EXECUTIVE SUMMARY

We have made enormous progress on cancer in the UK and have much to be proud of. In the 1970s only 1 in 4 cancer patients 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 NHS, survival continues to improve year-on-year. But the job is far from finished: cancer remains the leading cause of death in the UK, our survival lags behind that of comparable countries, and both the number of patients being diagnosed with and dying from cancer continue to increase.

To address this, we must get better at preventing cancers, diagnosing them earlier and ensuring access to optimal treatment for everyone. This report summarises the current state of cancer in the UK. It shows where we are making progress and the challenges that we still face. Running throughout is the clear message that the NHS does not have enough staff with the right skills to deal with our growing and ageing population and with the increasing number of cancer cases that are an inevitable result. Addressing this has been urgent for some time. Now it is critical.

This report uses data provided by patients across the UK and collected by the NHS as part of their care and support. Not all data is available for all parts of the UK and there remain differences in quality and timeliness. Continued investment in high quality data to understand and improve cancer services remains vital, as does explaining to patients how and why their data is used.

April 2018

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Compiled by the Cancer Intelligence team, Cancer Research UK
Comments, questions or feedback to: stats.team@cancer.org.uk
THERE ARE MORE NEW CASES OF CANCER EVERY YEAR

Cancer is the leading cause of death in the UK, above heart disease and dementia\(^1\). Every day more than 980 people are diagnosed with cancer, and more than 440 people die from the disease\(^2\).

Incidences rates have increased by 12% since the early 1990s. Largely due to a growing and ageing population, the number of cancer cases is projected to rise by more than 40% to around 514,000 new cases per year in 2035, with a greater increase in men than women\(^3\).

This increase will place an unprecedented burden on an already stretched healthcare system.
CANCER SURVIVAL IN THE UK IS WORSE THAN OTHER COUNTRIES

Half of people diagnosed with cancer in England and Wales survive their disease for ten years or more[4]. Survival varies considerably between cancer types: 98% of people with testicular cancer survive their disease for ten years or more, whereas just 1% of people with pancreatic cancer do[5].

Despite improvements in recent years, cancer survival in the UK is lower than in comparable countries[6,7]. We don’t fully understand why this is the case, but differences in stage at diagnosis and access to optimal treatments are likely to be the most important factors. The International Cancer Benchmarking Partnership (ICBP) will provide more information on these differences and help understand the drivers behind them.

There is also variation across England: survival is generally lower in the north of England than in the south[8].

Reducing the number of cancer cases, preventing deaths and improving survival involves action across the whole pathway, from prevention through diagnosis to treatment.

Understanding the reasons why the UK’s survival is poorer than comparable countries will identify where we can make the biggest difference and bring closer the day we beat cancer.

*UK includes data from England, Northern Ireland and Wales
Source: Allemani et al (2018)
FOUR IN TEN CANCER CASES IN THE UK CAN BE PREVENTED

That’s more than 135,000 cases every year. Smoking and excess bodyweight are the two largest preventable causes of cancer in the UK, but enjoying the sun safely, cutting back on alcohol, eating more fibre and less processed meat, and being more physically active all stack the odds against cancer.

Making a change to reduce the risk of cancer

Be smoke free
Keep a healthy weight
Be safe in the sun
Avoid certain substances at work such as asbestos
Protect against certain infections such as HPV and H.Pylori
Drink less alcohol
Eat a high fibre diet
Avoid unnecessary radiation including radon gas and x-rays
Cut down on processed meat
Avoid air pollution
Be more active
Minimise HRT use
Breastfeed if possible

Larger circles indicate more UK cancer cases

Source: Brown et al, British Journal of Cancer, 2018

Tackling cancer through prevention requires individuals to make changes to their lives. But support from governments and health professionals is crucial to facilitate those changes.
SMOKING IS STILL THE LARGEST CAUSE OF CANCER

Smoking causes around 55,000 cases of cancer every year in the UK and is a risk factor for at least 15 cancer types. Smoking is at its lowest recorded point at around 16% of the UK adult population\textsuperscript{10}. But smoking rates don’t come down on their own. The reduction in the UK from almost 50% in the 1970s to today’s all-time low reflects the impact of numerous interventions. The latest, standardised (un-branded) packaging, was fully implemented in May 2017\textsuperscript{11}.

