The burden of cancer and other long-term health conditions

70% of people with cancer are also living with one or more other potentially serious long-term health conditions, which could lead to reduced survival and a higher level of need

The number of people getting and surviving cancer is increasing every year. As of 2015 an estimated 2.5 million people are living with cancer in the UK, an increase of 400,000 people in just five years[i]. New research commissioned by Macmillan Cancer Support has now revealed that an estimated **1.8 million people are living with one or more other potentially serious long-term health conditions** in addition to cancer – more than two in three (70%) of those with cancer. This is the most up-to-date comprehensive estimate available for the UK.

Living with other long-term conditions as well as cancer reduces people's chance of survival and increases their level of support needs. In addition, the way in which we treat people with both cancer and other long-term conditions in the UK may partly explain why our survival rates lag behind those of other European countries.

The burden of other long-term health conditions

More than two in three (70%) people with cancer – 1.8 million people in the UK – are also living with one or more other potentially serious long-term health conditions. Almost half (47%) have two or more conditions as well as cancer, and **more than one in four (29%) have three or more conditions as well as cancer** (see Figure 1[ii]).

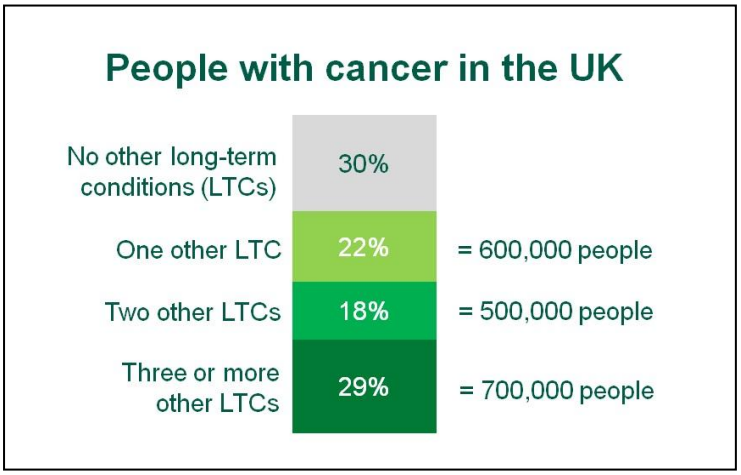

Figure 1: Proportion and number of people with cancer living with one or more other long-term health conditions

The top five most common long-term conditions for people with cancer are as follows[iii]:

1. High blood pressure (hypertension) – affects 42% of people with cancer
2. Obesity – 31%
3. Mental health problems – 21%
4. Chronic heart disease – 19%
5. Chronic kidney disease – 17%

The top four conditions are also the most common long-term conditions that affect people without cancer[iv]. However, people with cancer are **31% more likely than people without cancer to be living with one or more other long-term conditions**, after taking into account that people living with cancer are, on average, older than those who have never had cancer[v].

People with cancer are more likely than people without cancer to have high blood pressure (hypertension) – **42% of people with cancer have hypertension compared with 30% of people of the same age without cancer**. Previous research has suggested that hypertension may be associated with an increased risk of developing certain types of cancer[vi,vii], possibly due to lifestyle factors such as poor diet and a lack of exercise that increase the risk of both conditions. Certain cancer treatments can also increase the risk of hypertension[viii,ix]. People with cancer are also **more likely to have chronic kidney disease** than people without cancer (17% compared with 6%), which may also be due to shared risk factors or the long-term effects of cancer treatment[x].

The proportion of people with cancer who have one or more other serious long-term health conditions increases with age (see Figure 2). However, **more than one in three (39%) people with cancer aged 25-49 are living with at least one other condition**.

By 2030 the number of people living with cancer and at least one other LTC will increase by around one million, to around three million people (72% of people with cancer).

