put off from seeking help. In Great Britain, people in 'routine and manual' occupations, who are more likely to be from more deprived populations, experience more barriers to seeking help[41] compared to those in 'managerial and professional' occupations.

On key metrics such as difficulty getting an appointment with a doctor, being worried about going for tests, or worried about wasting the doctor's time, routine and manual workers are more likely to report being put off going to the doctor than managerial and professional staff. Cancer Research UK is currently surveying members of the public to understand barriers and facilitators to help-seeking. We will be looking at variations by deprivation and how this changes over time.

Proportion citing barriers to help-seeking by occupation group, Great Britain, 2014



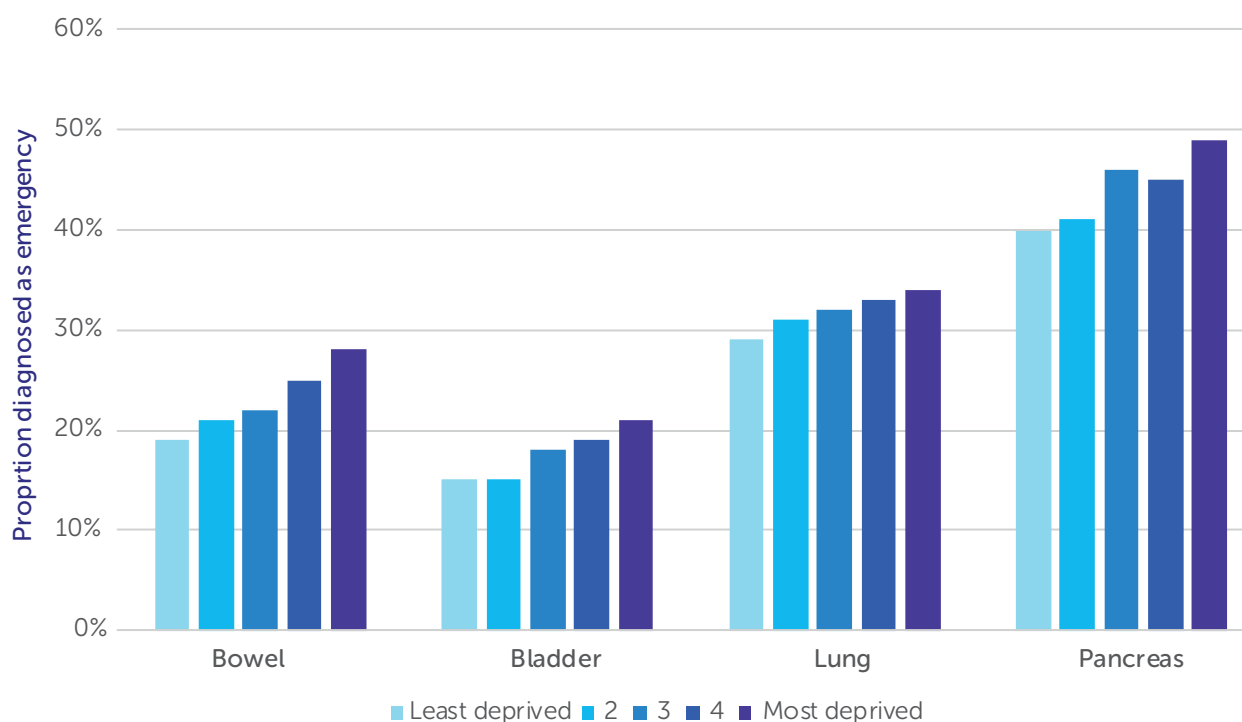
It is vital that everyone is able to get appropriate and timely access to health services across the UK and feels comfortable doing so. We must do more to improve access and reduce the emotional concerns people face. With innovation in health service delivery, it is vital that no person is left behind and that people can get the help they need, when they need it, in the way that suits them best.

