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Kidney Cancer
Incidence, Mortality and Survival Rates in the United Kingdom

August 2013

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Published August 2013

The National Cancer Intelligence Network (NCIN) is a UK-wide partnership operated by Public Health England. The NCIN coordinates and develops analysis and intelligence to drive improvements in prevention, standards of cancer care and clinical outcomes for cancer patients.

This summary factsheet presents data for ICD-10 C64 "Malignant neoplasm of kidney cancer, except renal pelvis". The most recent incidence and mortality data have been used. Rates are standardised to the 1976 European Standard Population. Where appropriate, rates are per 100,000 sex-specific population.

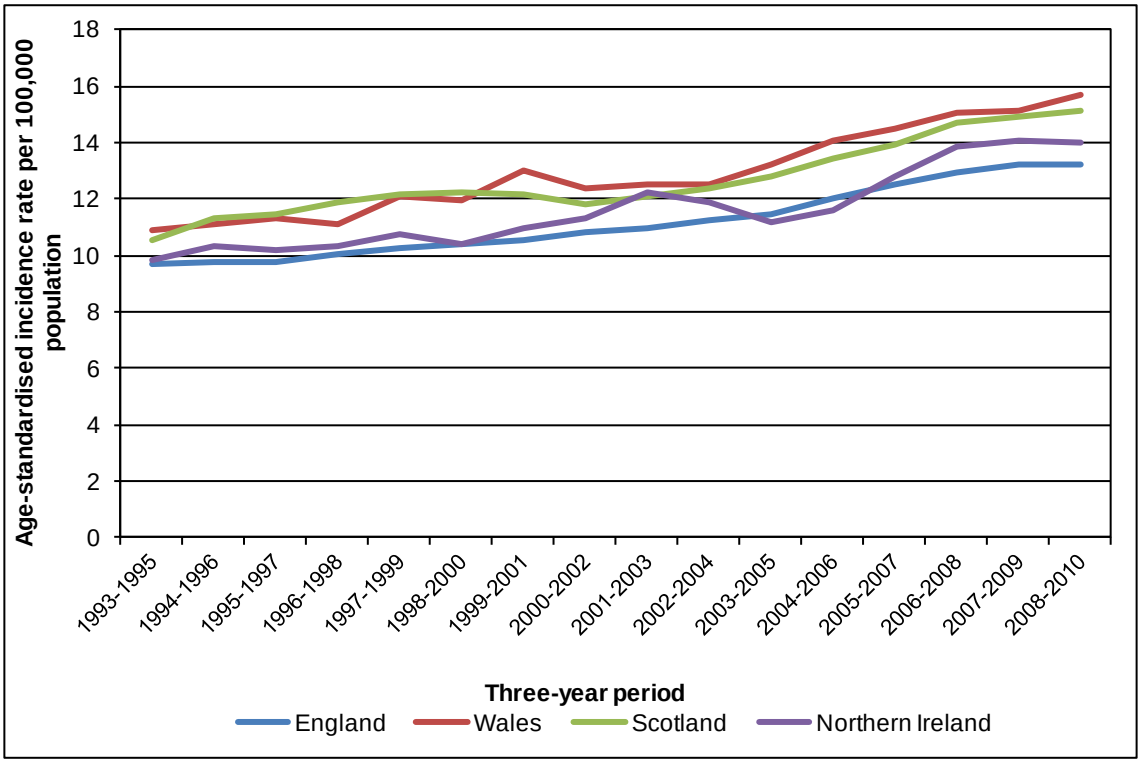
Incidence rates

The age-standardised incidence rate of kidney cancer is significantly higher in males than females ($p<0.001$ in 2008-10 for all four UK countries). In 2008-10, the rate in males was 13.3 to 15.7 per 100,000 (across the four countries) compared to 7.1 to 8.9 per 100,000 in females (Fig. 1 and Fig. 2).

For both sexes and in all countries, the incidence rate is significantly higher in 2008-10 compared to 1993-95 ($p<0.001$). During this period, the age-standardised rate in males increased from 9.7-10.8 to 13.3-15.7 per 100,000 across the four countries (around 42%), whilst in females the increase was from 4.5-5.7 to 7.1-8.9 per 100,000 (around 56%).

