



Cancer in adolescents and young adults

Incidence trends

Cancer is uncommon in adolescents and young adults. In 1994-2008, cancers in individuals aged 15-19 made up 0.4% of all registered cancers (including non-invasive types), and 1.3% in those aged 20-24. Between 1994 and 2008 there was little change in cancer numbers for males, and for females under 20. Cases in females aged 20-24 increased significantly (annual percentage increase 10.9%) from 1994 (Figure 1). This increase, which was mostly due to carcinoma *in situ* of cervix, reached a peak of 345 cases diagnosed in 2004 and shows some signs of decrease subsequently.

Cancer types

Persons aged 15-19

The commonest cancer in those aged 15-19 was Hodgkin's disease (12% of all cases). This was also the commonest cancer in males, but the commonest cancer in females was carcinoma *in situ* of the cervix (20% of cases) (Table 1). Neither of these cancers, nor any other cancer types, showed any significant time trend in this age group, but the annual number of cases for any specific cancer was low. Invasive brain tumours were much more common in males than in females, while invasive melanoma was more common in females.

Persons aged 20-24

Carcinoma *in situ* of the cervix, detected through cervical screening, was by far the commonest cancer in this age group, making up 74% of cancers in females, while for males the commonest cancer was cancer of the testis (286 cases, 33% of the total) (Table 2). The number of cases of carcinoma *in situ* of cervix increased by 18% per year between 1994 and 2004, from 51 cases in 1994 to 284 in 2004, but had fallen to 240 by 2008. There was also a small, but significant, increase in testicular cancer, from an average of 15 cases annually in 1994-1999 to 24 cases annually in 2004-2008. Melanoma (invasive and *in situ*) was more common in females, while leukaemia, brain and other CNS tumours and non-Hodgkin's lymphoma were more common in males.

Figure 1. Cases of cancer (including non-invasive types) in persons aged 15-24 years, 1994-2008

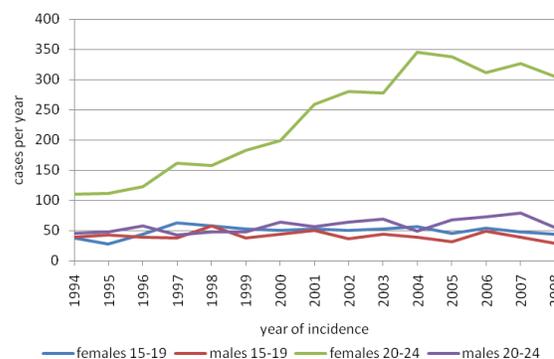


Table 1. Commoner cancers in persons aged 15-19 years of age, 1994-2008

	females	males
all cancers	731 (100%)	613 (100%)
Hodgkin's disease	76 (10.4%)	90 (14.7%)
cervix <i>in situ</i>	144 (19.7%)	—
brain and other CNS		
invasive	39 (5.3%)	86 (14.0%)
benign	8 (1.1%)	6 (1.0%)
uncertain behaviour	11 (1.5%)	9 (1.5%)
leukaemia	46 (6.3%)	60 (9.8%)
non-Hodgkin's lymphoma	32 (4.4%)	49 (8.0%)
testis	—	81 (13.2%)
melanoma		
invasive	53 (7.3%)	25 (4.1%)
<i>in situ</i>	8 (1.1%)	7 (1.1%)
bone	23 (3.1%)	45 (7.3%)
non-melanoma skin	33 (4.5%)	19 (3.1%)
connective tissues	22 (3.0%)	17 (2.8%)
thyroid	26 (3.6%)	7 (1.1%)
ovary	25 (3.4%)	0 (0.0%)
benign endocrine	12 (1.6%)	7 (1.1%)
head and neck	6 (0.8%)	11 (1.8%)
lung	8 (1.1%)	3 (0.5%)

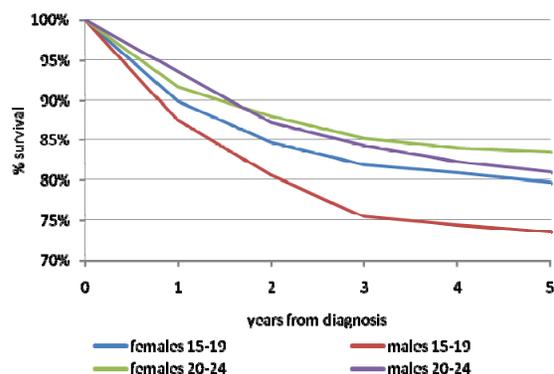
Table 2. Commoner cancers in persons aged 20-24 years of age, 1994-2008

