Delivering world-leading cancer services

Part one: An analysis of the funding context for cancer services in England

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Executive summary

The past fifteen years have seen important improvements in the quality of cancer services as well as the outcomes achieved. Cancer, as with all aspects of healthcare, enjoyed significant increases in funding between 2000 and 2010. Since then, however, growth in expenditure appears to have stalled. This report examines patterns in expenditure on cancer in England since 2009/10.

Funding alone is not a determinant of better outcomes. What matters is how the resources available are used to support cancer patients. Steps can be taken to increase the efficiency of services and the impact of expenditure, as well as to focus investment on those areas where improved outcomes will reduce costs elsewhere in the pathway. However, appropriate funding is an important enabler of high quality care.

Recent research commissioned by Cancer Research UK has shown that many staff working in NHS cancer services have become increasingly concerned about their ability to sustain high quality services with the resources they have available to them\(^1\). Services are having to undertake substantially more activity with increasingly constrained resources. More people are being diagnosed and they are living for longer, often with ongoing support needs. New treatments are helping patients live longer and better lives, but they are expensive. Waiting times – an effective barometer of NHS performance and the pressures being faced by services – indicate that there is little scope for achieving more by doing the same thing.

This report analyses recent trends in expenditure on cancer services at both a national level (Chapter 3) and at a local level (Chapter 4). The methodology used in analysing patterns in expenditure is set out in Chapter 2.

Cancer services will of course need to do their part to help the NHS meet the efficiency goals set out in the Five Year Forward View. During the last few years the NHS has succeeded in realising efficiencies in cancer care, as set out in Chapter 5. However, the scope for further ‘business as usual’ efficiencies appears limited. Instead, commissioners’ attention should shift to achieving the quality improvements – for example through earlier diagnosis, more effective treatment or better support for people after treatment – that can also avert significant costs.

Any consideration of future resource requirements should take into account the recent funding context for cancer, as well as projections for future demand. This report is intended to provide some helpful context to inform these discussions.
Key findings

• The public identifies expenditure on cancer services as a priority for NHS expenditure. When asked to prioritise health conditions for additional funding, more than half (56%) of the public identified cancer as a priority, compared to the next highest priority (dementia, which was identified by 45% of respondents)²

• Information on expenditure on cancer services is incomplete. Recent changes to the NHS have resulted in delays in publishing information on expenditure which impede scrutiny of spending on cancer services

• Expenditure on cancer services has fallen in real terms since 2009/10. Real terms expenditure was £227.1 million lower in 2012/13 than the peak in 2009/10 – a reduction of 3.8%

• Funding per capita has fallen by somewhat more, reducing by 5.7% since 2009/10. Had expenditure per capita being sustained at 2009/10 levels, then just under an additional £344 million would have been available across England in 2012/13. Between 2009/10 and 2012/13, a total of £1.28 billion in additional funding would have been available³

• Expenditure per newly diagnosed patient* has fallen by almost 10% in real terms, equivalent to over £2,000 per newly diagnosed patient. Had spending per newly diagnosed patient remained the same as in 2009/10 in real terms, then since that time just over an additional £1.49 billion would have been available to cancer services over this period. To put this in context, this additional funding could have paid for:

  - 10,442 extra Cancer Nurse Specialists a year⁴; or
  - 1.9 million MRI scans⁵, 7.2 million dexa x-rays scans⁶, 81,315 laparoscopic colorectal cancer surgeries⁷; or
  - All expenditure on chemotherapy for a year⁸

It is important to note that the £2000 figure does not represent expenditure per cancer patient, but rather expenditure per cancer patient diagnosed in the last year.

• There are significant and unexplained variations in expenditure on cancer between different commissioners, with over a threefold variation per capita and a sevenfold variation per newly diagnosed patient. It is unlikely that differences in health need or cancer incidence alone can explain this variation

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*Expenditure per newly diagnosed patient is calculated by dividing total cancer expenditure by the total number of cancer diagnoses in a given year. For more details, see Chapter 2.
• Cancer services have succeeded in realising some important efficiencies, including reducing emergency admissions, length of stay and the number of hospital bed days associated with cancer

• Problems with meeting cancer waiting time standards, although in part caused by the welcome increase in the number of people seeking help for cancer signs and symptoms, suggest that services cannot continue doing more with less resources

• The relationship between expenditure on cancer services and outcomes is a complex one, but those countries that spend more on cancer tend to achieve better outcomes

• England spends less on cancer services, both in absolute terms and as a proportion of overall health expenditure, than some other comparable countries

Recommendations

Future cancer funding

1. The new cancer strategy being developed by the Cancer Taskforce should include an assessment of the additional resources required to meet growing demand for cancer services over the next five years and to deliver on the aspirations for world-class outcomes

2. Given the political and public commitment that exists to further improving cancer outcomes, the Department of Health should include an explicit business case for further investment in cancer services in its submission to the post-election Spending Review, building on advice from the Cancer Taskforce. This business case should include an estimate of the financial costs and benefits of improving cancer outcomes

3. Further work should be undertaken to assess the cost implications of delivering a standard of service comparable with the best in the world at each stage of the patient pathway

4. Investments should be prioritised in those areas of the pathway with the potential to both improve outcomes and quality and avert further costs

5. NHS England (and Monitor) should develop financial incentives to encourage the adoption of evidence-based cancer interventions that have the potential to avert other health and social care costs or are proven to be cost-effective, rather than simply reward activity

Quality of information on expenditure

6. NHS England should publish updated information on expenditure by programme of care at both a national and a CCG level
7. A comprehensive review of cancer funding flows should be undertaken by NHS England, including how commissioner allocations are made and providers are rewarded for the quality of care they deliver.