More deprived populations are more likely to be diagnosed following an Emergency Presentation

Around 1 in 5 cancers in England and Northern Ireland are diagnosed through an Emergency Presentation, with later stage disease and worse survival than those diagnosed through other routes[18,34]. People diagnosed with cancer in this way also report worse patient experience and worse satisfaction with their care[42]. Whilst the overall proportion of cases diagnosed as an Emergency Presentation is decreasing, the proportion instigated by patient attendance at A&E has remained consistent and the gap between the least and most deprived populations remains [43].

The likelihood of presenting through an Emergency Presentation route is 50% higher for people in the most deprived populations compared to the least deprived[44] with the risk increasing with every deprivation quintile. It is estimated that there would be around 3,000 fewer Emergency Presentations of cancer in England each year if all deprivation groups had the same proportion presenting as an emergency as the least deprived[43].

Proportion of patients diagnosed as an Emergency by deprivation quintile, England, 2016



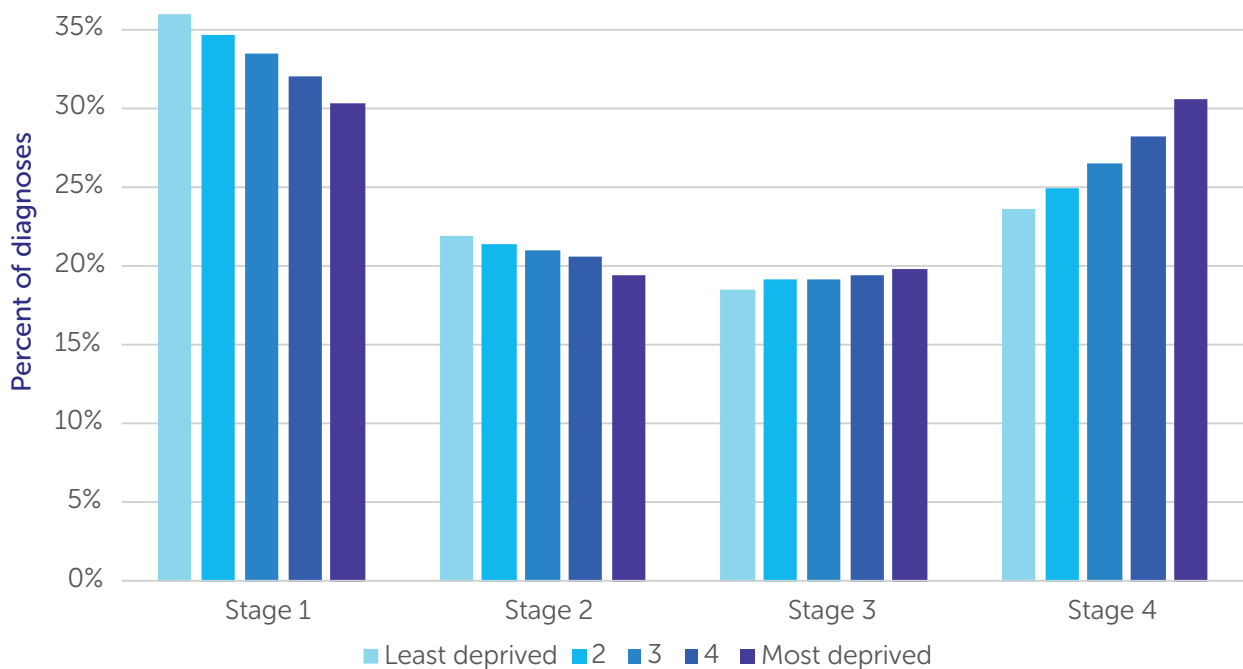
We need to do more to address cancers diagnosed via Emergency Presentation and the significant deprivation inequality that exists. Removing barriers to help-seeking at the earliest opportunity, supporting primary care to be alert to the possibility of cancer in their patients, and timely referral for tests and prompt access to specialist advice could help to ensure that fewer patients are diagnosed as an emergency.

