ACHIEVING WORLD CLASS OUTCOMES IN CANCER TREATMENT

Professor Sir Mike Richards CBE

16th Annual Lecture 2009

About the Author

Professor Richards was appointed as the first National Cancer Director in October 1999. In 2000 he led the development of the NHS Cancer Plan, the first comprehensive strategy to tackle cancer in England and was subsequently responsible for overseeing its implementation. More recently he has led the development of the Cancer Reform Strategy (published in December 2007) and the development of the first ever End of Life Care Strategy (published in July 2008). He works closely with ministers, parliamentarians, civil servants, clinicians, managers, patient groups, charities, researchers and industry to achieve the objectives of the plan.

In June 2008 Professor Richards was asked by Alan Johnson, Secretary of State for Health, to lead a review of policy relating to patients who choose to pay privately for drugs that are not funded on the NHS. His recommendations were accepted and his report was published in November 2008.

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The Royal College of Physicians
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Introduction

I am very honoured to be invited to give this OHE lecture, but I would like to start with a disclaimer. I cannot attempt to cover all aspects of the National Cancer Programme in one lecture. If I did, you would all be here until midnight and I hope not to detain you that long. Instead I intend to answer the question that was posed to me about the NHS achieving world class outcomes in cancer. To do that I think there are five questions that we need to both ask and then attempt to answer: 1) What would "world class" look like? 2) What measures should we use? 3) Where are we now? 4) Why are our outcomes below the best? 5) What do we need to do to close the gap? I have to say, the questions get progressively harder to answer as we go on so I will get straight into it and tackle the first one.

What would world class look like?

I think to be "world class" we would like the overall burden of cancer in England to be as low as anywhere in the developed world. I would also like that statement to be based on good evidence, i.e., the international comparative data used and to support this would be recognised as reliable. That, however, does beg the question: what is the burden of cancer in England? That takes us on to question two on the exam sheet.

What measures should we use?

Primary outcome measures

If you are looking at the outcomes of a randomised clinical trial you should only ever have one primary outcome measure. I do not think that is possible when you are looking at a national cancer control programme, so I have allowed myself five primary outcome measures: 1) cancer incidence, the age adjusted number of new cases in the country; 2) cancer mortality, the deaths from cancer; 3) cancer survival rates, (we often talk about the five year survival rate, but there are others that are equally meaningful); 4) the health and wellbeing of people who have survived cancer and 5) survivor experience of care. The reason I have allowed myself five primary outcome measures is that they measure different aspects of cancer control. We want to have a low incidence of cancer and a low cancer mortality rate. In the remaining measures, we would want high.

Cancer incidence largely reflects lifestyle: Smoking rates, obesity rates, alcohol consumption rates for example, are hugely influential on the number of new cases. The measures that we take to prevent cancer, such as programmes to help people stop smoking, are very important. There is one other factor that can influence cancer incidence, and that is how hard you look for it. This is especially true if you take a disease like prostate cancer. If we conduct biopsies on men at the age of 80, we would find that approximately 80 per cent of the men biopsied will have prostate cancer.

Cancer mortality is obviously a measure of both the number of cases and of the survival rate. Cancer survival in itself reflects how early or late we diagnose patients, and how well we treat them. The health and wellbeing of survivors measures their quality of life, and the experience of care is a measure of the quality of the care they received.

Can we measure the primary outcomes?

If we have decided that these are the primary outcome measures, can we actually measure them? The answer is only in part in terms of international comparisons. We can look at cancer incidence and cancer mortality rates across different countries through Globocan. Similarly, CONCORD provides global statistics on cancer survival, while EUROCARE does the same for Europe. The main point that I would make about all three of these datasets is that while their data are reasonably reliable, it is all out of date. International comparisons of incidence and mortality tend to be a few years behind the times. The CONCORD study refers to patients who were diagnosed between 1990 and 1994- before we implemented any of the cancer initiatives in this country- and the most recent EUROCARE study goes up to the turn of the century but no later.

For the last two measures, the health and wellbeing of survivors and experience of care, we do not have any comparative data and for that reason I am not going to come back to those again. This does not mean that I think they are unimportant, it is just that we really cannot, at this stage, provide any useful information on international comparisons for these measures.

Secondary outcome measures

There are at least a dozen secondary measures I believe we should also be tracking. Here are my selected dozen, but others might come up with a different list: prevention; screening; population awareness and beliefs; access, waits, delays; stage at diagnosis; proportion receiving potentially curative treatment; one year survival rates (a proxy for late diagnosis); proportion managed by a multidisciplinary team; adherence to guidelines; utilisation of palliative treatment; access to end of life care services; and resource utilisation and cost-effectiveness.

With regards to prevention, it is obviously important to know about smoking rates in a particular population. For screening, we not only want to know whether there are national screening programmes and the accessibility of these programmes, but also coverage. What proportion of the eligible population is being screened?

Population awareness and beliefs across countries may also be very important. If people do not know very much about cancer they may not go and seek the necessary healthcare. Similarly, if people have uniformly negative beliefs about cancer, for example if they think the cancer is not curable, they may not go and seek early treatment.

Over the last decade, there has been a lot of talk about access, waiting times, delays and how to measure them. It is interesting to note that the countries that measure these indicators are the ones with a problem. Countries that do not believe that they have an access problem do not track this data.

The stage of disease at diagnosis is a measure of the extent of the disease, and is incredibly important in determining the likelihood of survival. Given that, it would be helpful if we could compare across countries the stage of the disease at diagnosis. Unfortunately, this is not always possible. Equally important, once you have diagnosed people, they need to be treated, so one standard measure should be the proportion of people diagnosed receiving potentially curative treatments. This is not a measure that has been routinely reported on until now.

A measure that is commonly used is the one year survival rate. We will come back to this because it is a very good measure of whether or not people are diagnosed late. If you do not have "staging data" for the whole population, one year survival rates may be a good proxy.

