

# Head and Neck Cancers in England

## Relative survival by age and stage

---

***This report has been compiled by***

- Ann Watters, Analyst, Oxford Cancer Intelligence Unit

***With acknowledgements***

- Mr Richard Wight, Chair - Head and Neck Cancers Site Specific Clinical Reference Group
- Dr Monica Roche - Medical Director, OCIU
- Andrew Hughes, Principal Analyst, Solutions for Public Health



# Contents

Introduction	4
Objectives	4
Method	4
Data quality	5
Number of patients	5
Results	8
Larynx	10
Oral cavity	14
Oropharynx	18
Conclusion	22
References	23
Appendices	24
Appendix 1 - DAHNO audit case ascertainment	24
Appendix 2 - DAHNO tumour site groups	25
Appendix 3 - Statistics	26
Appendix 4 - Data quality	27
Appendix 5 - Tables	28

## Introduction

The purpose of this report is to compare the survival of patients whose data are recorded in two separate databases and identify whether one cohort of patients experience better survival than the other. The two databases are:

1. The DAHNO (Data for Head and Neck Oncology) system, which supports the National Head and Neck Cancer Audit, began a phased roll out and started receiving cases in 2004 on larynx and oral cavity cancers. Initially restricted to English cancer networks and subsequently eligible to Wales, all cancer networks in England and Wales now submit data to the audit, but not all eligible networks and trusts participated in the timeframe studied.

Some organisations submitted a broader range of tumour site groups (in addition to larynx and oral cavity) at inception whilst others have retrospectively populated the DAHNO database in these site group areas. Formal national collection on pharynx and major salivary gland cancer began in 2008.

Appendix 1 shows how case ascertainment has steadily improved against estimate since the first annual report was published in 2005.

2. The National Cancer Data Repository (NCDR) which holds merged data from the eight English cancer registries for cancers diagnosed in the years 1990 to 2006.

## Objective

Calculate and compare the relative survival rates for two cohorts:

1. DAHNO data - referred to in this report as 'DAHNO'
2. Cases on the NCDR but not included in the DAHNO audit - referred to as 'unmatched NCDR'

## Method

For both cohorts, one year and three year relative survival rates were estimated (appendix 3), for patients diagnosed with a head and neck cancer (as defined for the DAHNO audit – appendix 2) in the years 2004 to 2006. The analysis was restricted to cases diagnosed between 2004 and 2006 because these were the only years data included in both datasets.

The following analyses were done:

1. by DAHNO tumour site group: larynx and oral cavity, and other sites submitted including oropharynx, hypopharynx, nasopharynx and major salivary glands;
2. by stage and DAHNO tumour site groups larynx, oral cavity and oropharynx (for cohort 1, DAHNO, only. The unmatched NCDR, cohort 2, has no stage information – see section on data quality);
3. by age group and DAHNO tumour site groups larynx, oral cavity and oropharynx;
4. by Strategic Health Authority and DAHNO tumour site groups larynx, oral cavity and oropharynx.

All cases were followed up for at least three years after diagnosis or until death. The following registrations were included/excluded from the analysis:

- registrations with zero survival were included
- registrations made from a death certificate only were excluded
- where a patient had more than one primary tumour, only the earliest diagnosed tumour was included
- only cases for people aged between 15 and 99 years when diagnosed were included.

## Data quality

Appendix 4 gives details of records that were excluded from the analysis because they were either invalid or missing. Patients (as opposed to tumours) were identified from their NHS number, and death details were obtained by tracing the patients through the National Tracing Service using their NHS number, or name and date of birth. Patients that were not traced were excluded from the analysis because their vital status (whether they were dead or alive) was not known. Missing NHS numbers and vital status give rise to the majority of excluded records.

Stage information was taken from the DAHNO dataset, not the NCDR dataset, because stage recording on the NCDR dataset is incomplete. This means that the unmatched NCDR cohort has no stage information and is therefore excluded from this part of the analysis.

## Number of patients included in each cohort for analysis

There are over four times as many patients in the NCDR dataset for the period 2004-2006 as in the initial collection period of the DAHNO audit. Cancers of the larynx, oral cavity and oropharynx make up the majority of cases; over 90% of all head and neck cancers from the DAHNO data, and over 80% from the NCDR.

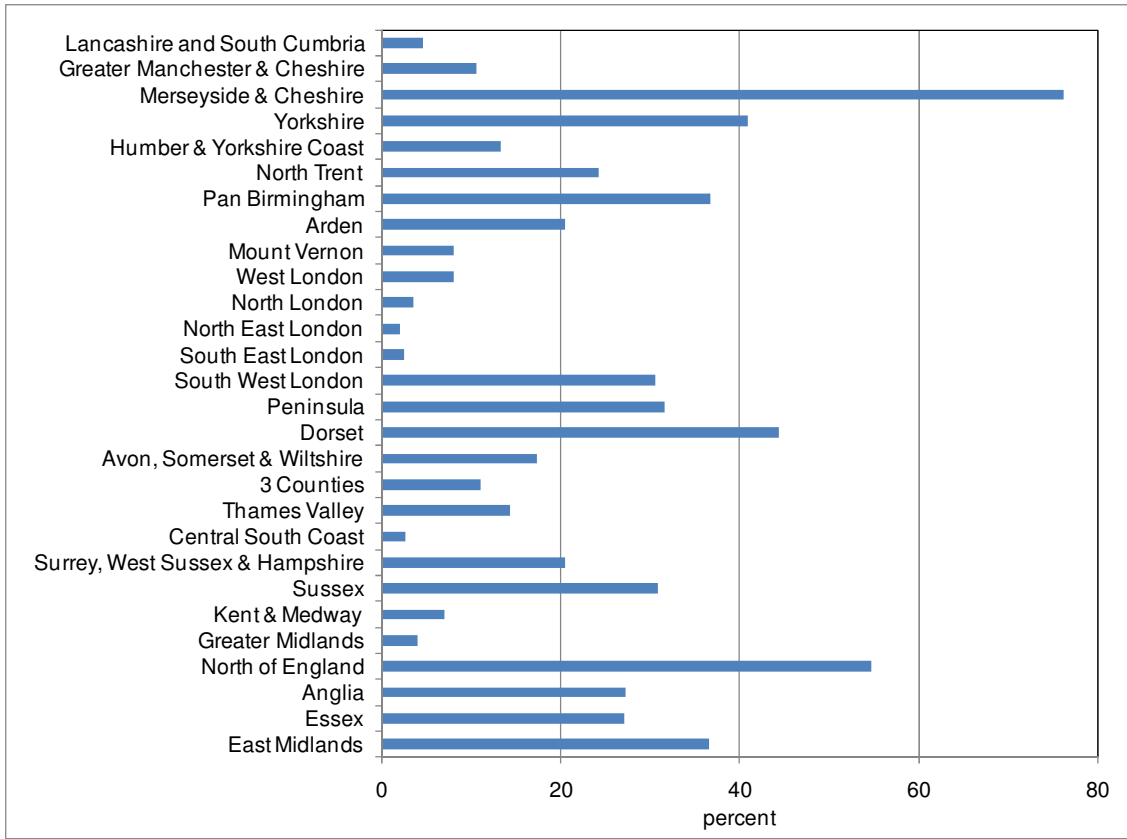
**Table 1: Number of head and neck cancers diagnosed in 2004-2006 in each dataset/cohort**

Tumour group	DAHNO dataset		NCDR dataset		matched DAHNO & NCDR		on DAHNO - not on NCDR		on NCDR - not on DAHNO	
	No.	%	No.	%	No.	%	No.	%	No.	%
Larynx	1552	39.2	5002	29.1	1296	39.2	256	39.5	3706	26.7
Oral cavity	1592	40.2	5614	32.6	1266	38.2	326	50.3	4348	31.3
Oropharynx	519	13.1	3686	21.4	479	14.5	40	6.2	3207	23.1
Hypopharynx	150	3.8	1042	6.1	148	4.5	2	0.3	894	6.4
Nasopharynx	47	1.2	581	3.4	42	1.2	5	0.8	539	3.8
Major salivary glands	98	2.5	1282	7.4	79	2.4	19	2.9	1203	8.7
Total	3958	100.0	17207	100.0	3310	100.0	648	100.0	13897	100.0

Comparing the number of cases in the DAHNO dataset for 2004-2006 for larynx and oral cavity to the number of cases in the NCDR dataset in the same period, gives an overall case ascertainment of 32.1% in these areas, whilst across all site groups was 24.7%. As figure 1 shows, there was considerable variation in completeness of ascertainment by cancer network. The number of cases of head and neck cancer submitted to the DAHNO audit has improved considerably in more recent years (see appendix 1).

