Background

Previous work suggested that there were two million people living with cancer in the UK, which will increase to four million by 2030 and five million by 2040. We aim to review and update this estimate, using the latest outputs from the Macmillan-National Cancer Registration and Analysis Service (NCRAS) UK Cancer Prognosis Project 3 the most widely available public data, and clinical advice, to build a model of total cancer prevalence for the UK up to 2040.

Results

Here we describe some of the key inputs and trends, and summarise the scenarios developed for each cancer site, which will be used to generate the model outputs.

Breast cancer

The incidence rates for breast cancer have seen a steady increase for all nations over the past 20 years. (Figure 1).

Colorectal cancer

The incidence rates for colorectal cancer have not followed any clear trend over the past 20 years. (Figure 3).

Lung cancer

Over the past 20 years, there have been different trends of incidence for men and women, for women increasing (Figure 5).

Conclusions

In addition to the baseline and improvement scenarios identified for each cancer, a ‘no improvement’ scenario – applicable to all cancer types – to allow for comparisons between scenarios and a ‘no change’ future. We also include an ‘other cancer’ group in the model, in order to be able to forecast for all cancers (excluding non-melanoma skin cancer).

Historical incidence and survival rates, and a changing stage of diagnosis mix, are – along with underlying population changes – likely to be the biggest determinants in forecasting a future cancer population. By working closely with a range of cancer site-specific clinical experts, we have been able to incorporate the baseline and improvement scenarios and assess of historical trends to draw up three scenarios for the future.

The input data used in each nation will vary depending on the availability of the data and trends but, where possible, we will use nation-specific data or assumptions agreed with experts for each nation. Not all the data from the individual nations can be described here. Details can be made available on request.

Methods

Year-on-year cancer prevalence will be calculated for the most common cancers (lung, female breast, prostate, colorectal and lung) – using aggregate and publicly available incidence and mortality figures for England, Wales, Scotland and Northern Ireland. Inputs are by age group, sex, nation, cancer site and stage. They include: historical incidence, survival, mortality (cancer and background), as well as underlying population.

Examination of the historical trends, a literature review and discussions with site-specific clinicians and cancer registry experts were carried out to define agreed sets of assumptions and data inputs to be used in the model. Assumptions around changing diagnosis rates, patterns of stage and survival are applied to each year.

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References


Digital version of this poster available from macmillan.org.uk/prevalenceprojections

June 2016

Forecasting the future cancer population

Wales

Scotland

England


Figure 1: Incidence rate of female breast cancer by nation, 1995-2013

Survival rates across the UK have seen great improvements in all locations. In England and Wales, more than three-quarters of women diagnosed with breast cancer are now expected to survive for at least 10 years (Figure 2).

In England, 71% of all breast cancers were diagnosed at Stage 1 or 2 in 2013, which has the best survival outcomes. Similar stage mixes are seen in each nation – in Wales 68% of all cases are diagnosed Stage 1 or 2, Scotland 83%3, and in N. Ireland 71%4.

Baseline scenario

Current trends of screening uptake will continue and will expand to the 47-49 and 71-73 age groups over the next 20 years. Survival will improve due to an earlier stage mix combined with more effective treatments. Improvement in survival will be most apparent for older patients and those diagnosed at Stage 4.

Improvement scenario

As for the baseline scenario, plus increasing awareness of breast cancer and requests for screening in the over 70s. There will be increased detection of early stage tumours in the 70-80 age group. Survival improvements are stronger than for the baseline scenario due to an even earlier stage mix.

Prostate cancer

Since 1995, the incidence rate for prostate cancer has seen a steady increase. This is particularly apparent from the early 2000s due to PSA testing. (Figure 7).

Baseline scenario

Continued incremental uptake of PSA testing in men aged 50 and over, with combined population growth, will see an increase in prostate cancer incidence, which will stabilise over the long term. Survival will improve gradually due to more aggressive treatment, with the majority of survival improvement for older and Stage 4 patients.

Improvement scenario

Increased uptake of PSA testing, combined with STILRAS risk stratification and population growth results in increased incidence but lower recording of non-clinically significant ‘low risk’ disease. Survival will improve strongly due to more aggressive treatment, with the majority of survival improvement for older and Stage 4 patients.

Figure 2: Survival trends for female breast cancer (England and Wales, 1971 - 2011)

Figure 3: Survival trends for female breast cancer (England and Wales, 1971 - 2011)

Figure 5: Incidence rate of lung cancer by sex

Figure 6: Survival trends for lung cancer (England and Wales, 1971 - 2011)

Figure 7: Incidence rate of prostate cancer, 1995-2013

Figure 8: Survival trends for prostate cancer (England and Wales, 1971 - 2011)

Figure 10: Survival trends for prostate cancer (England and Wales, 1971 - 2011)