Ideally, we would like patients to be managed by a multi-disciplinary team. Information sharing and communication amongst the team members, should result in better decisions being made and thus patients receiving better care. Adherence to guidelines is obviously important, as is the use of palliative treatment and having access to end of life care services. Finally, and especially important in this current environment, is resource utilisation and cost effectiveness.

These are the sorts of secondary measures we should be thinking about. The great advantage of many of these secondary measures is that they can provide much more up to date information on different aspects of cancer care than the primary measures. One year survival rates are much more up to date than five year survival rates and we should be able to get stage of diagnosis contemporaneously. Against that, however, comparative data on many other measures are unavailable across countries, the exceptions being data on lifestyle factors such as smoking prevalence, and on screening. These two, along with one year survival rates, are the three that I will come back to because they are available across countries.

Where are we now?

Primary outcome measures

Having discussed the measures we might use, I move onto my third question –"where are we now?" Remember that when I say "now," some of the data is out of date. Let us take incidence to begin with. Figure 1 shows the most up to date figures we have, which are for men diagnosed with cancer in 2002.

Figure 1. Age-standardised* incidence rates, all cancers exc. NMSC, 2002 (males)

Males

**ASR per 100,000 population**
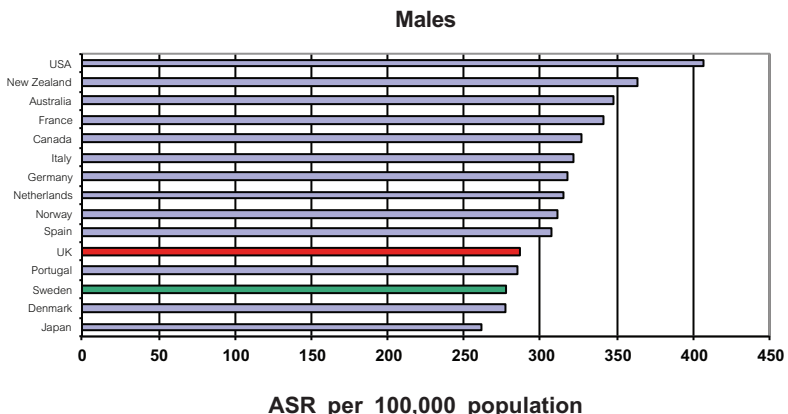
Source: Globocan, 2002   *to the world standard

Cancer incidence amongst males in the UK is shown in red, and I have highlighted Sweden in green because I believe it is a good comparator, especially on survival and mortality measures. What we can see from Figure 1 is that we want incidence down at the bottom end of the scale. For men, the UK is better than average. Sweden is even better than that and the best in the world is Japan, almost certainly because of their healthy lifestyle – sushi is good for you. Interestingly, if you look at the other end of the scale, the USA is the worst of these 15 countries. This is in part due to the fact that they actually have a higher cancer incidence but it is also affected by what is now increasingly being referred to as over-diagnosis. The US has extremely high rates of PSA testing and, I suspect very strongly, that their incidence figures reflect this over-diagnosis. To sum up, with regards to cancer incidence in men, we are a bit better than the average. Moving on to incidence amongst women, Figure 2 shows us that we are a little bit worse than the average.

Figure 1. Age-standardised* incidence rates, all cancers exc. NMSC, 2002 (females)

Females

Source: Globocan, 2002   ***to the world standard**
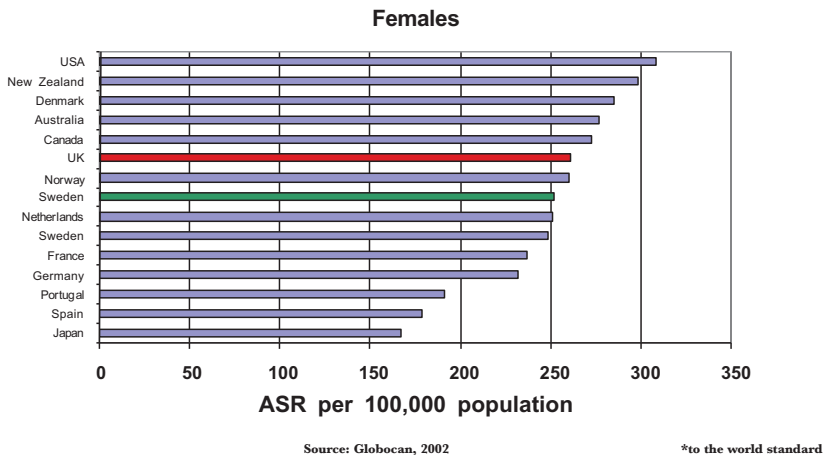
Again, here is the UK in red and Sweden, in green, doing a little bit better than us. Once again Japan is doing extremely well here with the lowest incidence while the USA continues to have the highest incidence in the world. That seems to be the pattern. Why is it that we are doing relatively less well for women than we are for men? There is a very simple explanation for that- the male smoking epidemic came to this country earlier than the female epidemic did. Currently, we are seeing the end of the epidemic for men, while we are, roughly speaking, at the plateau for women in terms of lung cancer incidence. Added to this is the fact that we have, in the past, had a high death rate from breast cancer in women. The combination of being at the top of the lung cancer curve and this legacy of breast cancer explains why we are not as good as we might be.

Moving on to mortality, we can see from Figure 3 that we (England and Wales) are bang on the average for men.

