7. Time trends in age-standardised incidence and mortality rates 1994–1998

7.1. Introduction

This chapter describes changes in incidence and mortality between 1994 and 1998 for all cancers combined and for a number of individual cancers. Information is given on case and death numbers, and age-standardised rates for each year from 1994 to 1998. Estimates of the annual percentage change in incidence and mortality over this five year period, with confidence limits for these estimates, are also given.

7.2. Summary

Summary details of the annual percentage changes in the European age-standardised incidence (EASIR) and mortality (EASMR) rates within three broad age categories (0 – 85+, 0 – 64, 65+) are presented below for specific sites. These are

- all cancers
- all cancers excluding non-melanoma skin cancer (NMS)
- colorectal cancer
- breast cancer
- lung cancer
- prostate cancer
- lymphoma
- stomach cancer
- bladder cancer
- leukaemia
- melanoma of skin.

7.2.1. Incidence

In men, the upward trends in lymphoma and prostate cancers in all age groups were statistically significant; the greater use of PSA testing may have influenced the latter result (Figure 7.1). These findings were also observed in men under 65 years, who also had a statistically significant increase in skin melanomas (Figure 7.2). A significant increase in prostate cancer rates was also recorded in men 65 and over, while stomach cancer rates had a significant downward trend in this group (Figure 7.3).

In women, breast cancer, as well as all cancers combined, increased significantly, while rates for melanoma of skin fell over the same period of time.

7.2.2. Mortality

Bladder cancer showed a statistically significant downward trend in men and, in women, breast and stomach cancer rates also fell significantly (Figure 7.4). By contrast, mortality from melanoma of the skin rose over the same period of time. However, when women were divided into those under (Figure 7.5) and over (Figure 7.6) 65 years of age, there were no statistically significant trends for any cancer site for either of these groups. In men under 65 years of age lymphoma mortality increased, while that for colorectal cancer and for all cancers decreased.

Figure 7.1 Annual percentage change in incidence rates (EASIR) between 1994 and 1998 by site and sex: all age groups

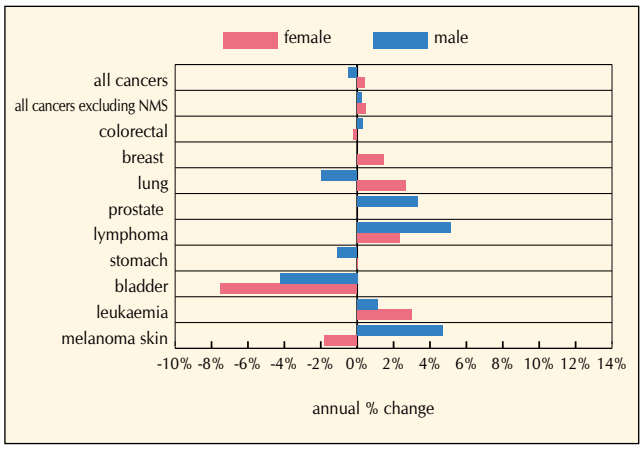


Figure 7.2 Annual percentage change in incidence rates (EASIR) between 1994 and 1998 by site and sex: patients under 65

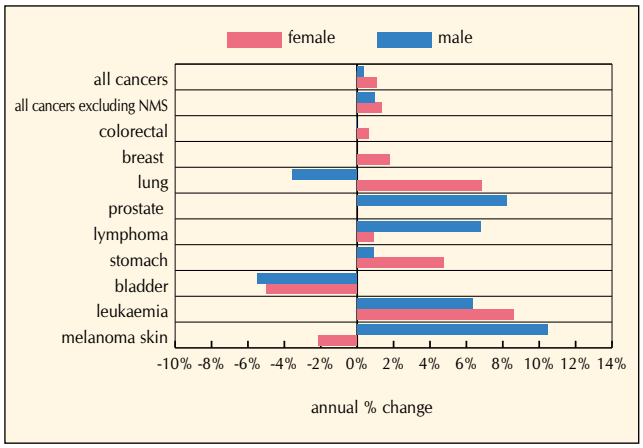


Figure 7.3 Annual percentage change in incidence rates (EASIR) between 1994 and 1998 by site and sex: patients 65 and over

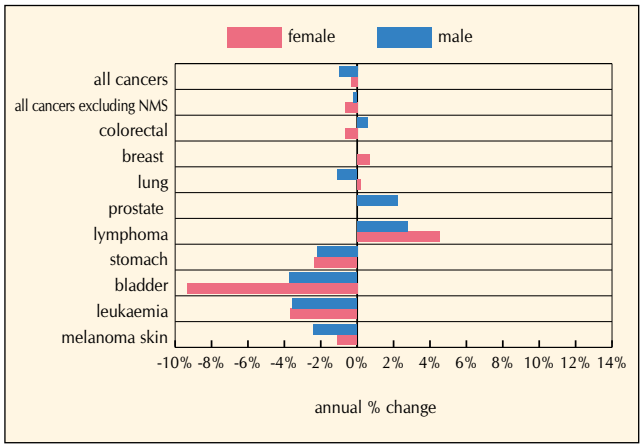


Figure 7.4 Annual percentage change in mortality rates (EASMR) between 1994 and 1998 by site and sex: all age groups

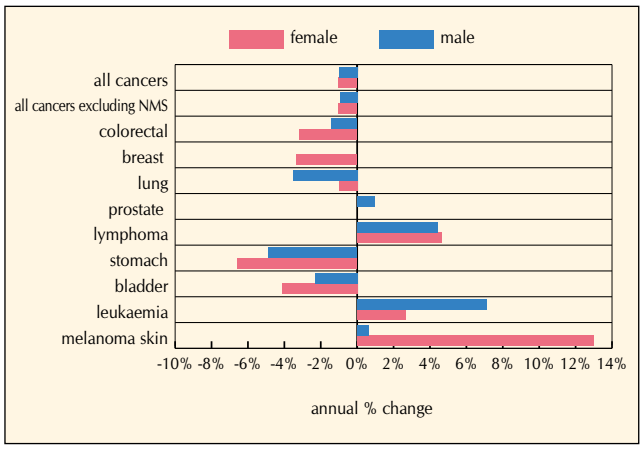


Figure 7.5 Annual percentage change in mortality rates (EASMR) between 1994 and 1998 by site and sex: patients under 65

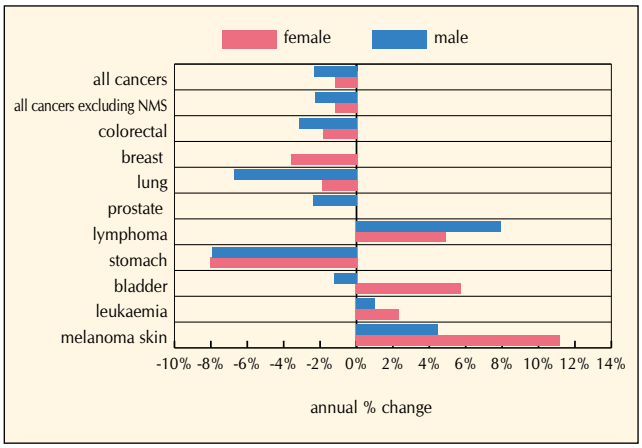
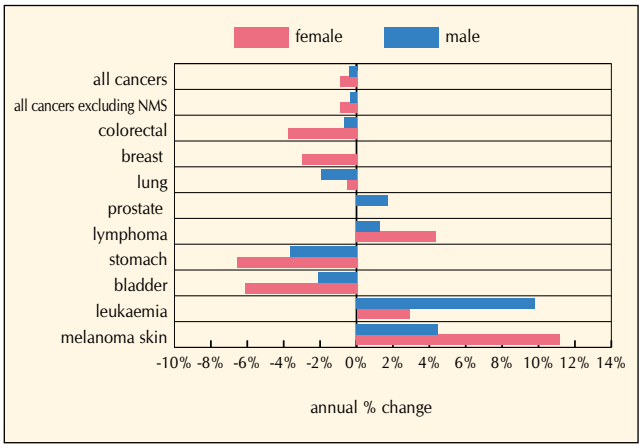


Figure 7.6 Annual percentage change in mortality rates (EASMR) between 1994 and 1998 by site and sex: patients 65 and over



7.3. All malignant cancers *ICD - 10 C00 - C96*

The all-cancer annual rate of change in incidence between 1994 and 1998 was less than 1% for both men and women, and was not statistically significant (Table 7.1, Figure 7.7). Cancer death rates over this period fell by 1% but, again, the result was not statistically significant.

For patients under 65, the age-standardised incidence rates increased by about 1% (Figure 7.8). Mortality rates for both men and women in this age group fell by 2.3% and 1.2% respectively, the former being statistically significant.

In the population aged 65 and over (Figure 7.9), only small changes in cancer incidence and mortality rates were recorded, none of them statistically significant. The generally stable nature of incidence trends is mirrored in the mortality trends for both sexes, with a clear divide between incidence and mortality rates over time.

Table 7.1 Trends in incidence and mortality by age and sex 1994 – 98: all malignant cancers

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	8936	580.41	8028	443.64	3957	259.65	3430	181.23
1995	8780	563.44	7874	431.36	4085	265.34	3413	177.26
1996	8974	572.61	8158	442.69	3960	255.43	3389	172.27
1997	9023	569.73	8319	448.16	3953	253.87	3480	177.06
1998	9016	563.55	8367	443.99	3992	252.60	3430	172.35
annual % change 1994–1998		-0.5%		0.4%		-1.0%		-1.0%
95% confidence limits of trend		-1.6%;0.7%		-1.1%;1.9%		-2.4%;0.5%		-2.6%;0.6%
under 65 years								
1994	2976	240.54	3191	254.27	1115	91.54	1033	84.47
1995	2995	236.62	3233	253.44	1089	88.16	984	78.94
1996	3145	245.19	3408	261.84	1080	85.35	952	75.40
1997	3132	241.05	3490	265.62	1078	84.50	1042	81.11
1998	3237	242.90	3530	262.32	1081	83.24	1026	78.52
annual % change 1994–1998		0.4%		1.1%		-2.3%		-1.2%
95% confidence limits of trend		-1.0%;1.8%		-0.2%;2.4%		-3.4%;-1.2%*		-5.4%;3.2%
65 years and over								
1994	5960	3330.30	4837	1975.79	2842	1619.80	2397	964.09
1995	5785	3207.74	4641	1870.85	2996	1698.87	2429	972.80
1996	5829	3221.74	4750	1905.88	2880	1631.49	2437	955.99
1997	5891	3229.04	4829	1925.10	2875	1624.24	2438	953.44
1998	5779	3157.96	4837	1913.91	2911	1622.89	2404	931.48
annual % change 1994–1998		-1.0%		-0.4%		-0.4%		-0.9%
95% confidence limits of trend		-2.3%;0.3%		-2.5%;1.9%		-2.6%;1.8%		-1.8%;0.1%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.7 Trends in incidence and mortality rates, 1994 – 1998 by sex: all malignant cancers, all age groups