More deprived populations are diagnosed at a later stage for some cancer sites

Patients diagnosed at an early stage have higher survival across all cancer sites[39], however for some cancer sites in England, people from more deprived populations are more likely to be diagnosed with advanced stage of disease[45]. This contributes to poorer survival for the more deprived.

Many factors will contribute to this inequality. For example, more deprived patients in the East of England were more likely to present at an advanced stage for breast, melanoma skin and prostate cancers after accounting for age, sex and screening status[45]. This reflects the many complex factors that can affect stage at diagnosis.

Proportion of patients diagnosed at each stage by deprivation quintile, England, 2014-2018



Achieving earlier diagnosis is a complex problem which requires a multifaceted solution. However, these differences by deprivation group show an unacceptable level of variation between groups in late stage diagnosis which leads to poorer outcomes. Removing barriers to screening and help-seeking, and ensuring sufficient staff and resources to conduct timely and appropriate diagnostic tests are key.

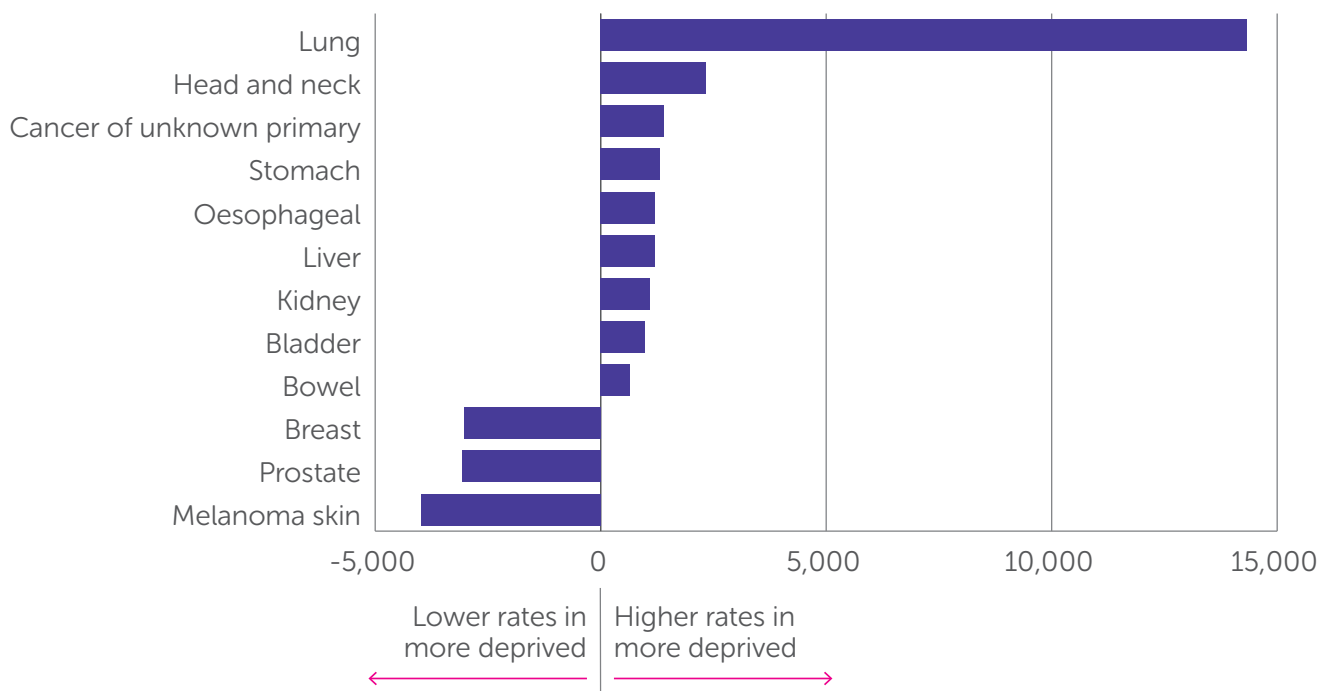
Cancer incidence is higher for more deprived populations

Cancer is more common in people in more deprived populations across the UK. It is estimated that there are more than 30,000 extra cancer cases each year in the UK attributable to deprivation in those cancer sites where incidence rates are higher in more deprived areas. In England, around 5.5% of all cancer cases diagnosed each year are attributable to deprivation, and incidence rates are 17% higher in the most versus least deprived areas[20]. Around the UK the size of the gap in cancer incidence between most and least deprived varies: 32% in Scotland[21], 20% in Wales[46], and 13% in Northern Ireland[22].