Long-term health conditions reduce cancer survival

Women with breast cancer and men with prostate cancer who have only one other serious long-term health condition before they are diagnosed with cancer are **more likely to die within seven years of diagnosis** than those who do not have a pre-existing condition. Data from the Macmillan-led *Routes from Diagnosis* research programme shows that, for example, women aged 65-69 with breast cancer are a third more likely to die within seven years if they have one other pre-existing serious health condition[xi]. For men with prostate cancer, the difference is even

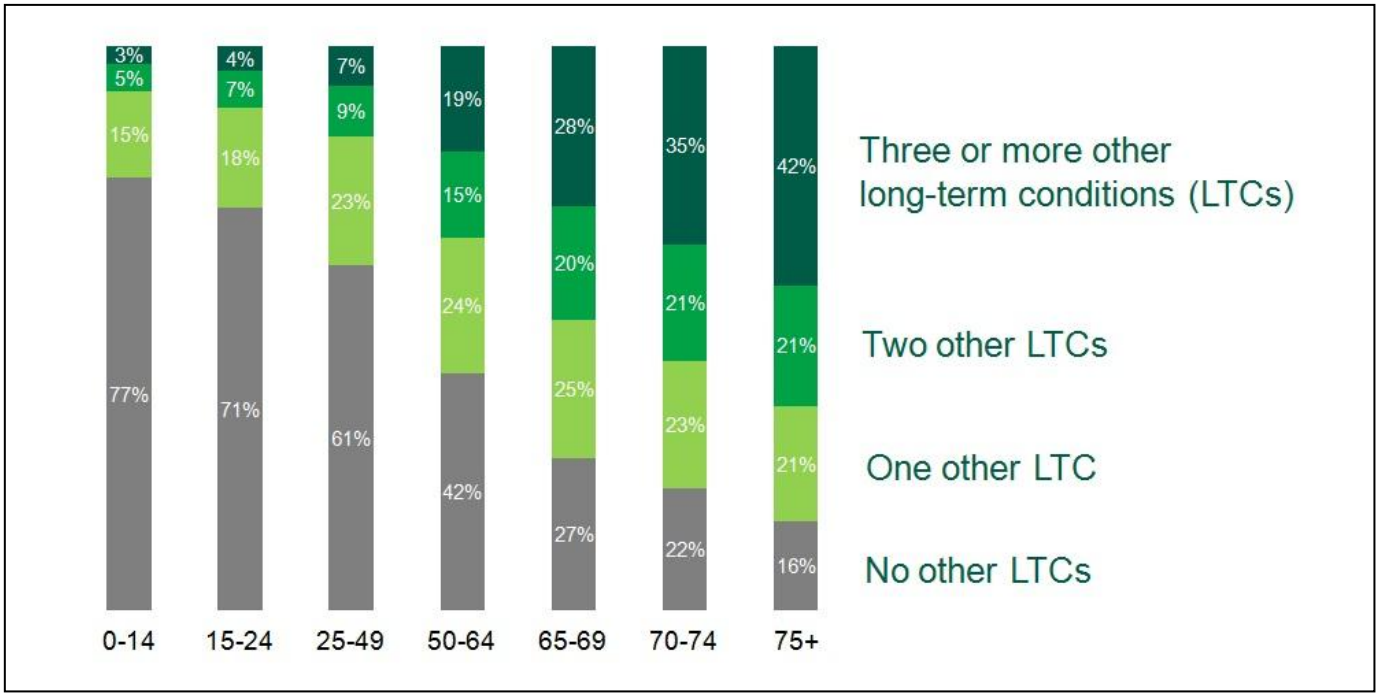

Figure 2: Proportion of people with cancer living with one or more other long-term health conditions, by age group

greater – those aged 65-69 with one other pre-existing condition are 58% more likely to die within seven years[xii].

Long-term health conditions increase people's needs

Two in three (67%) people with cancer who have other long-term conditions have **practical or personal support needs**, compared with around three in five (57%) people with cancer who have no other conditions, according to data from Macmillan Cancer Support's research into the social care needs of people with cancer. The research also shows that people with cancer who have other long-term conditions also report more emotional support needs, and are **more likely to have needs serious enough to be eligible for formal social care support** than people with no other long-term conditions[xiii].