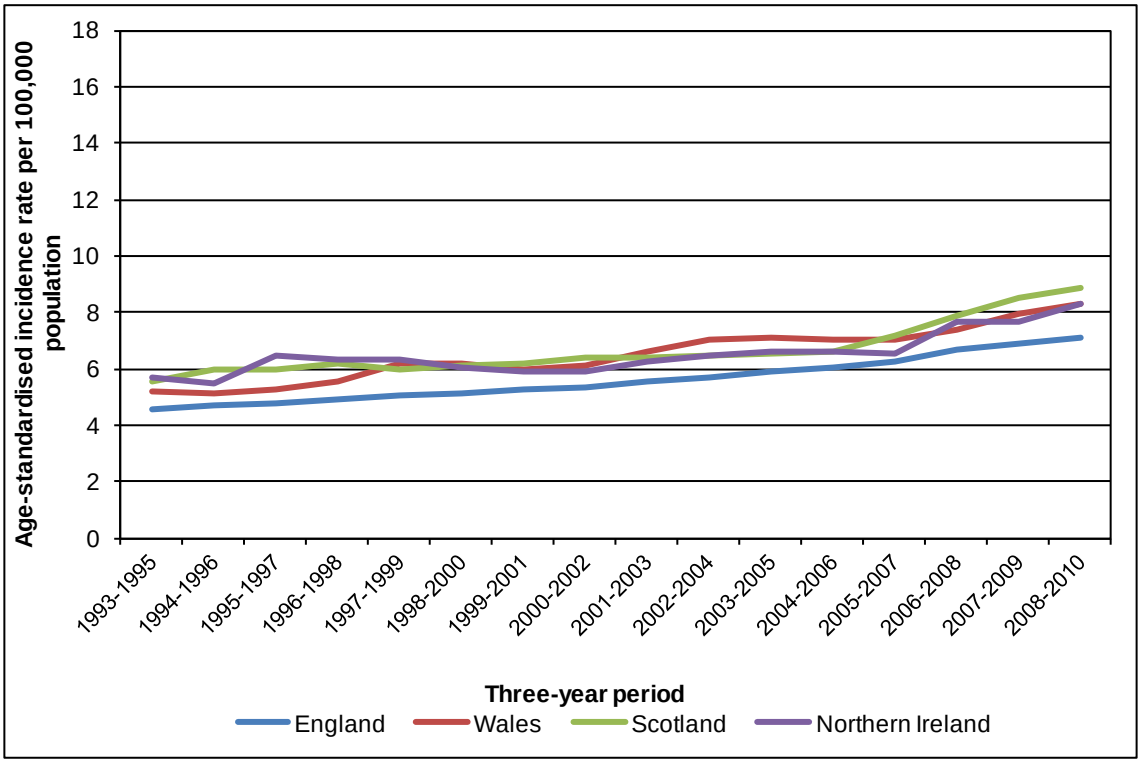
The increasing incidence of kidney cancer is thought to be partly explained by the use of imaging techniques such as ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI), resulting in the detection of asymptomatic disease (Cancer Research UK). Other factors are the increasing level of obesity (with associated effects on hormones, metabolism, and the immune system), and the increasing age of the population (Cancer Research UK).

Figure 1: Age-standardised incidence rates (per 100,000 population) of kidney cancer (ICD-10 C64), males, UK, 1993–2010



Source: Celtic National Cancer Data Repository

Figure 2: Age-standardised incidence rates (per 100,000 population) of kidney cancer (ICD-10 C64), females, UK, 1993–2010



