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The Excess Burden of Cancer in Men in the UK

In general men are at significantly greater risk than women from nearly all of the common cancers that occur in both sexes (with the exception of breast cancer) (White 2009, Wilkins 2006, DH 2007). This report will consider the current overall burden of cancer among men in the UK, estimated from the latest statistics, and outline the extent of the differences between the sexes. All figures and calculations reported here are based on data extracted from the Cancer Research UK CancerStats web pages extracted in June 2009 (Cancer Research UK, 2009).

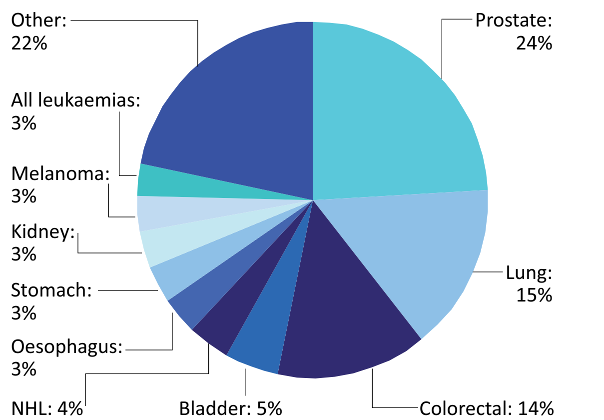
In 2006[1], there were 147,223 new cancers diagnosed in men (excluding non-melanoma skin cancer) and there was a very similar number of new cancers diagnosed in women in the UK (146,378). However, the corresponding European age-standardised incidence rates were 409.7 per 100,000 in men and 354.6 per 100,000 in women; this difference is because of the generally longer life expectancy of women.

Considering deaths from cancer in the UK, the most recent figures available, for 2007[2], show that there were 80,907 in men and 74,557 in women accounting for 29% of total male mortality and 25% of total female mortality. As with the incidence figures, when translated into age-standardised rates, the contrast between men and women is more profound, with death rates of 211.3 per 100,000 in males and 153.1 per 100,000 in females. This difference results from a combination of different life expectancy and the increased likelihood of men having more fatal cancers than women.

The male age-standardised incidence rate for all cancers combined (excluding non melanoma skin cancer) in Great Britain has risen from 353.7 per 100,000 in 1975 to 409.5 per 100,000 in 2006 even though the equivalent mortality rate (for the UK) has dropped from 278.5 in 1975 to 211.3 per 100,000 in 2007[3]. Similar figures for females are 264.5 in 1975 to 354.9 per 100,000 in 2006 for incidence; and 172.7 in 1975 to 153.1 per 100,000 in 2007 for mortality. These differences arise because, while the number of people developing cancer has increased, a combination of earlier diagnosis, improved diagnostic techniques and advances in care and treatment has resulted in more people surviving their cancers.

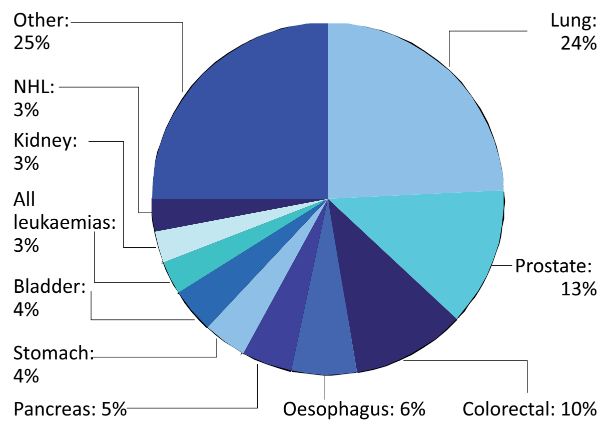
1 2006 is the latest year for which incidence data are available for the UK.
2 2007 is the latest year for which mortality data are available for the UK.
3 Incidence data for the UK are only available from 1993 onwards when the Northern Ireland Cancer Registry was set up. Thus, trends of incidence data are presented for Great Britain for 1975 onwards. Mortality data for the UK are available for the whole time period.