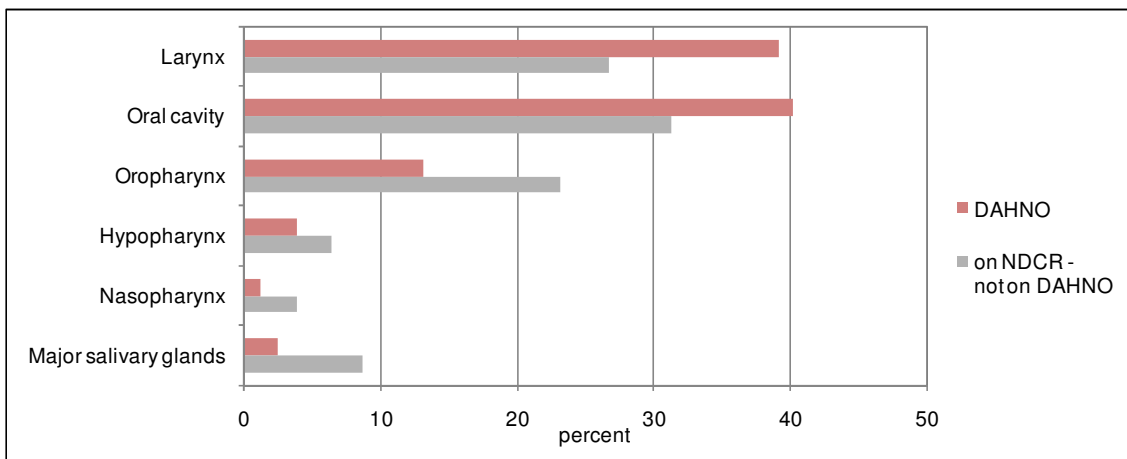
Of note are 648 cases recorded on the DAHNO database not evidenced in cancer registration. The exact reasons for this are unclear.

**Figure 1: DAHNO case ascertainment for the period 2004-2006 by cancer network of residence**



The rest of this report will compare the DAHNO cases (DAHNO) with the cases on NCDR and not on DAHNO (unmatched NCDR).

**Figure 2: Proportion of records included for each cohort**



**Table 2: Number of head and neck cancers diagnosed in 2004-2006 by age at diagnosis**

Tumour group	DAHNO dataset						on NDCR - not on DAHNO					
	15-59		60-74		75+		15-59		60-74		75+	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Larynx	431	27.8	721	46.4	400	25.8	1045	28.2	1662	44.8	999	27.0
Oral cavity	592	37.2	622	39.1	378	23.7	1662	38.2	1572	36.2	1114	25.6
Oropharynx	275	53.0	188	36.2	56	10.8	1747	54.5	1066	33.2	394	12.3
Hypopharynx	50	33.3	62	41.4	38	25.3	305	34.1	368	41.2	221	24.7
Nasopharynx	22	46.8	19	40.4	6	12.8	305	56.6	173	32.1	61	11.3
Major salivary glands	40	40.8	29	29.6	29	29.6	460	38.2	346	28.8	397	33.0



## Results

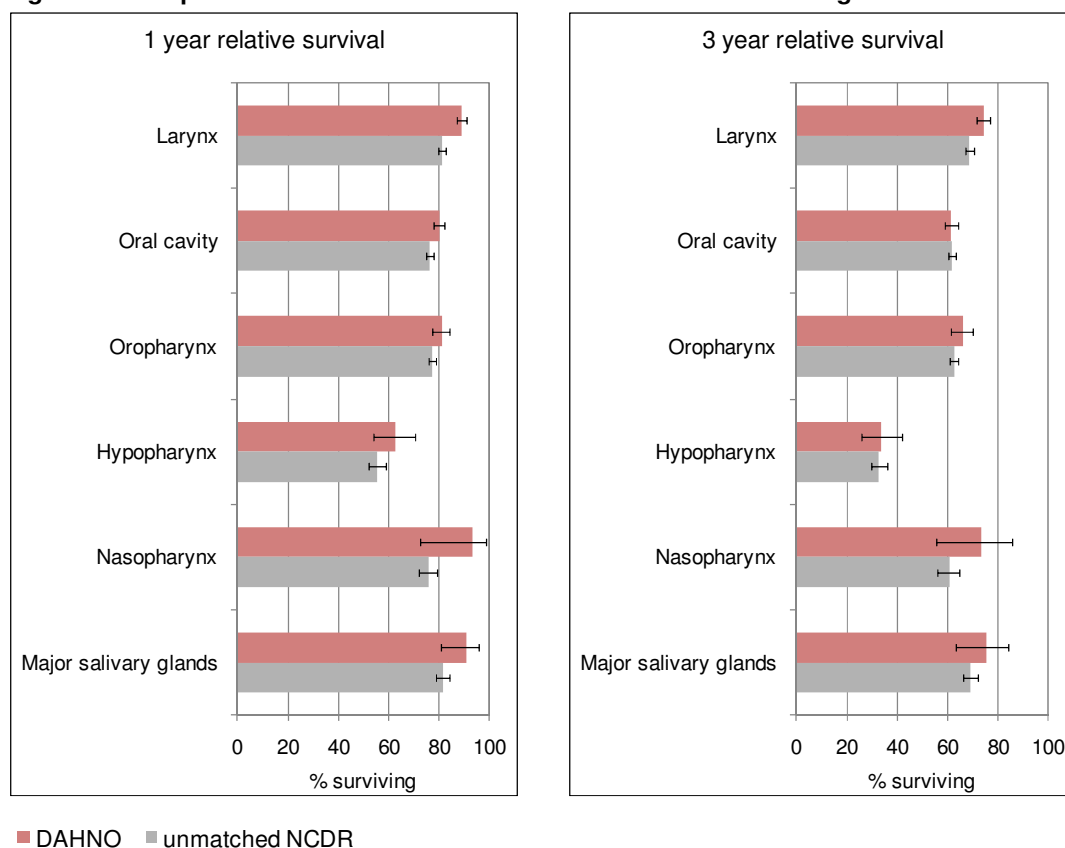
Appendix 5 includes tables which give details of survival rates and confidence intervals.

For head and neck cancers overall, patients included in the DAHNO audit have significantly higher relative survival rates than the NCDR patients that are not included in the DAHNO audit (the unmatched NCDR cohort).

**Table 3: Comparison of survival rates for head and neck cancers diagnosed in 2004-2006**

Tumour group	Number of cases		One year relative survival rates		Three year relative survival rates	
	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort
Larynx	1552	3706	88.9	81.1	74.1	68.7
Oral cavity	1592	4348	79.9	76.4	61.4	61.7
Oropharynx	519	3207	80.9	77.4	65.9	62.5
Hypopharynx	150	894	62.7	55.5	33.6	32.7
Nasopharynx	47	539	93.4	75.7	73.5	60.6
Major salivary glands	98	1203	90.7	81.5	75.2	69.0

**Figure 3: Comparison of survival rates for head and neck cancers diagnosed in 2004-2006**



Patients included in the DAHNO cohort have higher relative survival rates compared to the unmatched NCDR cohort for all tumour groups, except for the three year survival rate for cancers of the oral cavity (although the difference here is only 0.3%). Both one and three year survival rates for cancer of the larynx are significantly higher for the DAHNO cohort than for the unmatched NCDR.

Patients diagnosed with the three most common head and neck cancers – larynx, oral cavity and oropharynx – were analysed further, looking at stage, age and Strategic Health Authority at diagnosis.

