National Cancer Registry Ireland **Cancer Trends**

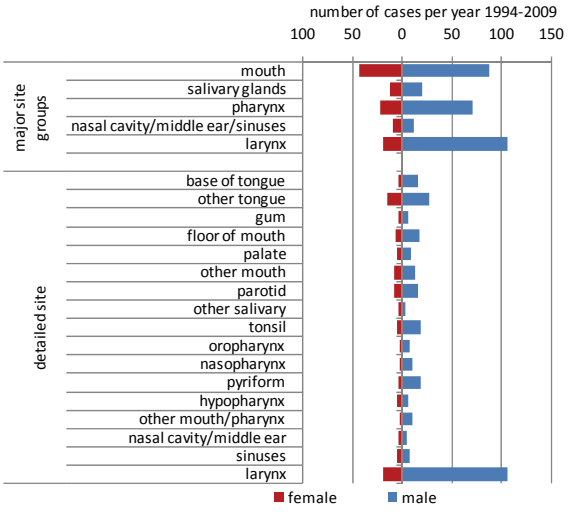
Cancers of the head and neck

Anatomical sites

Cancers of the head and neck are a heterogeneous group, consisting of cancers of the mouth (base of tongue, other tongue, gum, floor of mouth, palate and other mouth; ICD 10 codes C01–C06); salivary glands (C07–C08); pharynx (tonsil, oropharynx, nasopharynx, pyriform fossa, hypopharynx, other mouth/pharynx; C09□C14), nasal cavity, middle ear and sinuses (C30–C31) and larynx (C32). Cancer of the lip is not included in "head and neck cancer" in this report.

An average of 411 head and neck cancers was registered annually between 1994 and 2009*. Larynx was by far the commonest site, with 127 cases a year. The next most frequent site was tongue (62 cases per year). All head and neck cancers were commoner in men (Figure 1). The highest male/female ratio was for laryngeal cancers (4.2) and the lowest for salivary glands (1.1).

Figure 1. Anatomical site of head and neck cancers by sex, 1994–2009



Time trends

The incidence rate for cancers of the mouth increased significantly for women between 1994 and 2009 (annual percentage increase 3.0%, 95% confidence interval (CI) 1.7%–4.4%) but there was little evidence of a time trend for cancers of other sites (Figure 2). There was no significant time trend for any site for men, although there was a slight downward trend for all sites but larynx (Figure 3).

Figure 2. Head and neck cancer incidence rates by site, females, 1994–2009

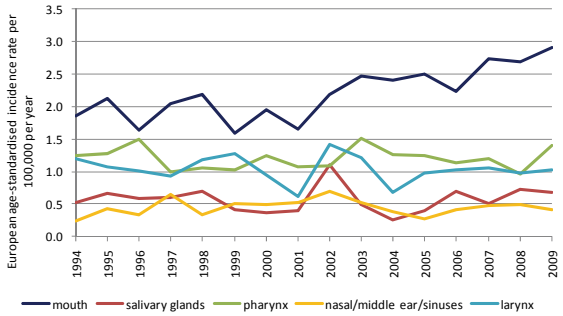
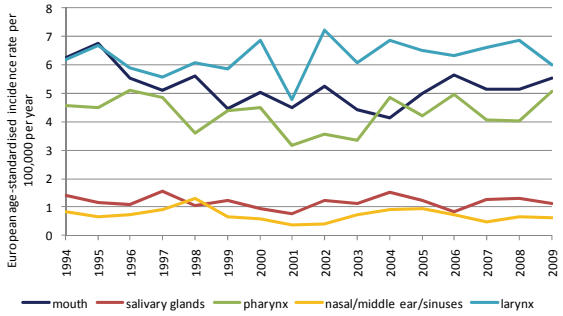
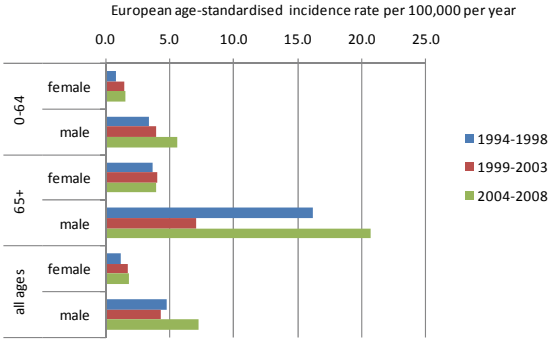


Figure 3. Head and neck cancer incidence rates by site, males, 1994–2009



Increased incidence of cancer of the tonsil, possibly related to human papilloma virus (HPV) infection, has been reported internationally.[1,2,3] The age-standardised incidence rate in Ireland increased by 4.9% (95% CI 0.8%–8.9%) annually for women and 4.3% (95% CI -2.9%–11.4%) annually for men between the periods 1994–1998 and 2004–2008. The largest increases were in those under 65 (Figure 4), with a 6.5% (95% CI 1.3%–11.7%) annual increase for women and a 5.2% (95% CI 3.0%–7.3%) increase for men.