Figure 1: Top ten most common cancer cases for men, UK 2006



All male cancers (exc NMSC): 147,223

Figure 2: Top ten most common cancer deaths for men, UK 2007



All malignant neoplasms: 80,907

June 2009 (amended August 2010)

In terms of different types of cancer in men, although there are now substantially more cases of cancer of the prostate than any other form of the disease (see Fig. 1), lung cancer is still the biggest contributor to male cancer death, accounting for 24% of the total (see Fig. 2). Prostate cancer makes up 13% of the total deaths, with colorectal cancer at 10%. These three cancers make up 53% of cancer cases and 47% of cancer deaths in men and, understandably, have received most attention from policy makers; however, the cancers that comprise the other 53% of deaths in men should not be neglected.

Male-specific cancers

With the introduction of Prostate Specific Antigen testing, alongside the increasingly ageing population, there has been a rapid increase in the incidence of prostate cancer, with rates rising from 32.5 per 100,000 in 1975 to 97.2 per 100,000 in 2006 in Great Britain. Whilst the death rate from prostate cancer for all ages has risen since 1975, it is now gradually decreasing. However, this decline has predominately been influenced by trends in the over 85 year olds (see Fig. 3) and has, therefore, not affected the overall falling age-standardised cancer mortality trend for all cancers.

Mortality from testicular cancer has continued to fall, but this is against a year on year increase in the incidence rate, which currently stands at 6.9 per 100,000 men in the UK. Penile cancer is relatively very rare, with 112 deaths in 2007 across the UK, with 88% of these occurring over the age of 50 years.

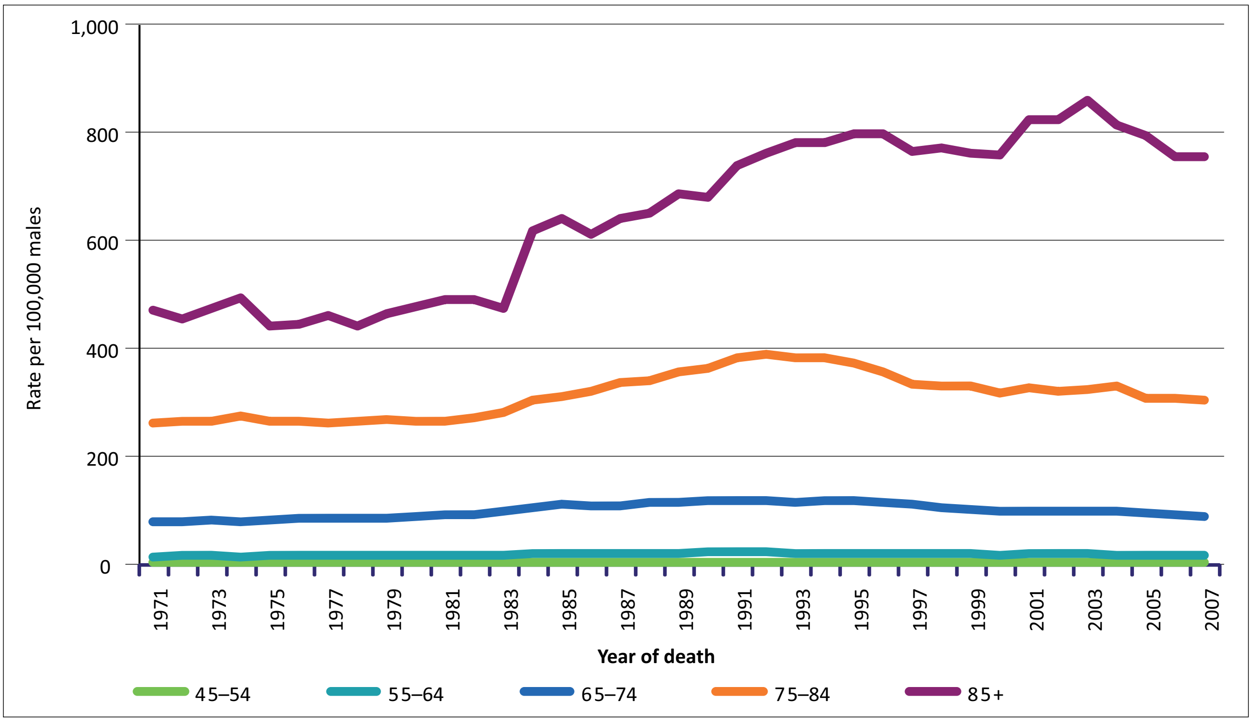
Rate ratios of cancer deaths

Rate ratios of the mortality age-standardised rates for males and females for all ages and truncated into two age groups are presented in Table 1. All were found to be statistically significant at the 95% confidence level. From the rate ratios of male to female deaths (see Fig. 4 and Table 1, excluding the 577 non-melanoma skin cancer deaths in 2007 across both sexes), it is evident that there is a significantly higher rate of death for men (1.38) over all ages. This ratio is lower in the 15–64 age range (1.05) but rises substantially (to 1.57) over the age of 65 years.