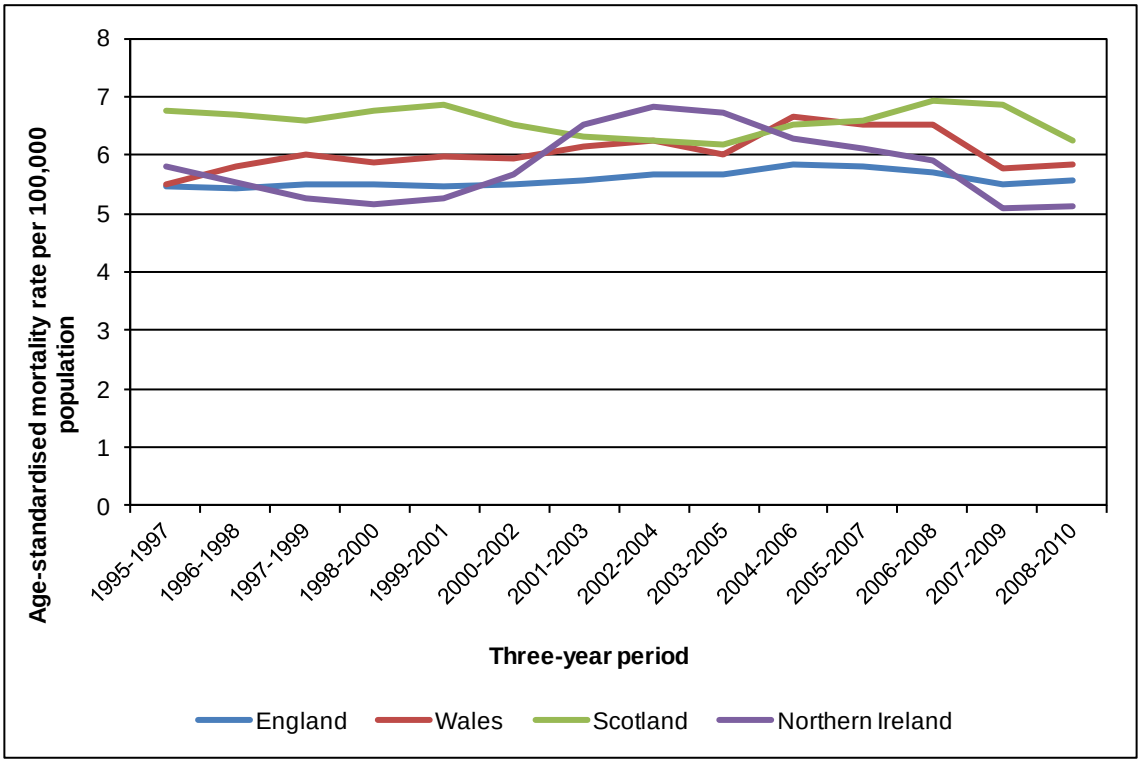
Source: Celtic National Cancer Data Repository

Mortality rates

Age-standardised mortality rates from kidney cancer in the United Kingdom are significantly higher in males than females ($p<0.001$; Fig. 3 and Fig. 4). In 2008-10, the mortality rate in males (5.1 to 6.2 per 100,000 in the different countries) was roughly twice the rate for females (2.8 to 3.1 per 100,000).