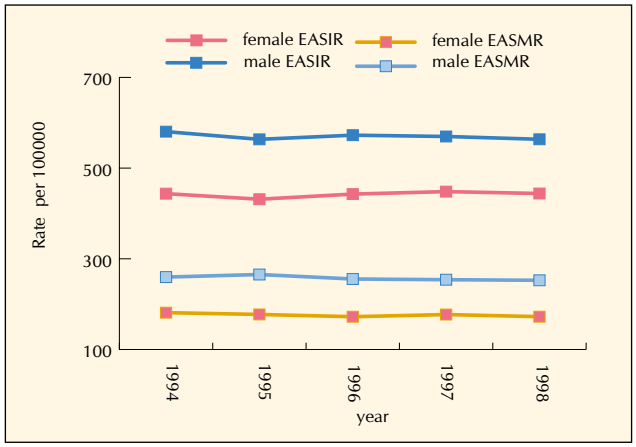


Figure 7.8 Trends in incidence and mortality rates, 1994 – 1998 by sex: all malignant cancers, patients under 65

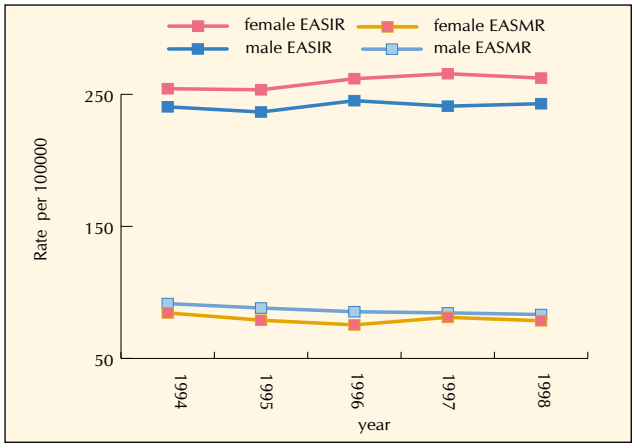
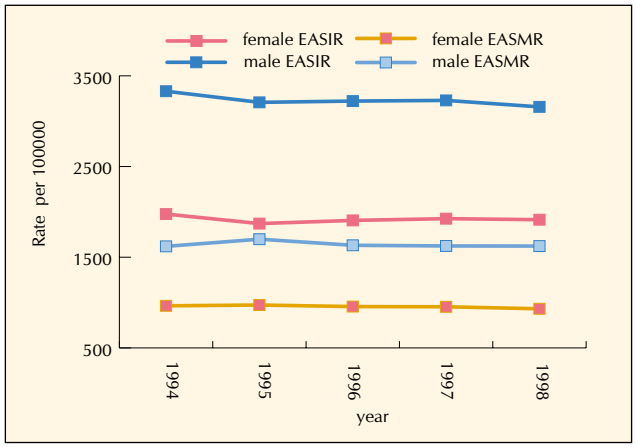


Figure 7.9 Trends in incidence and mortality rates, 1994 – 1998 by sex: all malignant cancers, patients 65 and over



7.4. All malignant cancers excluding non-melanoma skin (NMS) *ICD10 C00 - C43, C45 - C96*

As mortality from non-melanoma skin is negligible, only information on incidence is given in this section.

The annual rate of increase in incidence for all cancer cases, excluding NMS, was about 0.3% between 1994 and 1998 and not statistically significant (Table 7.2, Figure 7.10). For patients under 65 years, incidence rates increased by just over 1%; this was statistically significant for females (Figure 7.11). In those 65 years and over trends in incidence rates were downward but not significantly so (Figure 7.12).

Table 7.2 Trends in incidence by age and sex 1994 – 98: all malignant cancers (excluding NMS)

	INCIDENCE			
	male		female	
	cases	EASR	cases	EASR
all age groups				
1994	6121	395.97	5713	322.44
1995	5981	382.05	5553	310.21
1996	6096	388.27	5754	317.95
1997	6226	392.81	5870	322.75
1998	6343	395.15	5981	323.60
annual % change 1994–1998		0.2%		0.5%
95% confidence limits of trend		-1.4%;1.9%		-1.4%;2.4%
under 65 years				
1994	2069	166.15	2489	197.79
1995	2065	161.56	2521	196.56
1996	2176	168.60	2638	201.19
1997	2179	166.40	2735	206.58
1998	2305	171.61	2796	206.57
annual % change 1994–1998		0.9%		1.4%
95% confidence limits of trend		-1.0%;2.9%		0.3%;2.5%*
65 years and over				
1994	4052	2255.46	3224	1330.98
1995	3916	2166.10	3032	1229.74
1996	3920	2165.67	3116	1262.65
1997	4047	2224.70	3135	1262.60
1998	4038	2203.79	3185	1270.48
annual % change 1994–1998		-0.2%		-0.7%
95% confidence limits of trend		-2.2%;1.8%		-3.7%;2.5%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.10 Trends in incidence and mortality rates, 1994 – 1998 by sex: all cancers excluding non-melanoma skin, all age groups

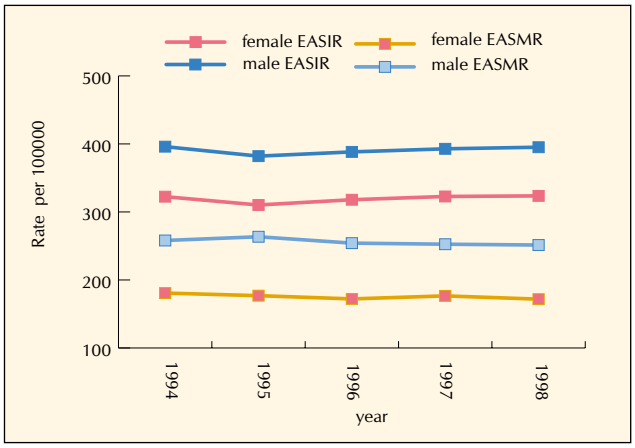


Figure 7.11 Trends in incidence and mortality rates, 1994 – 1998 by sex: all cancers excluding non-melanoma skin, patients under 65

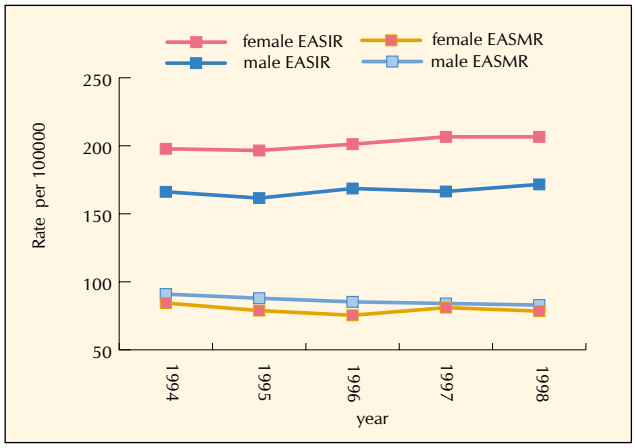
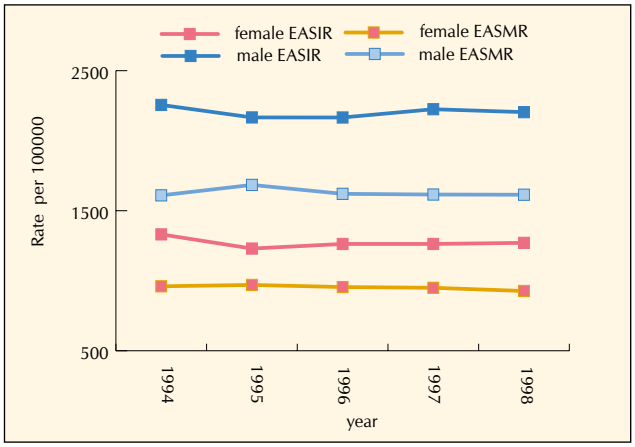


Figure 7.12 Trends in incidence and mortality rates, 1994 – 1998 by sex: all cancers excluding non-melanoma skin, patients 65 and over



7.5. Colorectal cancer *ICD - 10 C18 - C21*

Age adjusted colorectal cancer incidence rates have remained relatively stable since 1994 with only slight upward or downward trends of 1% or less (Table 7.3, Figure 7.13). The incidence rate for women fluctuated considerably, with an obvious but unexplained fall in incidence in 1996. Mortality rates have declined in both men and women; this was statistically significant in men under 65 years old (Figure 7.14) but not in older age groups (Figure 7.15).

Table 7.3 Trends in incidence and mortality by age and sex 1994 – 98: colorectal cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	985	64.59	767	40.68	505	33.47	414	20.54
1995	926	60.48	736	39.55	548	35.51	425	21.03
1996	977	63.43	693	35.73	490	31.93	402	18.84
1997	1007	63.59	774	40.40	524	33.64	443	21.58
1998	1017	64.02	771	39.86	506	32.05	368	17.31
annual % change 1994–1998		0.3%		-0.2%		-1.4%		-3.2%
95% confidence limits of trend		-2.6%;3.3%		-6.1%;6.1%		-5.6%;2.9%		-11.3%;5.8%
under 65 years								
1994	330	27.48	214	18.16	141	11.80	84	7.00
1995	319	26.04	257	20.77	148	12.16	91	7.55
1996	341	27.40	198	15.59	140	11.39	76	6.18
1997	335	26.26	245	19.49	134	10.69	101	7.86
1998	351	27.30	247	19.33	138	10.75	81	6.25
annual % change 1994–1998		0.0%		0.6%		-3.1%		-1.9%
95% confidence limits of trend		-3.0%;3.0%		-11.3%;14.1%		-6.1%;-0.03%*		-13.1%;10.9%
65 years and over								
1994	655	364.81	553	222.89	364	208.82	330	130.11
1995	607	339.10	479	191.52	400	224.49	334	130.12
1996	636	354.90	495	198.62	350	198.16	326	121.29
1997	672	365.59	529	209.58	390	219.34	342	132.60
1998	666	361.11	524	205.95	368	204.39	287	106.82
annual % change 1994–1998		0.5%		-0.7%		-0.7%		-3.8%
95% confidence limits of trend		-2.9%;4.1%		-7.0%;6.0%		-6.3%;5.3%		-10.9%;4.1%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.13 Trends in incidence and mortality rates, 1994 – 1998 by sex: colorectal cancer, all age groups