Stop Smoking Services give smokers the best chance of quitting. However, these services have been amongst the worst hit by public health funding cuts in England and the number of people accessing these services has fallen for the fifth year in a row\textsuperscript{12}.

Smoking rates decline with action

Adequate funding for Stop Smoking Services is essential to stem the tide of new cancer cases in the UK.

\textbf{PREVENTION OVERVIEW}

\textbf{LET’S BEAT CANCER SOONER}

cruk.org

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{chart.png}
\caption{SMOKING RATES DON’T COME DOWN ON THEIR OWN During the 1990s, there were periods when smoking rates stopped declining}
\end{figure}

\textbf{Source: Adult Smoking Habits in Great Britain. Opinions and Lifestyle Survey, ONS}
RISING OBESITY LEVELS COULD CAUSE AN EXTRA 670,000 CASES OF CANCER BY 2035

Being overweight or obese causes around 23,000 cases of cancer every year in the UK, and is a risk factor for 13 different cancer types⁹.

Overweight and obesity prevalence is currently at its highest recorded level across the UK nations.

There’s substantial evidence that the obesity problem starts early: obese children are much more likely to become obese adults. Today, nearly a third of children aged 2 to 15 in England are overweight or obese¹³, and the proportion of obese children in reception year has risen for the second consecutive year¹⁴. Some progress has been made with the soft drinks industry levy and restrictions on junk food advertising during children’s TV programmes. But these measures don’t go far enough.

**Being overweight or obese can cause 13 types of cancer**

We need robust strategies to tackle childhood obesity across the UK. These need to include restrictions to remove TV junk food marketing before the 9pm watershed and restrict multi-buy offers on unhealthy food and drink.
FINDING AND TREATING CANCER EARLY SAVES LIVES

Patients diagnosed at an early stage are more likely to survive cancer\(^{15}\).

Five-year survival by stage at diagnosis

This improved survival is in part because patients diagnosed at the earliest stage have different treatment options than those diagnosed later. Early stage cancers are more likely to be treated with surgery, offering a chance of a cure with fewer long term side effects, although sometimes chemotherapy might still be the best option for the patient\(^{16}\). Patients diagnosed at stage 4 are around three times as likely to have chemotherapy than those diagnosed at stage 1.

The challenge is reducing the number of cases diagnosed at a late stage.

Early diagnosis is a multifaceted problem that requires a multifaceted solution. Removing barriers to screening and ensuring sufficient staff and kit to conduct timely diagnostic tests are key.
TOO MANY PATIENTS ARE DIAGNOSED AS AN EMERGENCY PRESENTATION

One factor influencing the stage of cancer diagnosis is when a patient presents with symptoms. A fifth of all cancers in England are diagnosed via an emergency route, when the cancer has often progressed to a later stage\(^1\). The pattern is likely to be similar in the devolved nations. Not only does this impact their treatment options and potential survival, patients diagnosed via this route also report a worse experience of cancer care\(^2\).

How and when cancer patients are diagnosed

<table>
<thead>
<tr>
<th>% OF PATIENTS DIAGNOSED IN ENGLAND</th>
<th>STAGE WHEN DIAGNOSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Via national screening programmes</td>
<td>EARLIEST = 63%</td>
</tr>
<tr>
<td>By urgent GP two week wait referral for suspected cancer symptoms</td>
<td>LATEST = 2%</td>
</tr>
<tr>
<td>By routine GP referral</td>
<td>EARLIEST = 31%</td>
</tr>
<tr>
<td>In an emergency, via emergency GP transfer to hospital, as a hospital patient, or via A&amp;E</td>
<td>LATEST = 22%</td>
</tr>
<tr>
<td>Hospital in- or outpatient</td>
<td>EARLIEST = 38%</td>
</tr>
<tr>
<td>Unknown route</td>
<td>LATEST = 23%</td>
</tr>
<tr>
<td></td>
<td>LATEST = 12%</td>
</tr>
<tr>
<td></td>
<td>LATEST = 57%</td>
</tr>
<tr>
<td></td>
<td>LATEST = 35%</td>
</tr>
<tr>
<td></td>
<td>LATEST = 27%</td>
</tr>
</tbody>
</table>


Most cancers will be diagnosed following a visit to the GP. However, some patients see their GP multiple times before being referred for cancer tests. According to the Cancer Patient Experience survey in 2016, 15% said that they saw their GP three or four times, and 9% said that they saw their GP five or more times\(^3\).