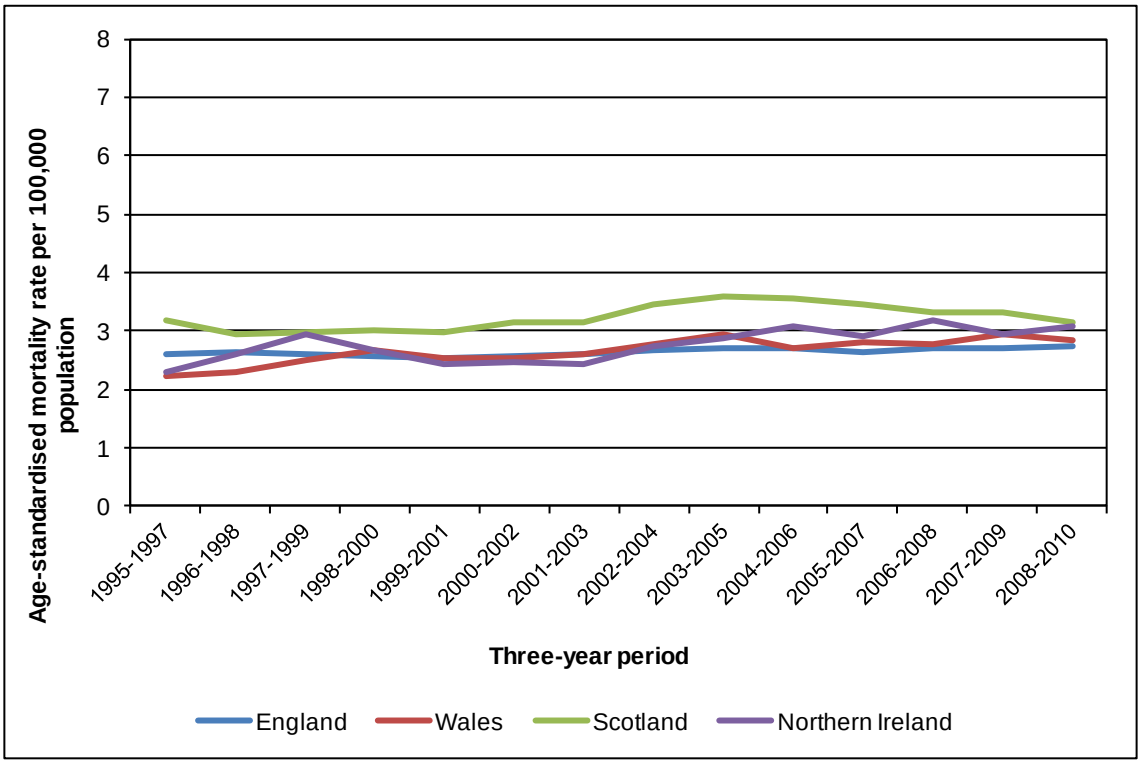
The mortality rates from kidney cancer in the United Kingdom in 2008-10 were not significantly different from 1995-97, except for females in Wales where it was higher ($p < 0.05$).

Figure 3: Age-standardised mortality rates (per 100,000 population) for kidney cancer (ICD-10 C64), males, UK, 1995–2010



Source: Office for National Statistics, UK Cancer Information System (CIS)

Figure 4: Age-standardised mortality rates (per 100,000 population) for kidney cancer (ICD-10 C64), females, UK, 1995–2010



Source: Office for National Statistics, UK Cancer Information System (CIS)

Survival rates

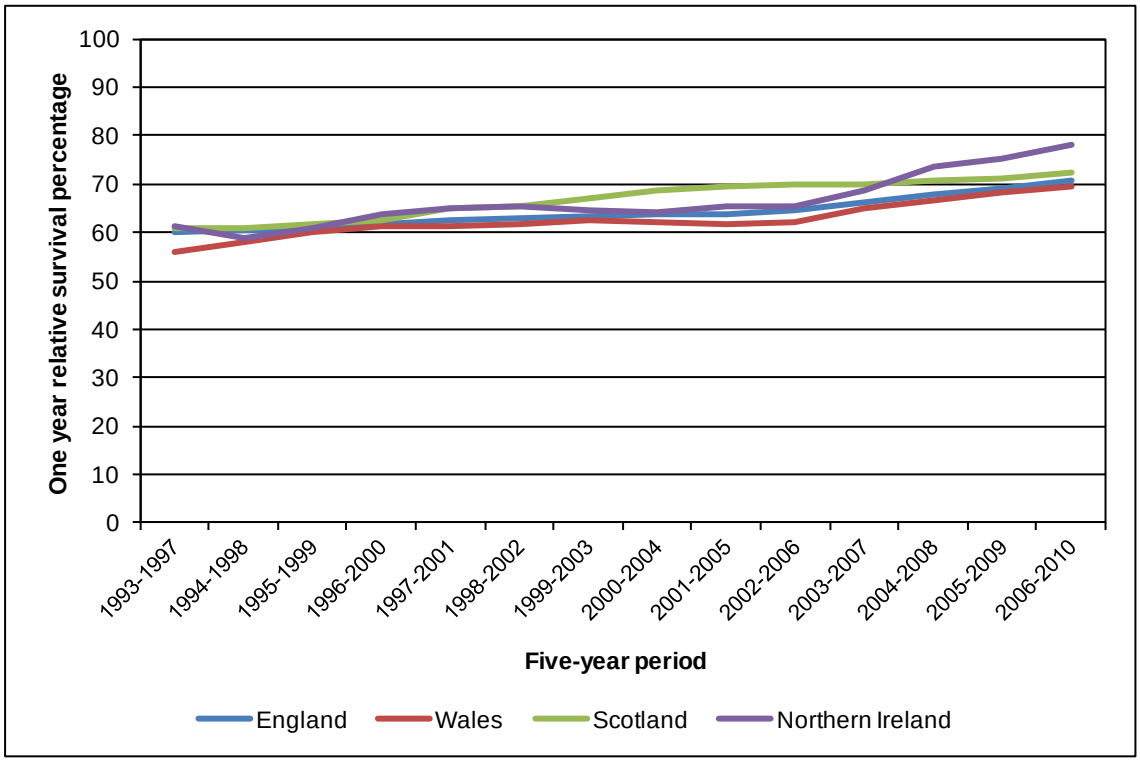
One and five-year relative survival rates from kidney cancer are similar in males and females in England, Wales, and Northern Ireland, based on diagnoses in 2006-10 for one-year survival and 2002-06 for five-year survival. However, in Scotland males have higher one and five-year survival rates than females ($p < 0.01$).