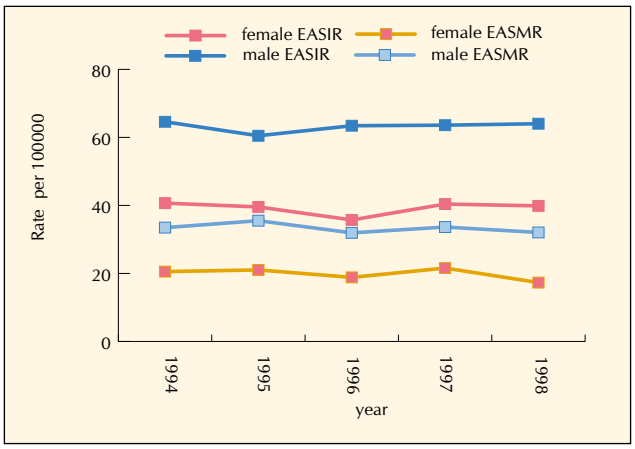


Figure 7.14 Trends in incidence and mortality rates, 1994 – 1998 by sex: colorectal cancer, patients under 65

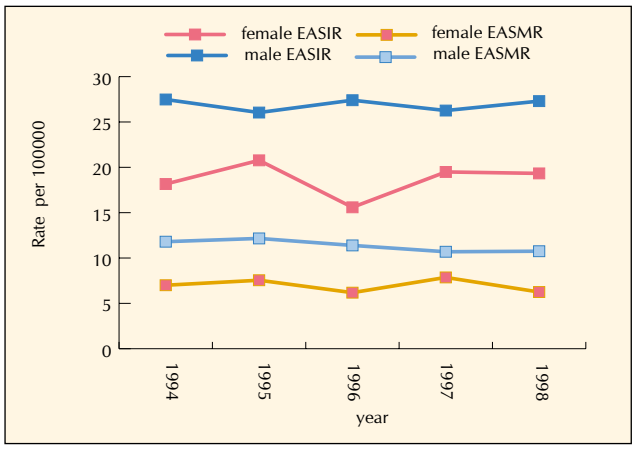
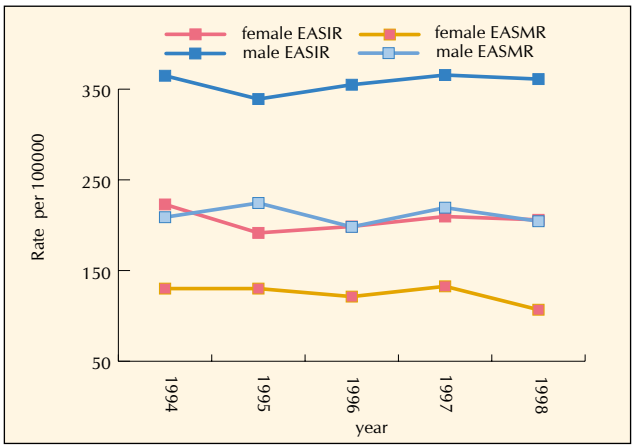


Figure 7.15 Trends in incidence and mortality rates, 1994 – 1998 by sex: colorectal cancer, patients 65 and over



7.6. Colon cancer *ICD - 10 C18*

Although the incidence rate has fallen since 1994 in both men and women, this was not statistically significant. Mortality rates have also fallen in both sexes during this period but, again, not to a statistically significant extent (Table 7.4, Figure 7.16, Figure 7.17, Figure 7.18).

Table 7.4 Trends in incidence and mortality by age and sex 1994 – 98: colon cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	597	38.97	540	28.62	357	23.67	321	15.84
1995	552	35.82	521	27.57	395	25.30	332	16.42
1996	577	37.06	474	24.15	355	23.02	327	15.35
1997	566	35.42	518	26.92	381	24.57	342	16.77
1998	570	35.75	501	25.64	360	22.77	295	13.96
annual % change 1994–1998		-1.8%		-2.4%		-1.1%		-2.3%
95% confidence limits of trend		-4.8%;1.2%		-8.3%;3.9%		-5.7%;3.8%		-9.1%;5.0%
under 65 years								
1994	195	16.22	147	12.46	98	8.16	63	5.24
1995	182	14.76	171	13.88	102	8.35	71	5.89
1996	188	15.10	121	9.57	87	7.09	60	4.87
1997	186	14.47	163	12.97	98	7.87	84	6.51
1998	190	14.70	153	11.98	103	7.99	61	4.77
annual % change 1994–1998		-2.2%		-1.5%		-1.0%		-0.9%
95% confidence limits of trend		-5.4%;1.2%		-16.2%;15.8%		-7.8%;6.3%		-14.8%;15.4%
65 years and over								
1994	402	223.07	393	159.31	259	149.12	258	101.58
1995	370	206.21	350	138.31	293	162.47	261	101.65
1996	389	214.72	353	142.15	268	151.90	267	100.19
1997	380	204.85	355	139.84	283	159.75	258	99.80
1998	380	206.03	348	136.16	257	142.33	234	88.27
annual % change 1994–1998		-1.7%		-3.0%		-1.1%		-3.0%
95% confidence limits of trend		-4.5%;1.3%		-7.4%;1.7%		-6.7%;4.9%		-7.0%;1.3%

Figure 7.16 Trends in incidence and mortality rates, 1994 – 1998 by sex: colon cancer, all age groups

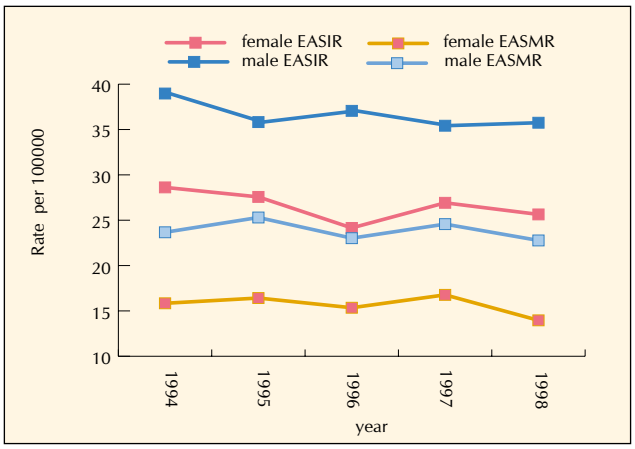


Figure 7.17 Trends in incidence and mortality rates, 1994 – 1998 by sex: colon cancer, patients under 65

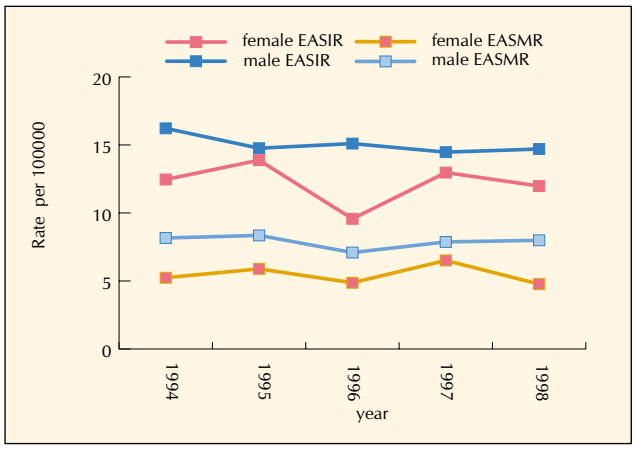
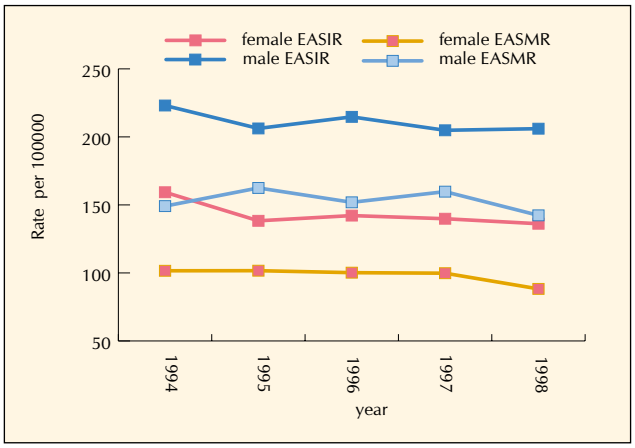


Figure 7.18 Trends in incidence and mortality rates, 1994 – 1998 by sex: colon cancer, patients 65 and over



7.7. Anorectal cancer *ICD - 10 C19 - 21*

Incidence rates for anorectal cancer have risen in both sexes since 1994, but the trends were not significant (Table 7.5, Figure 7.19, Figure 7.20, Figure 7.21). Mortality rates in general fell during this period but, also, not significantly. The patterns observed in the incidence and mortality rates observed in colorectal cancer above are repeated here except with considerably more fluctuation. This is partly due to the fact that the number of anorectal cancer cases and deaths is smaller than that of colon cancer. Also, there is also the question of how accurately colon and anorectal cancers are distinguished from one another as the cause of death given on a death certificate. It would appear from the figures that mortality rates in men are consistently much higher than of women even though the difference in incidence rates between the sexes is considerably smaller.

Table 7.5 Trends in incidence and mortality by age and sex 1994 – 98: anorectal cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	388	25.61	227	12.06	148	9.80	93	4.70
1995	374	24.66	215	11.98	153	10.21	93	4.61
1996	400	26.37	219	11.57	135	8.91	75	3.49
1997	441	28.17	256	13.48	143	9.06	101	4.81
1998	447	28.27	270	14.22	146	9.28	73	3.35
annual % change 1994–1998		3.3%		4.5%		-2.3%		-6.3%
95% confidence limits of trend		-0.04%;6.9%		-1.6%;11.1%		-7.1%;2.8%		-20.7%;11.1%
under 65 years								
1994	135	11.26	67	5.70	43	3.63	21	1.76
1995	137	11.28	86	6.89	46	3.81	20	1.66
1996	153	12.30	77	6.03	53	4.29	16	1.31
1997	149	11.79	82	6.52	36	2.82	17	1.35
1998	161	12.60	94	7.35	35	2.76	20	1.48
annual % change 1994–1998		2.7%		4.5%		-8.5%		-5.6%
95% confidence limits of trend		-0.5%;6.1%		-3.8%;13.8%		-21.9%;8.0%		-15.1%;5.4%
65 years and over								
1994	253	141.75	160	63.58	105	59.69	72	28.53
1995	237	132.90	129	53.21	107	62.01	73	28.47
1996	247	140.18	142	56.47	82	46.26	59	21.11
1997	292	160.74	174	69.74	107	59.59	84	32.79
1998	286	155.08	176	69.79	111	62.05	53	18.55
annual % change 1994–1998		3.7%		4.6%		0.4%		-7.2%
95% confidence limits of trend		-2.2%;10.2%		-6.8%;17.5%		-13.1%;15.9%		-26.9%;18.5%

Figure 7.19 Trends in incidence and mortality rates, 1994 – 1998 by sex: anorectal cancer, all age groups