Figure 4. Age-standardised incidence rate, cancers of the tonsil, by age and sex, 1994–2008

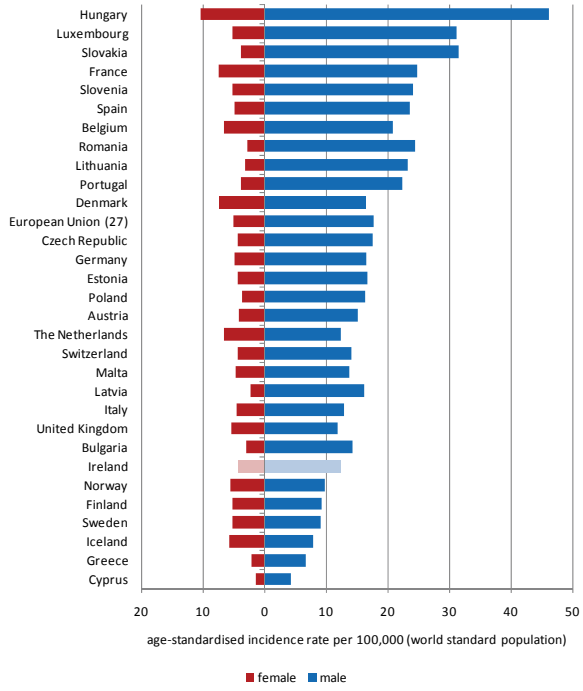


*__Dates:__ Complete incidence data are available to the end of 2009, but Figure 4 shows data grouped, for convenience, into three periods of five years from 1994 to 2008. Staging and treatment data are complete only to the end of 2008. European estimates are published for 2008 only. Survival estimates are shown for cancers diagnosed up to the end of 2005, to allow for 5 years of follow up.

International variation in incidence[5]

The estimated incidence of cancers of the oral cavity and pharynx[4] in 2008 varied from 46/100,000 for men in Hungary to 4.3/100,000 in Cyprus, and from 10/100,000 women in Hungary to 1.5/100,000 in Cyprus (Figure 5). The incidence was relatively low in Ireland (19th highest of 31 in women and 24th highest in men). The male/female ratio was highest in central and eastern European countries (>8 in Romania, Slovakia, Lithuania) and lowest in Nordic countries (<2 in Sweden, Norway, Finland), and was 2.8 in Ireland.

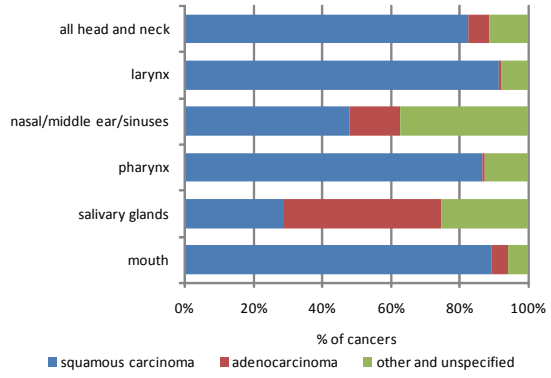
Figure 5. Estimated incidence of cancers of oral cavity and pharynx, 2008 (world standard population)[5]



Histological types

82% of the cancers of head and neck overall (ICD10 C01–C14, C30–C32) were squamous cell carcinomas (Figure 6). Squamous carcinoma predominated at all sites except salivary glands.

Figure 6. Histological types of head and neck cancer, 1994–2009



Stage at diagnosis

Even when missing data on nodes and metastases are interpreted as negative values, 31% of head and neck cancers were still unstaged. This ranged from 23% for mouth to 74% for nasal cavity, middle ear and sinuses (Figure 7). As a consequence, time trends in stage are difficult to interpret. Excluding cancers which were not staged, roughly half of all mouth, salivary gland and laryngeal cancers, but only one-fifth of those of the pharynx or of the nasal cavity/middle ear/sinuses, were diagnosed at stage I or II. Early (stage I and II) cancers fell, as a percentage of all staged cancers, between 1994–1998 and 2004–2008 for all sites but mouth (Figure 8), partly as a result of a fall in the percentage of unstaged cancers (Figure 9).