8. A detailed analysis of variations in cancer expenditure – and the reasons for these variations – should be undertaken by NHS England.

9. In order to facilitate greater discussion and understanding of the relative cost impact of different interventions, NHS England should consider the case for publishing expenditure data at a more granular level for appropriate parts of the cancer pathway.

10. The International Cancer Benchmarking Partnership should consider commissioning a further module of work to better understand the nature, causes and impact of variations in expenditure on cancer services across comparable countries.
Chapter 1: Introduction

Increases in funding for cancer services are an important enabler of improvements in the quality of care and the outcomes achieved. Greater funding has enabled investment in early diagnosis programmes, better treatments and improved support for people living with and beyond cancer. Important gains in recent years would not have been possible without appropriate funding, including:

- Shorter – and more consistent – waiting times
- Increases in skilled healthcare professionals
- More modern equipment and treatment settings
- Enhanced efforts to diagnose patients earlier, including through expanding screening programmes and early diagnosis initiatives
- Reorganised clinical teams, offering greater access to multidisciplinary specialist expertise
- Greater access to the latest effective treatments
- Improvements to the experience report by patients of treatment and care
- Better coordination of services through enhanced local and national leadership

Successive cancer plans and strategies have committed to spending extra resources to improve services and outcomes\textsuperscript{9,10,11}. This prioritisation matches the level of public priority given to cancer. Research undertaken in late 2014 showed that, when asked to prioritise health conditions for additional funding, more than half (56\%) of the public identified cancer as a priority, compared to the next highest priority (dementia, which was identified by 45\% of respondents)\textsuperscript{2}.

Of course funding is an input, not an outcome. Money alone is not a determinant of better outcomes. What matters is how the resources available are used to support cancer patients. Steps can be taken to increase the efficiency of services and the impact of expenditure, as well as to focus investment on those areas where improved outcomes will reduce costs elsewhere in the pathway. However, realising further efficiencies is likely to require upfront investment, for example in earlier diagnosis.

Nonetheless, there are some significant cost drivers in cancer that will need to be met:

- More people are being diagnosed with cancer, with the latest estimates suggesting one in two people will be diagnosed with cancer during their lifetime\textsuperscript{12}
- Advances in treatment are improving outcomes, but come at a cost, even if they may be very cost-effective over the longer term
- The nature of cancer is changing, with many patients now living longer on active treatment
- More people are living with and beyond cancer, sometimes with significant support needs
Now is an appropriate time to assess the changes that have occurred in cancer services in recent years. The Cancer Taskforce is developing a new five-year strategy for cancer, which will need to carefully consider the funding requirements for services over this time period. In addition, there is a public debate underway about the future funding requirements for health services in England, stimulated by the publication of the *Five Year Forward View*, which sets out how a greater focus on prevention, earlier diagnosis and new models of care can realise significant benefits, but will require upfront investment. A spending review is scheduled to take place after the election that will set the financial context in which the NHS, including cancer services, must operate.

This short report analyses trends in expenditure on cancer services. It is intended to provide a helpful contribution to the consideration of future funding needs for cancer services. It is the first stage of a wider project that will consider the anticipated resource requirements of different aspects of cancer services in future years, if the goal of providing world class cancer services across is England is to be achieved. Further findings will be published in due course.
Chapter 2: Methodology

This report uses published NHS datasets to analyse trends in expenditure on cancer services. Tracking cancer spending in the NHS is not straightforward. Not all services are subject to Payment by Results, meaning that payment is not always linked to activity and, historically, not all activity has been captured in a consistent or comprehensive manner.

Expenditure

Although additional investments in cancer services have been made, there is a lack of clarity about how some expenditure has been used and whether indeed it has been devoted to cancer services as intended. In 2010 the National Audit Office found that “a lack of high quality information on costs of cancer services and their outcomes inhibits substantial further improvements.”14 A follow up review, published early in 2015, concluded that, “important gaps in cancer data remain, particularly in the availability of robust cost data.”15

In order to analyse trends in expenditure on cancer, this report utilises centrally published Programme Budget data. Programme Budget data, which has been collected since 2003-04, uses information provided by local NHS organisations to categorise expenditure into 23 broad areas of spending, one of which is cancer.