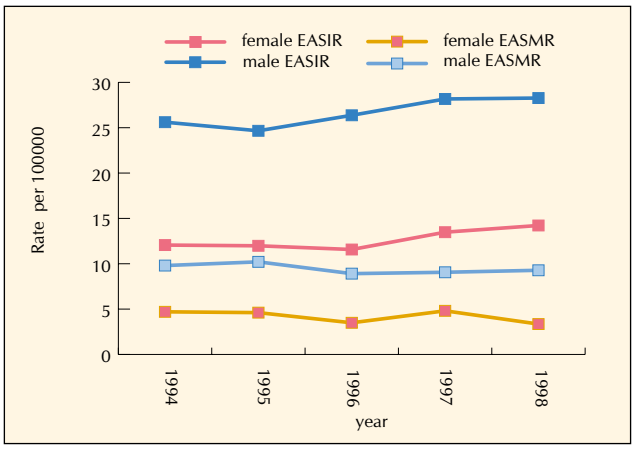


Figure 7.20 Trends in incidence and mortality rates, 1994 – 1998 by sex: anorectal cancer, patients under 65

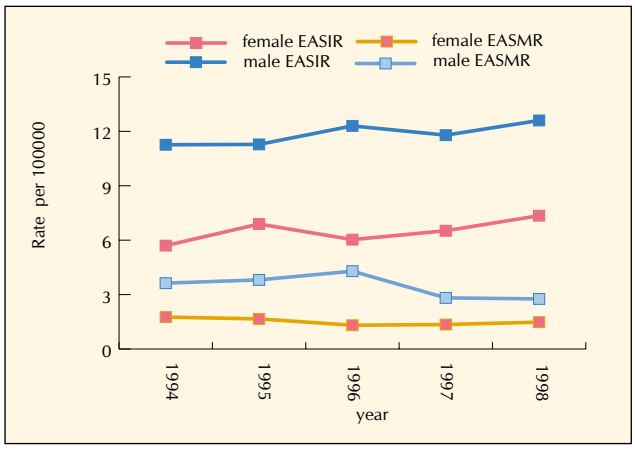
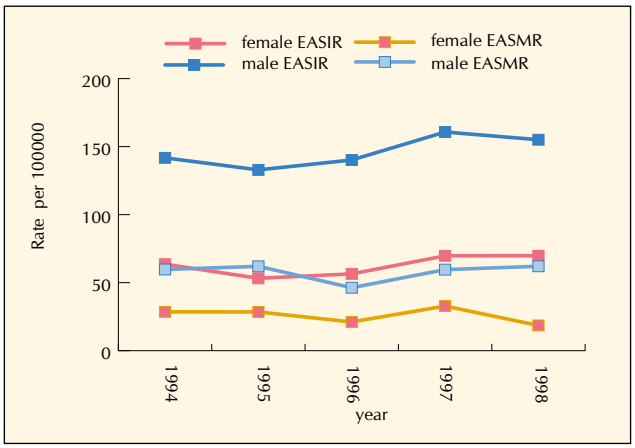


Figure 7.21 Trends in incidence and mortality rates, 1994 – 1998 by sex: anorectal cancer, patients 65 and over



7.8. Breast cancer *ICD - 10 C50*

There was evidence of a divergence between female incidence and mortality rates (Table 7.6), with a statistically significant upward trend in breast cancer incidence in women under 65 years (Figure 7.23) and downward trends in mortality rates in all age groups combined (Figure 7.22). These findings may be the result of improvements in treatment and/or increased screening. There were no significant trends in incidence or mortality for women 65 and over (Figure 7.24).Trends for male breast cancer were not statistically significant.

The clear margin between the incidence and mortality trends reflect the fact that survival from breast cancer is good. Also, the figures reveal that a divergence in the incidence and mortality trends seems to have started in 1995 (but beginning a year later in the 65 and over population). It should be noted that no nation-wide screening programme was operational during this period of time. This divergence in the trends is expected to continue as a result of continuing improvements in treatments and also as a result of the recently launched national "BreastCheck" screening programme.

Table 7.6 Trends in incidence and mortality by age and sex 1994 – 98: breast cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	13	0.82	1505	93.74	4	0.25	647	37.41
1995	8	0.49	1525	92.03	7	0.46	651	37.11
1996	17	1.15	1588	95.07	6	0.49	633	35.57
1997	16	1.06	1614	95.98	3	0.16	631	35.35
1998	10	0.70	1689	98.67	7	0.45	594	32.44
annual % change 1994–1998		4.4%		1.4%		1.2%		–3.3%
95% confidence limits of trend		-29.4%;54.7%		-0.02%;3.0%		-42.3%;77.5%		-5.6%;-0.9%*
under 65 years								
1994	4	0.34	910	73.40	1	0.08	296	24.58
1995	2	0.17	926	72.60	3	0.26	292	23.55
1996	7	0.52	995	76.59	3	0.23	278	22.20
1997	6	0.47	1018	77.15	0	0.00	299	23.19
1998	6	0.46	1045	77.74	2	0.15	269	20.71
annual % change 1994–1998		16.2%		1.8%		n/a		-3.6%
95% confidence limits of trend		-23.1%;80.0%		0.1%;3.4%*		n/a		-7.0%;0.1%
65 years and over								
1994	9	4.72	595	258.32	3	1.60	351	141.24
1995	6	3.03	599	249.26	4	2.13	359	146.80
1996	10	6.28	593	244.54	3	2.58	355	143.79
1997	10	5.83	596	248.34	3	1.48	332	133.74
1998	4	2.56	644	267.99	5	2.90	325	127.38
annual % change 1994–1998		-5.7%		0.7%		8.3%		-3.0%
95% confidence limits of trend		-39.8%;48.2%		-3.3%;4.9%		-19.8%;47.1%		-6.6%;0.9%

n/a data not possible to calculate

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.22 Trends in incidence and mortality rates, 1994 – 1998 by sex: breast cancer, all age groups

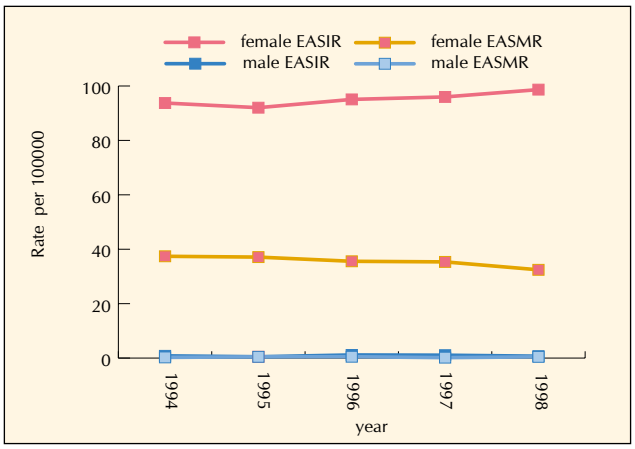


Figure 7.23 Trends in incidence and mortality rates, 1994 – 1998 by sex: breast cancer, patients under 65

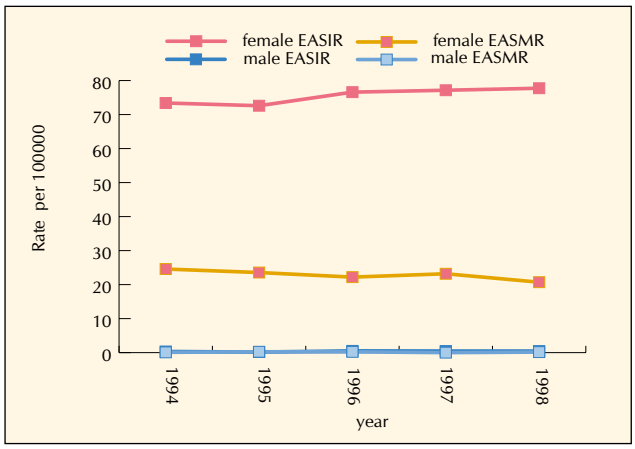
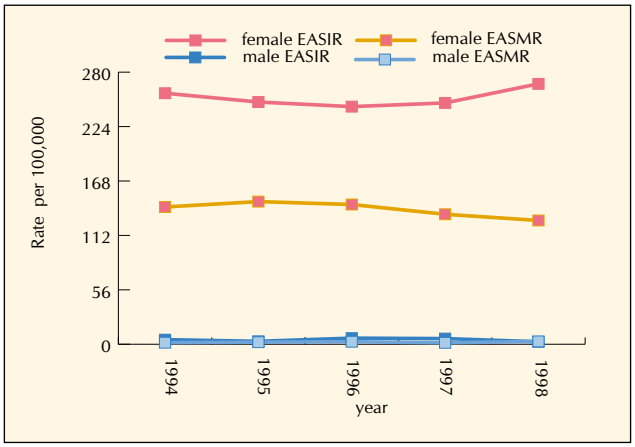


Figure 7.24 Trends in incidence and mortality rates, 1994 – 1998 by sex: breast cancer, patients 65 and over



7.9. Lung cancer *ICD - 10 C34*

Incidence rates have risen in women since 1994 (Table 7.7, Figure 7.25) – particularly the 6.8% increase in women under 65 years (Figure 7.26) – but have fallen in men (Figure 7.27). None of the trends were statistically significant.

Mortality rates have fallen by a much greater degree in men than in women but not to a statistically significant degree. The consistently overlapping incidence and mortality trends in both men and women reflect the poor prognosis associated with this disease. There also appears to be evidence of a convergence of male and female rates, particularly in the under 65 year population, suggesting that at some time in the future, female mortality rates will exceed those of males if present trends continue.