Long-term health conditions increase the cost of care for cancer patients

Hospital inpatient care for men with prostate cancer who have one other serious long-term health condition before they are diagnosed with cancer **costs on average £5,000 more** per patient than inpatient care for men with no other conditions, according to data from *Routes from Diagnosis.* The average cost of inpatient care for men with one other pre-existing condition is £11,700, measured for up to seven years following diagnosis, compared with £6,700 for men with no pre-existing conditions. The cost of inpatient care for women with breast cancer and one other serious pre-existing condition is on average over £2,500 more than for women with breast cancer and no other conditions (£12,600 compared with £10,000)[xiv].

Poor care for long-term health conditions could be linked to poor UK cancer survival rates

Survival rates for cancer in the UK generally lag behind the best in Europe. For example, the **UK is at least 10 years behind Sweden for three of the four most commonly diagnosed cancers** (colon, breast and lung)[xv]. The UK and Sweden have similar levels of wealth, both countries have universal access to healthcare, and both collect high-quality cancer data from 100% of the population[xvi]. The reasons behind the differences in survival rates are currently being investigated; one factor **could be that Sweden is particularly good at managing long-term health conditions**.

Sweden's population has one of the oldest age profiles in the Organisation for Economic Cooperation and Development (OECD). As a result, care for the elderly and managing chronic health conditions has been a priority for its health and social care system since the early 1990s. Currently seven out of 10 dependent elderly people receive care in their homes and rates of avoidable hospitalisation for chronic conditions are some of the lowest in the OECD. There is a key focus on prevention and significant investment in physical activity initiatives[xvii].

Conclusion

People with cancer in the UK have individual and complex needs, and our health and social care system urgently needs to reflect this. The presence of long-term conditions is associated with poorer cancer survival rates and a higher level of need. We need to care for the whole person with cancer, not just treat single diseases and their individual symptoms separately.

About this research

Health and social care providers are increasingly focused on managing the growing burden of long-term conditions (LTCs) among an ageing population. Understanding cancer not only as an LTC itself, but in the context of other LTCs is therefore becoming a key area of enquiry for Macmillan Cancer Support.

To produce new estimates for the proportion and number of people with cancer and other LTCs, we commissioned research consultancy Monitor Deloitte to conduct a review of internal and external evidence, and conduct secondary analysis of available data where appropriate.

An extensive review identified 'best available' data from different care settings and perspectives. No single source provides definitive data on the prevalence of LTCs amongst the UK public and people living with cancer. UK-wide estimates in this document are therefore derived from the following 'best available' sources to estimate the population living with with cancer and another long term condition:

- **Patient-reported data from Health Survey England and Scottish Health Survey, 2012** – captures LTCs considered meaningful to patients, with some conditions (such as obesity and blood pressure) measured by a healthcare professional
- **Primary care data from Quality and Outcomes Framework (QOF) summary records, 2012-13** – Captures LTCs considered clinically meaningful to GPs (or those prioritised through QOF)
- **Secondary care data from Hospital Episode Statistics, 2003-12** – Captures LTCs severe enough to be recorded in a hospital setting.

We assume that these data sources are representative of the rest of the UK and apply the proportion of LTCs in the cancer population by age to total cancer prevalence figures[xviii] to derive our estimate for 2015 and future projections.

To be considered long-term for the purposes of this analysis, a condition had to satisfy the following criteria. It must:

- Be a symptom or morbidity, and;
- Prevent the individual leading a 'normal' life, by being:
    - A chronic condition where there is a need for active management, or;
    - An acute condition leading to residual disability, and;
- Last longer than one year, and;
- Have been recorded :
    - At any time during the patient's life, or;
    - Between three years pre-cancer diagnosis and seven years post-cancer diagnosis for LTCs being actively treated within secondary care during cancer survivorship

Beyond estimating the burden of LTCs in general, this work also sought to understand the prevalence of specific LTCs. For the purposes of this project, Macmillan agreed a list of priority morbidities and health problems to investigate. Individual conditions were included on the basis that they demonstrated all or some of the following characteristics:

- Fall within this project's definition of an LTC (e.g. asthma)
- High prevalence, now or in 2030 (e.g. hypertension, obesity)
- High impact on ability to lead a 'normal' life (e.g. chronic kidney

disease, chronic obstructive pulmonary disease [COPD])

- Important in the context of other ongoing/future Macmillan work
- Relationship/association with cancer (e.g. chronic fatigue, hypertension)

For more details of the methodology, please contact evidence@macmillan.org.uk.