	females	males
all cancers	3485 (100%)	864 (100%)
cervix		
<i>in situ</i>	2576 (73.9%)	—
invasive	34 (1.0%)	—
testis	—	286 (33.1%)
melanoma		
invasive	121 (3.5%)	64 (7.4%)
<i>in situ</i>	31 (0.9%)	11 (1.3%)
Hodgkin's disease	93 (2.7%)	70 (8.1%)
non-melanoma skin	79 (2.3%)	60 (6.9%)
brain and other CNS		
invasive	50 (1.4%)	65 (7.5%)
benign	10 (0.3%)	12 (1.4%)
uncertain behaviour	7 (0.2%)	11 (1.3%)
leukaemia	50 (1.4%)	54 (6.3%)
non-Hodgkin's lymphoma	33 (0.9%)	53 (6.1%)
thyroid	53 (1.5%)	6 (0.7%)
bone	14 (0.4%)	23 (2.7%)
connective tissues	20 (0.6%)	16 (1.9%)
ovary	30 (0.9%)	0 (0.0%)
benign endocrine	30 (0.9%)	12 (1.4%)
breast	23 (0.7%)	0 (0.0%)
colorectal	11 (0.3%)	10 (1.2%)

Survival

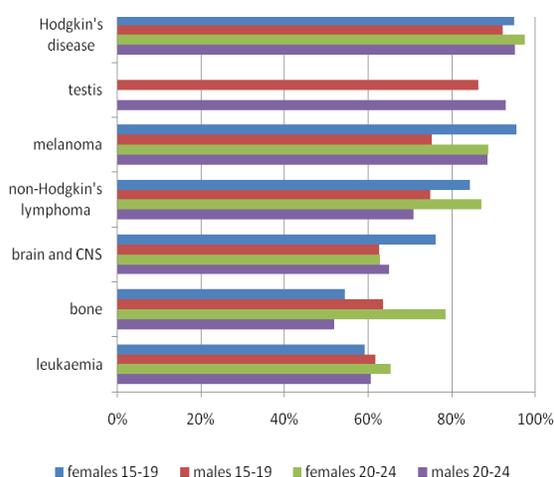
Overall crude survival at five years from diagnosis was 80% for females aged 15-19, 74% for males aged 15-19, 83% for females aged 20-24 and 81% for males aged 20-24 (Figure 2). Survival is shown here for invasive cancers only, as non-invasive cancers would not be expected to cause death.

Figure 2. Five-year survival (all causes) by age and sex. 1994-2008, invasive cancers only



Of the commoner cancers, five-year survival was highest overall for Hodgkin's disease (95%) and lowest for leukaemia (62%). There were no consistent differences in survival between cancer sites by age or sex (Figure 3) but as males and older patients had a higher proportion of cancers with poorer prognosis, they had a lower overall survival, as seen in Figure 2.

Figure 3. Five year survival (all cause) by cancer site, age and sex, 1994- 2008



Mortality

The commonest cause of cancer death (1994 to 2006), for both age groups and sexes, was leukaemia; the commonest solid tumour was cancer of the brain and other CNS (Table 3). The overall number of cancer deaths was higher for males in both age groups.

Table 3. Cancer deaths in persons aged 15-24, 1994-2006

	15-19		20-24	
	females	males	females	males
all cancers	71 (100%)	109 (100%)	101 (100%)	121 (100%)
leukaemia	21 (29.6%)	21 (19.3%)	27 (26.7%)	21 (17.4%)
brain and other CNS	10 (14.1%)	28 (25.7%)	19 (18.8%)	19 (15.7%)
bone	9 (12.7%)	13 (11.9%)	7 (6.9%)	16 (13.2%)
non-Hodgkin's lymphoma	2 (2.8%)	10 (9.2%)	5 (5.0%)	14 (11.6%)
connective tissue	7 (9.9%)	10 (9.2%)	3 (3.0%)	3 (2.5%)
unknown primary site	4 (5.6%)	6 (5.5%)	3 (3.0%)	4 (3.3%)
Hodgkin's disease	2 (2.8%)	3 (2.8%)	5 (5.0%)	6 (5.0%)
testis	0 (0.0%)	3 (2.8%)	0 (0.0%)	12 (9.9%)
melanoma	3 (4.2%)	4 (3.7%)	4 (4.0%)	3 (2.5%)

Prevalent cases

Of all 5693 individuals aged between 15 and 24 who were diagnosed with cancer in 1994-2008, 5216 (92%) were alive at the end of 2008, 82% of those diagnosed at ages 15-19 and 94% of those diagnosed at 20-24 (Table 4). At the end of 2008, 4082 persons who had been diagnosed during 1999-2008 and 2293 who had been diagnosed during 2004-2008 were still alive. The higher prevalence in the older age group was mainly due to the large number of cases of carcinoma *in situ* of cervix in this age group.

Table 4. Number of persons still alive at the end of 2008

Time from diagnosis	all ages	15-19	20-24
up to five years	2293	400	1893
up to ten years	4082	781	3301
up to fifteen years	5216	1107	4109
all cases diagnosed	5693	1344	4349

Second cancers

Seventeen individuals (0.3% of the total), ten aged 15-19 and seven aged 20-24 at the time of the first cancer diagnosis, developed a second cancer before the end of 2009. The average interval between cancers was 3.5 years for those aged 15-19 and 1.3 years for those aged 19-24. In general, the first and second cancers were of different types, but three persons aged 20-24 were diagnosed with two distinct non-melanoma skin cancers within two years.