The mortality rate for lung cancer is substantially higher in men than women (see Fig. 5) due to differing smoking patterns over the previous 60 years, although the gap has reduced as greater numbers of men have given up smoking relative to the numbers of females smokers (see Fig. 6). When rate ratios are calculated after excluding lung cancer to examine the influence on the burden of cancer in the two sexes after excluding the major cancer caused by smoking, then the ratio for all ages drops slightly to 1.31, with corresponding falls to 0.98 for 15-64 year olds and 1.51 for those aged 65 and over. This could suggest that younger males have higher overall cancer mortality because of their excess rate of lung cancer.

If, however, rate ratios are calculated when breast cancer and those cancers which are unique to either men or women only are excluded, a different picture emerges, with 60% more men in the 15–64 year age range dying from cancers that should be affecting men and women equally. Thus a greater effect seems to be predominately because the cancer deaths that occur

Figure 3: Age-specific mortality rates, prostate cancer, UK, 1971–2007



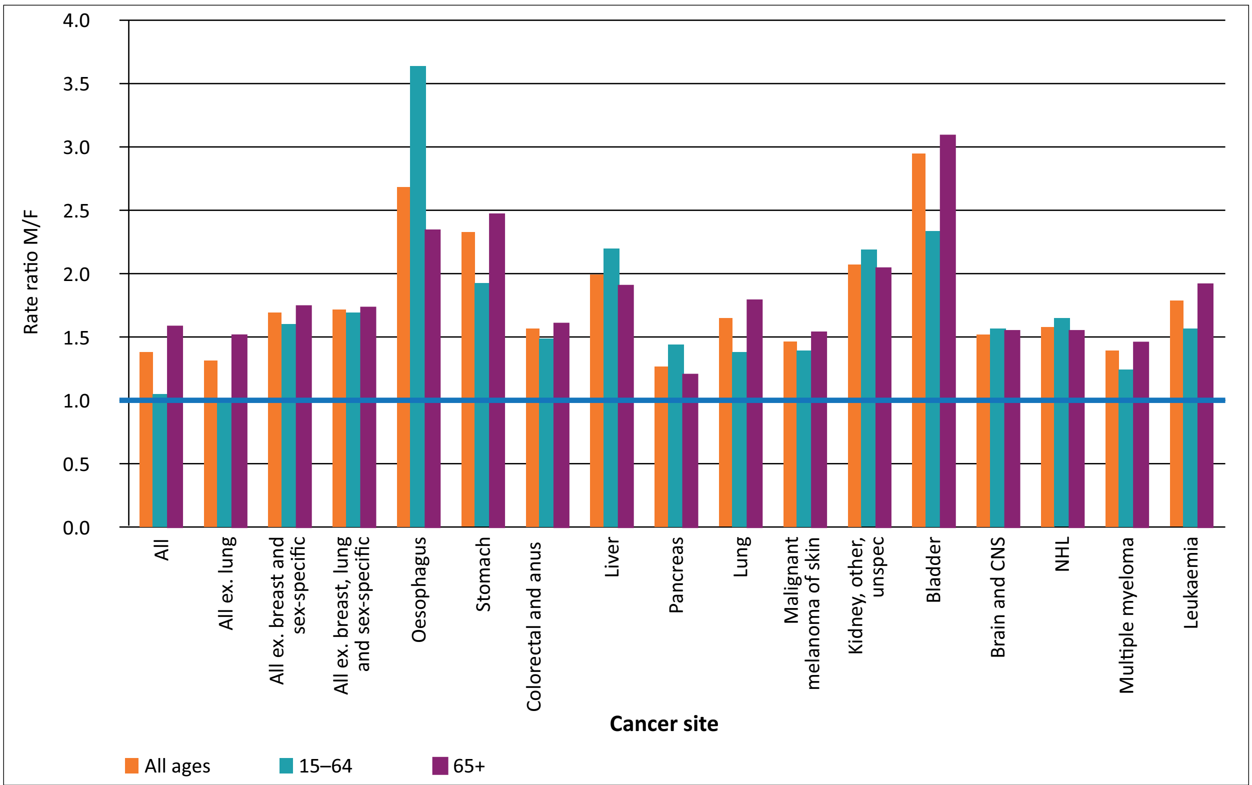
in younger women are those related to the breast and genital organs (37.1% overall of cancer deaths in those aged 15–64; and around 50% in the 35–44 years age group; Table 2). For men there are no significant numbers of deaths that can be attributed to a sex-specific cause in these early years (only 4.7% deaths in ages 15–64 are for male-specific cancers).

