National Cancer Registry Ireland **Cancer Trends**

Cancers of the kidney, ureter, bladder

Anatomical sites

On average, 466 cancers of bladder (ICD10 code: C67), 341 of kidney (C64) and 24 of renal pelvis and ureter (C65, C66) were diagnosed annually from 1994 to 2009 (Table 1). Cancers at all sites were more common in men than in women, with approximately two-thirds of all urinary cancers diagnosed in men.

Table 1. Anatomical site of urinary tract cancers by sex (% at each site), 1994–2009 annual average

	females	males	both sexes
kidney	125 (37%)	216(63%)	341
renal pelvis	4 (31%)	8 (69%)	12
ureter	4 (37%)	7 (63%)	12
bladder	135 (29%)	331 (71%)	466

Histological type

The histological type of cancer was mainly dependent on anatomical site. Almost all renal cell carcinomas were in the kidney, while transitional cell carcinoma made up the majority of bladder cancers (Table 2).

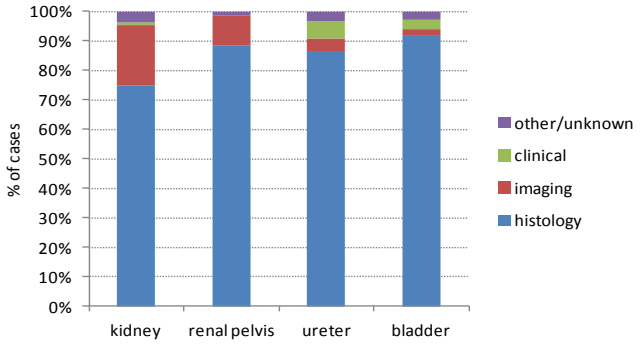
Table 2. Histological type of urinary tract cancers, 1994–2009 annual average

	kidney	renal pelvis	ureter	bladder	all
transitional cell	8	9	10	399	425
renal cell	179	1	–	–	179
adenocarcinoma	58	–	–	8	66
Wilm's tumour	6	–	–	–	6
squamous cell	2	–	–	13	15
sarcoma	2			1	3
other/unspecified	88	1	2	46	136

– : *<1 cancer per year*

The majority of urinary cancers were histologically verified (Figure 1), particularly for bladder cancer with 92% diagnosed pathologically.

Figure 1 Diagnostic methods of urinary tract cancers, 1994–2009

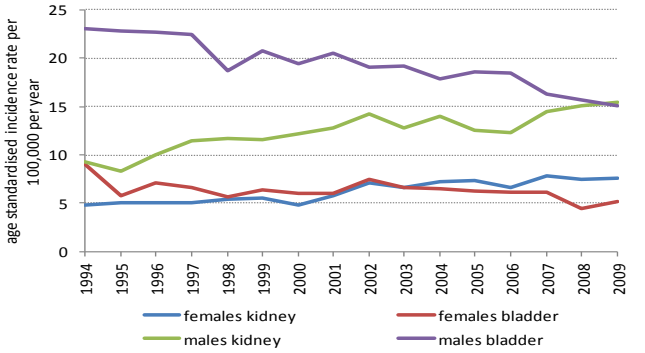


26% of kidney cancers were described as "cancer, not otherwise specified". Almost all the kidney cancers which were not histologically verified had been diagnosed by imaging alone. There has been no significant change over time in the percentage of kidney cancers histologically verified.

Time trends

There was a significant increase in the age-standardised incidence rate for cancer of the kidney for both women (annual percentage increase (APC) 3.5% ±0.9%) and men (APC 3.0% ±0.9%) between 1994 and 2009. Bladder cancer incidence decreased over the same period by 2.0%±1.4% in women and 2.6%±0.6% in men (Figure 2). Variation in bladder cancer incidence rates over time are difficult to interpret due to changes in classification and coding systems affecting the definition of invasive carcinoma of the bladder. There was no measurable trend for cancers of renal pelvis or ureter.

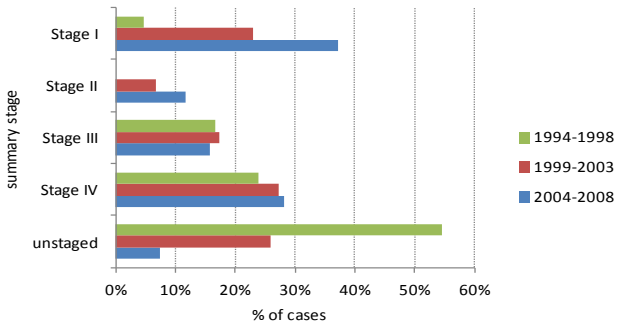
Figure 2. Urinary tract cancer incidence rates by site and sex, 1994–2008