Table 7.7 Trends in incidence and mortality by age and sex 1994 – 98: lung cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	1039	68.25	492	26.35	1024	67.25	517	27.54
1995	940	60.71	480	24.93	1028	66.19	534	27.59
1996	958	61.23	497	25.93	953	61.20	505	25.24
1997	919	58.68	523	27.14	882	56.59	494	24.57
1998	1002	62.98	545	28.84	966	60.96	544	27.75
annual % change 1994–1998		-1.9%		2.7%		-3.5%		-1.0%
95% confidence limits of trend		-7.2%;3.7%		-1.4%;6.9%		-8.1%;1.4%		-7.2%;5.6%
under 65 years								
1994	335	28.34	126	10.51	318	26.74	132	11.05
1995	274	22.76	111	9.11	273	22.82	121	9.99
1996	281	22.86	134	10.87	239	19.66	106	8.59
1997	285	22.89	141	11.34	236	18.95	107	8.65
1998	302	23.67	168	13.26	265	20.94	137	10.80
annual % change 1994–1998		-3.5%		6.8%		-6.8%		-1.9%
95% confidence limits of trend		-11.6%;5.3%		-2.6%;17.7%		-15.5%;3.4%		-14.2%;12.3%
65 years and over								
1994	704	391.16	366	154.49	706	394.95	385	160.95
1995	666	367.81	369	152.95	755	417.06	413	170.01
1996	677	371.64	363	147.78	714	397.30	399	159.96
1997	634	348.31	382	154.97	646	361.12	387	153.38
1998	700	381.04	377	154.95	701	384.79	407	164.91
annual % change 1994–1998		-1.1%		0.2%		-2.0%		-0.5%
95% confidence limits of trend		-5.6%;3.6%		-2.1%;2.5%		-6.7%;3.0%		-4.7%;3.9%

Figure 7.25 Trends in incidence and mortality rates, 1994 – 1998 by sex: lung cancer, all age groups

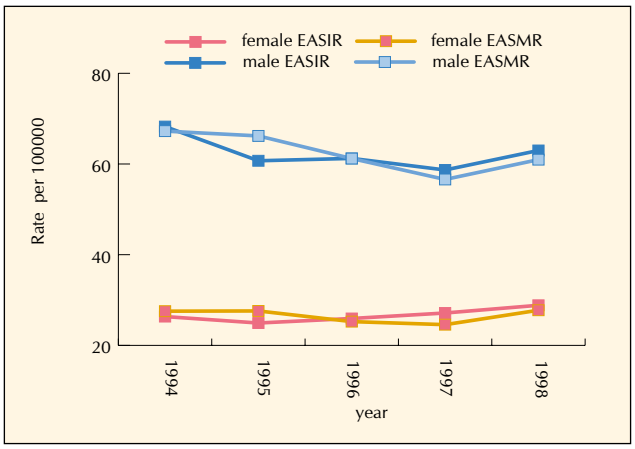


Figure 7.26 Trends in incidence and mortality rates, 1994 – 1998 by sex: lung cancer, patients under 65

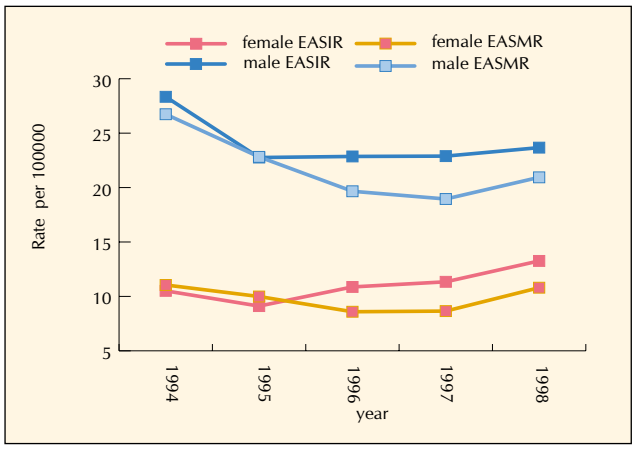
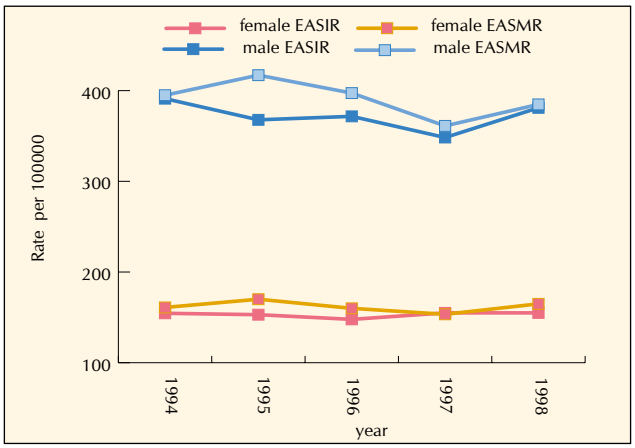


Figure 7.27 Trends in incidence and mortality rates, 1994 – 1998 by sex: lung cancer, patients 65 and over



7.10. Prostate cancer *ICD - 10 C61*

Incidence rates in men in all age groups (Figure 7.28), 0 – 64 (Figure 7.29) and 65 and over (Figure 7.30) showed statistically significant increases. Incidence rates in men under 65 years old increased by 8.2% (Table 7.8). Mortality rates showed no evidence of an upward or downward time trend. The evidence of a divergence between incidence and mortality rates may be due to better case-finding, more incidental diagnoses or a genuine increase in survival. The sharp increase in incidence rates in men under 65 years of age appears to be a recent phenomenon and may be attributable to more PSA testing but it is notable how little mortality rates have changed over this same period of time. It is unclear from the figures if mortality trends will change much in the future but it is not unlikely that incidence rates will continue their steady climb.

Table 7.8 Trends in incidence and mortality by age 1994 – 98: prostate cancer

	INCIDENCE		MORTALITY	
	male		male	
	cases	EASR	deaths	EASR
all age groups				
1994	1068	67.53	475	29.03
1995	1113	69.33	521	31.71
1996	1147	71.33	520	31.29
1997	1180	73.46	534	31.86
1998	1244	77.50	514	30.38
annual % change 1994–1998		3.3%		1.0%
95% confidence limits of trend		2.4%;4.4%*		-3.1%;5.2%
under 65 years				
1994	158	13.45	78	6.64
1995	150	12.55	90	7.50
1996	182	15.08	87	7.15
1997	199	16.29	75	6.13
1998	222	17.83	81	6.51
annual % change 1994–1998		8.2%		-2.4%
95% confidence limits of trend		1.8%;15.8%*		-10.0%;5.9%
65 years and over				
1994	910	505.04	397	210.21
1995	963	528.67	431	227.55
1996	965	526.41	433	226.56
1997	981	536.02	459	240.01
1998	1022	560.26	433	223.46
annual % change 1994–1998		2.2%		1.8%
95% confidence limits of trend		0.7%;3.8%*		-2.7%;6.4%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.28 Trends in incidence and mortality rates, 1994 – 1998: prostate cancer, all age groups

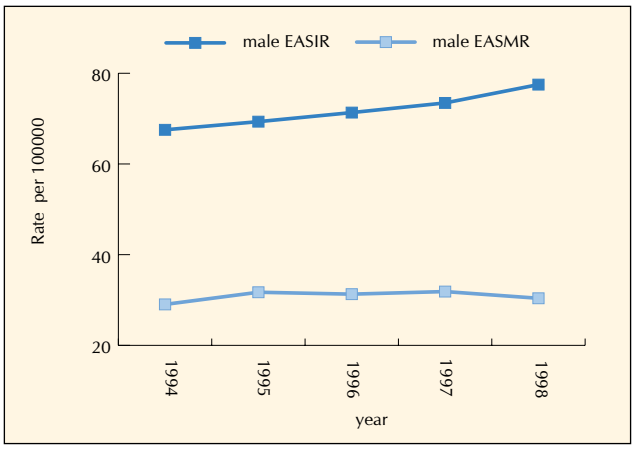


Figure 7.29 Trends in incidence and mortality rates, 1994 – 1998: prostate cancer, patients under 65

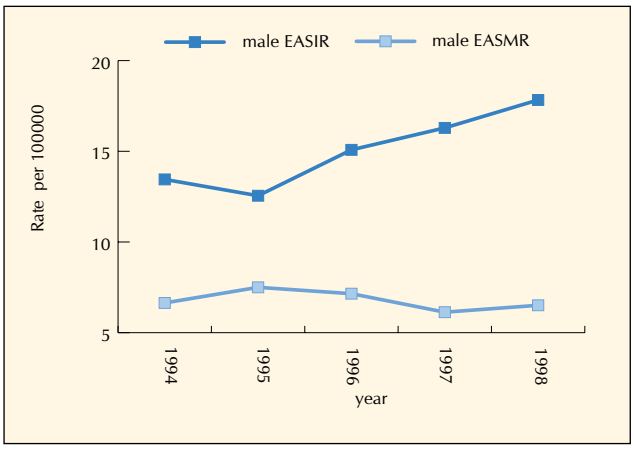
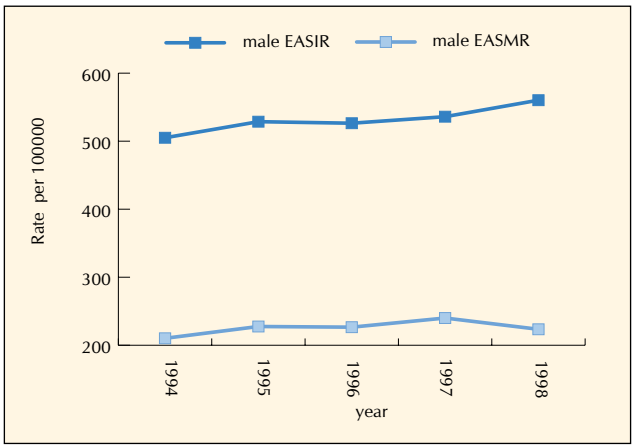


Figure 7.30 Trends in incidence and mortality rates, 1994 – 1998: prostate cancer, patients 65 and over



7.11. Lymphoma

Since 1994 the incidence rate for men has risen significantly, overall by 5.2% (Table 7.9, Figure 7.31), and in those under 65 years by 6.8% (Figure 7.32). For women the rise has not been as marked, and was not statistically significant. Mortality rates have also risen in both men and women during this time (Figure 7.33) but, except in men under 65, not to a statistically significant extent. The rates for men consistently exceeded those for women but some overlap is apparent.

Table 7.9 Trends in incidence and mortality by age and sex 1994 – 98: lymphoma

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	239	14.91	220	12.44	115	7.52	107	5.61
1995	226	14.32	196	11.14	126	8.18	94	4.78
1996	251	15.69	214	12.06	130	8.14	89	4.66
1997	266	16.43	238	12.88	116	7.26	99	5.14
1998	296	18.01	244	13.01	157	9.95	131	6.75
annual % change 1994–1998		5.2%		2.4%		4.4%		4.6%
95% confidence limits of trend		1.0%;9.8%*		-3.4%;8.5%		-7.0%;17.4%		-10.4%;21.9%
under 65 years								
1994	135	9.56	109	8.12	47	3.66	33	2.63
1995	146	10.78	110	8.11	54	4.07	24	1.92
1996	168	11.89	119	8.76	62	4.64	29	2.23
1997	161	11.27	124	8.70	59	4.34	37	2.87
1998	189	13.12	118	8.21	71	5.26	37	2.83
annual % change 1994–1998		6.8%		0.9%		7.9%		4.9%
95% confidence limits of trend		1.3%;13.1%*		-3.1%;5.2%		1.6%;15.4%*		-11.2%;25.6%
65 years and over								
1994	104	58.20	111	47.35	68	38.74	74	29.68
1995	80	42.96	86	35.64	72	41.46	70	27.91
1996	83	46.40	95	38.70	68	36.44	60	24.33
1997	105	58.19	114	46.67	57	30.86	62	23.51
1998	107	57.52	126	51.86	86	47.88	94	38.41
annual % change 1994–1998		2.8%		4.5%		1.3%		4.3%
95% confidence limits of trend		-12.5%;20.8%		-10.9%;22.8%		-16.0%;22.1%		-16.8%;28.8%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.31 Trends in incidence and mortality rates, 1994 – 1998 by sex: lymphoma, all age groups