Table 1: Rate* ratio of male to female cancer mortality, UK 2007

ICD-10 code	Site description	Mortality rate ratios		
		All ages	15–64	65+
C00-C97 excl. C44	All cancers ex. NMSC	1.38	1.05	1.57
C00-C97 excl. C44 and C33-C34	All cancers ex. NMSC and lung cancer	1.31	0.98	1.51
C00-C97 excluding C44, C50, C51-C58, C60-C63	All cancers ex. NMSC, breast and sex-specific	1.69	1.60	1.73
C00-C97 excluding C44, C33-C34, C50, C51-C58, C60-C63	All cancers ex. NMSC, breast, lung and sex-specific	1.71	1.69	1.72
C15	Oesophagus	2.68	3.63	2.33
C16	Stomach	2.32	1.92	2.46
C18- C21	Colorectum and anus	1.56	1.48	1.59
C22	Liver	1.99	2.20	1.90
C25	Pancreas	1.27	1.44	1.20
C33-C34	Lung	1.65	1.38	1.78
C43	Malignant melanoma of skin	1.46	1.40	1.53
C64-C66 & C68	Kidney, other and unspecified urinary organs	2.07	2.18	2.03
C67	Bladder	2.94	2.34	3.08
C70-C72	Brain and CNS	1.52	1.56	1.54
C82-C85 & C96	Non-Hodgkin's lymphoma	1.57	1.64	1.54
C90	Multiple myeloma	1.39	1.24	1.44
C91-C95	Leukaemia	1.79	1.57	1.91

** European age-standardised rates.*
All of the above mortality rate ratios were statistically significant at the 95% confidence level.

Figure 4: Rate* ratio of male to female cancer mortality, UK 2007



** See Table 1 for complete cancer site label descriptions.*
All of the above mortality rate ratios were statistically significant at the 95% confidence level.

Figure 5: European age-standardised mortality rates, lung cancer, by sex, UK, 1971–2007