The majority of cancer sites have higher incidence in more deprived areas. Lung cancer has by far the largest number of excess cases attributable to deprivation, with over 14,000 excess cases each year in England alone[20]. Many of the cancer sites with higher incidence in more deprived areas have clear links with risk factors which are more common in more deprived groups, such as smoking and overweight and obesity.

For the few cancer sites where incidence is lower in more deprived areas, this is likely linked with inequalities in access to/uptake of screening and testing (female breast cancer[35], prostate cancer[47]), as well as other risk factors which are more common in less deprived groups [48,49].

Average annual extra cases due to deprivation gap, England, 2013-2017



Higher cancer incidence rates for the more deprived are reflective of the wider determinants of health. Inequalities in factors such as smoking and obesity are all linked to higher incidence rates. We must focus on reducing the risk of cancer with a particular focus on more deprived populations.

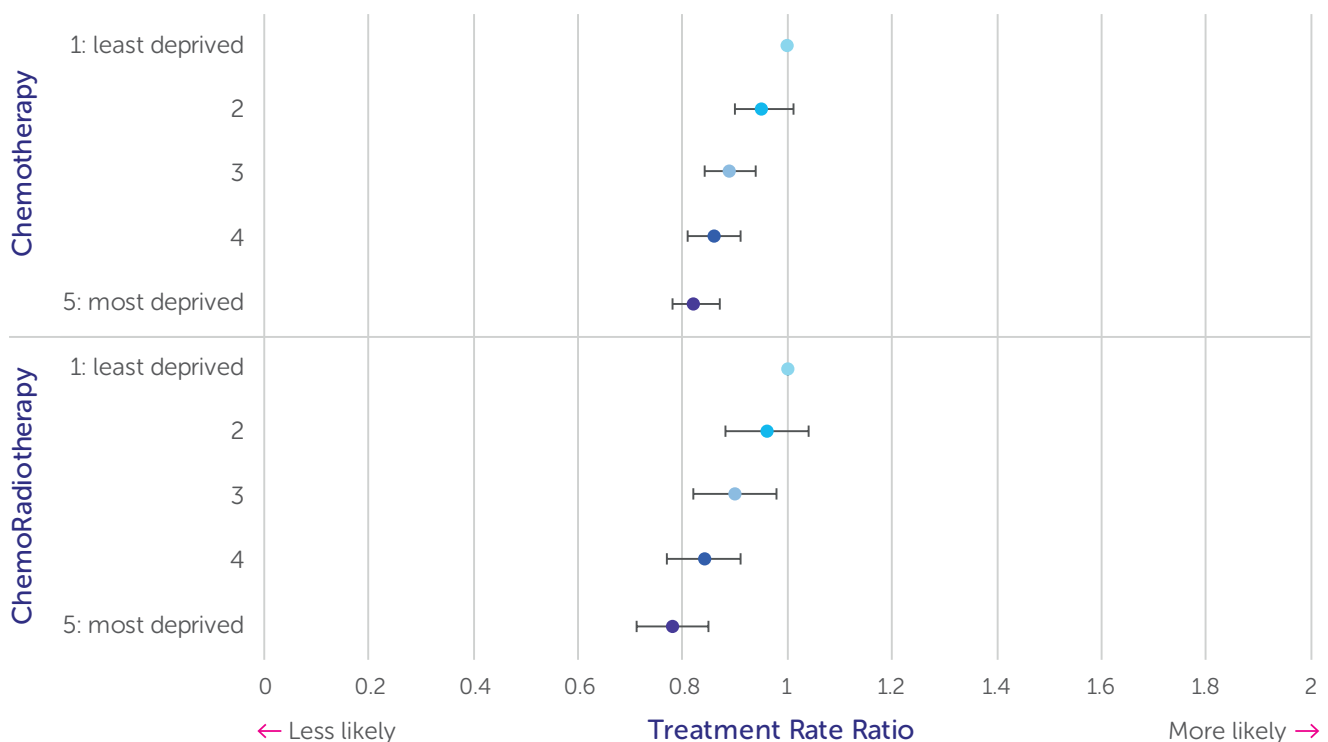
Patients from more deprived areas receive different treatment at the same stage of diagnosis