Improving primary care and referral options is essential to ensure GPs are equipped to spot the signs and symptoms of cancer, and refer patients appropriately for tests and specialist consultation.
SCREENING UPTAKE COULD BE IMPROVED

There are three national screening programmes, for bowel, breast and cervical cancer, with some variation in how they are delivered across the UK nations. Around two in three cancers diagnosed through screening are at an early stage.

Across the UK, only around 60% of people invited to take part in bowel screening do so. Pilots run by Cancer Research UK have shown that campaigns such as TV advertising, endorsement letters and long term outdoor advertising, have increased uptake of bowel cancer screening\textsuperscript{20}. A new screening test called the faecal immunochemical test (FIT) is already in place in Scotland and roll out is planned in England and Wales. This test is predicted to improve uptake, but there will still be more to do to increase participation (subject to informed choice) and reduce inequalities in uptake.

FIT detects human blood in stool samples, giving a numerical result of micrograms of human haemoglobin per gram of faeces (µg/g). Scotland have rolled out the test with an initial threshold of 80µg/g. In England, it has been suggested that the programme will be implemented with a higher initial sensitivity threshold of 120µg/g\textsuperscript{21} due to concerns about colonoscopy capacity. A lower threshold is more sensitive and will detect more cases of cancer and pre-cancerous adenoma, but requires more colonoscopies and an increased demand for pathology.

There must be a clear and resourced plan to increase colonoscopy and pathology capacity so that FIT can be made more sensitive and bowel screening improved.

<table>
<thead>
<tr>
<th>FIT – 120µg/g</th>
<th>Cancers detected</th>
<th>Advanced adenomas</th>
<th>Colonoscopies required*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggested threshold in England</td>
<td>4,700</td>
<td>17,700</td>
<td>58,000</td>
</tr>
</tbody>
</table>

**But if England used the Scottish threshold:**

<table>
<thead>
<tr>
<th>FIT – 80µg/g</th>
<th>Cancers detected</th>
<th>Advanced adenomas</th>
<th>Colonoscopies required*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agreed threshold in Scotland</td>
<td>5,800</td>
<td>24,400</td>
<td>81,000</td>
</tr>
</tbody>
</table>

*Additional surveillance colonoscopies will also be required. Figures shown are estimates per year for years immediately following the introduction of FIT. Figures are based on data from the England FIT pilot (Moss et al, 2016) and assume 4.5 million screening invites per year.
UPTAKE OF CERVICAL SCREENING IS FALLING

A worrying trend in recent years has been the continued decline in coverage of cervical screening. This decline is greater among under 50s, particularly in young women aged 25-29. Although the human papilloma virus (HPV) vaccine introduced in 2008 offers some protection, screening is still vital to both prevent cervical cancer and diagnose it early, particularly in women who have not been vaccinated. Cervical screening can also be improved by using HPV testing as the first test. This change has been recommended by the UK National Screening Committee and should be introduced without delay.

National public health agencies should run evidence-based campaigns to increase participation and reduce inequalities in all screening programmes. Improvements to screening programmes must be brought in on time and with enough diagnostic capacity.
THE HEALTHCARE SYSTEM IS STRUGGLING TO KEEP UP WITH CURRENT DEMAND...

Across the UK, official cancer waiting times measure two or three time intervals: two-week, 31-days and 62-days. In England, the 62 day wait states that 85% of people with an urgent GP referral for suspected cancer should begin their first definitive treatment within two months. This target has been consistently missed since early 2014, and is currently around 82%. However, the number of patients being treated within waiting times targets has increased over this period, as there has been a rise in the number of people being diagnosed with cancer via this route. While Scotland, Wales and Northern Ireland all use different measures for their 62 and 31 day targets, performance trends have been very similar to those in England.