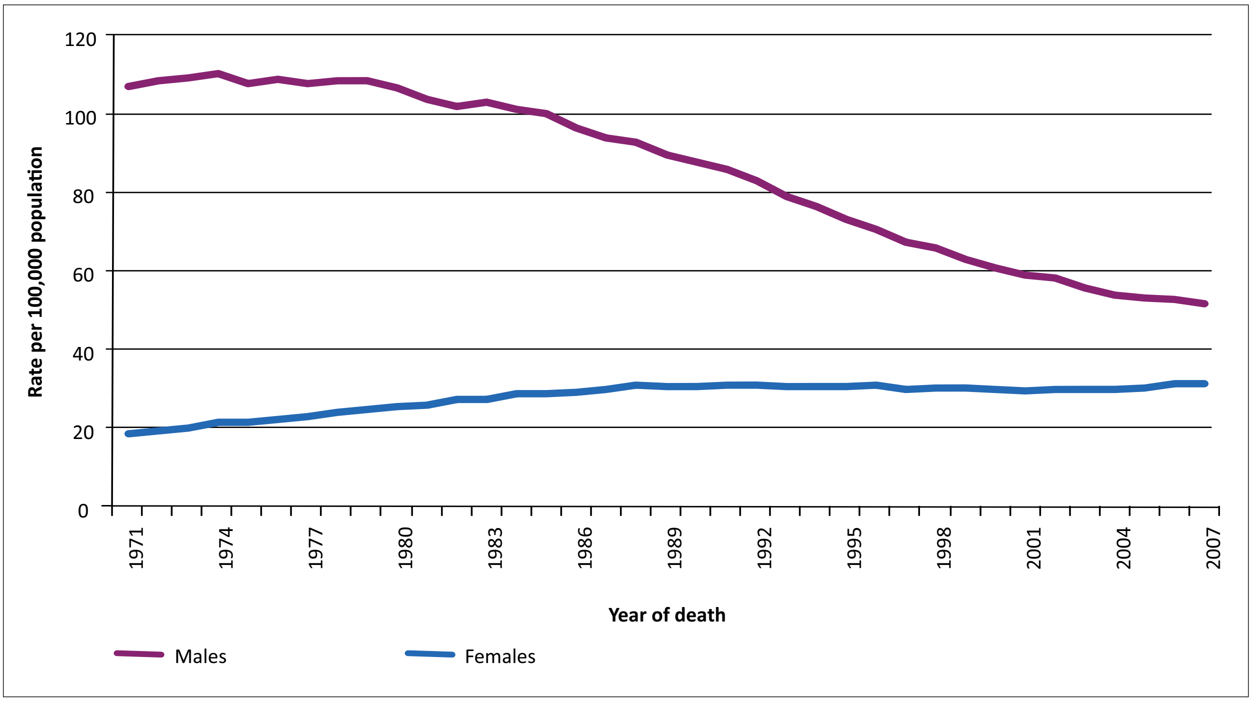
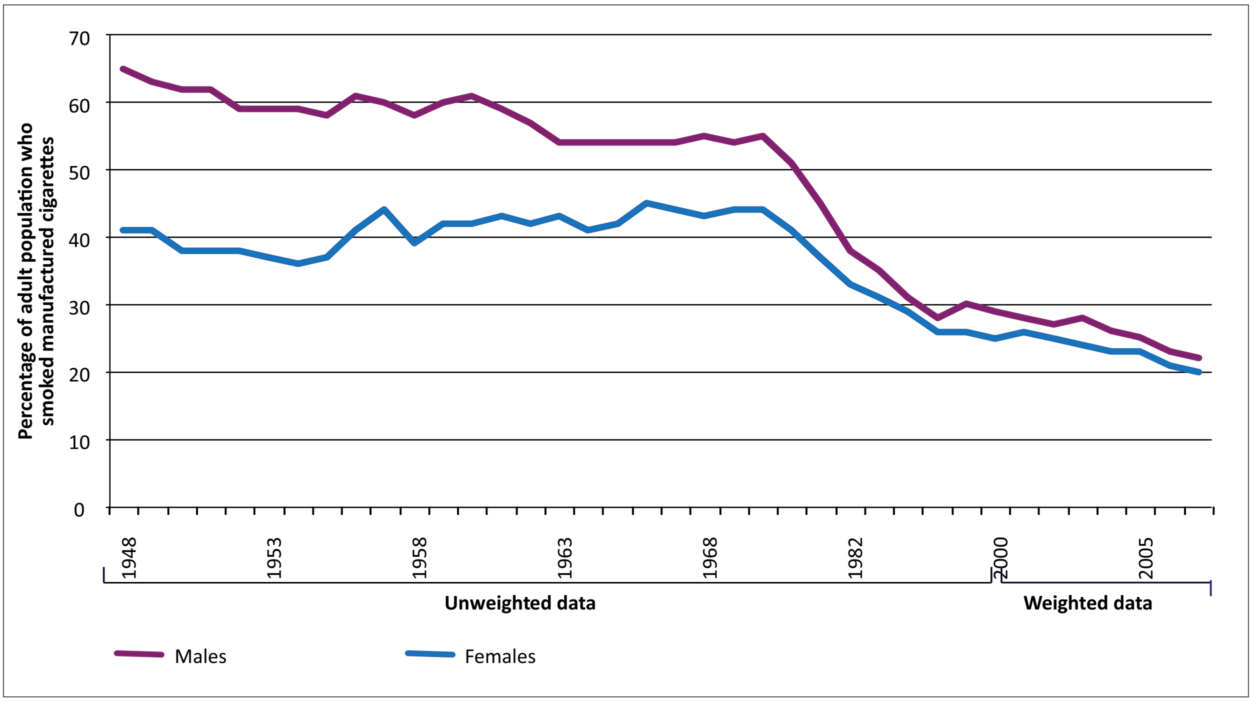