There are many reasons why treatments for cancer could differ between patients, including clinical factors and patient choice. There is evidence that cancer treatment may vary between more and less deprived people with similar patient and disease characteristics, and the reasons for this are not yet clear.

A study in England[19] showed that for lung, oesophageal, stomach and pancreatic cancers, the most deprived patients received different treatments for late stage disease compared to the least deprived, even after accounting for patient characteristics such as age, sex, ethnicity and comorbidities. More deprived patients were around 20% less likely to receive chemotherapy, or chemotherapy and radiotherapy combined, compared with the least deprived. Differences were more evident for oesophageal cancer than the other cancer types studied.

It is important to understand the causes of these differences in treatment, and the impact they may have on outcomes. Deprivation may be associated with other valid reasons for treatment differences, but it is vital we unpick this – deprivation in itself cannot be a driver of treatment variation.

Treatment rates ratios for stage 4 lung, oesophageal, stomach and pancreatic cancers combined, adjusted for patient characteristics, England, 2013-2014

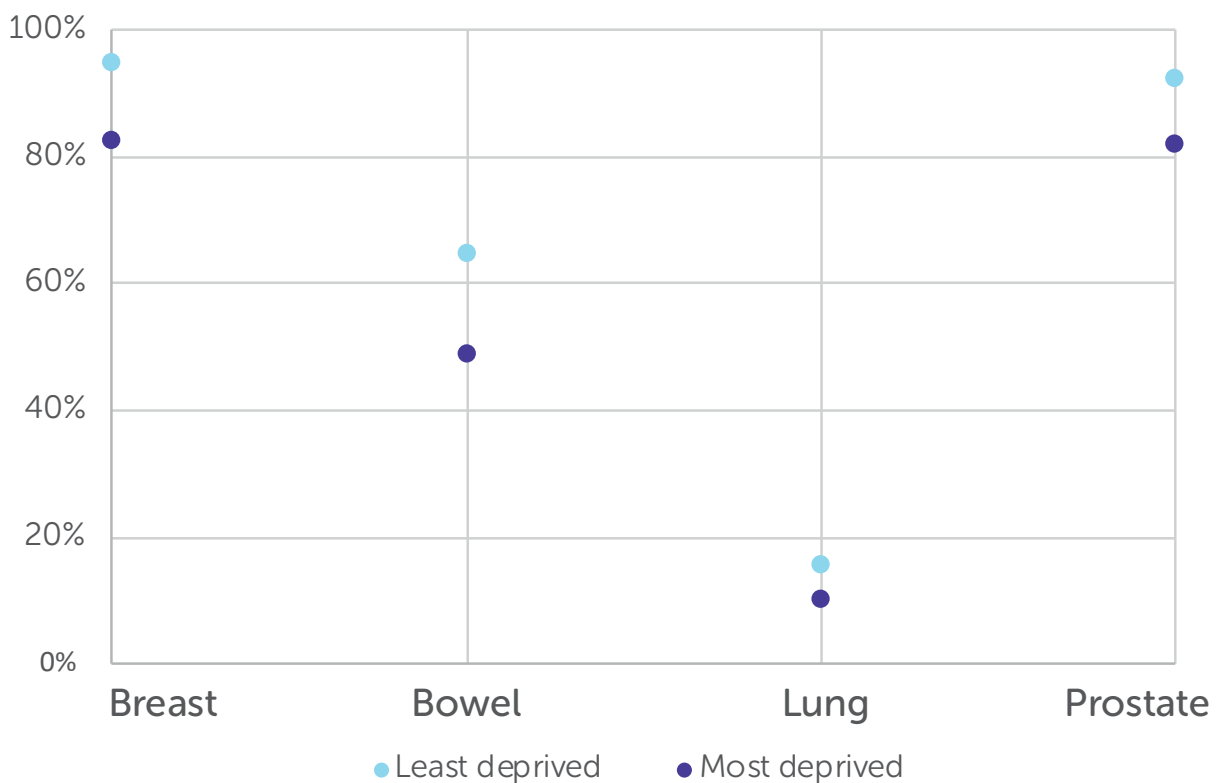


All patients should be offered the same treatment for the same stage disease, where it is appropriate for them to receive it. Treatment variation could be a factor in the differences that are seen in survival. Further work is needed to assess all factors which may be driving this variation in treatment between socio-economic groups.

People from more deprived populations have worse cancer survival

More deprived groups have worse cancer survival compared to the least deprived[23,25]. This is reflective of the many inequalities evident across the patient pathway. Data for England shows there has been very little progress in closing the deprivation gap[23] with most cancer sites showing overall improvements in survival, but the deprivation gap in survival remaining consistent. Survival by deprivation in Wales for the four largest cancer sites shows a consistent picture with regards inequalities, which has also shown no improvement. For bowel cancer, there is a deprivation gap in survival of almost 9 percentage points in Wales[25].

Five year cancer survival (net) by socio-economic deprivation, Wales, 2012-2016



CRUK are focussing on working with others to achieve our goal of 3 in 4 patients surviving their disease for at least 10 years by 2034 but we must work together to ensure no groups are left behind. There has been little progress in closing the deprivation gap in survival and this requires focus across the entire cancer pathway in order to make improvements.