# Larynx

## One and three year relative survival rates by stage at diagnosis

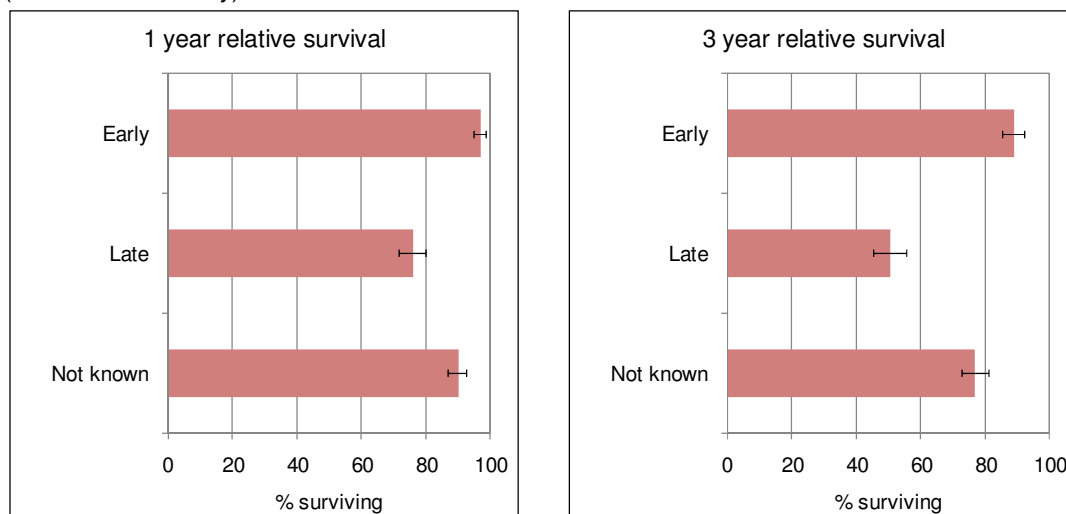
Stage recording on the NCDR dataset is poor, so stage was taken from the DAHNO data for both datasets. This means that the unmatched NCDR cohort has no stage information and therefore cannot be included in this part of the analysis.

Survival rates are significantly better for patients diagnosed at an early stage in the cancer.

**Table 4: Survival rates for laryngeal cancers diagnosed in 2004-2006 by stage at diagnosis (DAHNO cohort only)**

Stage	Number of cases	One year relative survival rate	Three year relative survival rate
Early	587	97.0	89.0
Late	439	75.9	50.5
Not known	526	89.9	77.0
Total	1552	88.9	74.1

**Figure 4: Survival rates for laryngeal cancers diagnosed in 2004-2006 by stage at diagnosis (DAHNO cohort only)**



# Larynx

## One and three year relative survival rates by age at diagnosis

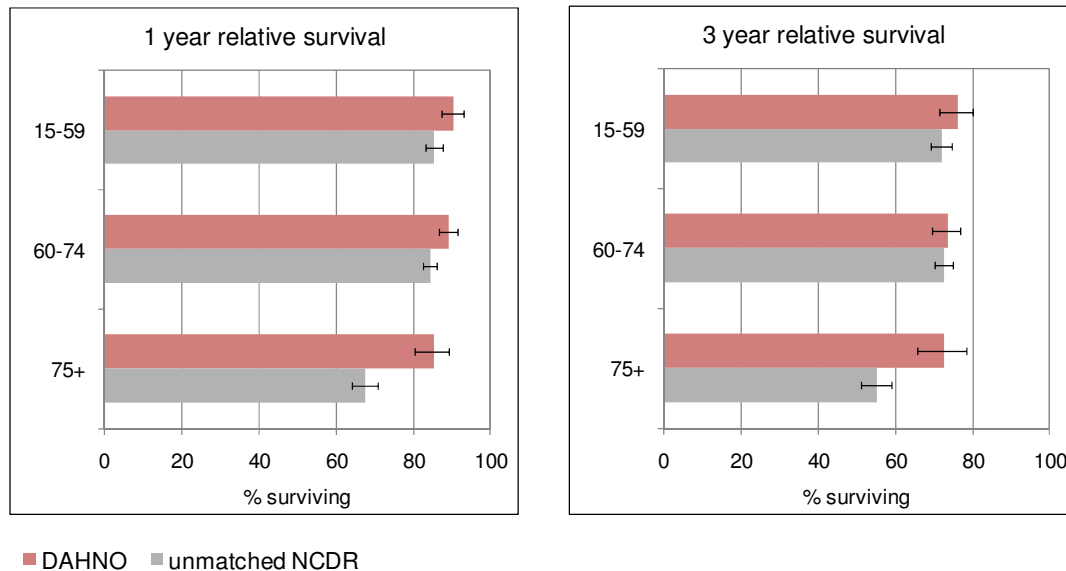
Survival rates fall with increasing age but not significantly, except for the 75 years plus age group of the unmatched NCDR cohort. Both the one year and three year survival rates for patients aged 75 years and over in the unmatched NCDR cohort are significantly lower than the younger age groups in the same cohort.

The survival rates for all age groups in the unmatched NCDR cohort are consistently lower than those in the DAHNO cohort, significantly lower for the 75 years and over age group.

**Table 5: Comparison of survival rates for laryngeal cancers diagnosed in 2004-2006 by age at diagnosis**

Age group	Number of cases		One year relative survival rates		Three year relative survival rates	
	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort
15-59	431	1045	90.5	85.5	76.0	72.0
60-74	721	1662	89.3	84.4	73.5	72.5
75+	400	999	85.3	67.6	72.6	55.2
Total	1552	3706	88.9	81.1	74.1	68.7

**Figure 5: Comparison of survival rates for laryngeal cancers diagnosed in 2004-2006 by age at diagnosis**



# Larynx

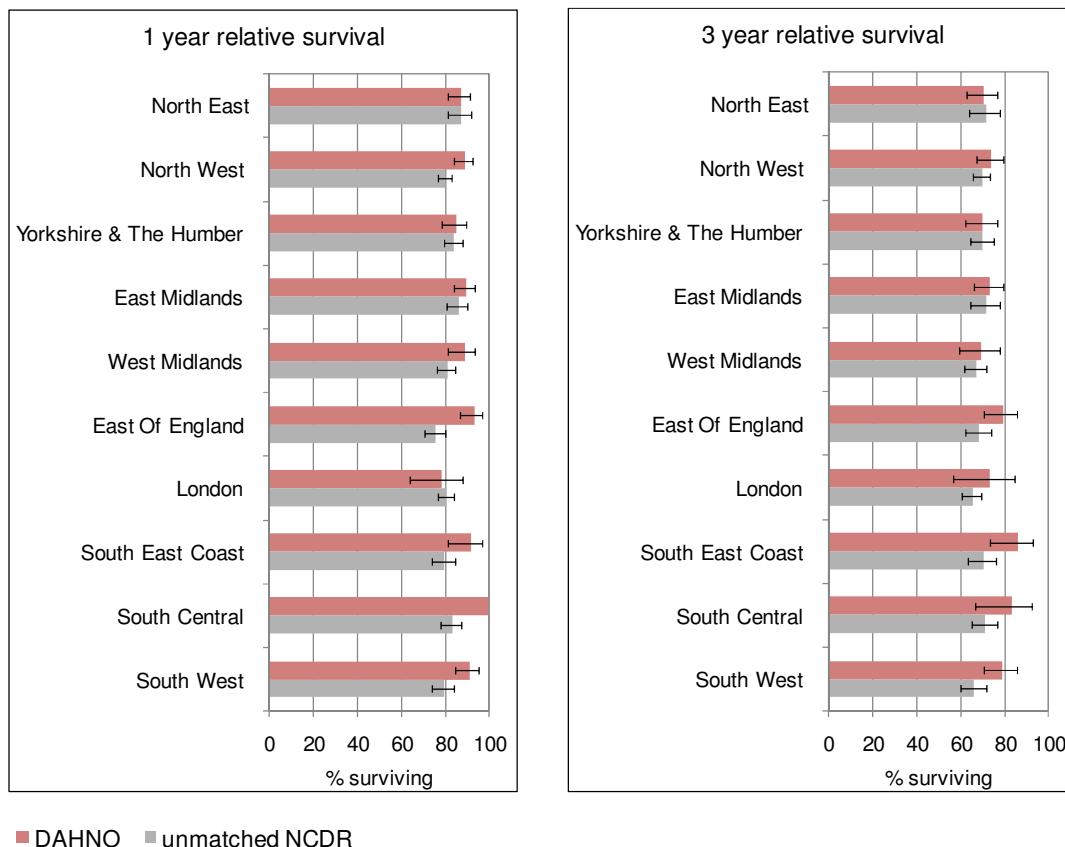
## One and three year relative survival rates by SHA of residence at diagnosis

There are no consistently significant differences in survival between the SHAs. The apparently high one year survival rates for South Central SHA, for the DAHNO cohort, should be viewed with caution because of the small number of cases and deaths recorded.