Figure 6: Percentage of men and women aged 16 and over, who smoke cigarettes, Great Britain, 1948–2007



Source: General Household Survey, Office for National Statistics

Table 2: Total numbers of deaths from all cancers excluding breast cancer, the sex-specific cancers and non-melanoma skin cancer; and the percentages of these out of the numbers of deaths from all cancers excluding non-melanoma skin cancer, by age group, UK 2007

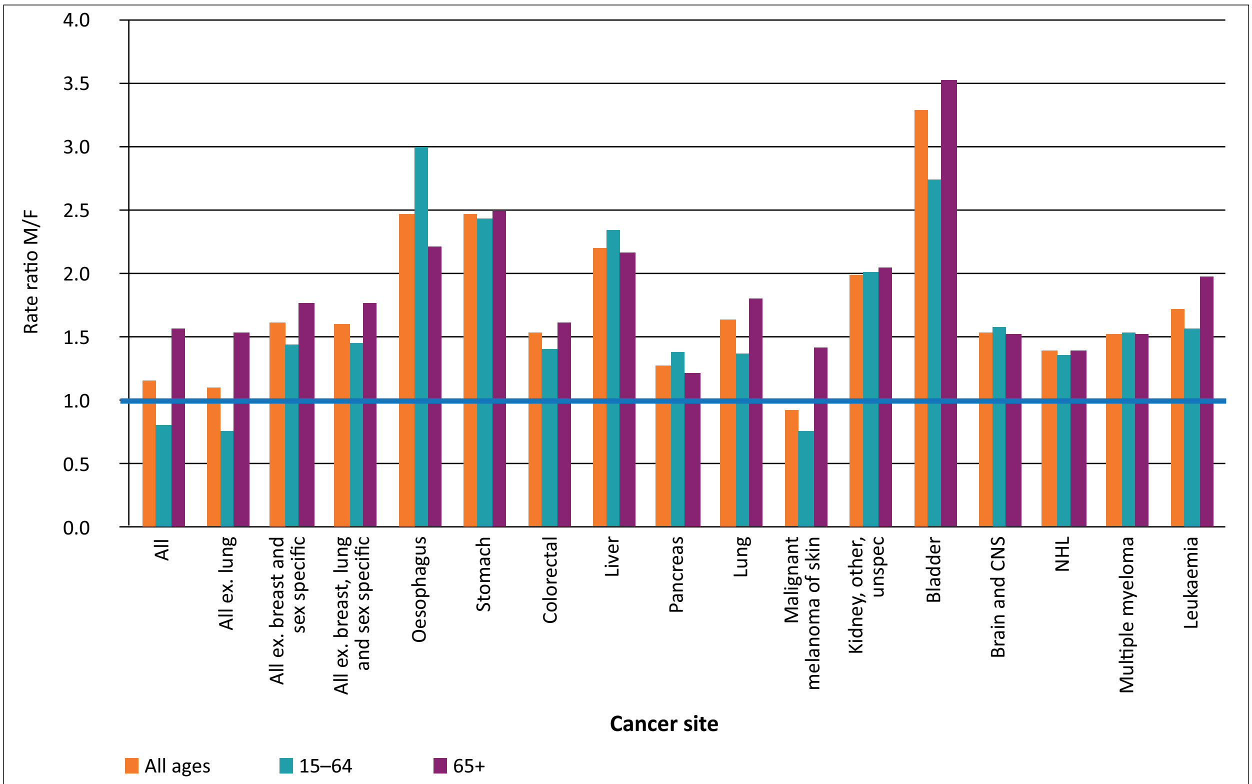
	Under 1 to 14 years	15–64 years	35–44 years	65+ years	All ages
Male	158 (100%)	17,659 (95.3%)	1,177 (99.8%)	52,246 (84.4%)	70,063 (87.0%)
Female	116 (98.3%)	11,363 (62.9%)	856 (49.9%)	43,484 (77.4%)	54,963 (73.9%)