The Programme Budget category ‘cancer and tumours’ covers the expenditure on the following areas, which cover the majority of cancer services16:

• Outpatient attendances under cancer specialties such as clinical and medical oncology
• Paediatric medical oncology and specialist multi-disciplinary team appointments
• Hospital admissions with a primary diagnosis of cancer, including all surgical procedures carried out
• Radiotherapy
• Chemotherapy
• Specialist services for critical care and palliative care, rehabilitation and community services
• Prescription costs of cancer drugs in primary care

The National Audit Office has identified that Programme Budget Data does not capture all elements of cancer spending, particularly those associated with the phase before a person has received a diagnosis of cancer (and can therefore be coded as a ‘cancer patient’). Costs associated with the following areas of activity are therefore likely to be understated in Programme Budget Data:

• Cancer-related GP consultations
• Most outpatient referrals for cancer diagnosis including diagnostic and pathology testing
• Cancer-related accident and emergency attendances
The National Audit Office estimated that, when the above costs are taken into account, expenditure on cancer totalled £6.3 billion in 2008/9 instead of the estimate of £5.1 billion provided by the Department of Health. The National Audit Office’s estimate for 2012/13 – the latest available – is £6.7 billion, as opposed to the £5.7 billion recorded in Programme Budget Data.

Unfortunately National Audit Office estimates for other years do not exist. Therefore, in order to ensure comparability, the analyses presented in this report are based on the information collected through Programme Budget Data.

Changes in costs

Costs are not static and this report seeks to adjust for the impact of inflation. There is some evidence that costs to health services have increased at a faster pace than costs in economy as a whole. However, given that expenditure on health must be funded from other sectors of the economy, real terms costs have been adjusted to reflect prices in 2012/13. This has been achieved using the Gross Domestic Product (GDP) deflator from HM Treasury, allowing like for like comparison. Where figures have been adjusted to 2012/13 prices, these are clearly marked as real terms prices. Where figures are cited as ‘nominal’ expenditure, they are unchanged from the information reported in Programme Budget data from NHS England.

Changes in demand

When assessing the funding available for cancer, it is also important to consider changes in demand or need for cancer care. There are a number of potential ways of estimating demand, including the number of people living with or beyond cancer or the number of hospital attendances associated with cancer. In order to adjust for changes in demand, this report examines expenditure per capita and per newly diagnosed cancer patient. The latter is considered to be a useful proxy for changes in demand because:

- The majority of patients will receive treatment (and therefore incur cost for the NHS) in the year of their diagnosis
- Changes in the number of people diagnosed with cancer also impact on the number of people living with or beyond cancer
- Information on incidence is available on an annual basis
- Information on incidence is available at a commissioner level
- Incidence is considered to be a more useful indicator of demand on NHS services than prevalence, which includes people who have been alive for decades after a cancer diagnosis and who are no longer receiving cancer treatment

In order to calculate an estimate of expenditure per head, population figures have been extrapolated from Programme Budgeting data published by NHS England.
An estimate of expenditure per newly diagnosed case of cancer has then been calculated using cancer incidence data published by the Office of National Statistics (for all cancers excluding non-melanoma skin cancer). As incidence data are published on a calendar year basis and expenditure data are available on a financial year, information on incidence has been assigned to the year to which the majority of it applies (so, for example, 2009 incidence data have been applied to the 2009/10 financial year).

Therefore, this figure does not represent expenditure per cancer patient, but rather expenditure per cancer patient diagnosed in the last year.

Local variation

To assess differences in reported expenditure on cancer services at a local level, commissioner-level Programme Budget Data have been used, which show spending by clinical commissioning groups (CCGs) on cancer in 2013/14.

To assess differences in expenditure per newly diagnosed cancer patient on a local level, commissioner level cancer incidence data published by the Office of National Statistics have been used (for all cancers excluding non-melanoma skin cancer). Commissioner level ONS incidence data are only available for 2009, so figures from this year have been analysed against Primary Care Trust (PCT) Programme Budget spending data from the same year.
Chapter 3: Changes in expenditure in England

Using Programme Budgeting Data it is possible to assess changes to funding for cancer services in England in nominal and real terms, as well as adjusted for health need. This chapter examines trends in expenditure in recent years. As of 21 June 2015, while CCG level programme budget data had been made available for 2013/14, NHS England had not published national level expenditure data on cancer for the same year. Given the significant proportion of cancer expenditure which is incurred at national level through specialised commissioning, it is not possible to assess changes in overall expenditure for 2013/14. Full data tables are available in Annex 1.

Funding in nominal and real terms

The latest year for which Programme Budget Data are available is 2012/13, when just over £5.68 billion was recorded as being spent on cancer services. Although expenditure in nominal terms was slightly higher in 2012/13 than 2009/10, expenditure has fallen in real terms\(^{21}\). Patterns of expenditure are not consistent. However, real terms expenditure was £227.1 million lower in 2012/13 than the peak in 2009/10 – a reduction of 3.8% - as set out in figure 1.