Figure 3. Age-standardised* mortality rates, 2004 (males)

Males

ASR per 100,000 population

Source: WHO   *to the world standard
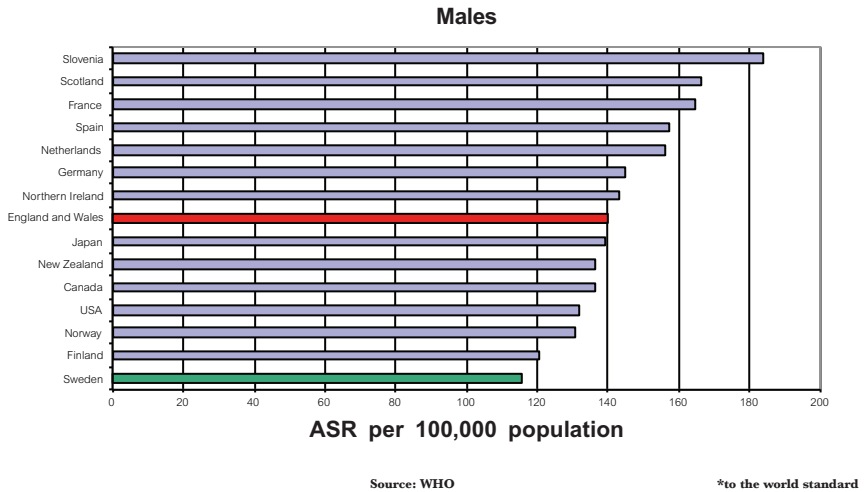
Scotland is high on mortality but Slovenia is doing the worst. Sweden, as we can see is doing extremely well. We can also see that the USA is no longer right up at the top and is doing well. Japan is actually not doing quite so well especially considering the low incidence seen in Figure 1. Turning now to mortality in women, we can see from Figure 4 that we are above average.

Figure 4. Age-standardised* mortality rates, 2004 (females)

Females

ASR per 100,000 population

Source: WHO   *to the world standard
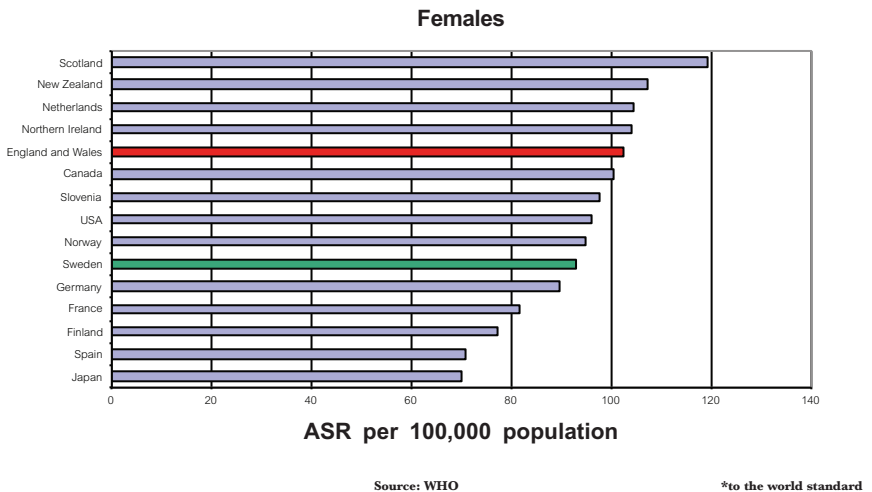
As with incidence, female cancer mortality is primarily driven by lung and breast cancer. Unlike in men, Japan is doing extremely well. The USA is doing about average and Sweden is doing slightly better than average.

One of the things we can see from these four graphs is that countries move around depending on what measures are reported. The measures we do the worst on are, of course, those that get reported in the press.

The next interesting and important question is not just where were we at a particular point in time, but how we look over time. Figure 5 is our Healthier Nation target for cancer in people under 75.

Figure 5. Cancer mortality target, under 75 years
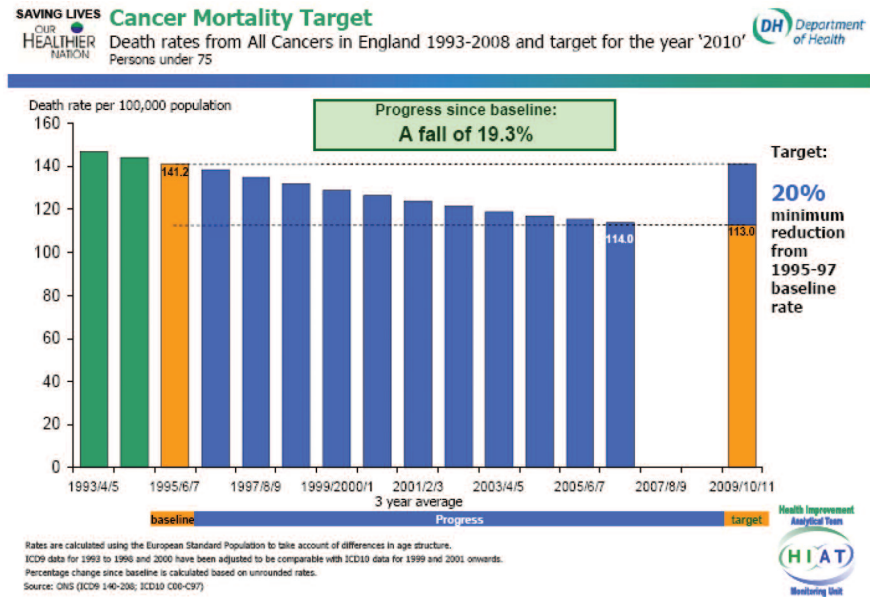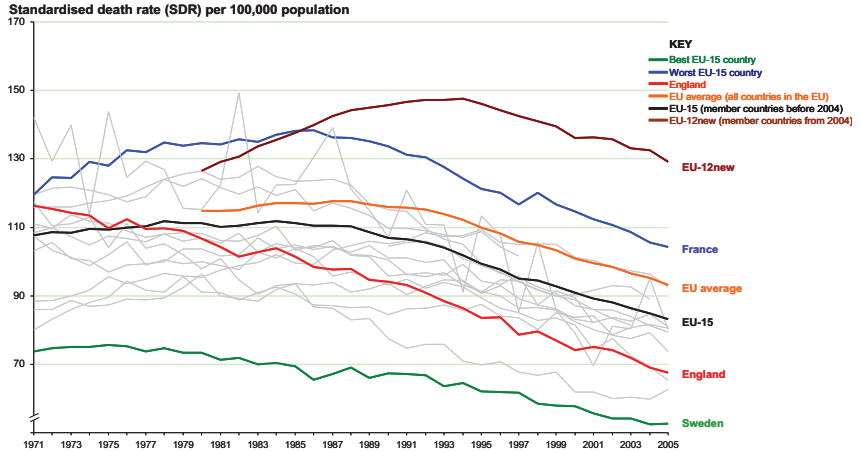