References

[i] Macmillan Cancer Support. Estimate for 2015 based on extrapolation of data in: Maddams J et al. Projections of cancer prevalence in the United Kingdom, 2010-2040. *Br J Cancer* 2012; 107: 1195-1202. (Projections scenario 1)

[ii] Please note that the overall estimates in Figure 1 are based on people with records of LTCs in secondary care – the true number will be higher as not everyone with an LTC requires hospital treatment.

[iii] Estimates for hypertension and chronic heart disease are from secondary care data (Hospital Episode Statistics). Estimates for mental health conditions and chronic kidney disease are from patient-reported data (Health Survey for England and Scottish Health Survey). Estimates for obesity are defined as a BMI of 30 or more, as measured by a healthcare professional as part of the Health Survey for England and Scottish Health Survey

[iv] The age-adjusted prevalence of the most common long-term conditions in people without cancer are as follows: hypertension (30%); obesity (28%); mental health issues (21%); chronic heart disease (15%); arthritis (14%)

[v] 70% of people with cancer are living with at least one other LTC, compared with 55% of the general population (rounded figures). The figure for people with cancer is around 15 percentage points, or 31% (for the non-rounded figures), greater than the figure for the general population

[vi] Sanfilippo KM, McTigue KM, Fidler CJ *et al*. Hypertension and obesity and the risk of kidney cancer in 2 large cohorts of US men and women. *Hypertension* 2014; 63: 934-941

[vii] Rosato V, Zucchetto A, Bosetti C *et al*. Metabolic syndrome and endometrial cancer risk. *Ann Oncol* 2011; 22: 884-889

[viii] Wang Z, Xu J, Nie W *et al*. Risk of hypertension with regorafenib in cancer patients: a systematic review and meta-analysis. *Eur J Clin Pharmacol* 2014; 70: 225-231

[ix] Funakoshi T, Latif A, Galsky MD. Risk of hypertension in cancer patients treated with sorafenib: an updated systematic review and meta-analysis. *J Hum Hypertens* 2013; 27: 601-611

[x] Stengel B. Chronic kidney disease and cancer: a troubling connection. *J Nephrol* 2010; 3: 253-262

[xi] Macmillan Cancer Support. Routes from Diagnosis research programme. Unpublished data. For breast cancer patients aged 65-69 with a pre-diagnosis adapted Charlson Index score of 1, 34% die within seven years of diagnosis, compared with 25% of those aged 65-69 with a pre-diagnosis adapted Charlson index score of 0 (the difference in percentage points, 9%, represents a 35% increase). In the context of Routes from Diagnosis, an adapted Charlson index score of 1 means the person has one of the following conditions recorded in their inpatient hospital record in the 27 months prior to their cancer diagnosis: myocardial infarct (heart attack), congestive heart failure, peripheral vascular disease, dementia, cerebrovascular disease, chronic lung disease, connective tissue disease, ulcer, chronic liver disease or diabetes. A score of 0 means that the person does not have any of these conditions recorded in their inpatient hospital record in the 27 months prior to their cancer diagnosis. For an overview of the main findings from phase one of Routes from Diagnosis, see: Macmillan Cancer Support. *Routes from Diagnosis: The most detailed map of cancer survivorship yet.* April 2014. http://www.macmillan.org.uk/Documents/AboutUs/Research/Researchandevaluationreports/Routes-from-diagnosis-report.pdf

[xii] Detail as per reference x. For prostate cancer patients aged 65-69 with a pre-diagnosis adapted Charlson Index score of 1, 39% die within seven years of diagnosis, compared with 25% of those aged 65-69 with a pre-diagnosis adapted Charlson index score of 0 (the difference in percentage points, 14%, represents a 58% increase).