Improving the state of the nation

All the issues highlighted in this report can be improved for all populations across the UK. There is much to be gained from diagnosing cancers earlier and ensuring consistent access to optimal treatments to improve survival. Inequalities by socio-economic group exist across the cancer patient pathway and sustained efforts are required to tackle these. We know that lower cancer incidence and mortality rates and higher cancer survival is being achieved across the UK in less deprived populations. We need everyone to reach the best level regardless of socio-economic group, indeed we won't have a world-class cancer service without doing so. In order to have the largest impact in reducing inequalities, we must ensure that we work collaboratively across charities, health organisations, communities and governments. Together we will beat cancer.

Data saves lives

Much of the evidence in this report uses data that has been provided by patients and collected by the health service as part of their care and support. The data is collated, maintained and quality assured by different organisations across the UK, including the four cancer registries.

By analysing and interpreting data from across the cancer pathway, we can identify where improvements could be made for patients. To do this we need access to complete, up-to-date information, including patient data.

The routine collection of data on diagnosis, treatment and outcomes for every patient is invaluable in tackling the disease and improving survival.

Whilst there is a wide range of evidence regarding socio-economic inequalities, there are many other patient characteristics where evidence of inequalities is not available as we do not have appropriate data collection. We need to improve the collection and accessibility of data for research purposes to truly understand the impact of cancer on different groups across the UK so that inequalities can be addressed.

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Cancer Research UK (CRUK) is the world's largest independent cancer charity dedicated to saving lives through research. It supports research into all aspects of cancer and this is achieved through the work of over 4,000 scientists, doctors and nurses. Over 40,000 volunteers and more than 9,000 patients enrolled in clinical trials. In 2019/20, we spent £468 million on research in institutes, hospitals and universities across the UK . We receive no funding from the Government for our research and are dependent on fundraising with the public. Cancer Research UK wants to accelerate progress so that 3 in 4 people survive their cancer for 10 years or more by 2034.

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