Source: Department of Health

The main point here is that our mortality rate is dropping satisfactorily amongst people under the age of 75. At the start of the period based on data from 1995, 1996 and 1997, our mortality rate was 141 per 100,000. Our target is to reduce that by 20 per cent which gets it to 113 per 100,000. We are now at 114 and I think that, unless something goes disastrously wrong in the next couple of years, we will hit that target. Having said that, some people may say that the target was not challenging enough, but I believe that at the time it was chosen, it was, and I am pleased to say we are on track to reach it.

Figure 6 shows us how well we are doing amongst males under the age of 65, and how we compare to other countries.

Figure 6. Male premature mortality from cancer, under 65 years

Chart 3.13: Male premature mortality from cancer
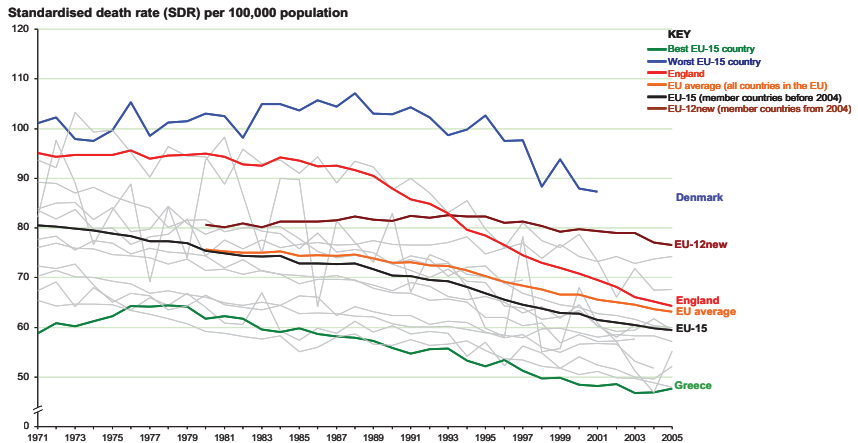Aged under 65 years, England, EU-15 countries and selected averages

Standardised death rate (SDR) per 100,000 population

KEY
Best EU-15 country
Worst EU-15 country
England
EU average (all countries in the EU)
EU-15 (member countries before 2004)
EU-12new (member countries from 2004)

Source: England ONS Mortality data. Web link http://www.statistics.gov.uk/statbase/Product.asp?vlnk=6725 analysed by DH Analysts.
All other countries - WHO, Health For All Database-Jul 2008. Web link http://www.euro.who.int/hfadb

Remember that we want a low male mortality rate, and looking at Figure 6 we can see that for England, the mortality rate for the under 65s has been coming down extremely satisfactorily, though we are not the best. In men, Sweden comes out as being the best but we are definitely better than the EU-15 average, and very much better than the 12 new EU countries. The differences in mortality trends amongst the countries reflects where each country is with its smoking epidemic. In the UK, we had already passed our lung cancer peak by 1971. According to Figure 6, France reached its peak in the late 1980s and the new EU countries reached their peak in the late 1990s. Overall this is a fairly satisfactory picture for the UK. If I was trying to report good news, this is one of the graphs that I would use. If I am trying to do the same for women, we can see from Figure 7 that this is not bad picture here either.

Figure 7. Female premature mortality from cancer, under 65 years

Chart 3.15: Female premature mortality from cancer
Aged under 65 years, England, EU-15 countries and selected averages

Standardised death rate (SDR) per 100,000 population

KEY
Best EU-15 country
Worst EU-15 country
England
EU average (all countries in the EU)
EU-15 (member countries before 2004)
EU-12new (member countries from 2004)

Denmark
EU-12new
England
EU average
EU-15
Greece

Source: England ONS Mortality data. Web link http://www.statistics.gov.uk/statbase/Product.asp?vlnk=6725 analysed by DH Analysts.
All other countries - WHO, Health For All Database-Jul 2008. Web link http://www.euro.who.int/hfadb

The UK is in red, and it is clear that while we started fairly high on the European league table, our morality rates are now going down and we are approaching the EU average. Hopefully we will soon get down to the level of the EU 15 countries. Unlike the previous graphs, there it is a different country in the pole position, Greece. I suspect it is there, in large, part, because of the Mediterranean diet and it's impact on health. Denmark is an interesting case because it seems to be doing quite poorly comparatively.

However – and there is a big however – what we have just seen is the best. Figure 8 shows us what happens when we further break down mortality rates for different age groups. I would like to thank Dr Tony Moran in the North West Cancer Registry for this chart.