These targets act as a barometer for cancer services – addressing underpinning capacity shortages in diagnostic services are essential. Meeting these targets is also important for securing a better experience for patients during an anxious time.
…BECAUSE CANCER SERVICES ARE SHORT-STAFFED

According to recent analysis of the National Cancer Diagnosis Audit, GPs report that most patients (78%) in England don’t suffer avoidable delays in getting their cancer diagnosis. But where delays occur, one in three were due to waiting for tests and results.

When might avoidable delays happen in cancer diagnosis?

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waiting for tests &amp; results</td>
<td>33.7%</td>
</tr>
<tr>
<td>Waiting for a referral</td>
<td>19.7%</td>
</tr>
<tr>
<td>Being assessed</td>
<td>16.7%</td>
</tr>
<tr>
<td>Patient doesn’t seek help</td>
<td>15.5%</td>
</tr>
<tr>
<td>Waiting for an appointment</td>
<td>7.3%</td>
</tr>
<tr>
<td>Waiting for follow-up</td>
<td>7.1%</td>
</tr>
<tr>
<td>Unknown</td>
<td>3.6%</td>
</tr>
</tbody>
</table>

Source: National Cancer Diagnosis Audit, 2017

As cancer incidence increases and we drive for earlier diagnosis, more people are referred for tests every year and we need enough trained and employed staff to meet this demand. In December 2017, Health Education England published a long-awaited plan for how to tackle staffing issues in NHS cancer services. The report acknowledges that more staff are needed for cancer tests, including radiologists, radiographers, endoscopists, pathologists and biomedical scientists, and promises over 5,000 extra staff by 2021. This will go some way towards filling existing gaps in England, as long as it’s put into action by local cancer alliances. A ‘phase 2’ plan for longer term workforce planning is in development, and we must see action to increase the number of staff working in cancer.

There are also staff shortages in the rest of the UK and action must be taken to address these and improve workforce planning in the future.

More staff will be needed to meet future diagnostic demand.
TREATMENT REGIMENS VARY BY CANCER TYPE

Alongside early diagnosis, ensuring access to optimal treatment is essential for improving cancer outcomes. Surgery, radiotherapy and chemotherapy are the mainstays of cancer treatment. Between 2013 and 2014 in England, surgery to remove the tumour was the most commonly used primary treatment. However, treatment regimens vary widely between different cancer types. For example, surgery rates for early stage lung cancer are 53% compared to 98% for early stage rectal cancer.

The most common cancers are treated in different ways

Patients in England diagnosed early are more likely to have surgery than chemotherapy. The pattern for radiotherapy varies by cancer.

The proportion of patients receiving radiotherapy as a first line treatment varies greatly by cancer site. This reflects the fact that radiotherapy can be used in various ways depending on the location of the tumour and stage at diagnosis.

These data have the potential to help us understand whether patients are getting the most appropriate treatments for them, and to monitor the impact of changes in standards of care.
THERE IS GEOGRAPHIC VARIATION IN TREATMENT ACCESS

There is some evidence to suggest that not all patients are getting the best possible treatment for their cancer. The national cancer audits provide a wealth of information on the diagnosis, management and treatment of cancer patients. All show geographic variation in the provision of cancer treatment. For example:

- Too few lung cancer patients receive anticancer treatment, varying between organisations from 24% to 88% of patients against a 60% target\(^\text{26}\).
- Regional variation in oesophageal cancer patients managed with curative intent ranges from 30% to 54%\(^\text{27}\).
- Regional variation in bowel cancer patients undergoing major resection ranges from 58% to 66%\(^\text{28}\).
- Variation across specialist multidisciplinary teams (MDTs) in the proportion of men with locally advanced prostate cancer who do not receive radical treatment ranges from 34% to 84%\(^\text{29}\).

Some of this variability may represent differences in patient demographics and/or data completeness, but the data suggest there may be considerable variation in standards of care between organisations.