**Table 6: Comparison of survival rates for laryngeal cancers diagnosed in 2004-2006 by SHA of residence at diagnosis**

Strategic Health Authority	Number of cases		One year relative survival rates		Three year relative survival rates	
	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort
North East	206	205	87.1	87.3	70.2	71.5
North West	263	709	88.9	79.8	73.6	69.7
Yorkshire & The Humber	202	398	84.8	84.1	70.0	69.8
East Midlands	216	248	89.5	85.8	73.2	71.6
West Midlands	140	386	88.7	80.8	69.5	66.9
East Of England	162	344	93.1	75.7	79.2	68.3
London	54	541	78.4	80.7	73.1	65.3
South East Coast	78	272	91.6	79.5	86.1	70.3
South Central	55	291	99.5	83.1	83.3	71.3
South West	176	312	91.1	79.2	79.1	66.2
Total	1552	3706	88.9	81.1	74.1	68.7

**Figure 6: Comparison of survival rates for laryngeal cancers diagnosed in 2004-2006 by SHA of residence at diagnosis**



The survival rates for patients in the DAHNO cohort are generally higher than the rates for patients in the unmatched NCDR cohort, but only significantly higher for one year survival for patients in the North West, East of England and South West SHAs.

## Oral cavity

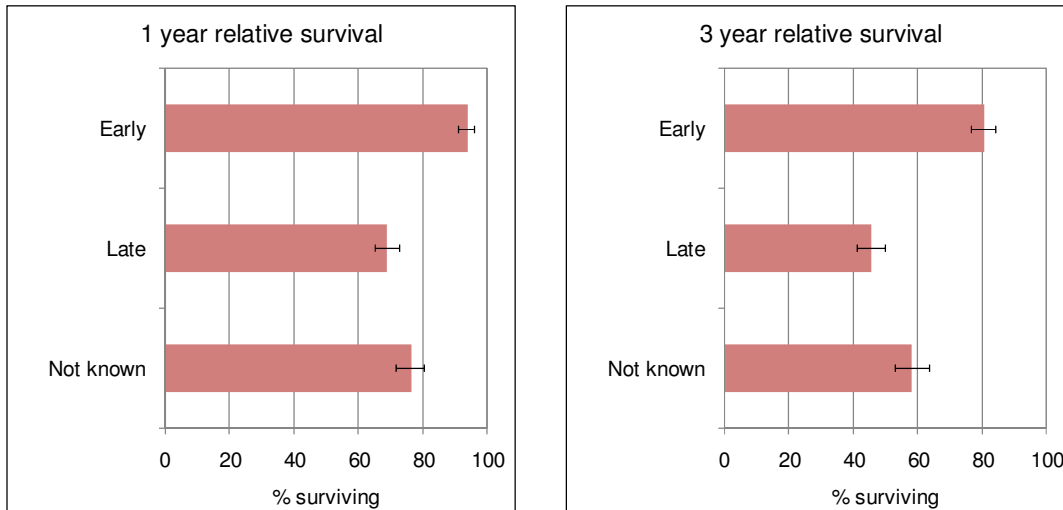
### One and three year relative survival rates by stage at diagnosis

Oral cavity cancers diagnosed at an early stage of disease have a significantly better survival than cancers diagnosed later, at both one year and three years after diagnosis.

**Table 7: Survival rates for oral cavity cancers diagnosed in 2004-2006 by stage at diagnosis (DAHNO cohort only)**

Stage	Number of cases	One year relative survival rates	Three year relative survival rates
Early	574	93.8	80.5
Late	616	68.9	45.4
Not known	402	76.2	58.2
Total	1592	79.9	61.4

**Figure 7: Survival rates for oral cavity cancers diagnosed in 2004-2006 by stage at diagnosis (DAHNO cohort only)**



## Oral cavity

### One and three year relative survival rates by age at diagnosis

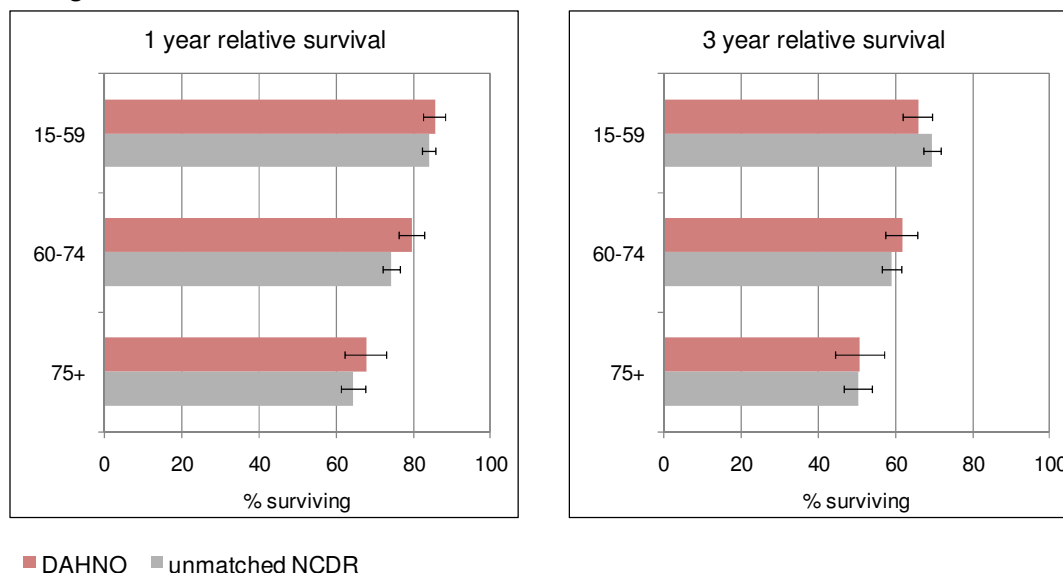
Relative survival rates for oral cavity cancer decrease with increasing age for both cohorts. Both one year and three year survival rates, for patients aged 75 years and over, are significantly lower than the earlier age groups for both cohorts. The decrease in survival with increasing age is most noticeable for the unmatched NCDR cohort, where each consecutive older age group is significantly lower than the preceding younger age group.

For one year survival rates, the DAHNO cohort has consistently higher rates than the unmatched NCDR cohort, but these differences are not significant.

**Table 8: Comparison of survival rates for oral cavity cancers diagnosed in 2004-2006 by age at diagnosis**

Age group	Number of cases		One year relative survival rates		Three year relative survival rates	
	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort
15-59	592	1662	85.6	84.0	65.9	69.5
60-74	622	1572	79.8	74.4	61.8	59.1
75+	378	1114	67.8	64.4	50.8	50.4
Total	1592	4348	79.9	76.4	61.4	61.7