Stage at diagnosis

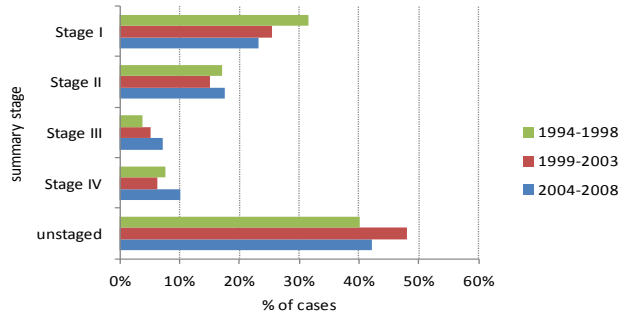
There has been a dramatic increase in the percentage of stage I kidney cancers, from 5% of the total in 1994-1998 to 37% in 2004-2008[1]. This has been accompanied by a fall in unstaged cancers, from 55% to 7% of the total (Figure 3). Small stage I tumours are often found in patients without any clinical signs or symptoms and are being detected more and more with the widespread use of abdominal imaging studies, such as MRIs and CAT scans. Stage II cancers increased from 0% in 1994-1998 to 12% in 2004-2008. No change was seen for stage III cancers and a small increase in stage IV tumours.

Figure 3 Percentage of kidney cancers by stage 1994–2008



For bladder cancer, by contrast, there has been a fall in the percentage of stage I cancers, from 32% to 23%, with a small increase in stage III and IV cancers (Figure 4). The percentage of unstaged cancers remained quite high, at over 40%.

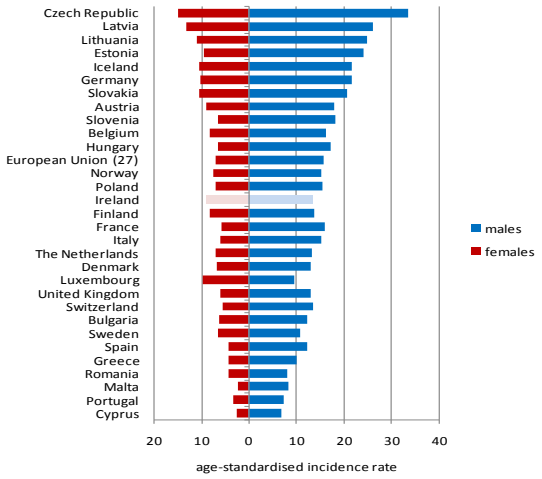
Figure 4 Percentage of bladder cancers by stage 1994–2008



International variation in incidence[2]

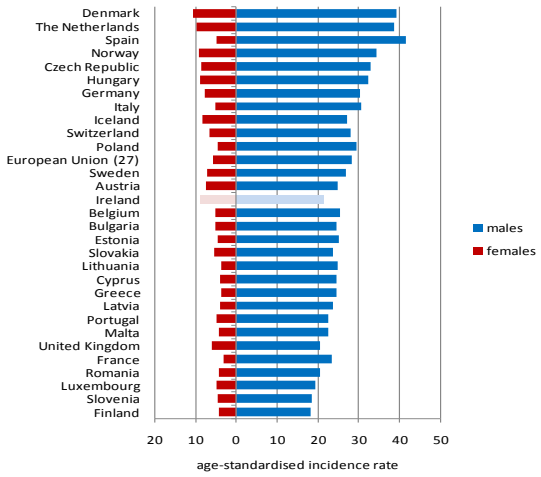
Estimated kidney and bladder cancer incidence in 2008 varied widely between European countries (Figure 5 and 6). Kidney cancer incidence was relatively higher for women in Ireland (9th highest of 31 countries) than for men (19th highest) (Figure 5). The male/female ratio for kidney cancer in Ireland (1.5) was one of the lowest in Europe.

Figure 5. Estimated incidence of kidney cancer, 2008 (European standard population)



Bladder cancer incidence was relatively higher for women in Ireland (4th highest of 31 countries) than for men (15th highest) (Figure 6). The male/female ratio in Ireland (2.4) was the lowest in Europe. International data on bladder cancer are less reliable than for most other sites, due to the difficulty in classifying some bladder tumours as invasive or not.

Figure 6 Estimated incidence of bladder cancer, 2008 (European standard population)



Treatment

In the period 1994-2008 overall[3], 64% of patients with kidney cancer had surgery, 14% had radiotherapy and 12% chemotherapy (Figure 7). While chemotherapy increased from 7% to 16% of cases between 1994-1998 and 2004-2008, there was little change in surgery or radiotherapy uptake. A similar pattern was seen for bladder cancer (Figure 8), for which the uptake of chemotherapy increased from 7% to 22% and that of radiotherapy from 15% to 17%. The proportion of patients having surgery remained relatively unchanged over time.