One-year survival rates from kidney cancer were higher in 2006-10 than in 1993-97 ($p < 0.001$) in all cases except for females in Northern Ireland. This may be due to small numbers of cases in Northern Ireland. The rates increased from 56-61% (across the four countries) to 69-78% in males, and from 51-68% to 67-74% in females.

Five-year survival rates from kidney cancer were higher in 2002-06 than in 1993-97 for both sexes in England and Wales, and for males in Scotland ($p < 0.01$); otherwise there was no difference.

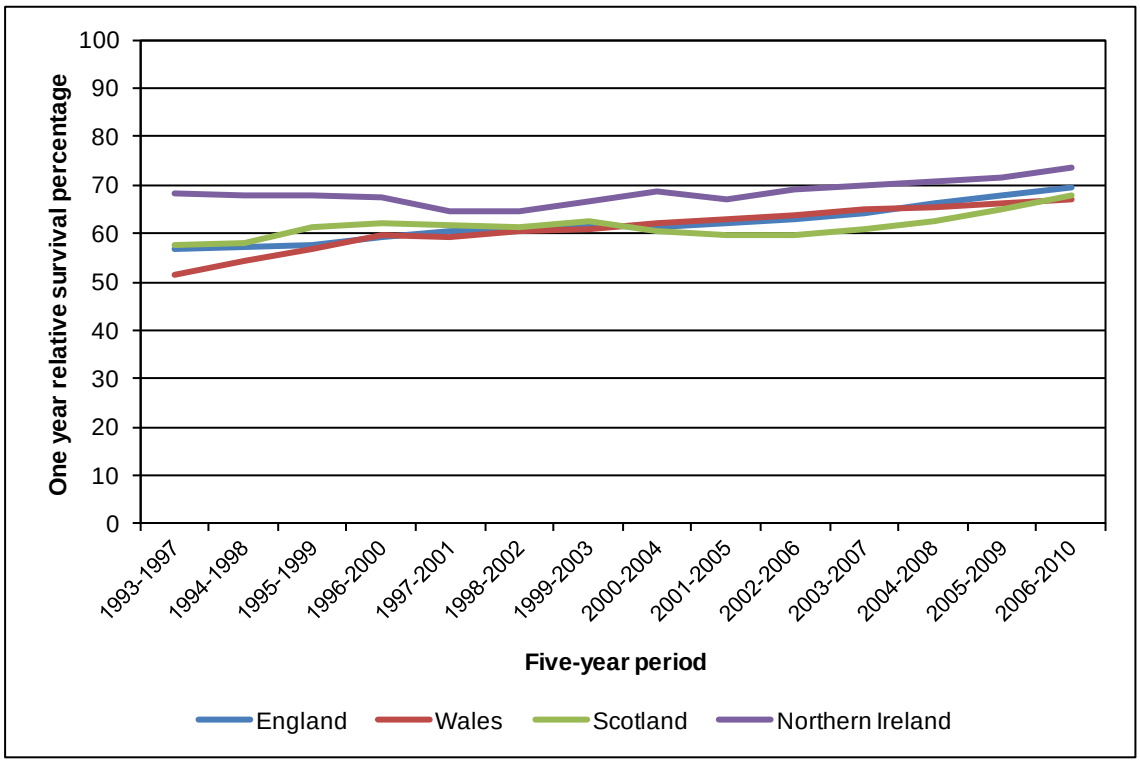
If more early-stage kidney cancers are being detected by imaging, this may help explain the increase in survival rates as earlier treatment is more effective. There is, however, the possibility that lead-time and length bias is also being introduced via the same route. Lead-time bias will lead to an apparent increase in survival, even without delaying time of death, as the cancer is simply detected earlier. Length bias is the preferential detection of cancers with a less aggressive nature, which increases survival figures without improving prospects for those with the most aggressive or advanced form of the disease.