Figure 7. Percentage of cases by stage 1994–2008

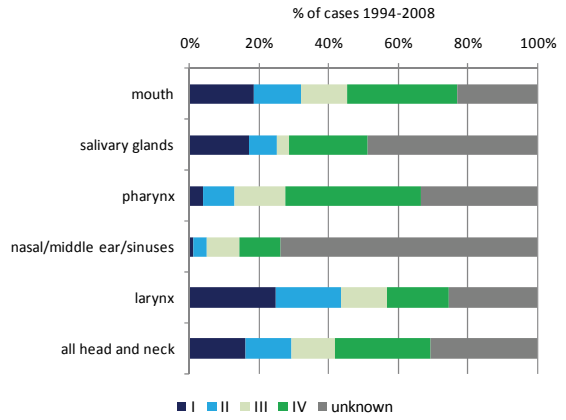


Figure 8. Change in percentage of early stage cancers 1994–2008

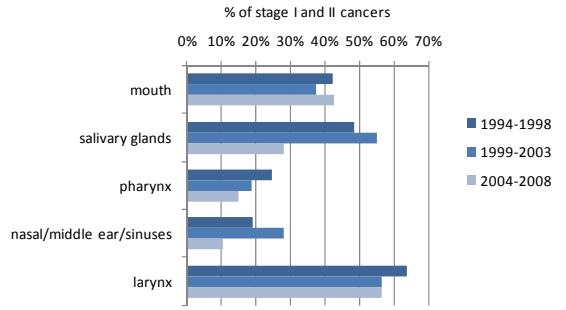
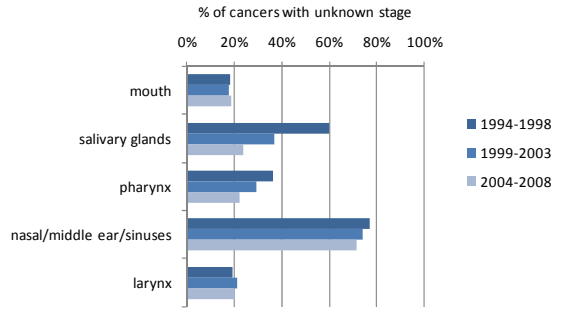


Figure 9. Change in percentage of unknown stage cancers 1994–2008



Treatment

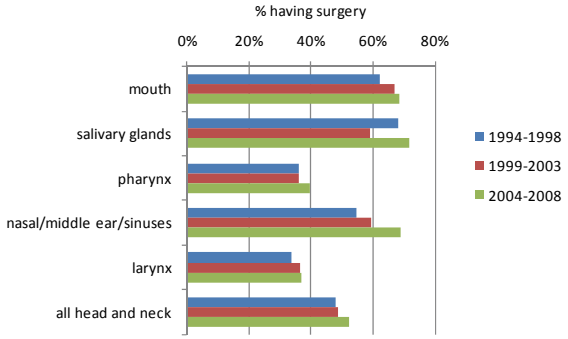
50% of patients had surgery, while 70% had radiotherapy (Table 1). These figures were strongly influenced by laryngeal cancer, which had a relatively low rate of surgical intervention (Figure 10) but a high use of radiotherapy (Figure 11).

Table 1. Treatment by time period, all sites 1994–2008

	1994–1998	1999–2003	2004–2008	**1994–2008**
surgery	48%	49%	52%	**50%**
chemotherapy	6%	17%	28%	**18%**
radiotherapy	70%	70%	69%	**70%**

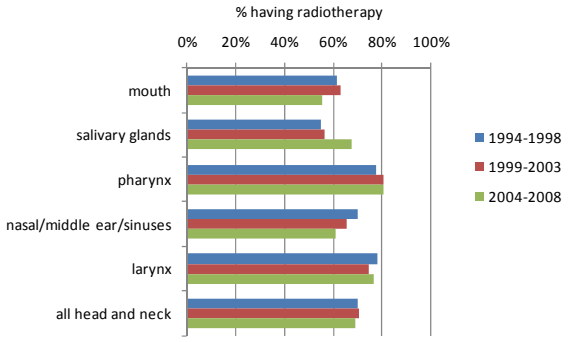
The use of surgery increased slightly, from 48% of cases overall in 1994–1998 to 52% in 2004–2008 (Figure 10). This increase was seen for most sites.