Figure 1: changes in expenditure on cancer in England (nominal and real terms)

Had expenditure been flat in real terms between 2009/10 and 2012/13, there would have been an additional £1.04 billion spent on cancer services in England.
Funding per capita

The latest programme budget data shows that £107.21 was spent on cancer per head of population in England in 2012/13. This is a reduction in real terms of £6.58, or 5.7% per capita, from 2009/10, as set out in figure 22.

Figure 2: changes in expenditure on cancer per capita

The population of England has grown in recent years. Had expenditure per capita been sustained at 2009/10 levels, then just under an additional £344 million would have been available across England in 2012/13. Between 2009/10 and 2012/13, a total of £1.28 billion in additional funding would have been available.

Funding per newly diagnosed patient

In 2012/13 the average expenditure per newly diagnosed case of cancer in England was just over £20,200. This is a reduction in both nominal and real terms since 2009/10, as set out in figure 3.
As shown in figure 3, cancer incidence has steadily increased. Therefore, in real terms, spending per newly diagnosed cancer patient has fallen by almost 10%, equivalent to over £2,000 per newly diagnosed patient. Had spending per newly diagnosed patient remained the same as in 2009/10 in real terms, then since that time just over an additional £1.49 billion would have been available to cancer services.

To put this in context, this additional funding could have paid for:

• 10,442 extra Cancer Nurse Specialists a year⁴; or
• 1.9 million MRI scans⁵, 7.2 million dexam x-rays scans⁶, 81,315 laparoscopic colorectal cancer surgeries⁷; or
• All expenditure on chemotherapy for a year²³

With the number of people diagnosed with cancer in England projected to increase still further to 300,000 per year by 2020 and many more people living with and beyond cancer²⁴, it will be important that funding levels increase simply to keep pace with the growing need. It is now estimated that one in two people will be diagnosed with cancer during their lifetime²⁵.

Funding per cancer death

Although cancer incidence has increased, mortality from cancer has remained more static. An analysis of funding per cancer death therefore shows a smaller reduction of 6.7%, equivalent to £3,120 per death, over the period.

Comparisons with expenditure on other conditions

Trends in spending on different programme areas have varied significantly. This could be explained by a number of factors, including:
The availability of high cost new treatments for a condition may result in significant increases in expenditure.

Changes to the cost of existing treatments due to loss of marketing exclusivity may result in slower growth in expenditure for some conditions.

Changes in health need may result in expenditure on a programme area going up or down.

Better recording of activity may result in expenditure for a condition increasing.

Overall, expenditure on the cancer and tumours category has increased at a slightly lower rate than Programme Budget expenditure as a whole in nominal terms, as set out in figure 4. While spending on the cancer and tumours category has fallen in real terms, this is not the case in some other areas. Given the number of areas in which real terms spending has fallen (figure 5), it is surprising that NHS England has only set a target for a real terms spending increase for mental health services, on which spending rose by 0.5% in real terms between 2009/10 and 2012/13.

Figure 4: change in nominal expenditure by programme budget category 2009/10 – 2012/13

Wider financial impact of cancer

In considering funding for cancer, it is also necessary to take into account the wider costs associated with the condition. Although the NHS costs associated with cancer are significant, the wider economic burden on society is far greater. It has been estimated healthcare costs account for just over a third (35%) of the overall cost of cancer\textsuperscript{27}. It is likely that the wider economic impact of cancer could be reduced through improved outcomes\textsuperscript{28}.
Chapter 4: Local variations in expenditure

This chapter looks at variations in reported expenditure on cancer at a local commissioner level. Programme Budget data are available at a commissioner level based on CCG geographies and the old PCT boundaries. Given the different geographies concerned, these data are not directly comparable.

Variation in expenditure

Significant and unexplained variations occur in expenditure reported at commissioner level, with over a threefold variation per capita (figure 6 and 7) and a sixfold variation per newly diagnosed patient (figure 8 and 9), although it is important to note that much of this variation is driven by a small number of PCTs at either end of the spectrum. When outliers (those in the first or tenth decile) are excluded, the variation is reduced to just under twofold. The figures below show the variation in expenditure and the geographical distribution of this variation. It is implausible that this variation can be explained by differences in health need alone.

It is notable that the extent of variation is significantly greater per newly diagnosed patient than it is per capita, suggesting that expenditure on cancer services may not be well aligned with need.

Figure 6: expenditure per 100,000 on cancer 2013/14 by commissioner

Source: NHS England, 2013/14 CCG programme budgeting benchmarking tool,
Figure 7: expenditure per 100,000 on cancer 2013/14 by commissioner

Source: map developed from NHS England, Programme Budgeting Aggregate PCT Expenditure, 2012/13

Figure 8: expenditure per newly diagnosed patient on cancer 2009/10 by commissioner

Change in expenditure

The extent of variation in per capita expenditure has remained relatively constant, although there have been significant changes – both upwards and downwards – in the level of variation reported by individual commissioners. The level of variation observed in some commissioners suggests that further work is required to improve the quality and consistency of data on local cancer expenditure.