**Figure 8. Cancer mortality rates by age group (2003-2005)
UK vs Western Europe, Northern Europe and USA**
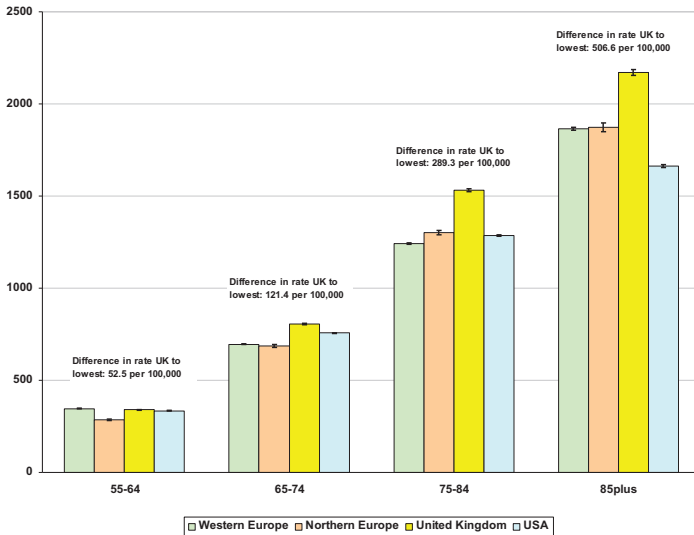
Source: Tony Moran, Northwest Cancer Registry

The UK mortality rate is in yellow in each of the four age groups: 55-64, 65-74, 74-85, and 85 plus. The comparator countries are a group of countries in Western Europe (in green), Northern Europe (in beige), and the USA (in blue). What this chart shows us is that in terms of mortality in the 55-64 age group, we are doing pretty well, we are certainly no worse than any of the other countries. However, as soon as we start to look at the 65 to 74 age group, we begin to see a higher mortality rate. This increase continues when we get up to the over 75s and the over 85s. This tells us that there is a real problem amongst the elderly in this country. To take that one step further, let's look at trends in mortality rates, amongst the same age groups and countries. Figure 9 shows changes in cancer mortality between 1995-1997 to 2003-2005.

Figure 9. Changes in cancer mortality between 1995-1997 and 2003-2005
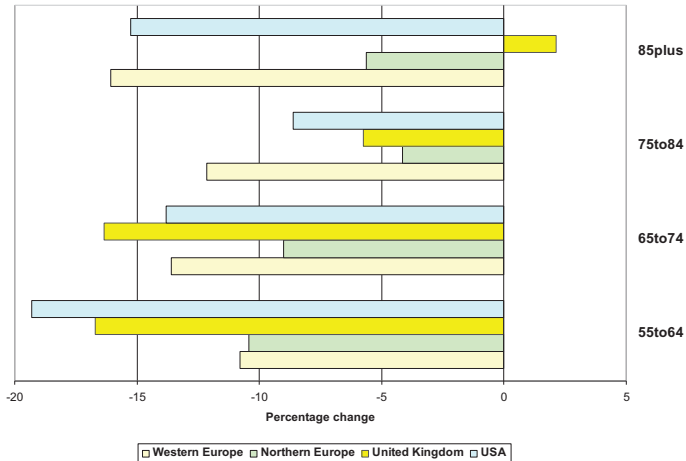
In both of the younger age groups, i.e. 55-64 and 65-74, our change in mortality is either first or second of the four groups, so in that respect we can say that things are going well. This trend is also seen in Figure 5. What we see amongst the 75-84 age group is that our reduction in mortality is not happening as quickly as it is in either the US or Western Europe, and amongst the 85 plus group, mortality is increasing. We are still trying to understand why this is.

Moving on from incidence and mortality, let's talk about survival. For survival I have tried to provide one relatively simple graph (Figure 10) that really gets at the essence of the EUROCARE data.

Figure 10. Survival: Colorectal and breast cancer
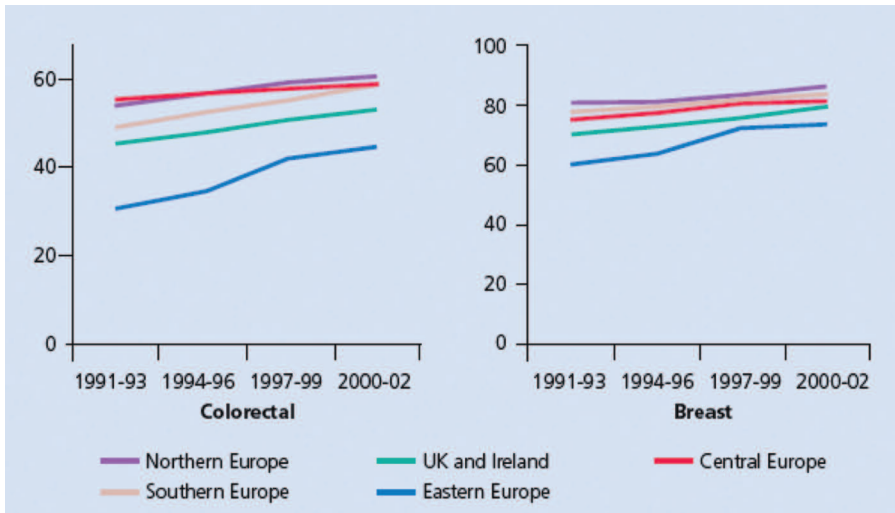
Recall that the EUROCARE data relates to patients diagnosed in the 1990s and reflects what was happening then, up to about the turn of the century. Looking at the green line, which represents the UK and Ireland, we can see that our survival rates for both cancers have undoubtedly improved but we still have not narrowed the gap with Northern Europe and Central Europe, Central Europe including countries like Germany. This gap, in many ways, is the retrospective case for why we needed the Cancer Plan, which was published around this time. I do not necessarily think that all the results in EUROCARE are the most reliable, however, I do think that the data from Northern Europe – Norway, Sweden, Finland – are as reliable as ours so I have no reason to think that the survival gap is not real. My message is that survival during the 1990s was improving but not really closing the gap.

So how do we convert this picture into the number of avoidable deaths if we became the best in Europe? Professor Michel Coleman from the London School of Hygiene and Tropical Medicine has recently conducted an analysis that shows that if we brought ourselves up to the best standards in Europe, we could have avoided ten thousand deaths within five years of diagnosis during the period covered by the previous EUROCARE studies. Professor Coleman defines "best" quite conservatively. For this analysis he did not just remove the one outlier at the top, he also excluded a couple of countries where people questioned the reliability of the data, and he then took the average of the next three data points. I do not think that this is unattainable, in fact, it feels to me as if this is a figure we should be aiming for. The point I would make is that ten thousand deaths a year is a pretty substantial figure, especially when you think that the total number of deaths from cancer in the UK is around 150,000. Would I prefer it to be 140,000 rather than 150,000? Undoubtedly. We certainly need to work out why there is this survival gap and what we are going to do about it.