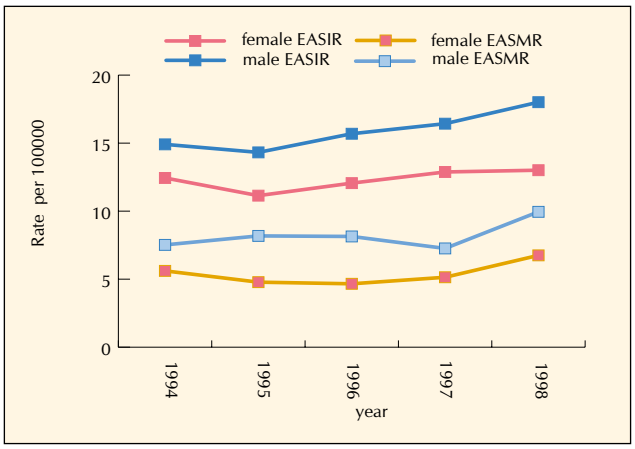


Figure 7.32 Trends in incidence and mortality rates, 1994 – 1998 by sex: lymphoma, patients under 65

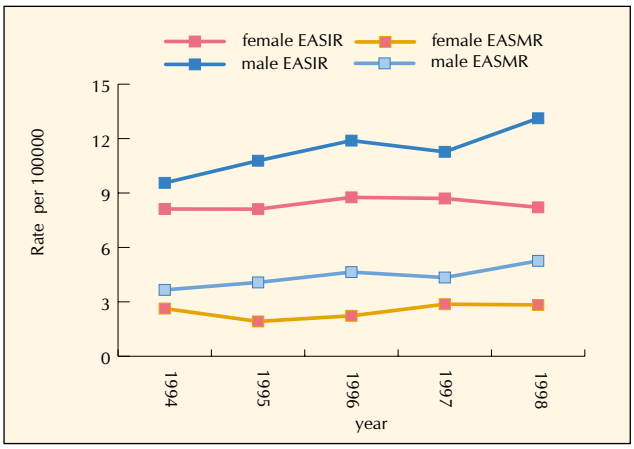
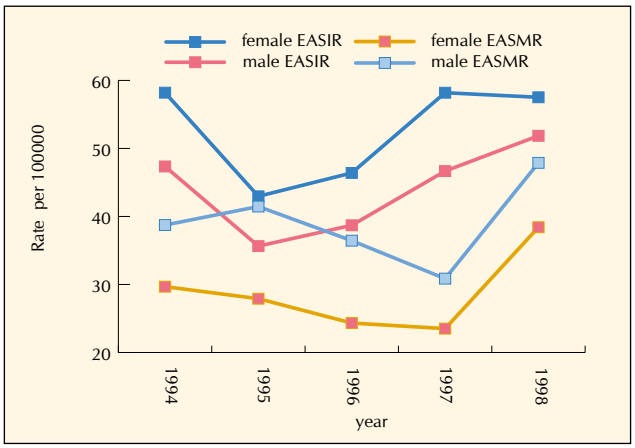


Figure 7.33 Trends in incidence and mortality rates, 1994 – 1998 by sex: lymphoma, patients 65 and over



7.12. Non-Hodgkin's lymphoma *ICD - 10 C82 - C85*

Rates for non-Hodgkin's lymphoma (NHL) have increased generally in both men and women and in all age categories generally, particularly in men (Table 7.10, Figure 7.34). The increase in the incidence rate in men in all age groups (5.6%) was statistically significant as was the rise in the mortality rate in those under 65 years old (9.3%) (Figure 7.35).The increase in incidence and mortality for the older age group was smaller and not significant (Figure 7.36).

Table 7.10 Trends in incidence and mortality by age and sex 1994 – 98: non-Hodgkin's lymphoma

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	191	12.29	183	10.48	100	6.52	95	5.00
1995	189	12.21	164	9.34	109	7.11	87	4.39
1996	207	13.13	185	10.56	110	6.96	85	4.43
1997	223	14.02	194	10.56	102	6.43	88	4.56
1998	244	15.16	198	10.60	142	9.08	121	6.19
annual % change 1994–1998		5.6%		1.5%		5.6%		4.6%
95% confidence limits of trend		2.7%;8.9%*		-4.2%;7.5%		-6.6%;19.9%		-9.2%;20.9%
Under 65 years								
1994	92	6.97	81	6.41	39	3.11	29	2.35
1995	116	8.87	83	6.37	44	3.33	20	1.61
1996	128	9.29	93	7.24	49	3.77	27	2.08
1997	123	8.88	87	6.45	51	3.76	31	2.44
1998	144	10.39	84	6.10	62	4.66	32	2.44
annual % change 1994–1998		8.0%		-0.9%		9.3%		4.9%
95% confidence limits of trend		-0.5%;17.9%		-7.8%;6.6%		4.1%;15.8%*		-12.6%;26.1%
65 years and over								
1994	99	55.35	102	43.39	61	34.10	66	26.43
1995	73	39.18	81	33.39	65	37.69	67	26.83
1996	79	44.16	92	37.46	61	32.71	58	23.45
1997	100	55.59	107	43.82	51	27.99	57	21.71
1998	100	53.75	114	46.98	80	44.87	89	36.50
annual % change 1994-1998		2.9%		4.3%		2.5%		4.3%
95% confidence limits of trend		–13.7%;22.8%		–9.2%;20.0%		–15.9%;25.0%		–15.9%;29.6%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.34 Trends in incidence and mortality rates, 1994 – 1998 by sex: non-Hodgkin's lymphoma, all age groups

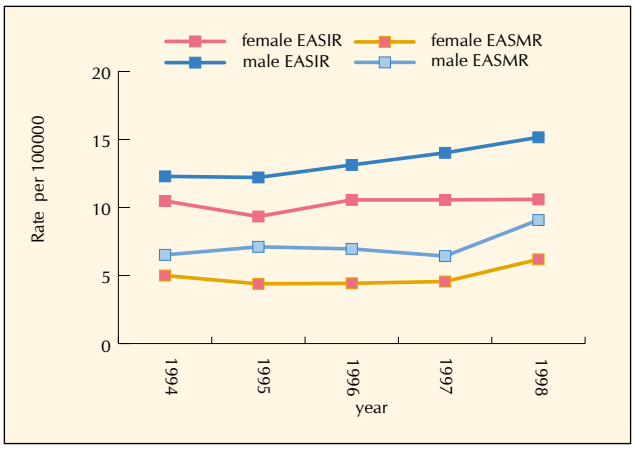


Figure 7.35 Trends in incidence and mortality rates, 1994 – 1998 by sex: non-Hodgkin's lymphoma, patients under 65

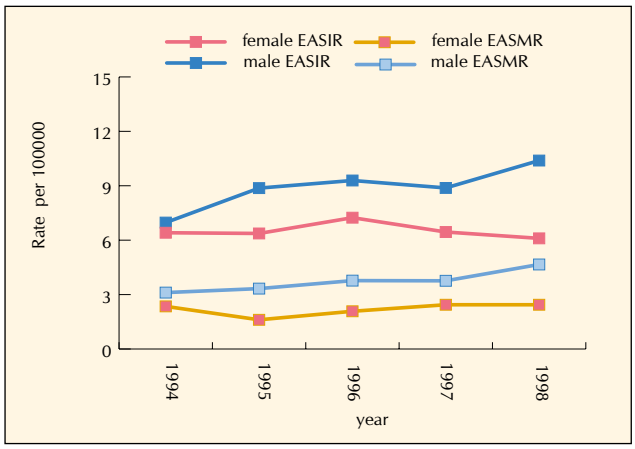
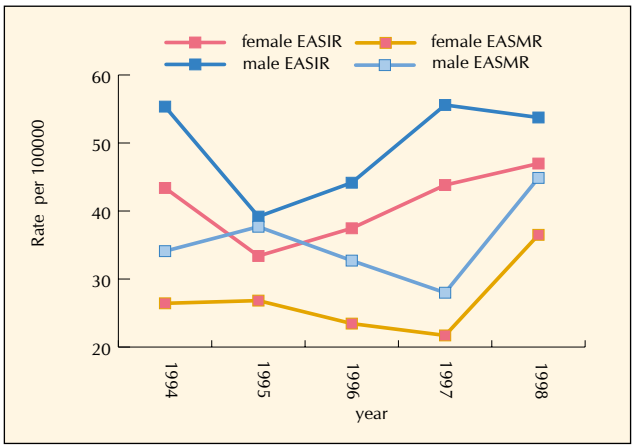


Figure 7.36 Trends in incidence and mortality rates, 1994 – 1998 by sex: non-Hodgkin's lymphoma, patients 65 and over



7.13. Stomach cancer *ICD - 10 C16*

No overall time trends in the standardised incidence rate were apparent in either sex since 1994 (Figure 7.37). Mortality rates declined significantly in men 65 and over (3.7%) (Table 7.11, Figure 7.39). The mortality rates in women declined in all age categories; the trend was statistically significant (Figure 7.38).

In general, mortality trends for women appear to be in steeper decline than those for men, especially in those under 65 years of age. In the 65 and over population, the relatively narrow margins between incidence and mortality rates in both sexes reflect a poorer prognosis.

Table 7.11 Trends in incidence and mortality by age and sex 1994 – 98: stomach cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	300	19.41	171	8.59	240	15.67	178	8.56
1995	288	18.64	179	8.54	259	17.14	152	7.38
1996	303	19.37	173	8.81	233	15.01	162	7.73
1997	299	19.11	172	8.50	230	14.86	139	6.82
1998	284	18.14	176	8.63	206	13.18	149	6.41
annual % change 1994–1998		-1.1%		0.1%		-4.9%		-6.6%
95% confidence limits of trend		-3.7%;1.6%		-1.6%;1.7%		-10.7%;1.6%		-10.8%;-1.7%*
under 65 years								
1994	95	7.80	37	2.99	63	5.22	32	2.54
1995	87	7.03	36	2.91	77	6.36	29	2.35
1996	101	8.05	43	3.38	65	5.17	33	2.64
1997	99	7.85	48	3.67	66	5.27	36	2.84
1998	100	7.71	44	3.38	49	3.86	20	1.55
annual % change 1994–1998		0.9%		4.8%		-7.9%		-8.0%
95% confidence limits of trend		-4.8%;6.9%		-2.1%;12.3%		-20.3%;7.2%		-27.1%;16.8%
65 years and over								
1994	205	113.31	134	53.89	177	100.15	146	57.31
1995	201	112.59	143	54.12	182	104.35	123	48.02
1996	202	110.95	130	52.81	168	94.60	129	48.90
1997	200	110.25	124	47.59	164	92.44	103	39.09
1998	184	102.55	132	51.14	157	88.60	129	45.74
annual % change 1994–1998		-2.2%		-2.3%		-3.7%		-6.6%
95% confidence limits of trend		-4.4%;0.1%		-6.5%;2.1%		-6.8%;-0.3%*		-15.7%;4.0%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.37 Trends in incidence and mortality rates, 1994 – 1998 by sex: stomach cancer, all age groups