Figure 7 Treatment by time period: kidney cancer, 1994–2008

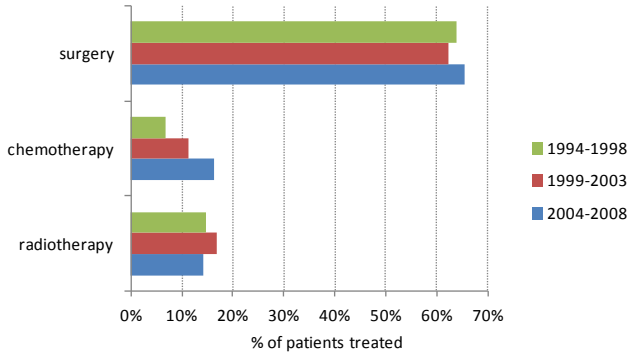
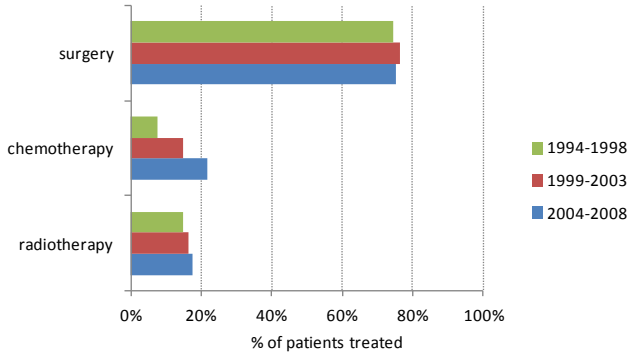


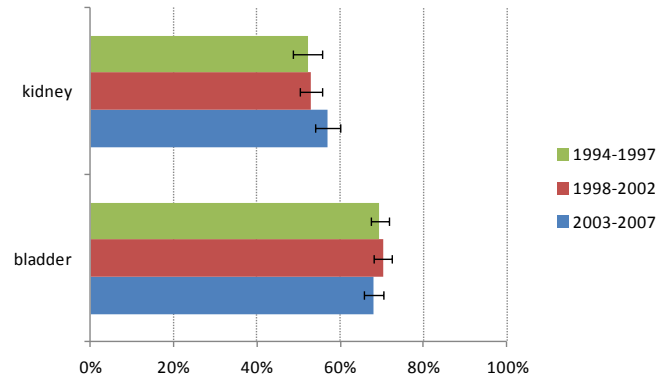
Figure 8 Treatment by time period: bladder cancer, 1994–2008



Survival[4]

There were small and non-significant increases in survival for kidney cancer and a fall for bladder cancer between 1994-1997 and 2003-2007 (Figure 9). The improvement in kidney cancer survival may reflect increased diagnosis of lower stage tumours over time. Survival remained better for bladder than for kidney cancer throughout all time periods.

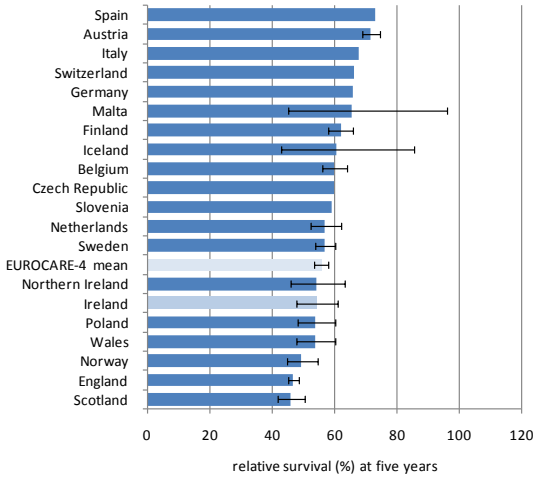
Figure 9. Cause-specific five-year survival by time period (with 95% confidence intervals) for kidney and bladder cancers



International variation in survival[5]

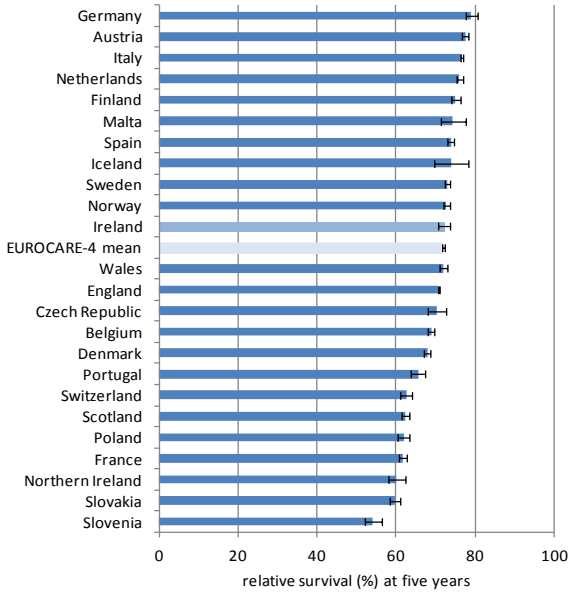
Figures are available for kidney cancer survival for patients diagnosed in Europe in 2000-2002. Survival ranged from 46% in Scotland to 73% in Spain; the figure for Ireland (54%) was close to the average (Figure 10).