Figure 10. Surgical treatment, 1994–2008



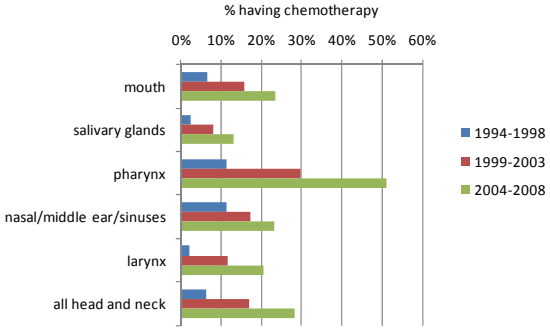
Overall radiotherapy use fell very slightly, from 70% to 69%, between 1994–1998 and 2004–2008 (Figure 11). However, there was an increase in radiotherapy for cancer of the salivary glands from 55% to 68%, and for pharyngeal cancers from 77% to 81%.

Figure 11. Radiotherapy, 1994–2008



The use of chemotherapy increased from 6% to 28% between 1994–1998 and 2004–2008 (Figure 12). The largest increases were for cancer of the larynx (from 2% to 20%) and cancer of the pharynx (from 11% to 51%).

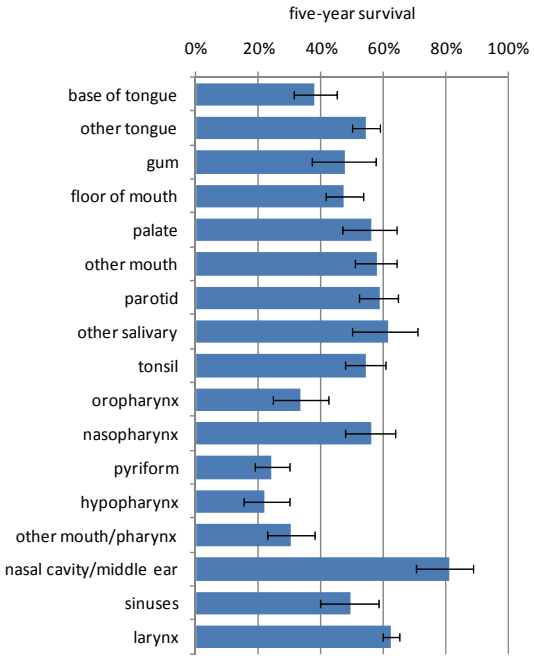
Figure 12. Chemotherapy, 1994–2008



Survival

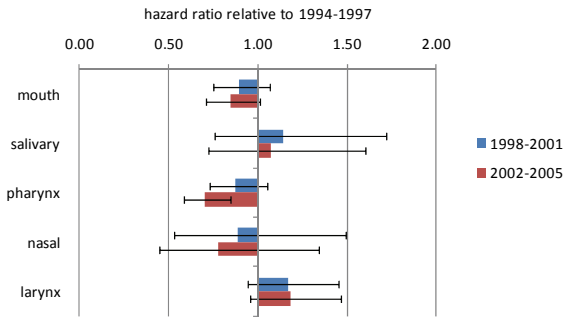
Cause-specific survival was 53% overall (95% CI 51%–54%) at five years. This ranged from 22% for cancers of the hypopharynx to 81% for those of the nasal cavity and middle ear (Figure 13).

Figure 13. Cause-specific five-year survival (with 95% confidence intervals) for cancers diagnosed 1994–2005



For the major site groupings, survival increased significantly for pharynx (hazard ratio for 2002–2005, compared to 1994–1997, 0.70, 95% CI 0.58–0.85) but not for any other sites (Figure 14). Survival for cancer of the mouth overall improved, although not significant overall, showed a significant improvement for cancers of the tongue (C01 and C02) (hazard ratio for 2002–2005, compared to 1994–1997, 0.74, 95% CI 0.58–0.95) possibly due to the increasing use of chemotherapy for these sites.