**Figure 8: Comparison of survival rates for oral cavity cancers diagnosed in 2004-2006 by age at diagnosis**





## Oral cavity

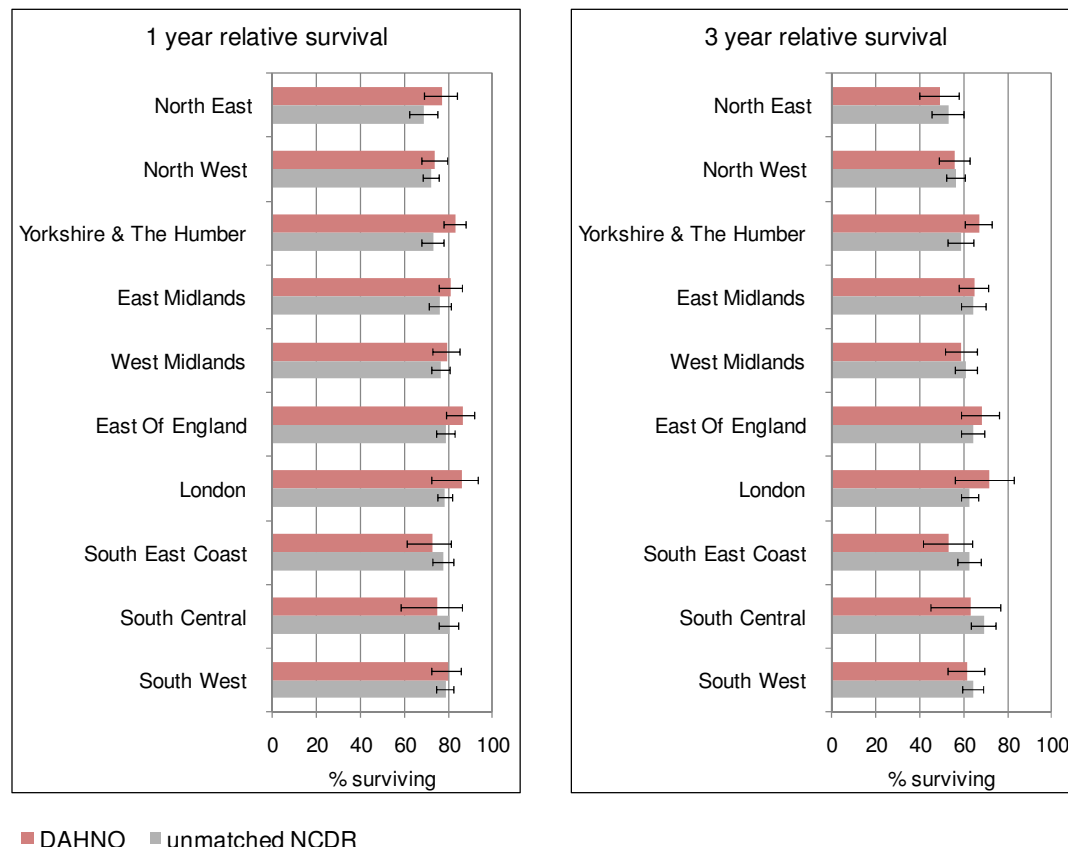
### One and three year relative survival rates by SHA of residence at diagnosis

There is little difference in one year survival between the SHAs and no significant differences for the DAHNO cohort. The North East SHA has the lowest three year survival rates for both cohorts, significantly lower than Yorkshire and Humber, and East of England SHAs for the DAHNO cohort.

**Table 9: Comparison of survival rates for oral cavity cancers diagnosed in 2004-2006 by SHA of residence at diagnosis**

Strategic Health Authority	Number of cases		One year relative survival rates		Three year relative survival rates	
	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort
North East	132	214	77.2	69.1	49.2	53.2
North West	237	694	74.0	72.2	56.0	56.4
Yorkshire & The Humber	261	327	83.5	73.1	67.1	58.7
East Midlands	245	324	81.3	76.3	64.9	64.6
West Midlands	202	457	79.5	76.4	58.9	61.1
East Of England	154	416	86.8	79.0	68.2	64.3
London	56	696	86.0	78.4	71.8	62.7
South East Coast	86	391	72.6	77.9	53.2	62.7
South Central	47	352	75.2	80.3	63.2	69.1
South West	172	477	79.8	78.7	61.5	64.1
Total	1592	4348	79.9	76.4	61.4	61.7

**Figure 9: Comparison of survival rates for oral cavity cancers diagnosed in 2004-2006 by SHA of residence at diagnosis**



There is little variation in survival rates between the cohorts. The unmatched NCDR cohort has the lowest one year survival rates for eight out of the ten SHAs, but the only significantly lower rate is for Yorkshire and The Humber SHA. One year survival rates for South Central SHA and South East Coast SHA are higher for the NCDR cohort compared to the DAHNO cohort, but these differences are not significant. There are no significant differences between the cohorts for three year survival rates.

## Oropharynx

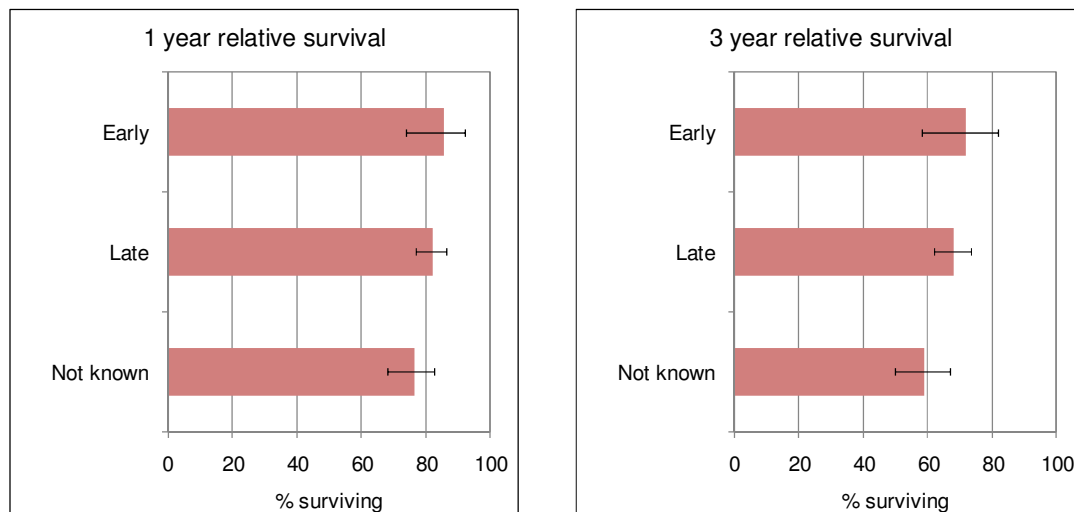
### One and three year relative survival rates by stage at diagnosis

Cancers of the oropharynx diagnosed at an early stage of the disease have higher one and three year survival rates compared to cancers diagnosed later, but in contrast to cancers of the larynx and oral cavity, the differences are not statistically significant.

**Table 10: Survival rates for oropharynx cancers diagnosed in 2004-2006 by stage at diagnosis (DAHNO cohort only)**

Stage	Number of cases	One year relative survival rates	Three year relative survival rates
Early	68	85.4	71.8
Late	307	82.1	68.0
Not known	144	76.2	59.0
Total	519	80.9	65.9

**Figure 10: Survival rates for oropharynx cancers diagnosed in 2004-2006 by stage at diagnosis (DAHNO cohort only)**



# Oropharynx

## One and three year relative survival rates by age at diagnosis

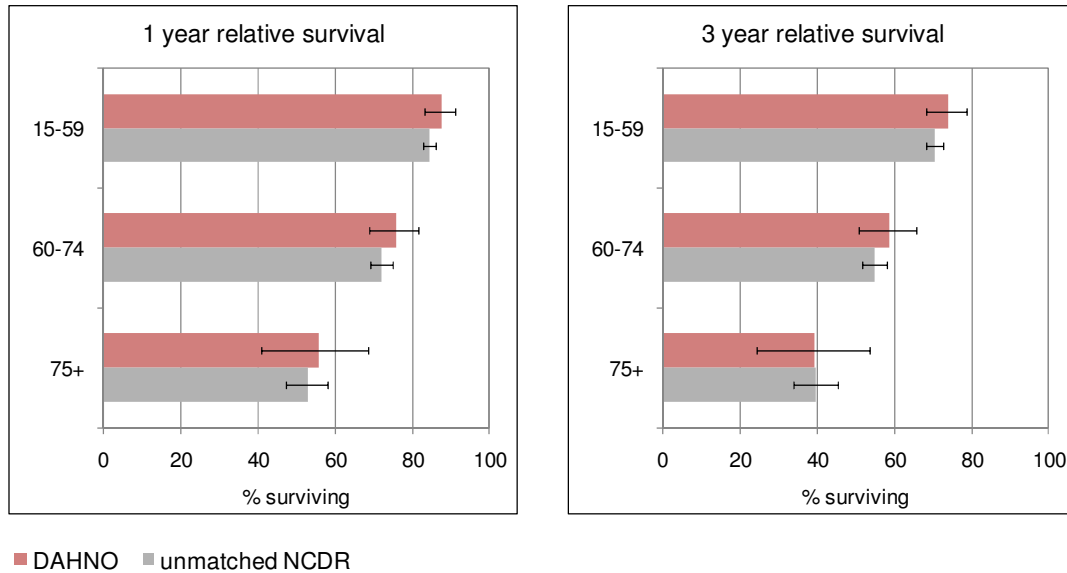
Survival rates for cancers of the oropharynx fall as age increases. Survival rates for the 15-59 year age group are significantly higher than for the two older age groups.