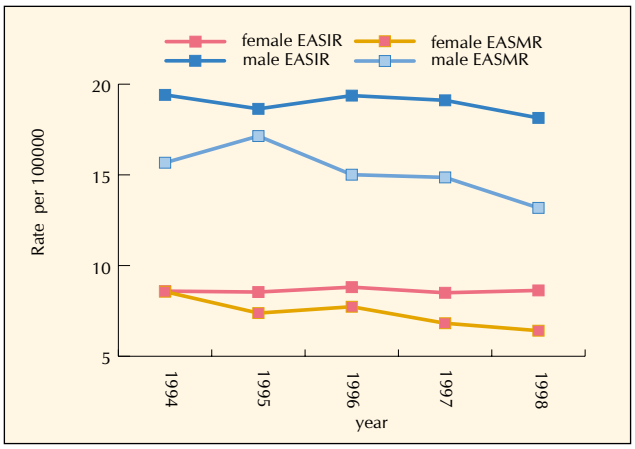


Figure 7.38 Trends in incidence and mortality rates, 1994 – 1998 by sex: stomach cancer, patients under 65

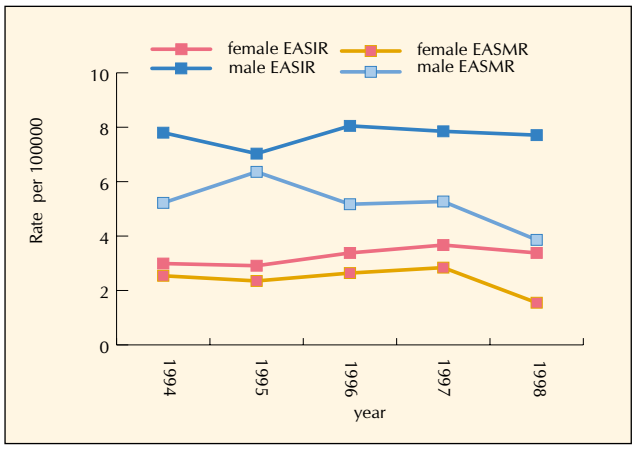
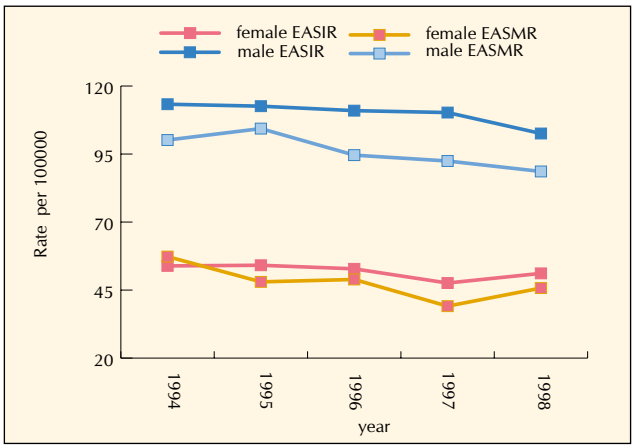


Figure 7.39 Trends in incidence and mortality rates, 1994 – 1998 by sex: stomach cancer, patients 65 and over



7.14. Bladder cancer *ICD - 10 C67*

Apart from an increase in mortality rate in women under 65 years (Table 7.12, Figure 7.41), decreases in incidence and mortality rates in both sexes and in all age categories were recorded between 1994 and 1998 (Figure 7.40, Figure 7.42). None of the trends were statistically significant except for the decline in male mortality rates in all age groups.

A downward trend in male incidence can be seen. The margins between male incidence and mortality rates are consistently wider than the female equivalents. Some of these differences may be partly to do with differences in coding and classification of bladder cancers.

Table 7.12 Trends in incidence and mortality by age and sex 1994 – 98: bladder cancer

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	341	22.23	171	8.93	115	7.40	70	3.08
1995	335	21.71	106	5.50	115	7.44	46	2.11
1996	341	21.59	130	6.61	113	7.22	49	2.16
1997	334	21.54	121	6.27	113	7.16	60	2.73
1998	288	18.04	112	5.75	105	6.72	47	2.20
annual % change 1994–1998		-4.3%		-7.5%		-2.3%		-4.1%
95% confidence limits of trend		-9.8%;1.8%		-22.0%;10.3%		-4.3%;-0.3%*		-19.9%;15.0%
under 65 years								
1994	93	7.74	51	4.19	19	1.58	6	0.49
1995	101	8.20	27	2.25	9	0.72	4	0.32
1996	106	8.45	30	2.38	17	1.36	3	0.24
1997	99	7.92	36	2.75	14	1.15	8	0.61
1998	78	6.00	40	2.95	15	1.17	6	0.48
annual % change 1994–1998		-5.5%		-5.0%		-1.3%		5.7%
95% confidence limits of trend		-16.3%;7.1%		-27.3%;24.5%		-29.8%;38.8%		-30.3%;61.0%
65 years and over								
1994	248	139.47	120	47.29	96	54.49	64	24.03
1995	234	131.02	79	31.82	106	61.77	42	16.55
1996	235	127.89	100	40.90	96	54.68	46	17.65
1997	235	131.82	85	34.77	99	55.78	52	19.84
1998	210	115.52	72	28.35	90	51.55	41	16.17
annual % change 1994–1998		-3.7%		-9.4%		-2.1%		-6.1%
95% confidence limits of trend		-7.6%;0.5%		-22.5%;7.0%		-8.4%;4.6%		-19.2%;9.5%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.40 Trends in incidence and mortality rates, 1994 – 1998 by sex: bladder cancer, all age groups

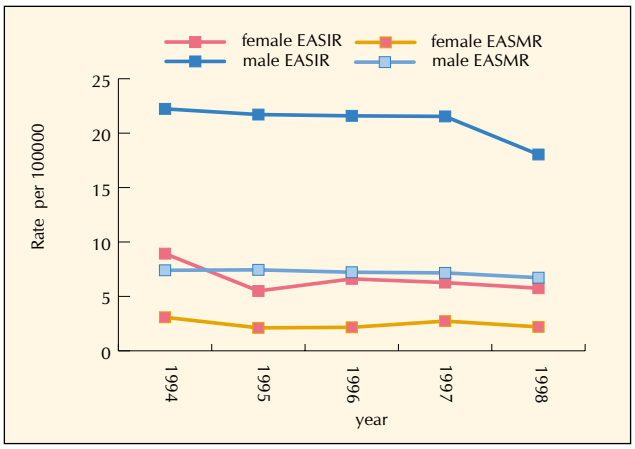


Figure 7.41 Trends in incidence and mortality rates, 1994 – 1998 by sex: bladder cancer, patients under 65

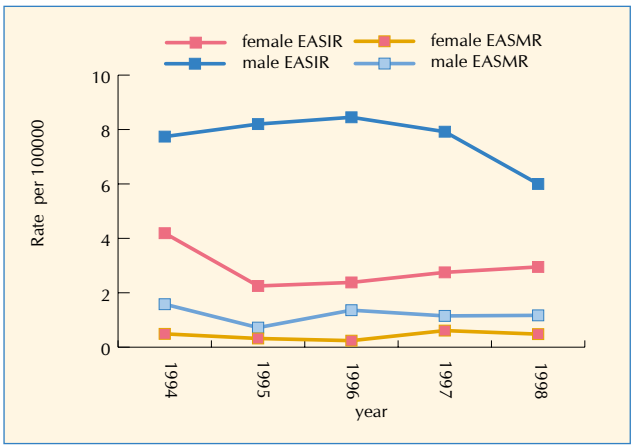
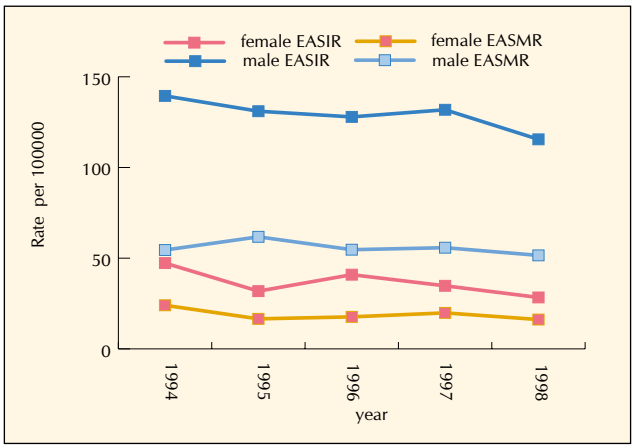


Figure 7.42 Trends in incidence and mortality rates, 1994 – 1998 by sex: bladder cancer, patients 65 and over



7.15. Leukaemia *ICD - 10 C91 - C95*

There was a decrease in incidence in those 65 and over – for males 3.5%, for females 3.7% – but otherwise all incidence and mortality rates have risen since 1994 (Figure 7.45). This was most marked for those under 65 (Figure 7.44) (males 6.3% and females 8.6%). Mortality rates increased in all age categories (Table 7.13, Figure 7.43), especially in men but no trend was statistically significant.

Table 7.13 Trends in incidence and mortality by age and sex 1994 – 98: leukaemia

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	185	11.53	157	8.42	109	7.12	86	4.29
1995	208	13.00	115	6.00	101	6.49	80	3.98
1996	192	12.04	141	7.59	120	7.47	90	4.41
1997	204	12.44	152	7.92	125	8.10	90	4.33
1998	205	12.46	162	8.51	146	9.10	98	4.70
annual % change 1994–1998		1.1%		3.0%		7.1%		2.7%
95% confidence limits of trend		-3.6%;6.1%		-11.8%;20.4%		-0.1%;15.4%		-2.2%;7.9%
under 65 years								
1994	72	5.28	64	4.79	37	2.74	26	1.82
1995	98	6.98	43	3.13	32	2.35	27	1.95
1996	95	6.84	73	5.11	46	3.18	27	2.00
1997	93	6.51	72	5.02	36	2.57	25	1.72
1998	108	7.51	84	5.81	38	2.76	31	2.17
annual % change 1994–1998		6.3%		8.6%		1.0%		2.3%
95% confidence limits of trend		-3.7%;17.9%		-12.9%;36.2%		-11.1%;14.8%		-6.8%;12.3%
65 years and over								
1994	113	62.06	93	37.77	72	42.55	60	24.31
1995	110	61.69	72	29.19	69	40.01	53	20.44
1996	97	54.15	68	27.65	74	42.14	63	23.92
1997	111	60.39	80	31.42	89	52.82	65	25.42
1998	97	52.52	78	30.34	108	60.46	67	25.22
annual % change 1994–1998		-3.5%		-3.7%		9.8%		2.9%
95% confidence limits of trend		-9.4%;2.9%		-14.5%;8.8%		-0.03%;21.7%		-5.7%;12.4%