Figures 10 and 11 below show the extent of change in expenditure by commissioner on a per capita basis.
Figure 10: percentage change in expenditure on cancer per 100,000 from 2009/10 – 2012/13 by commissioner


Figure 11: percentage change in expenditure on cancer per 100,000 from 2009/10 – 2012/13 by commissioner

Key:
-54% - -13%
-12% - -5%
-4% - 4%
3% - 13%
14% - 108%
No data

Chapter 5: Efficiencies and performance in cancer care

Given the financial pressures on health services and the wider public sector, it is of course important that cancer services takes steps to realise efficiencies. Although there is always more scope for efficiency savings, this chapter suggests that significant progress has already been made in this respect and that the scope for further savings from cancer services may be limited.

Hospital utilisation

As set out elsewhere in this report, the health burden of cancer has continued to grow. Planned hospital admissions for cancer patients have increased year on year since 2007. In 2012/13, 16% more people with cancer were admitted to hospital than in 2007, as set out in figure 12.

However, in the same time period, emergency admissions for patients already diagnosed with cancer reduced by 9%, as set out in figure 13, which is a significant achievement given increasing cancer incidence and prevalence. This suggests that health services may have become more effective at supporting patients in community settings, perhaps reflecting the emphasis placed on improving services for people living with and beyond cancer in the Cancer Reform Strategy. There are still over 140,000 emergency admissions for cancer each year, amounting to 7% of all admissions for cancer.

Figure 12: number of hospital admissions for cancer 2007 – 2013

![Hospital Admissions Chart]

Source: Hospital Episode Statistics 2007 – 2013
Figure 13: number of emergency admissions for cancer

The average length of stay in hospital for cancer patients has reduced by 11% since 2007. In 2012/13, a cancer patient stayed in hospital for an average of 6.6 days compared to 7.4 days in 2007.

Figure 14: mean length of stay in hospital for cancer patients

Source: Hospital Episode Statistics 2007 – 2013
Reductions in length of stay have also resulted in the number of bed days associated with cancer reducing by 15% between 2007 and 2013. It is estimated that this reduction has released savings of approximately £116 million per year\textsuperscript{29}.

**Figure 15: number of bed days for people with cancer**

![Figure 15: number of bed days for people with cancer](image)

Source: Hospital Episode Statistics 2007 – 2013

It is thought that the shorter recovery times associated with minimally invasive treatments such as laparoscopic surgery, together with focused efforts to help patients recover more quickly, are the major explanation for these reductions. For example, projections have suggested that the enhanced recovery programme\textsuperscript{30} will save the NHS between £35 and £52 million across four specialities\textsuperscript{31} and the redesign of cancer pathways for those living with and beyond cancer will save £90 million over five years\textsuperscript{32}.

**Performance**

Shorter waiting times – which reduce anxiety for people having investigations for suspected cancer and minimise the chance of a cancer spreading whilst a person is waiting for treatment – have been a significant feature of improvements in cancer services over the past 15 years. There are a series of key standards on cancer waiting times, including\textsuperscript{33}:

- A maximum two-week wait to see a specialist for all patients referred with suspected cancer symptoms
- A maximum one month (31-day) wait from the date a decision to treat (DTT) is made to the first and subsequent definitive treatments for all cancers
- A maximum two month (62-day) wait from urgent referral for suspected cancer to the first definitive treatment for all cancers
Performance against these standards is set out in figures 16, 17 and 18.

Figure 16: percentage of cancer patients seen by a specialist within 14 days of referral against the standard

![Graph showing percentage of patients seen within 14 days](source: NHS England, Cancer waiting times, 2011 – 2015)

Figure 17: percentage of patients receiving first treatment for cancer within 31 days against the standard

![Graph showing percentage of patients receiving treatment within 31 days](source: NHS England, Cancer waiting times, 2011 – 2015)
Over the past year, the key 62 day standard has not been met – the first time the NHS has breached the 62 days cancer waiting time standard since its introduction. This dip in performance has continued. The most recent data published in February 2015 showed that just 83% of patients received cancer treatment within 62 days of urgent GP referral, meaning that the standard not been met for a full year.

There are some explanations for the breach in these standards. Thanks to an increased focus on earlier diagnosis and higher levels of awareness of cancer signs and symptoms, there are many more thousands of people are being investigated for suspected cancer. Research shows that the annual number of urgent GP referrals has risen by around 500,000 in recent years to 1.4 million, representing a 50% increase from 2009/10. However, irrespective of the explanation for the breaches, the fact that they are occurring on a sustained basis after many years of the standards being met suggests that services are unlikely to be able to cope with further demand without additional investment and resources.