There is also variation in access to advanced forms of radiotherapy. Initially, intensity modulated radiation therapy (IMRT) was used to treat mainly head and neck cancer and prostate cancer, and an interim access target of 24% (of patients receiving radiotherapy to be given inverse-planned IMRT) was set in 2009. After significant Government investment, this has improved and 44% of patients treated with curative intent are now getting IMRT\(^\text{30}\). However, there is still more to be done, as the target is now 50%\(^\text{31}\), and there is significant variation ranging from 23% to 69% across CCGs in England\(^\text{30}\).

We need to better understand the causes of this variation in order to tackle it: data on treatments should be collected, analysed and published regularly.

Intensity modulated radiation therapy (IMRT): what are the benefits?

IMRT is a form of high precision radiotherapy that can deliver extremely controlled doses of radiation to malignant tumours.

The radiation beam is shaped and intensity varied to target the tumour and protect vital organs.

G AMTRY ROTATES AROUND THE PATIENT

SALIVARY GLAND PROTECTED

RADIATION BEAM

TUMOUR

We need to better understand the causes of this variation in order to tackle it: data on treatments should be collected, analysed and published regularly.
CAN THE WORKFORCE COPE WITH INCREASING TREATMENT DEMAND?

On top of the diagnosis challenge, the NHS is also facing staffing issues among those who treat cancer patients. While staff numbers in treatment teams are increasing, this doesn’t match the growing number of cancers being diagnosed each year. In a recent survey of healthcare staff, nearly three in four people (73%) said staffing shortages in treatment teams were affecting treatment and patient care.32

The recently published workforce plan from Health Education England promises 243 extra oncologists and 1,560 extra therapeutic radiographers by 2021. As with the boost to diagnostic staff, these extra people to treat patients will go some way to filling the gaps in England. We must now see similar commitment to train more treatment staff in the other UK nations to ensure that patients across the UK are able to receive the best treatments available, and robust planning to ensure we have the right capacity in the future.

More staff will be needed in the future to deal with increasing demand.
DATA SAVES LIVES

This work uses data provided by patients and collected by the NHS as part of their care and support.

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. As a condition of that access, we apply effective safeguards to maintain the confidentiality and anonymity of patient data, consistently, transparently and rigorously.

The routine collection of data on diagnosis, treatment and outcomes for every patient is invaluable in tackling the disease and improving survival. A new health data sharing opt-out will be implemented in England in 2018, alongside the General Data Protection Regulation (GDPR). Communication of these changes must be carefully managed to ensure that patients are better informed, are willing to give their data to help others, and access to cancer data continues.

IMPROVING THE STATE OF THE NATION

Preventing cancer by reducing exposure to risk factors, diagnosing cancers earlier through awareness, screening, primary care and diagnostic capacity, and improving survival by ensuring consistent access to optimal treatments, together, will help us to beat cancer sooner.
REFERENCES


2. Calculated by the Cancer Intelligence Team at Cancer Research UK: based on all cancers combined excluding non-malignant melanoma (ICD10 C00-C97 exc. C44) in the UK in 2015.

3. Smittenaar CR, Petersen KA, Stewart K et al. (2016) Cancer Incidence and Mortality Projections in the UK Until 2035. Brit J Cancer Oct 25;115(9):1147-1155. Proportion of total cancer cases by cancer site in 1993 (observed), 2014 (observed) and 2015 (projected), split by sex. The size of each doughnut is scaled to reflect the total number of cases. All cancers (C00-C97 excluding C44) not otherwise individually named, plus D32-33, D35.2-D35.4, D42-D43 and D44.3-D44.5 where brain is not individually named.


   All cancers combined for radiotherapy and chemotherapy; 22 cancer sites for surgery.


22. Calculated by the Cancer Intelligence Team at Cancer Research UK using data from Public Health Wales (25-64 years), ISD Scotland (20-60 years), NHS Digital (England, 25-64 years) and Health and Social Care Northern Ireland (25-64 years).

23. Calculated by the Cancer Intelligence Team at Cancer Research UK: the proportion of patients treated within 62 days of an urgent GP referral for suspected cancer in England, October 2009 – July 2017 alongside number of cases.


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. In 2016/17, we spent £432 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.