Secondary outcome measures

We have discussed the primary outcome measures: incidence, mortality and survival. With regards to the secondary measures, and to prevention in particular, I think we can be pretty proud of the fact that in the UK, over to the last decade, smoking prevalence has fallen from 28 per cent to 21 per cent. It seems that we have done a lot of things that have been right in terms of tobacco policy. Banning smoking in public places has been a very important and major step. However, I would like to point out that there are countries – some of the Scandinavian countries, Australia, and California in the US – that have smoking rates around the 14 to 15 per cent mark. If we are going to be amongst the best in the world, we will still have to do a lot better on this front. I believe our next step should be to ban cigarette advertising at the point of sale. Not surprisingly, as we have borne down on all the other aspects of advertising, the point of sale displays in petrol stations and newsagents have gotten bigger and brighter, and they are all subsidised by the tobacco industry. My belief is that we should make cigarettes "under the counter" rather than "behind the counter." That is one measure. I think the harm reduction issue is also a very important one. An example of what this may look like come from Sweden, where they have a product called "snus" which is effectively a form of tobacco that you can chew but does not seem cause cancer in any significant numbers. This may be one way to keep people off cigarettes and on to a less harmful form of nicotine. I am not suggesting that that is the right nicotine delivery system but I think that there are some hardened nicotine addicts who we need to help keep off cigarettes which are the most lethal way of getting a nicotine buzz.

I do believe that our screening services are amongst the best in the world. The reason for this is that we have effective call and recall processes. We write to, and invite women to come in for cervical cancer screening and for breast cancer screening, and now we invite men and women for bowel cancer screening as well. Our coverage rates are amongst the best and we have evidence to suggest that the cervical cancer screening programme saves about 4,500 lives a year, and the breast cancer screening programme saves at least 1400 lives a year. I have no doubt that the bowel cancer screening programme will save lives as well.

There is sound evidence to suggest that our waiting times have decreased markedly, but then there are other countries that appear to have no problems with waiting times. I have met with colleagues from France, Germany, Canada and the USA to discuss this issue, and the interesting thing is that Canada has some of the same problems as we do, but France, Germany and the USA just ask, "What are you on about?" These countries all have a lot of spare capacity, and when it comes to the economic side of this problem, we have to decide whether that is a price that we are prepared to pay.

Access to multi-disciplinary teams in this country is now amongst the best in the world. I am not trying to claim that every one of our multi-disciplinary teams is working perfectly, but compare this to the United States, where only one in five patients are treated at a comprehensive cancer centre. The majority are treated by community oncologists and not with a multi-disciplinary team.

Where I think we are doing poorly are on the last three secondary measures: the proportion of patients receiving curative treatments, the uptake of palliative treatments (particularly

chemotherapy) and one-year survival rates. Let us look at each one in more detail, starting with the use of potentially curative surgery.

I know I am in the presence of many people who come from a pharmaceutical industry background, but just in case there are any surgeons in the room (I know there is at least one), I must point out that surgery cures more patients with cancer than any other treatment method. Therefore, making sure that the quality of surgery in the UK is high and that people are getting the surgery they need is really important. Lung cancer is a rotten condition with a poor five year survival rate, but the one treatment that can cure non-small cell lung cancer (NSCLC) is the removal of the tumour with surgery. If you look across the UK, approximately ten per cent of our NSCLC patients are treated with surgery. In other countries this number is around 20 per cent.   If you look within our cancer networks it varies from 20 per cent down to some that are only reaching four per cent. There was a large national colorectal clinical audit and I was quite surprised to see that only about 60 per cent of patients presenting with colorectal cancer in this country get a major colorectal resection with curative intention. I do not know what the figure is elsewhere but it would be interesting to know. I do not yet have a national figure for breast cancer surgery but there was a very interesting study from the east of England where they looked at ten different hospitals and at women over the age of 70, and found that over a quarter of patients did not undergo surgery. This figure excluded patients who had metastatic breast cancer and for whom surgery would have been inappropriate. Despite the fact that this study was conducted in a specific geographic region, I have no reason to believe that the findings would not be similar across the whole country. With that in mind, the question we have to ask ourselves is: are we treating our older patients as well as we might or are our older patients with breast cancer presenting later? There is quite good evidence for that too. In general, we need to determine why so few patients are receiving potentially curative surgery. We can argue about why that is. For example, is it because they present so late that they are no longer suitable for surgery? But if we do not get them to surgery then we are certainly not going to get our survival rates up. I really think we need to focus on this issue and this is why I have suggested it as a secondary outcome measure.

What about the use of anticancer drugs? I thought I would quote from the Cancer Reform Strategy, something that for many people in this room has become a mantra: "usage of new anticancer drugs is estimated to be considerably lower in England than in other developed countries, with usage at approximately 60 per cent of that in other major European countries." Whether or not changing this will impact outcomes is debateable because we have to remember that a lot of these anticancer drugs are given with palliative intent and probably only have a minor impact on five year survival and thus on mortality rates. Having said that, many of you are aware that we are in the process of doing some very detailed international benchmarking of drug utilisation. Although we are looking at cancer in detail, we are also looking at drugs for dementia, arthritis, osteoporosis, multiple-sclerosis, respiratory syncytial virus, hepatitis C, Wet AMD, cardiovascular disease (including drugs such as statins and thrombolytics), and anti-psychotics. This process of benchmarking came out of my review of access to drugs, as well the Pharmaceutical Price Regulation Scheme (PPRS). We have linked these two work streams together and hopefully we will have good and, up to date information on how our drug usage compares to other countries.