Figure 7.43 Trends in incidence and mortality rates, 1994 – 1998 by sex: leukaemia, all age groups

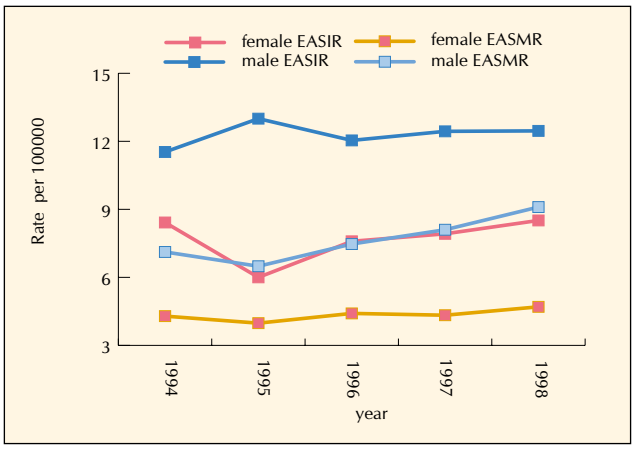


Figure 7.44 Trends in incidence and mortality rates, 1994 – 1998 by sex: leukaemia, patients under 65

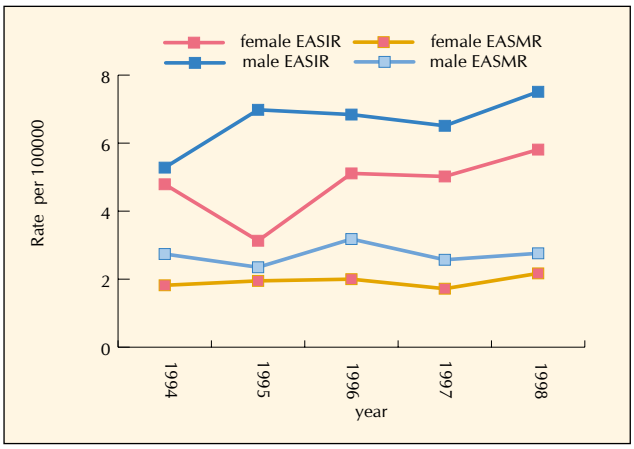
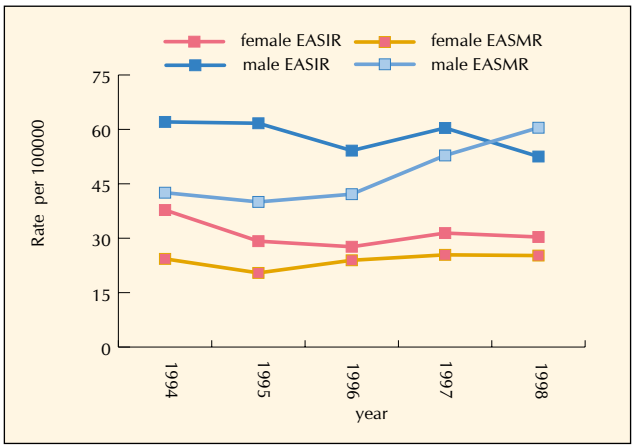


Figure 7.45 Trends in incidence and mortality rates, 1994 – 1998 by sex: leukaemia, patients 65 and over



7.16. Melanoma of skin *ICD - 10 C43*

In the population under 65, incidence rates changed significantly in both men and women (Figure 7.47). Rates rose by 10.4% per annum in men whilst rates fell by 2.1% in women within this age group. Other statistically significant results included the 13% increase in female mortality rates in all age groups (Figure 7.46, Table 7.14). Incidence fell in both men and women 65 and over, but this was not significant (Figure 7.48).

Table 7.14 Trends in incidence and mortality by age and sex 1994 – 98: melanoma of skin

	INCIDENCE				MORTALITY			
	male		female		male		female	
	cases	EASR	cases	EASR	deaths	EASR	deaths	EASR
all age groups								
1994	134	8.67	240	13.75	22	1.40	25	1.39
1995	121	7.74	233	13.41	33	2.17	26	1.34
1996	127	7.91	230	13.06	27	1.79	33	1.68
1997	167	10.49	236	13.35	35	2.24	32	1.73
1998	152	9.43	235	12.60	23	1.42	45	2.35
annual % change 1994–1998		4.7%		-1.8%		0.6%		13.0%
95% confidence limits of trend		-6.8%;18.0%		-3.7%;0.1%		-22.5%;30.7%		2.9%;26.0%*
under 65 years								
1994	61	4.60	145	10.77	8	0.66	12	0.89
1995	75	5.50	139	10.27	17	1.28	8	0.61
1996	75	5.44	144	10.29	13	0.98	9	0.71
1997	100	7.02	139	10.09	16	1.19	13	1.00
1998	97	6.86	142	9.77	12	0.85	16	1.21
annual % change 1994–1998		10.4%		-2.1%		4.5%		11.2%
95% confidence limits of trend		3.0%;19.6%*		-3.4%;-0.8%*		-22.7%;41.4%		-12.5%;42.9%
65 years and over								
1994	73	41.59	95	37.90	14	7.38	13	5.46
1995	46	25.87	94	38.81	16	9.39	18	7.24
1996	52	27.89	86	35.39	14	8.35	24	9.53
1997	67	38.55	97	39.72	19	10.72	19	7.65
1998	55	30.21	93	35.48	11	6.03	29	11.51
annual % change 1994–1998		-2.4%		-1.1%		-2.7%		15.5%
95% confidence limits of trend		-22.9%;23.6%		-6.6%;4.8%		-24.4%;25.3%		-1.1%;37.8%

* Statistically significant trend as 95% confidence limits do not include the value of zero.

Figure 7.46 Trends in incidence and mortality rates, 1994 – 1998 by sex: : melanoma of skin, all age groups

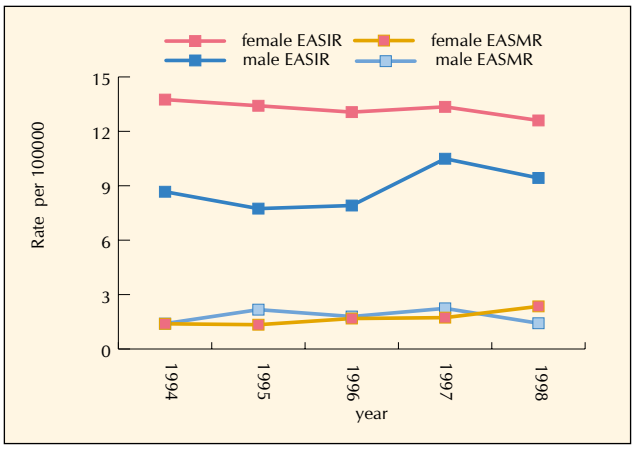


Figure 7.47 Trends in incidence and mortality rates, 1994 – 1998 by sex: melanoma of skin, patients under 65

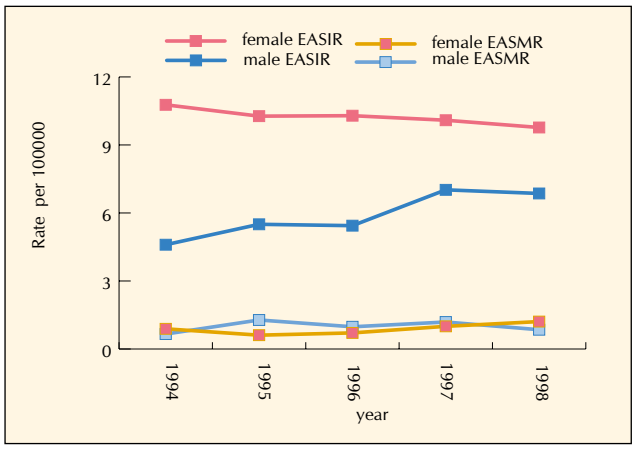
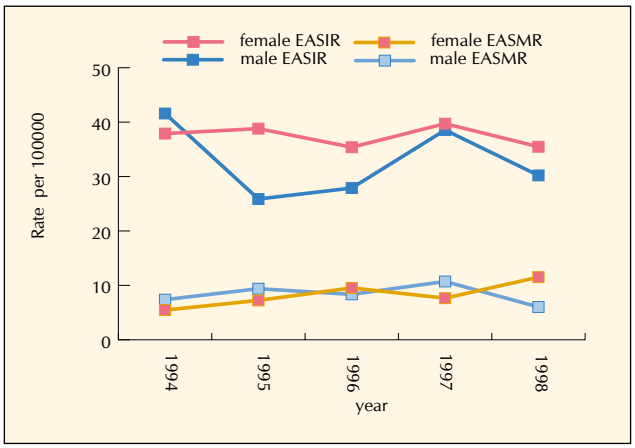


Figure 7.48 Trends in incidence and mortality rates, 1994 – 1998 by sex: : melanoma of skin, patients 65 and over



7.17. Comments

Many trends in cancer incidence and mortality have been described in this chapter, even with the short period of observation available to us. The overall pattern is of no significant change in overall cancer incidence, with a fall in mortality in the male population under 65. Incidence and mortality trends do not go in parallel for many reasons. For cancers with good survival, such as breast cancer, those dying in a particular year may have been diagnosed and treated many years previously. Survival may improve, causing improvement in mortality without any change in incidence. Screening tends to increase incidence in the short term, but mortality in the long term.

Incidence and survival trends from the National Cancer Registry data provide additional insights into the complex problems of cancer control. None of these indicators is perfect, and none is adequate on its own. This has made incidence data increasingly more important for early monitoring of trends, and for assessment of major public health interventions such as breast and cervical screening. Unfortunately, incidence data is only available from 1994 onwards. Changes in observed incidence and mortality are most commonly due to real changes in the underlying rates in the population. However, in a small number of instances, apparent changes in rate may be artefactual and due to changes in case ascertainment.

Variation in registration practice – under or over-registration of cases in different years – may give a false impression of change in incidence with time. In the data presented here, incidence rates in 1994 were consistently a little higher than those in 1996, suggesting that, in the first year of operation of the registry, some cases not truly incident in 1994 were registered for that year. This is a well-recognised problem with new registries and difficult to eliminate entirely. The major consequence of this is to cause us to over-estimate downward trends in incidence and to under-estimate increases.

Changes in the practice of diagnosis may also have an effect on incidence that may extend over a number of years. This may be the introduction of new diagnostic procedures such as PSA testing, or the introduction of organised screening; these are likely to influence the reported incidence of cancers such as breast, prostate and cervical cancer.

Mortality data can be affected by most of the factors mentioned above. In addition, however, the underlying cause of death is not always correctly certified so that changes in certification practice by doctors may lead to bias. The patterns in cancer mortality reflect the care seeking behaviour of the population in the way it locates and operates its health services, the practices of its health care workers, the patterns of cancer treatment, the methods of death registration and the patterns of internal migration. Consideration of these issues is required when interpreting the “historical” cancer morality data.