Table 3: Rate ratio of male to female cancer incidence, UK 2006*

ICD-10 code	Site description	Incidence rate ratios		
		All ages	15–64	65+
C00-C97 excl. C44	All cancers ex. NMSC	1.16	0.80	1.57
C00-C97 excl. C44 and C33–C34	All cancers ex. NMSC and lung cancer	1.10	0.76	1.53
C00-C97 excluding C44, C50, C51-C58, C60-C63	All cancers ex. NMSC, breast and sex specific	1.62	1.44	1.77
C00-C97 excluding C44, C33–C34, C50, C51-C58, C60-C63	All cancers ex. NMSC, breast, lung and sex specific	1.61	1.45	1.77
C15	Oesophagus	2.48	3.01	2.22
C16	Stomach	2.48	2.44	2.50
C18–C21	Colorectum and anus	1.54	1.40	1.62
C22	Liver	2.21	2.35	2.18
C25	Pancreas	1.27	1.38	1.21
C33-C34	Lung	1.64	1.37	1.80
C43	Malignant melanoma of skin	0.92	0.76	1.42
C64–C66 & C68	Kidney, other and unspecified urinary organs	1.99	2.01	2.05
C67	Bladder	3.30	2.75	3.54
C70–C72	Brain and CNS	1.53	1.58	1.52
C82–C85 & C96	Non-Hodgkin's lymphoma	1.39	1.36	1.40
C90	Multiple myeloma	1.52	1.54	1.52
C91–C95	Leukaemia	1.72	1.56	1.99

** European age-standardised rates.*
All of the above incidence rate ratios were statistically significant at the 95% confidence level.

Figure 7: Rate* ratio of male to female cancer incidence, UK 2006



** See Table 3 for complete cancer site label descriptions.*
All of the above incidence rate ratios were statistically significant at the 95% confidence level.

The increased risk in mortality rates for males compared with females is seen across a broad range of cancer sites (Table 1).

Rate ratios of cancer incidence

When incidence rate ratios are considered (see Fig. 7 and Table 3), it can be seen that there are more women registered with cancer in the UK in the 15–64 year age group (male to female rate ratio = 0.80) but again when breast cancer and the sex-specific cancers for both men and women are excluded, a greater number of men are seen to be at risk of the non sex-specific cancers (ratio = 1.44). This significant excess is seen across the cancers listed in Table 3, with the exception of malignant melanoma, where more women are diagnosed although (as can be seen from Table 1) more men die from this form of cancer. All incidence rate ratios were statistically significant at the 95% confidence level.

Conclusion

The explanations as to why men seem to be so much more at risk of so many cancers are complex and still only partially understood. Clearly the incidence of those cancers influenced by smoking, such as cancers of the lung and bladder, and those caused by excessive alcohol consumption will reflect sex differences in such behaviours. However, there are likely to be a number of other factors that may be associated including other risk factors and potential differences in symptom awareness and the propensity to seek early medical advice (see box 1). Due to the uncertainty as how all these factors impact on sex differences in cancer risk, more extensive research in this area is required.

Box 1: Factors involved in the development of cancer in men

- **Lifestyle**
  (Martin-Moreno et al. 2008, White 2009)
- **Genetics**
  (White 2009)
- **Knowledge of genetic links within families**
  (Moynihan & Huddart 2009)
- **Reduced uptake of available screening**
  (Brenner, H et al. 2007).
- **Humoral and cellular immunity**
  (Bouman et al. 2004)
- **Help seeking behaviour**
  (Smith et al 2005, Branney 2008)
- **Knowledge of cancer**
  (Macdonald et al. 2004)

Acknowledgements: This report was prepared by Alan White (Centre for Men's Health, Leeds Metropolitan University), Catherine Thomson (Cancer Research UK, Stats Info Team) and David Forman (National Cancer Intelligence Network). Many thanks to Jon Shelton, Cheryl Livings and Joanna Meadows (Cancer Research UK) for data and chart preparation, Helen Bolton and Jeannette Smith (South West Public Health Observatory) for graphic design and report production.

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This information briefing was jointly produced by the National Cancer Intelligence Network, Cancer Research UK, The Centre for Men's Health at Leeds Metropolitan University and the Men's Health Forum. The NCIN is a UK-wide initiative, working closely with cancer services in England, Scotland, Wales and Northern Ireland, and the NCRI, to drive improvements in standards of cancer care and clinical outcomes by improving and using the information it collects for analysis, publication and research. In England, the NCIN is part of the National Cancer Programme.