Figure 5: One-year relative survival rate (%) for kidney cancer (ICD-10 C64), males, UK, 1993–2010



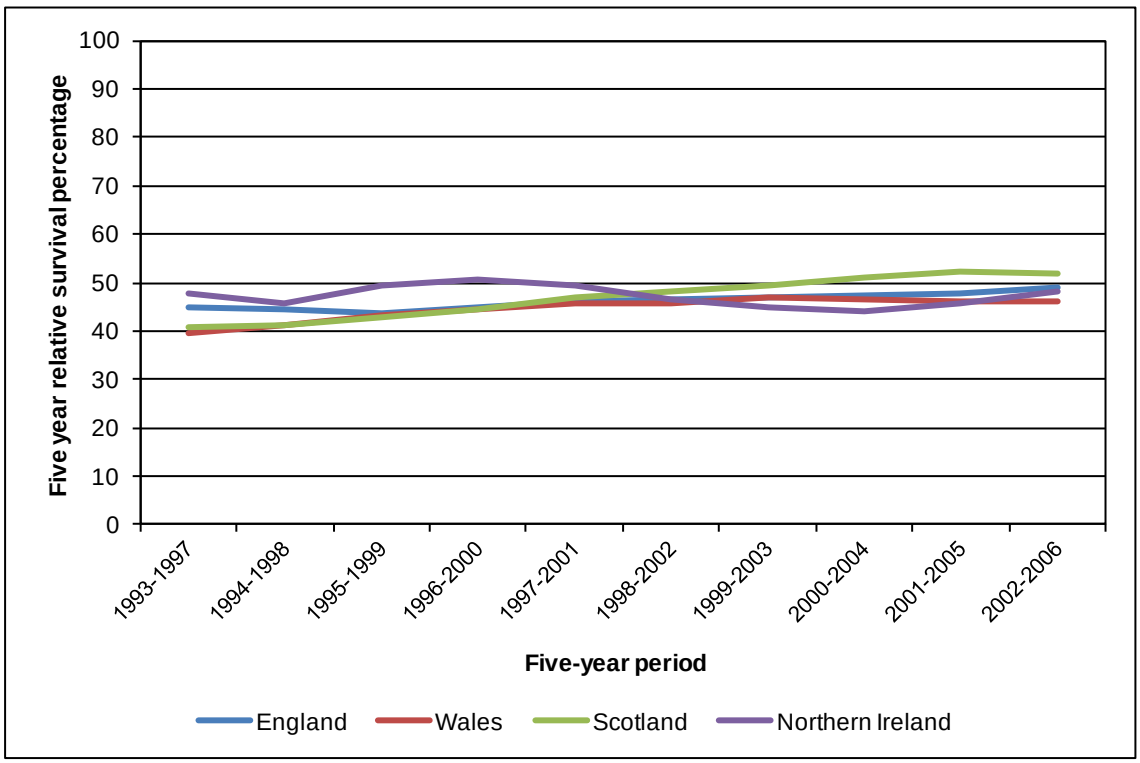
Source: Celtic National Cancer Data Repository