Focus for future savings

Notwithstanding the importance of additional investment in cancer services, there must of course be a continued focus on realising savings. Below three key areas have been identified where improvements in quality could also realise savings in cost:

Early diagnosis. Research undertaken by Incisive Health has demonstrated that late diagnosis is a major driver of NHS cancer treatment costs. For example, treatment for stage 3 and 4 colon, rectal, lung and ovarian cancer costs the NHS nearly two and a half times the amount spent on stage 1 and
It is estimated that, if every area of England was able to achieve the stage of diagnosis of the best, then treatment costs of just under £210 million could be averted, resulting in over 52,000 additional people being diagnosed with earlier stage cancer. Realising these savings will require upfront investment.

**More focused treatment.** Treatments such as minimally invasive surgery, targeted radiotherapy or cancer drugs with reduced side effects can help minimise stays in hospital, reducing recovery times for patients and unlocking resources for the NHS. Commissioners should consider the scope for additional savings through the more rapid adoption of these techniques.

**Better support for people living with cancer.** A cancer diagnosis and treatment can increase a person’s risk of developing further health complications. However, patients can often be supported to manage these risks, improving their health and quality of life and reducing longer-term demand for NHS services.
Chapter 6: International comparisons in expenditure

In considering how England might improve its cancer outcomes, there is a clear interest in assessing how other countries tackle cancer, not least to be able to determine the types of services where they appear to be achieving better outcomes. Work by the International Cancer Benchmarking Partnership has identified that there appear to be two key causes of poorer outcomes in England:

- Later diagnosis of cancer, with more people being diagnosed with cancer that has already spread
- Under treatment, with fewer patients being offered the most effective treatment, minimising the risk of recurrence or offering the best chance of survival extension

Improving performance on both of these issues may have expenditure implications (in the case of earlier diagnosis, including cost reductions) and therefore it could be expected that level of expenditure on cancer services would have an impact on cancer outcomes.

Relationship between expenditure and outcomes

However, the relationship between cancer expenditure and outcomes is complex and confounded by a range of issues, including:

- Reporting – different countries report expenditure in different ways and there also variations in the extent and accuracy of the recording of outcomes
- Efficiency – expenditure will not necessarily always be for effective of efficient interventions but macro analyses of cancer expenditure are unlikely to be able to distinguish between effective and ineffective expenditure
- Cost of managing advanced disease – our previous research has demonstrated that it is more costly to treat cancer which has already spread, which is also associated with a poorer outcome, meaning that analyses that use mortality or long term survival as outcomes metrics will inevitably find that the higher costs associated with managing advanced disease are associated with poorer outcomes
- Lag in data – the inevitable lag in the availability of survival data means that comparisons are delayed and may be less useful for informing future expenditure decisions

Nonetheless, there does appear to be a correlation between higher levels of expenditure and better survival, as shown in figure 19.
It is notable that some other countries – such as Sweden – appear to achieve significantly better survival than the UK on a similar level of expenditure. It will be important to explore the methodology used in these countries for recording cancer expenditure to understand the extent to which data are directly comparable.

Differences in expenditure

It is clear that a number of other countries do spend significantly more per capita on cancer, both in absolute terms and as a proportion of GDP, as set out in the figures below. This difference cannot be explained by variations in the burden of cancer or the cost of delivering services alone.
Some of this variation may be explained by differences in reporting and further work is required to understand the extent to which this variation is real, whether it is the result of a conscious decision to offer cancer greater prioritisation and what the implications have been for other services.
Chapter 7: Recommendations

This report demonstrates the squeeze that has been placed on funding for cancer services in recent years and how a continuation of this squeeze is likely to be incompatible with aspirations to further improve services and outcomes. However, it also shows that financial information on NHS cancer services remains incomplete and that further work is required to improve the information available to the commissioners of cancer services.

Based on the findings presented in this report, we are able to make the following recommendations:

**Recommendations**

**Future cancer funding**

1. The new cancer strategy being developed by the Cancer Taskforce should include an assessment of the additional resources required to meet growing demand for cancer services over the next five years and to deliver on the aspirations for world-class outcomes.

2. Given the political and public commitment that exists to further improving cancer outcomes, the Department of Health should include an explicit business case for further investment in cancer services in its submission to the post-election Spending Review, building on advice from the Cancer Taskforce. This business case should include an estimate of the financial costs and benefits of improving cancer outcomes.

3. Further work should be undertaken to assess the cost implications of delivering a standard of service comparable with the best in the world at each stage of the patient pathway.

4. Investments should be prioritised in those areas of the pathway with the potential to both improve outcomes and quality and avert further costs.

5. NHS England (and Monitor) should develop financial incentives to encourage the adoption of evidence-based cancer interventions that have the potential to avert other health and social care costs or are proven to be cost-effective, rather than simply reward activity.

**Quality of information on expenditure**

6. NHS England should publish updated information on expenditure by programme of care at both a national and a CCG level.

7. A comprehensive review of cancer funding flows should be undertaken by NHS England, including how commissioner allocations are made and providers are rewarded for the quality of care they deliver.
8. A detailed analysis of variations in cancer expenditure – and the reasons for these variations – should be undertaken by NHS England.