Figure 11. Visual summary of EUROCARE-4 results

Source: EUROCARE

Figure 11 summarizes the results of EUROCARE-4. Across the top, we have all the different cancers that are looked at in the EUROCARE programme and along the side are the countries that participate in EUROCARE-4. If a country is in the top five for a particular cancer, it will be in green, if a country is in the bottom five it will be red. The main point is that a country wants to be in green, not red. The countries with the most green and the least red are towards the top of the table, while those with the most red and the least green are towards the bottom. The first league table presents the result for one year survival rates. England, I am afraid, is seventh from the bottom with rows of red. Hardly a green is to be seen on the English landscape. The countries that come below us are Slovenia, Northern Ireland, Denmark, Ireland, the Czech Republic and Poland- hardly a resounding success. We are not doing well in terms of one year survival rates. However, if you do make it to one year, what is your chance of getting to five years? Looking at the second table we see that here, interestingly, we are much closer to the average- we have some greens, the odd red and quite a lot of white, meaning we are near the middle of the road. In this case we are pretty average. If you happen to get as far as one year, your chance of getting to five is as good as elsewhere. Recall that the one year survival rate can be used as a proxy measure of late presentation. The first league table provides further evidence that this is a problem in this country, and for multiple cancers.

The National Cancer Intelligence Network has set benchmarks for where we think one year survival rates for different cancers should be. For breast cancer we think it should be around 97 per cent. The average for Sweden is 96.6 per cent. Only 13 out of 152 PCTs in this country achieve that benchmark. So only 13 are where the average for Sweden was seven years ago. For colorectal cancer, we should be aiming for 79 per cent survival, but only one of our PCTs is achieving that, as compared to over half of all of Sweden achieving this rate at the time. We should be aiming for a 37 per cent survival rate for lung cancer. In the UK, only one PCT is achieving that. The message here is that this is not just a problem amongst deprived area PCTs, but it is a problem across the country. The point of presenting this is to say to all commissioners that you really need to be thinking about this problem of late diagnosis.

Just to summarise before we move on, with regards to incidence we are a bit better than average for men and a bit worse than average for women. For mortality we are bang on average in men and a bit worse than average in women. For one year survival we are definitely worse than average, however, if you make it to one year, our five year survival rate is average.
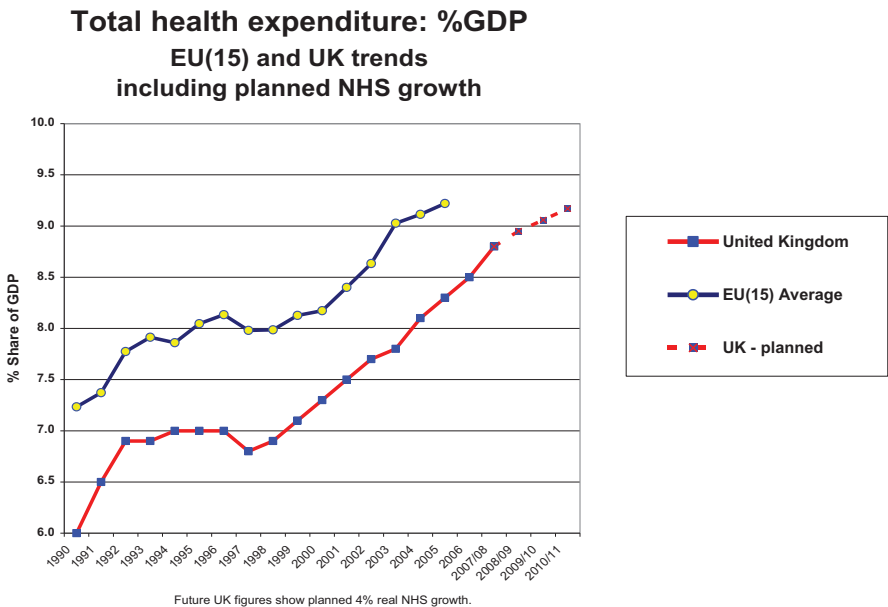
Why are our outcomes below the best?

Why are we below the best? I have already half answered this question but I think we ought to look at all the possibilities, particularly unhealthy lifestyle, comorbidities, late presentation, poor services, inadequate investment in healthcare and cancer care, and biological differences.

I will give you my opinion in one fell swoop. Unhealthy lifestyles are a factor but that predominantly affects incidence rather than survival. A lot of my clinical colleagues think that comorbidities are one of the reasons but why would comorbidities differ between countries? Why would we have a particularly bad problem with lung disease or cardiovascular disease compared to other countries? I think late presentation, from what I have already discussed, is

almost certainly a factor. Sub-optimal services certainly have been a factor and may still be a factor in terms of getting people to curative treatment. I am not sure whether investment plays a role but I will go into that in a little bit more detail. I think there is very little to suggest that biological differences are a factor. In general, however, I do not think it is likely that it is just one of these factors, but some combination of several.

On the issue of investment, we have lagged behind other countries but we have been catching up quickly. Figure 12 plots the total health expenditure of the UK and the EU-15.

Figure 12. Total Health Expenditure

Total health expenditure: %GDP
EU(15) and UK trends
including planned NHS growth

Future UK figures show planned 4% real NHS growth.

As we can see, we have closed the total health expenditure gap, but what about cancer specific expenditures? We know that about five per cent of NHS expenditures go towards cancer. This is quite similar to the proportion spent in the Netherlands and is somewhat less than in France or Germany. The most recent direct comparison that has been published was for 2004, and it found that the NHS was spending about £76 per capita on cancer care. You could increase this figure to £90-£100 if you include all the money that hospices and major charities spend, as well as the private sector. This is still, however, considerably less than what was being spent per head of population in France and Germany. That is where we are on expenditure, but how is the money being spent? Figure 13 is a graph from the Cancer Reform Strategy, which shows where the money goes.