Figure 6: One-year relative survival rate (%) for kidney cancer (ICD-10 C64), females, UK, 1993–2010



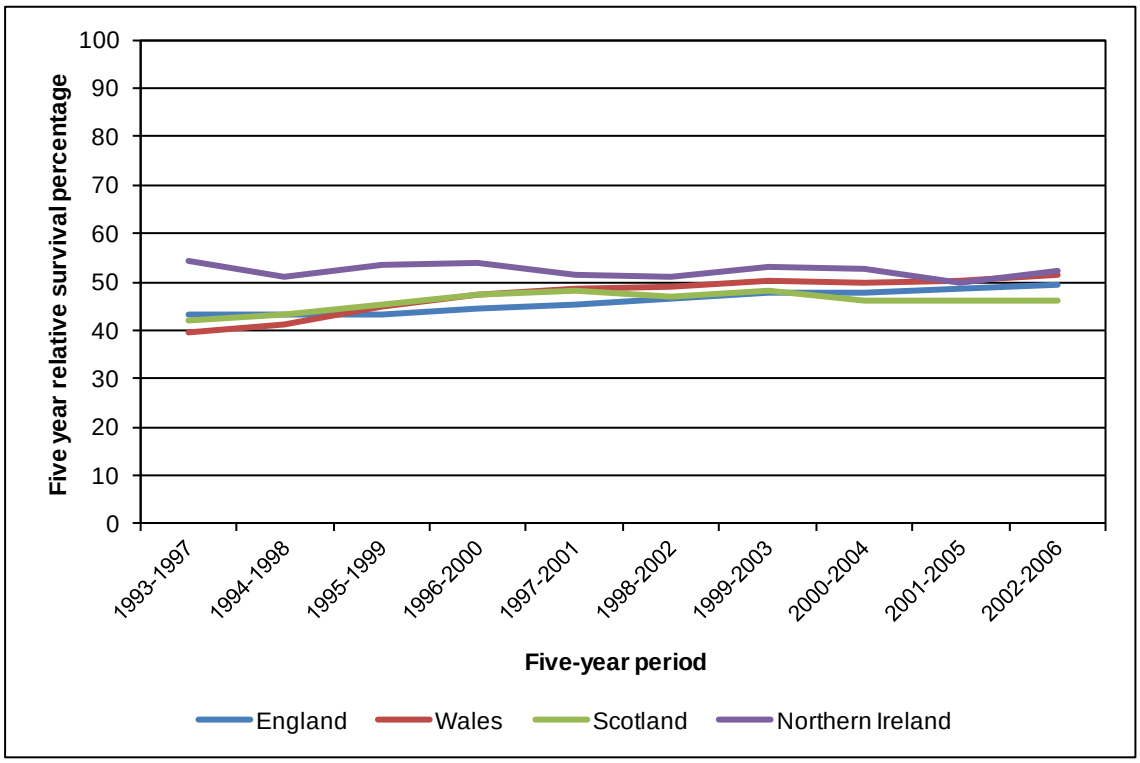
Source: Celtic National Cancer Data Repository

Figure 7: Five-year relative survival rate (%) for kidney cancer (ICD-10 C64), males, UK, 1993–2006



Source: Celtic National Cancer Data Repository

Figure 8: Five-year relative survival rate (%) for kidney cancer (ICD-10 C64), females, UK, 1993–2006



Source: Celtic National Cancer Data Repository

Key questions and next steps

- Why is the rate of incidence and mortality much higher in males compared to females?
- How has the increase in detection via imaging affected stage at diagnosis and treatment patterns?
- Is increasing survival genuine or simply a bias due to improved/earlier detection?
- Explore age-specific incidence and mortality rates.
- Explore the influence of socio-economic factors on incidence and mortality rates.
- Explore changing stage patterns, and try to relate to changes in diagnostic techniques.
- Explore stage by other factors such as sex, age and socioeconomic status.

References

Cancer Research UK. UK Kidney Cancer incidence statistics. Retrieved December 08, 2009, from Cancer Research UK: http://info.cancerresearchuk.org/cancerstats/types/kidney/incidence/index.htm#trends