[xiii] Unpublished data from Macmillan Cancer Support/mruk research study comprising of:

- A UK-wide survey of 1,037 people living with cancer and their carers (209 people in treatment, 573 people with cancer diagnosed up to 10 years previously, and 255 current or recently bereaved carers of people at the end of life). 219 interviews

out of the 1,037 were conducted with people living with cancer in Scotland.
- 24 in-depth face-to-face interviews
- 15 week-long online diaries

The data show that 44% of people with cancer who have other long-term conditions report having needs that could be classified as 'critical' or 'substantial' according to the former England's Fair Access to Care Services (FACS) criteria. Scotland, Wales and Northern Ireland use similar criteria, although precise definitions differ., compared with 35% of those with no other conditions. For an overview of the main findings from the research, see: Macmillan Cancer Support. *Hidden at home: The social care needs of people with cancer.* March 2015. http://www.macmillan.org.uk/Documents/GetInvolved/Campaigns/Carers/hidden-at-home.pdf

[xiv] Macmillan Cancer Support. Routes from Diagnosis research programme. Unpublished data. For prostate cancer patients with a pre-diagnosis adapted Charlson Index score of 1, the average cost of inpatient care per patient over up to seven years after diagnosis is £5,000 higher (£11,700 vs. £6,700) than for patients with a score of 0. For breast cancer patients, the equivalent figures are £12,600 compared with £10,000. In the context of Routes from Diagnosis, an adapted Charlson index score of 1 means the person has one of the following conditions recorded in their inpatient hospital record in the 27 months prior to their cancer diagnosis: myocardial infarct (heart attack), congestive heart failure, peripheral vascular disease, dementia, cerebrovascular disease, chronic lung disease, connective tissue disease, ulcer, chronic liver disease or diabetes. A score of 0 means that the person does not have any of these conditions recorded in their inpatient hospital record in the 27 months prior to their cancer diagnosis. Please note, costs comes from inpatient data only so exclude the large proportion of chemotherapy or radiotherapy delivered in an outpatient setting. It reflects the cost to the NHS budget, i.e. what commissioners pay hospitals to provide the care based on the NHS National Tariff, rather than the exact cost to hospitals of providing the care. For an overview of the main findings from phase one of Routes from Diagnosis, see: Macmillan Cancer Support. *Routes from Diagnosis: The most detailed map of cancer survivorship yet.* April 2014. http://www.macmillan.org.uk/Documents/AboutUs/Research/Researchandevaluationreports/Routes-from-diagnosis-report.pdf

[xv] Analysis based on data sourced from: Allemani C, Weir HK, Carreira H *et al* and the CONCORD Working Group. Global surveillance of cancer survival 1995–2009: analysis of individual data for 25,676,887 patients from 279 population-based registries in 67 countries (CONCORD-2). *Lancet* 2015; 385: 977–1010. http://dx.doi.org/10.1016/S0140-6736(14)62038-9. For analysis see: Macmillan Cancer Support. *Cancer survival in the UK and Europe, 1995-2009*. March 2015. http://www.macmillan.org.uk/Documents/AboutUs/Newsroom/10yearsbehind.doc. Analysis highlights that the UK's five-year survival rates for colon, breast and lung cancer for 2005-2009 are lower than Sweden's survival rates for these cancer types for 1995-1999.

[xvi] Both Sweden and the UK take part in the International Cancer Benchmarking Partnership based on having comparable wealth, universal access to health care, and longstanding, high-quality, population-based cancer registration (Coleman M, Forman D, Bryant H *et al*. Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995–2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data. *Lancet* 2010; 377: 127–138 http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2810%2962231-3/fulltext)

[xvii] Macmillan Cancer Support. *How does Sweden manage co-morbidities well?* Internal analysis. Source for the figure for the proportion of dependent elderly people who receive care at home: OECD Reviews of Health Care Quality: Sweden 2013. http://www.oecd.org/health/health-systems/health-care-quality-reviews.htm

[xviii] Maddams J, Utley M, Møller H. Projections of cancer prevalence in the United Kingdom, 2010-2040. Br J Cancer 2012; 107: 1195-1202. (Projections scenario 1). Macmillan analysis based on extrapolation of 2010 and 2020 projections that the number of people living with cancer will hit an estimated 2.5 million in 2015.