9. In order to facilitate greater discussion and understanding of the relative cost impact of different interventions, NHS England should consider the case for publishing expenditure data at a more granular level for appropriate parts of the cancer pathway.

10. The International Cancer Benchmarking Partnership should consider commissioning a further module of work to better understand the nature, causes and impact of variations in expenditure on cancer services across comparable countries.
Glossary

• **Active treatment** – interventions given with a view to managing a person’s cancer, thereby extending their life and improving its quality

• **Advanced cancer** – a primary cancer that is unlikely to be cured or a cancer that has spread from its initial site to other parts of the body

• **Bed days** – number of nights in hospital associated with cancer

• **Nominal expenditure** – expenditure as reported in the original data source and which has not been adjusted to take into account inflation

• **Chemotherapy** – medical treatment for cancer that destroy cancer cells by stopping their ability to grow and divide

• **Commissioning** – the process by which services are planned, organised and contracted

• **Early diagnosis** – diagnosis of cancer before it has spread to other parts of the body

• **Emergency admission** – unpredictable admission at short notice because of clinical need, normally through accident and emergency or emergency GP referral routes

• **Expenditure per newly diagnosed patient** – amount of money spent per person who has been diagnosed with cancer within the past 12 months

• **Incidence** – the number of new cases of cancer diagnosed in an identified population within a specified time period

• **Length of stay** – the amount of time spent in hospital, usually calculated in bed days

• **Per capita** – measurement per head of population

• **Radiotherapy** – the use of high-energy rays, usually x-rays and similar rays, to treat disease by destroying cancer cells in the area that’s treated

• **Real terms** – the change in a financial number after correcting for the effect of inflation

• **Screening** – the process of testing a defined population of people who do not have symptoms of a disease with a view to diagnosing a condition at an earlier stage
• **Stage** – terminology used to describe the size of a cancer and how far it has spread

• **Surgery** – the removal of a tumour and surrounding tissue during an operation

• **Survival** – the percentage of people still alive after a specified amount of time (often 1, 5 or 10 years) subsequent to a diagnosis of cancer at a specific time (e.g. 2010-11)
Annex 1: National expenditure data

Expenditure in nominal and real terms

<table>
<thead>
<tr>
<th>Year</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>expenditure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>on cancer and</td>
<td>£5,566,047,451</td>
<td>£5,496,244,000</td>
<td>£5,501,143,000</td>
<td>£5,680,827,855</td>
</tr>
<tr>
<td>tumours</td>
<td>programme</td>
<td>budget</td>
<td></td>
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</tr>
<tr>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>change in</td>
<td>-1%</td>
<td>0.09%</td>
<td>3.2%</td>
<td></td>
</tr>
<tr>
<td>absolute</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>expenditure</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from previous</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real terms</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>expenditure</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percentage</td>
<td>-4%</td>
<td>-2.17%</td>
<td>2.05%</td>
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<tr>
<td>change in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>real terms</td>
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<td></td>
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</tr>
<tr>
<td>expenditure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from previous</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>year</td>
<td></td>
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</table>

Expenditure per capita

<table>
<thead>
<tr>
<th>Year</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
</tr>
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<tbody>
<tr>
<td>Population</td>
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</tr>
<tr>
<td>(derived from</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Programme</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>budget figures)</td>
<td>51,961,577</td>
<td>52,369,540</td>
<td>52,634,128</td>
<td>52,988,875</td>
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<tr>
<td>expenditure</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per head</td>
<td>£107.12</td>
<td>£104.95</td>
<td>£104.52</td>
<td>£107.21</td>
</tr>
<tr>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>change in</td>
<td>-2.02%</td>
<td>-0.4%</td>
<td>2.57%</td>
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</tr>
<tr>
<td>nominal</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>expenditure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>from previous</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real terms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>expenditure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per head (2012/13 prices)</td>
<td>£113.70</td>
<td>£108.56</td>
<td>£105.72</td>
<td>£107.21</td>
</tr>
<tr>
<td>Percentage</td>
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<td></td>
</tr>
<tr>
<td>change in</td>
<td>-4.5%</td>
<td>-2.62%</td>
<td>1.4%</td>
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</tr>
<tr>
<td>real terms</td>
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</tr>
<tr>
<td>expenditure</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>from previous</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>year</td>
<td></td>
<td></td>
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</tbody>
</table>
## Funding per newly diagnosed cancer patient

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer incidence (all cancers excluding NMSC)</td>
<td>264,279</td>
<td>268,758</td>
<td>274,233</td>
<td>281,118</td>
</tr>
<tr>
<td>Nominal expenditure</td>
<td>£5,566,047,451</td>
<td>£5,496,244,000</td>
<td>£5,501,143,000</td>
<td>£5,680,827,855</td>
</tr>
<tr>
<td>Nominal expenditure per newly diagnosed case</td>
<td>£21,061.26</td>
<td>£20,450.53</td>
<td>£20,060.11</td>
<td>£20,207.98</td>
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<tr>
<td>Real terms expenditure</td>
<td>£5,907,939,935</td>
<td>£5,685,338,353</td>
<td>£5,564,522,916</td>
<td>£5,680,827,855</td>
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<tr>
<td>Real terms expenditure per newly diagnosed case</td>
<td>22,354.94</td>
<td>21,154.12</td>
<td>20,291.22</td>
<td>20,207.98</td>
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</table>
Comparisons with expenditure on other conditions