Figure 13. Estimated NHS spend on cancer care
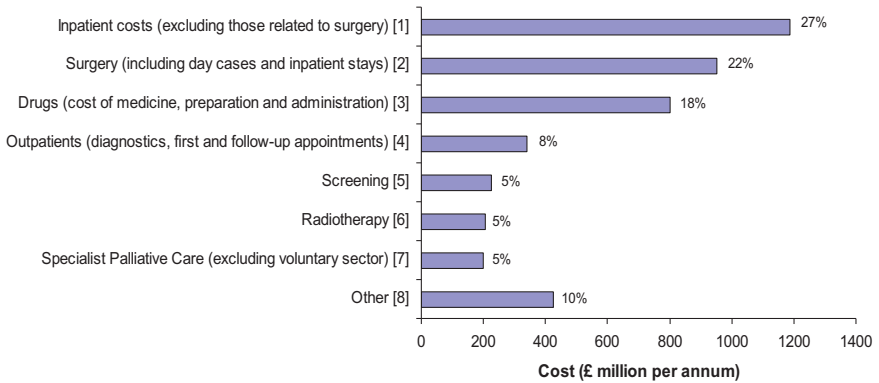
The most important thing to note here is that we are spending an awful lot, over a quarter of the total cancer budget, on in-patient care. Obviously the item that gets the most attention is drugs. If you combine the cost of the drugs and their administration we estimate that this makes up about 18 per cent of the budget. Yes, this is increasing, but it is not the largest category. I would argue that there is good evidence to suggest that the top two areas are those where there is potential for cost saving. We compared ourselves to the USA and found that we use more in-patient beds. One way to reduce this is through an "enhanced recovery programme" which has allowed some hospitals to reduce the stay for colorectal cancer surgery from 10 to 14 days, to 4 days or in one hospital to 23 hours. This is applicable not only to colorectal cancer, but also to urological surgery, gynaecological surgery, and orthapaedics. We estimate that there are well over £100 million worth of savings to be made if we can get the "enhanced recovery programme" disseminated across the country, which is why we are putting a great deal of emphasis on that. We also have another programme that is aiming to save a million bed days used for cancer care. Hopefully, this will allow us some headroom in other directions.

Despite all this, I cannot give you a simple answer as to why our cancer outcomes are below the best. We have done not done the detailed comparisons. We are just starting an international benchmarking programme, and are working with countries that we know have reliable data - Denmark, Sweden, Norway, Canada and Australia – and we are trying to determine why our cancer survival rates are different. However, there is a great deal of indirect evidence pointing to late diagnosis and a low curative intervention rate as the main factors underlying our poor survival rates and probably those of Denmark as well. That is why we are putting a lot of emphasis on the national awareness and early diagnosis initiative. Briefly, the thinking here is that we should tackle low public awareness or negative beliefs about cancer to avoid late presentation, low uptake of screening and ultimately, patients presenting as emergencies. Just to give you a sense of the magnitude of the problem, a quarter of all patients with bowel cancer present as emergencies. There may be other factors at work, such as difficulty accessing primary care and delays in primary care. All of these factors lead to late presentation and

diagnosis. There is a lot of very good work going on in primary care and emerging evidence to suggest that longer delays in primary care do translate into worse outcomes, i.e. poor one year survival rates and low intervention rates.

There can then be delays in secondary care as well, although we believe that these are much less significant now. Delays in secondary care can lead to more late stage diagnoses resulting in fewer patients who undergo or are eligible for curative treatment. Both of these lead to poor survival rates and to the 10,000 avoidable deaths per annum. This is the model that we are working with. I cannot go through all the evidence behind it, but we do know that awareness of signs and symptoms is very low. Jane Wardle and her colleagues have recently published the results of a study that further explores this problem.

What do we need to do to close the gap?

This brings me to the final question: what do we need to do to close the gap? My view is that the first thing we must do is tackle the problem of late diagnosis. To do that we need targeted public awareness programmes. The worst public awareness programme in the world was Kylie Minogue's diagnosis. What happened in this instance is that women in their 30s (the same age as Kylie Minogue) went to their GPs and were referred onto hospital. In the month following Minogue's diagnosis, mammograms went up by 60 per cent, but not a single one lead to an extra diagnosis. Contrast this with the publicity about Jade Goody targeted at a particular group which led to an increase in younger women, going for cervical cancer screening. We believe that her death may will save several hundred lives over the next 30 years. If we are going to have public awareness programmes we need to target them to the right groups. We are working with the Improvement Foundation on a very exciting programme targeted at the community level, and we are also working on one-to-one interventions to see if we can encourage people to come forward earlier when they become symptomatic.

We also need to do a lot of work in primary care. We need to make screening and diagnosis easier for GPs. In the past, we have said to them "Please be gatekeepers, do not send everything to secondary care" and then at the same time we said to them, "By the way, you can't have access to diagnostics either." There are patients who quite rightly should get referred through the urgent two week path, and hopefully most of them do. But there is another group of patients whose risk of being diagnosed with cancer or anything serious is lower, but not negligible, and the GP is concerned. We have tied the GPs' hands behind their backs by not giving them access to diagnostics and the education and training that goes along with that. The government is now committed to improving access to diagnostics for GPs and we clearly then need to monitor what the impact of this is.

Finally, once we have diagnosed patients we need to be able to deliver cost effective interventions such as laparoscopic surgery, high quality radiotherapy and of course systemic therapies and in the future maybe robotic surgery,

Professor Sir Mike Richards CBE

Conclusion

I believe there is no doubt that we have made progress on cancer in this country over the last ten to 15 years, despite the fact that mortality in older people is poor and that survival rates still lag behind other countries. The bottom line is that we really do need to focus on both prevention and early diagnosis to have the greatest impact.