There are no significant differences in survival between the cohorts, although the DAHNO cohort tends to have the higher survival rates.

**Table 11: Comparison of survival rates for oropharynx cancers diagnosed in 2004-2006 by age at diagnosis**

Age group	Number of cases		One year relative survival rates		Three year relative survival rates	
	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort
15-59	275	1747	87.7	84.5	73.9	70.6
60-74	188	1066	75.9	72.2	58.5	54.8
75+	56	394	55.9	52.9	39.2	39.7
Total	519	3207	80.9	77.4	65.9	62.5

**Figure 11: Comparison of survival rates for oropharynx cancers diagnosed in 2004-2006 by age at diagnosis**



## Oropharynx

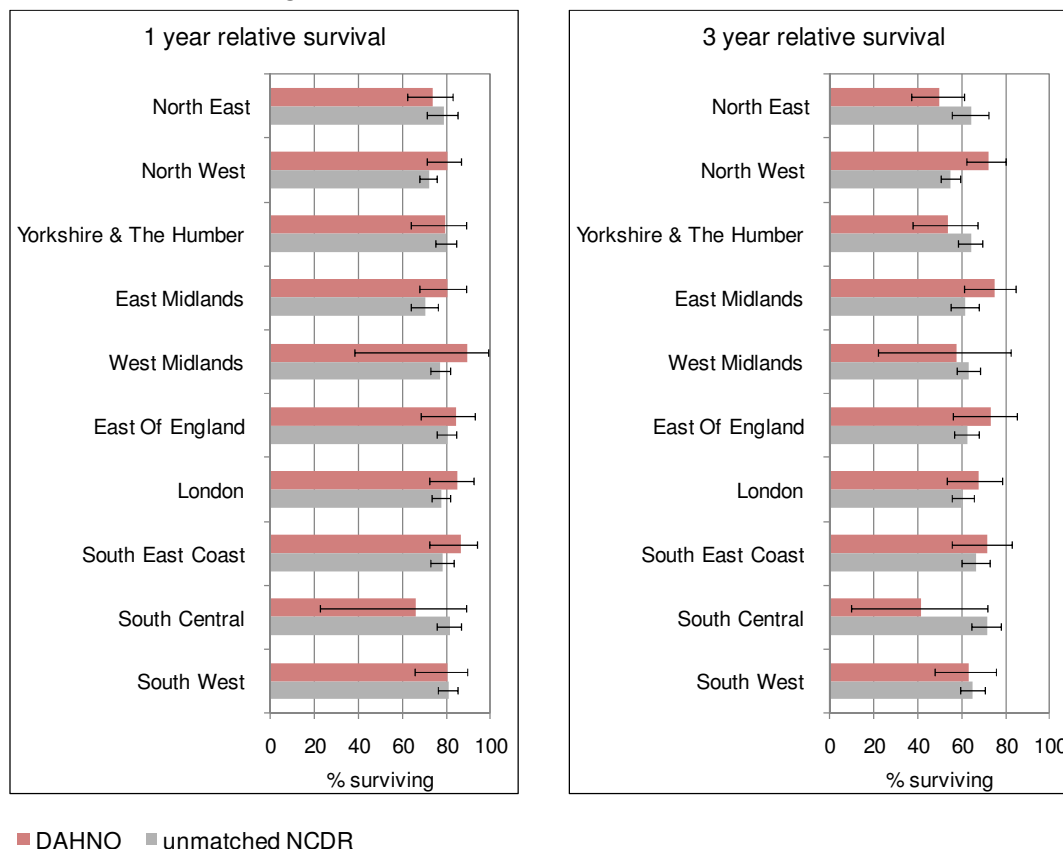
### One and three year relative survival rates by SHA of residence at diagnosis

Cancer of the oropharynx is less common than cancers of the larynx and oral cavity, and confidence intervals on the smaller SHAs are relatively wide. Survival rates for patients from the North East SHA and North West SHA are significantly less than some other SHAs.

**Table 12: Comparison of survival rates for oropharynx cancers diagnosed in 2004-2006 by SHA of residence at diagnosis**

Strategic Health Authority	Number of cases		One year relative survival rates		Three year relative survival rates	
	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort	DAHNO cohort	Unmatched NCDR cohort
North East	73	146	74.1	78.9	49.7	64.3
North West	114	557	80.3	71.9	72.3	55.1
Yorkshire & The Humber	48	328	79.4	80.0	53.6	64.4
East Midlands	64	239	80.5	70.6	74.8	61.6
West Midlands	9	372	89.4	77.3	57.9	63.5
East Of England	41	322	84.6	80.5	73.3	62.5
London	61	446	85.1	77.7	67.6	60.7
South East Coast	51	247	86.7	78.5	71.5	66.6
South Central	8	216	66.1	81.8	41.5	71.5
South West	50	334	80.7	81.0	63.4	65.2
Total	519	3207	80.9	77.4	65.9	62.5

**Figure 12: Comparison of survival rates for oropharynx cancers diagnosed in 2004-2006 by SHA of residence at diagnosis**



There are no significant differences in survival rates between the cohorts, except for North West SHA where the three year survival rate for the unmatched NCDR cohort is significantly less than the survival rate for the DAHNO cohort.

## Conclusion

Overall, patients included in the DAHNO audit have higher relative survival rates than the NCDR patients that are not included in the DAHNO audit (the unmatched NCDR cohort), although in many cases the differences are not statistically significant. The differences are statistically significant for patients with cancer of the larynx, with the most marked difference in the 75 years and over age group.

In the early years of the DAHNO audit when case ascertainment was relatively poor and very variable geographically, there is some evidence to suggest that the patients included in the DAHNO audit survived longer than those patients who were not included.

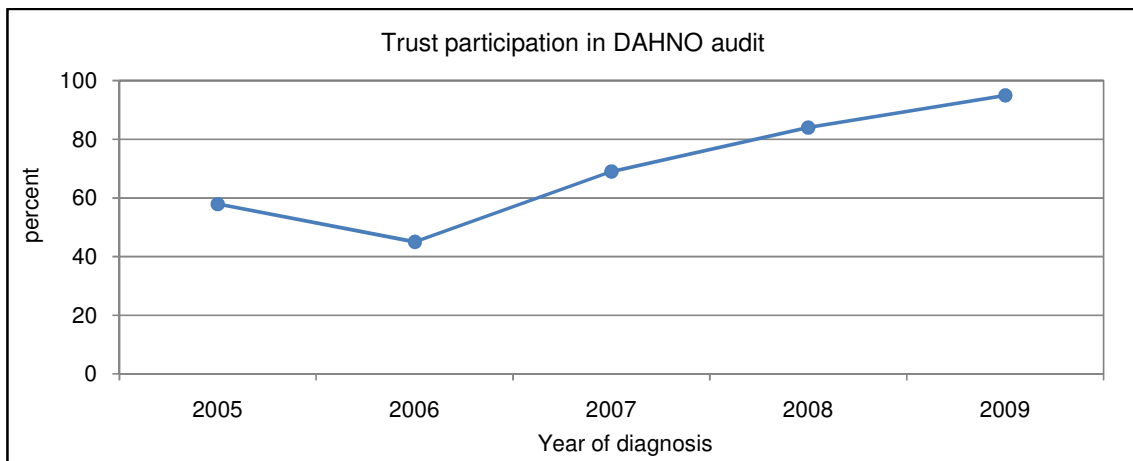
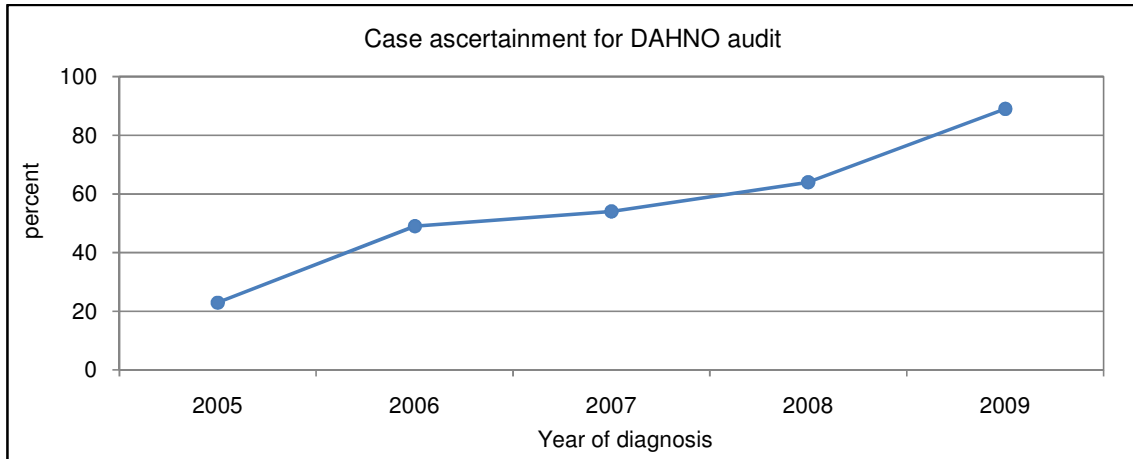
## References