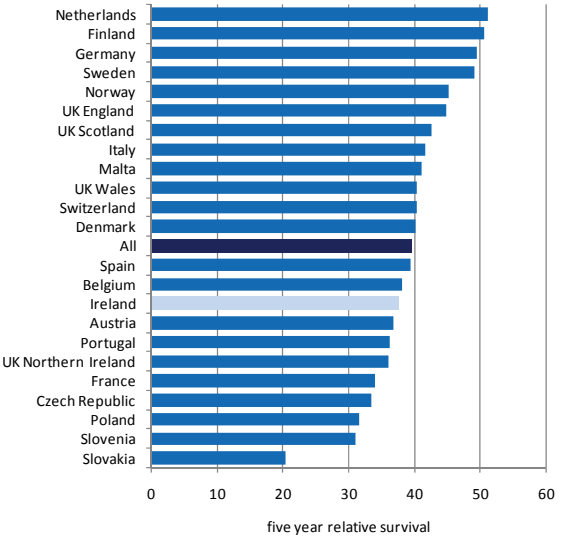
Figure 14. Hazard ratio (with 95% confidence interval) for cancers diagnosed in 1998–2001 and 2002–2005, relative to 1994–1997



International variation in survival[6]

Five-year relative survival from head and neck cancer in Europe ranged from 20% in Slovakia to 51% in the Netherlands, with the figure for Ireland (37%) close to the average (Figure 15). Survival in Ireland ranked 15th highest of 23 countries for head and neck cancers overall, 16th for oral cavity, 7th for pharynx, 12th for salivary glands, 8th for nasal cavities and sinuses and 15th for larynx.

Figure 15. Five year relative survival for head and neck cancers diagnosed 1995–1999[6]



Mortality[7]

Age-standardised mortality rates from cancers of the lip, oral cavity and pharynx* fell rapidly for men (annual percentage change (APC) -3.0%) and women (APC -1.7%) between 1950 and 1980 (Figure 16). The decrease since then has been less: 0.8% for men and 1.1% for women. By contrast, the largest fall in laryngeal cancer mortality has been in the past 25 years, 1.2% annually for men and 4.2% for women (Figure 17).

Figure 16. Age-standardised mortality rate (world standard population) for cancers of lip, oral cavity and pharynx 1950–2008[7]

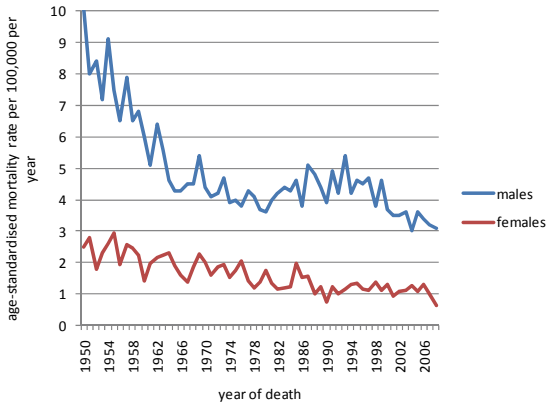
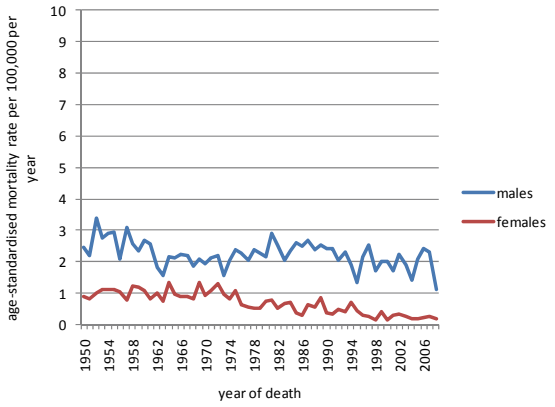


Figure 17. Age-standardised mortality rate (world standard population) for cancers of larynx 1950–2008[7]



References and notes

1. Head and neck cancer in Australia between 1982 and 2005 shows increasing incidence of potentially HPV-associated oropharyngeal cancers. Hocking JS, Stein A, Conway EL, Regan D, Grulich A, Law M, Brotherton JM. Br J Cancer. 2011 ;104:886–91.
2. Trends in the incidence rates of tonsil and base of tongue cancer in England, 1985–2006. Reddy VM, Cundall-Curry D, Bridger MW. Ann R Coll Surg Engl. 2010 92:655–9
3. Burden of potentially human papillomavirus-associated cancers of the oropharynx and oral cavity in the US, 1998–2003. Ryerson AB, Peters ES, Coughlin SS, Chen VW, Gillison ML, Reichman ME, Wu X, Chaturvedi AK, Kawaoka K. Cancer. 2008;113:2901–9.
4. The data available from the European Cancer Observatory describes only ICD10 sites C01–C14, and excludes some cancer sites included elsewhere in this report.
5. European Cancer Observatory (ECO) http://eu-cancer.iarc.fr/
6. 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.
7. WHO mortality database http://www-dep.iarc.fr/WHOdb/WHOdb.htm

* This categorisation is the one used in the WHO mortality database.