Figure 10. Five year relative survival for kidney cancers diagnosed 2000-2002[5]



Equivalent data for bladder cancer are currently available for 1995-1999 only[6]. Five year relative survival for bladder cancer in Ireland (72%) was similar to the European average and 11th highest of 24 countries (Figure 11). Survival rates ranged from over 78% in Germany and Austria to less than 60% in Slovenia and Slovakia.

Figure 11 Five year relative survival for bladder cancers diagnosed 1995-1999[6]



Mortality[7]

Age-standardised mortality rates from cancer of the kidney have been increasing steadily for men (by 1.9% a year) and women (by 1.2% a year) since at least the 1950s (Figure 12). Although the difference in mortality rates between men and women has increased, the ratio between the two rates has increased only slightly.

Mortality from bladder cancer has been falling only slightly since 1968 (the earliest data for which mortality data are available), by 0.2% annually for males and 0.3% for females (Figure 13). For both sexes, renal (kidney) cancer mortality is now greater than that for bladder cancer, mostly due to the increases in kidney cancer mortality rates. Similarly poor cancer mortality trends for smoking related cancers such as kidney cancer have also been observed in Europe in general[8]

Figure 12. Age-standardised mortality rate (world standard population) for cancer of kidney 1950–2009

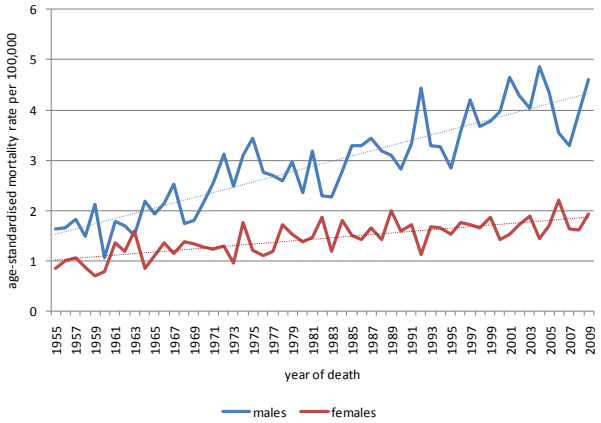
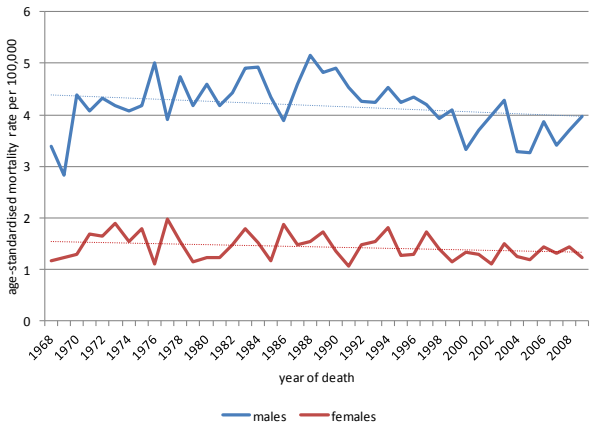


Figure 13. Age-standardised mortality rate (world standard population) for cancer of bladder 1950–2009



References and notes

1. Full staging information is available to the end of 2008 only.
2. Source: European Cancer Observatory (ECO) http://eu-cancer.iarc.fr/
3. Full treatment information is available to the end of 2008 only.
4. Cases followed up to 31/12/2008.
5. Recent cancer survival in Europe: a 2000–02 period analysis of EUROCARE-4 data. Verdecchia A, Francisci S, Brenner H, Gatta G, Micheli A, Mangone L, Kunkler I; EUROCARE-4 Working Group. Lancet Oncol. 2007 ;8:784–96.
6. EUROCARE-4, Five year relative survival for bladder cancers diagnosed 1995-1999: results available online, EUROCARE working group, www.eurocare.it/Portals/0/CDEU4/Forms/SA9599.aspx
7. WHO mortality database http://www-dep.iarc.fr/WHOdb/WHOdb.htm
8. Karim-Kos HE et al, 2008. Recent trends in cancer in Europe: a combined approach of incidence, survival and mortality for 17 cancer sites since the 1990s. Eur J Cancer 44 (10): 1345-1389.