1. DAHNO fifth Annual Report: Key findings from the National Head and Neck Cancer Audit. 2010  
<http://www.ic.nhs.uk/services/national-clinical-audit-support-programme-ncasp/audit-reports/head-and-neck-cancer>
2. Estève J, Benhamou E, Croasdale M, Raymond L. Relative survival and the estimation of net survival: elements for further discussion. *Statistics in Medicine* 1990; 9: 529-538
3. Cancer Research UK Cancer Survival Group (2006). *strel* computer program, version 1.2.7 and life tables for cancer survival analysis. Downloaded from [www.lshtm.ac.uk/ncde/cancersurvival/tools.htm](http://www.lshtm.ac.uk/ncde/cancersurvival/tools.htm) on 30/03/2010. Department of Non-Communicable Disease Epidemiology, London School of Hygiene & Tropical Medicine, UK
4. Coleman MP, Babb P, Damiecki P, Grosclaude P, Honjo S, Jones J, Knerer G, Pitard A, Quinn MJ, Sloggett A, De Stavola BL. Cancer survival trends in England and Wales, 1971-1995: deprivation and NHS Region. *Studies in Medical and Population Subjects* No. 61. London: The Office for National Statistics, 1999



## Appendix 1 - DAHNO audit case ascertainment

The number of cases of head and neck cancer submitted to the National Head and Neck Cancer Audit has improved considerably since the first report was published in 2005, as has the number of participating trusts. The following charts are reproduced from the fifth annual report for the National Head and Neck Cancer Audit (1).



## Appendix 2 - DAHNO tumour site groups

<b>DAHNO group</b>	<b>ICD10 codes</b>
larynx	C10.1, C32
oral cavity	C00.3, C00.4, C02-C04, C05.0, C05.8, C06
oropharynx	C01, C05.1, C05.2, C09, C10.0, C10.2, C10.3, C10.8, C10.9
hypopharynx	C12-C13
nasopharynx	C11
major salivary glands	C07-C08

## Appendix 3 - Statistics

### Relative survival analysis

Observed survival is the proportion of cases surviving a certain number of years after diagnosis, irrespective of cause of death.

The estimated survival rate is:

$$p_i = 1 - q_i$$

where  $q_i$  is the crude death rate for the interval  $(i, i+1)$

and the observed cumulative survival rate  $j$  years after diagnosis is:

$$P_i = \prod_{i=0}^{j-1} p_i$$

Relative survival is an estimate of the survival rate, which allows for deaths from causes other than cancer. It is defined as the observed survival in the study group divided by the expected survival of a comparable group from the general population.

For this report relative survival was estimated using the method described by Estève et al. (2) and an algorithm (strel) (3) developed by Coleman et al. (4).

### Confidence intervals

The estimated rates presented have 95% confidence intervals attached.

There is a 95% chance that the true value of the estimated rate will lie within the interval given. The width of the interval is influenced by the number of cases used to estimate the rate. The more cases in the group, the more precise will be the estimate of the rate and the narrower the confidence interval.

When comparing two different estimated rates, if their respective confidence intervals overlap, then the true value of both rates could be the same. The apparent difference in the estimates is due to chance. If the two confidence intervals do not overlap, there is evidence to suggest that the difference in the true values of the rates is real.

If the difference in two rates could be due to chance (intervals overlap), it is described as not significant. If the intervals suggest that the true rates are different (intervals do not overlap) the difference is described as significant.

## Appendix 4 - Data quality

The tables below show the number of records excluded from the analysis and why.

### DAHNO

		<b>tumours</b>
Number of tumours in original dataset		12184
less duplicate records	377	
less missing NHS numbers	146	
less tumours where the patient was not traced (for death information)	284	
Number of tumours remaining		<u>11377</u>
		<b>patients</b>
Number of corresponding patients		10198
exclude where country is not England	720	
less records with missing variables:	1103	
missing dates of birth	4	
negative age*	26	
missing country code	6	
gender not known	20	
Number of patients remaining		<u>9095</u>
Number of patients diagnosed in 2004-2006 only		3960
less patients not aged between 15 and 99	2	
Number of patients in DAHNO cohort		<u>3958</u>

\* this figure includes 3 patients with a year of birth between 6694 and 6716 and 13 patients with a year of birth that had been changed from 19## to 20##.

### NCDR

		<b>tumours</b>
Number of tumours in original dataset		132828
less duplicate records	393	
less missing NHS numbers	4435	
less tumours where the patient was not traced	1192	
Number of tumours remaining		<u>126808</u>
Number of tumours diagnosed in 2004-2006		<u>26875</u>
		<b>patients</b>
Number of corresponding patients		26046
less patients with a non-DAHNO tumour site	8559	
less patients not resident in England	59	
Number of patients remaining		<u>17428</u>
less patients not aged between 15 and 99	50	
less registrations made from a death certificate only	171	
		<u>17207</u>

## Appendix 5 - Tables

Cohort 1: DAHNO data

Tumour group	Cases diagnosed in period	Deaths in three years	One year relative survival			Three year relative survival		
			rate	95% CI		rate	95% CI	
				low	upp		low	upp
Larynx	1552	514	88.9	87.0	90.6	74.1	71.5	76.5
Oral cavity	1592	701	79.9	77.7	82.0	61.4	58.7	64.0
Oropharynx	519	197	80.9	77.0	84.2	65.9	61.3	70.1
Hypopharynx	150	103	62.7	54.1	70.2	33.6	25.7	41.6
Nasopharynx	47	16	93.4	72.2	98.6	73.5	55.3	85.3
Major salivary glands	98	34	90.7	80.6	95.6	75.2	62.9	83.9
Total	3958	1565	83.3	82.0	84.6	66.4	64.7	68.0

Tumour group	Stage	Cases diagnosed in period	Deaths in three years	One year relative survival			Three year relative survival		
				rate	95% CI		rate	95% CI	
					low	upp		low	upp
Larynx	Early	587	117	97.0	94.6	98.3	89.0	85.2	91.8
	Late	439	239	75.9	71.3	79.9	50.5	45.3	55.5
	Not known	526	158	89.9	86.6	92.5	77.0	72.5	80.8
Oral cavity	Early	574	152	93.8	90.9	95.7	80.5	76.4	84.0
	Late	616	361	68.9	64.9	72.6	45.4	41.1	49.6
	Not known	402	188	76.2	71.5	80.3	58.2	52.8	63.3
Oropharynx	Early	68	23	85.4	73.9	92.1	71.8	57.9	81.7
	Late	307	110	82.1	76.9	86.1	68.0	62.0	73.3
	Not known	144	64	76.2	67.9	82.6	59.0	49.9	67.0