<table>
<thead>
<tr>
<th>Programme budgeting category</th>
<th>2009/10</th>
<th>2010/11</th>
<th>2011/12</th>
<th>2012/13</th>
<th>% increase 2009/10-2012/13</th>
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</thead>
<tbody>
<tr>
<td>Social Care Needs</td>
<td>2.07</td>
<td>2.71</td>
<td>2.83</td>
<td>3.34</td>
<td>61.35</td>
</tr>
<tr>
<td>Other Areas of Spend/Conditions</td>
<td>12.71</td>
<td>15.87</td>
<td>16.26</td>
<td>16.77</td>
<td>31.94</td>
</tr>
<tr>
<td>Endocrine, Nutritional and Metabolic Problems</td>
<td>2.55</td>
<td>2.82</td>
<td>2.94</td>
<td>3.06</td>
<td>20.00</td>
</tr>
<tr>
<td>Problems of Vision</td>
<td>1.98</td>
<td>2.24</td>
<td>2.26</td>
<td>2.30</td>
<td>16.16</td>
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<tr>
<td>Problems of the Musculoskeletal System</td>
<td>4.61</td>
<td>5.02</td>
<td>5.16</td>
<td>5.34</td>
<td>15.84</td>
</tr>
<tr>
<td>Neurological</td>
<td>3.92</td>
<td>4.07</td>
<td>4.26</td>
<td>4.44</td>
<td>13.27</td>
</tr>
<tr>
<td>Infectious Diseases</td>
<td>1.40</td>
<td>1.37</td>
<td>1.48</td>
<td>1.55</td>
<td>10.71</td>
</tr>
<tr>
<td>Problems of the Skin</td>
<td>1.95</td>
<td>2.03</td>
<td>2.09</td>
<td>2.10</td>
<td>7.69</td>
</tr>
<tr>
<td>Problems of the Respiratory System</td>
<td>4.36</td>
<td>4.27</td>
<td>4.41</td>
<td>4.69</td>
<td>7.57</td>
</tr>
<tr>
<td>Mental Health Disorders</td>
<td>10.61</td>
<td>10.96</td>
<td>11.16</td>
<td>11.28</td>
<td>6.31</td>
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<tr>
<td>Problems of the Gastro Intestinal System</td>
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<td>4.40</td>
<td>4.60</td>
<td>4.76</td>
<td>6.25</td>
</tr>
<tr>
<td>Dental Problems</td>
<td>3.48</td>
<td>3.52</td>
<td>3.42</td>
<td>3.58</td>
<td>2.87</td>
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<tr>
<td>Cancers &amp; Tumours</td>
<td>5.57</td>
<td>5.50</td>
<td>5.50</td>
<td>5.68</td>
<td>2.05</td>
</tr>
<tr>
<td>Problems due to Trauma and Injuries</td>
<td>3.69</td>
<td>3.65</td>
<td>3.76</td>
<td>3.72</td>
<td>0.81</td>
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<tr>
<td>Conditions of Neonates</td>
<td>1.01</td>
<td>0.85</td>
<td>0.94</td>
<td>0.99</td>
<td>-1.98</td>
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<tr>
<td>Disorders of Blood</td>
<td>1.19</td>
<td>1.14</td>
<td>1.15</td>
<td>1.15</td>
<td>-3.03</td>
</tr>
<tr>
<td>Problems of Circulation</td>
<td>7.17</td>
<td>6.99</td>
<td>6.92</td>
<td>6.90</td>
<td>-3.77</td>
</tr>
<tr>
<td>Maternity and Reproductive Health</td>
<td>3.68</td>
<td>3.53</td>
<td>3.57</td>
<td>3.50</td>
<td>-4.89</td>
</tr>
<tr>
<td>Adverse Effects and Poisoning</td>
<td>1.05</td>
<td>0.94</td>
<td>0.97</td>
<td>0.98</td>
<td>-6.67</td>
</tr>
<tr>
<td>Problems of Hearing</td>
<td>0.50</td>
<td>0.45</td>
<td>0.46</td>
<td>0.46</td>
<td>-8.00</td>
</tr>
<tr>
<td>Healthy Individuals</td>
<td>2.01</td>
<td>2.06</td>
<td>2.01</td>
<td>1.82</td>
<td>-9.45</td>
</tr>
<tr>
<td>Problems of Learning Disability</td>
<td>3.02</td>
<td>2.84</td>
<td>1.62</td>
<td>1.58</td>
<td>-47.68</td>
</tr>
</tbody>
</table>