Tumour group	Age group	Cases diagnosed in period	Deaths in three years	One year relative survival			Three year relative survival		
				rate	95% CI		rate	95% CI	
					low	upp		low	upp
Larynx	15-59	431	109	90.5	87.2	93.0	76.0	71.5	79.9
	60-74	721	227	89.3	86.5	91.5	73.5	69.6	76.9
	75+	400	178	85.3	80.4	89.1	72.6	65.8	78.3
Oral cavity	15-59	592	208	85.6	82.4	88.2	65.9	61.8	69.6
	60-74	622	260	79.8	76.2	82.9	61.8	57.5	65.7
	75+	378	233	67.8	62.2	72.8	50.8	44.3	57.0
Oropharynx	15-59	275	75	87.7	83.1	91.1	73.9	68.1	78.8
	60-74	188	84	75.9	68.8	81.6	58.5	50.6	65.6
	75+	56	38	55.9	40.8	68.7	39.2	24.4	53.7

Tumour group	SHA	Cases diagnosed in period	Deaths in three years	One year relative survival			Three year relative survival		
				rate	95% CI		rate	95% CI	
					low	upp		low	upp
Larynx	North East	206	75	87.1	81.1	91.3	70.2	62.4	76.7
	North West	263	88	88.9	83.8	92.5	73.6	67.0	79.2
	Yorkshire & The Humber	202	76	84.8	78.3	89.5	70.0	62.0	76.7
	East Midlands	216	71	89.5	83.9	93.2	73.2	65.8	79.2
	West Midlands	140	54	88.7	81.1	93.4	69.5	59.5	77.5
	East Of England	162	49	93.1	86.7	96.5	79.2	70.3	85.7
	London	54	18	78.4	63.7	87.6	73.1	56.5	84.2
	South East Coast	78	16	91.6	81.2	96.4	86.1	73.3	93.0
	South Central	55	13	99.5	-	-	83.3	66.8	92.1
Oral cavity	South West	176	54	91.1	84.5	95.0	79.1	70.5	85.4
	North East	132	72	77.2	68.7	83.7	49.2	39.9	57.9
	North West	237	116	74.0	67.5	79.5	56.0	48.8	62.5
	Yorkshire & The Humber	261	98	83.5	78.0	87.8	67.1	60.4	72.9
	East Midlands	245	98	81.3	75.3	86.0	64.9	57.9	71.0
	West Midlands	202	90	79.5	72.9	84.7	58.9	51.3	65.8
	East Of England	154	63	86.8	79.1	91.8	68.2	58.7	76.0
	London	56	19	86.0	72.2	93.3	71.8	56.2	82.7
	South East Coast	86	43	72.6	61.0	81.3	53.2	41.4	63.7
Oropharynx	South Central	47	21	75.2	58.5	86.0	63.2	45.0	76.9
	South West	172	81	79.8	72.2	85.5	61.5	52.5	69.3
	North East	73	38	74.1	61.9	82.9	49.7	37.3	60.9
	North West	114	36	80.3	71.2	86.7	72.3	62.1	80.2
	Yorkshire & The Humber	48	24	79.4	64.0	88.8	53.6	37.4	67.3
	East Midlands	64	19	80.5	67.7	88.7	74.8	61.0	84.4
	West Midlands	9	4	89.4	37.9	98.7	57.9	22.0	82.1
	East Of England	41	12	84.6	68.3	92.9	73.3	55.7	84.8
	London	61	22	85.1	72.0	92.4	67.6	53.2	78.4
South East Coast	51	17	86.7	72.3	93.9	71.5	55.2	82.8	
South Central	8	5	66.1	22.7	89.1	41.5	9.9	71.5	
South West	50	20	80.7	65.7	89.6	63.4	47.5	75.6	

## Appendix 5 - Tables

Cohort 2: NCDR data where the patients are not included in the DAHNO audit

Tumour group	Cases diagnosed in period	Deaths in three years	One year relative survival			Three year relative survival		
			rate	95% CI		rate	95% CI	
				low	upp		low	upp
Larynx	3706	1411	81.1	79.7	82.5	68.7	66.9	70.3
Oral cavity	4348	1904	76.4	75.0	77.7	61.7	60.1	63.3
Oropharynx	3207	1316	77.4	75.8	78.9	62.5	60.7	64.3
Hypopharynx	894	627	55.5	52.0	58.8	32.7	29.4	36.0
Nasopharynx	539	229	75.7	71.7	79.3	60.6	56.0	64.8
Major salivary glands	1203	479	81.5	78.9	83.8	69.0	65.8	72.0
Total	13897	5966	76.9	76.1	77.6	62.4	61.5	63.3

Tumour group	Age group	Cases diagnosed in period	Deaths in three years	One year relative survival			Three year relative survival		
				rate	95% CI		rate	95% CI	
					low	upp		low	upp
Larynx	15-59	1045	305	85.5	83.2	87.5	72.0	69.1	74.7
	60-74	1662	535	84.4	82.5	86.2	72.5	70.0	74.8
	75+	999	571	67.6	64.2	70.8	55.2	51.1	59.0
Oral cavity	15-59	1662	525	84.0	82.1	85.7	69.5	67.2	71.7
	60-74	1572	696	74.4	72.1	76.5	59.1	56.5	61.7
	75+	1114	683	64.4	61.2	67.5	50.4	46.7	54.1
Oropharynx	15-59	1747	534	84.5	82.7	86.2	70.6	68.3	72.7
	60-74	1066	514	72.2	69.3	74.8	54.8	51.6	58.0
	75+	394	268	52.9	47.3	58.1	39.7	33.9	45.4

Tumour group	SHA	Cases diagnosed in period	Deaths in three years	One year relative survival			Three year relative survival		
				rate	95% CI		rate	95% CI	
					low	upp		low	upp
Larynx	North East	205	74	87.3	81.0	91.6	71.5	63.6	78.0
	North West	709	257	79.8	76.4	82.8	69.7	65.7	73.3
	Yorkshire & The Humber	398	150	84.1	79.7	87.7	69.8	64.3	74.7
	East Midlands	248	89	85.8	80.2	89.9	71.6	64.5	77.5
	West Midlands	386	151	80.8	76.1	84.7	66.9	61.3	71.8
	East Of England	344	136	75.7	70.3	80.2	68.3	62.3	73.6
	London	541	221	80.7	76.7	84.0	65.3	60.6	69.6
	South East Coast	272	104	79.5	73.6	84.2	70.3	63.5	76.1
	South Central	291	103	83.1	77.7	87.2	71.3	64.9	76.7
	South West	312	126	79.2	73.7	83.7	66.2	59.9	71.8
Oral cavity	North East	214	109	69.1	62.0	75.1	53.2	45.7	60.1
	North West	694	333	72.2	68.4	75.5	56.4	52.3	60.2
	Yorkshire & The Humber	327	152	73.1	67.6	77.9	58.7	52.6	64.3
	East Midlands	324	132	76.3	70.9	80.8	64.6	58.5	69.9
	West Midlands	457	202	76.4	71.9	80.3	61.1	56.0	65.8
	East Of England	416	173	79.0	74.4	82.8	64.3	58.9	69.1
	London	696	294	78.4	74.9	81.5	62.7	58.6	66.5
	South East Coast	391	175	77.9	73.0	82.1	62.7	57.0	67.9
	South Central	352	135	80.3	75.2	84.4	69.1	63.2	74.2
	South West	477	199	78.7	74.4	82.3	64.1	59.1	68.7
Oropharynx	North East	146	57	78.9	70.9	84.9	64.3	55.3	71.9
	North West	557	268	71.9	67.8	75.6	55.1	50.6	59.3
	Yorkshire & The Humber	328	129	80.0	75.0	84.2	64.4	58.5	69.6
	East Midlands	239	99	70.6	64.0	76.2	61.6	54.7	67.8
	West Midlands	372	150	77.3	72.5	81.4	63.5	57.9	68.5
	East Of England	322	133	80.5	75.4	84.6	62.5	56.5	67.9
	London	446	189	77.7	73.3	81.4	60.7	55.7	65.3
	South East Coast	247	92	78.5	72.5	83.3	66.6	59.8	72.5
	South Central	216	70	81.8	75.5	86.6	71.5	64.3	77.5
	South West	334	129	81.0	76.1	85.0	65.2	59.4	70.3