**What is Head and Neck Cancer?**

Head and neck cancer is the term given to a variety of malignant tumours that occur in the head and neck region. For the purpose of this factsheet, head and neck tumours have been divided into the following sites:

**Larynx (C32):** There are three main parts of the larynx: the glottis (middle section of the larynx where the vocal chords are), the supraglottis (tissue above the glottis), and the subglottis (tissue below the glottis). Approximately 95% of laryngeal cancers are squamous cell carcinomas. Other cancers include verrucous carcinomas, sarcomas, adenocarcinomas and neuroendocrine tumours.

**Oral cavity (C00-C06):** The oral cavity comprises the tongue, hard palate (roof of mouth), the floor of the mouth, the inner lining of the lips and cheeks (buccal mucosa), the alveolar ridge, and the retromolar trigone. These cancers are squamous cell carcinomas.

**Pharynx (C09-C14):** The pharynx comprises the hypopharynx (bottom part of the throat), the nasopharynx (upper part of the throat) and the oropharynx (part of the throat at the back of the mouth including the base of the tongue, tonsil, tonsillar pillar and the soft palate). These cancers are squamous cell carcinomas.

**Salivary gland (C07-C08):** Salivary gland tumours account for approximately 5% of all head and neck cancers. The major salivary glands are the parotids, submandibulars and the sublingual. The minor glands are located throughout the upper aero-digestive tract. Approximately 90% of salivary gland tumours occur in the parotid gland. These tumours include adenocarcinoma, epidermoid carcinoma, acinic cell carcinoma, mucoepidermoid carcinoma and adenoid cystic carcinoma.

**Thyroid gland (C73):** The thyroid is a small gland in the front of the neck just below the larynx that produces the two main hormones, thyroxine and triiodothyronine. Different types of thyroid cancer develop at different ages. Papillary (accounting for approximately 80%), follicular (15%) and medullary (5-10%) thyroid cancer, occur mainly in younger and middle aged people. Anaplastic thyroid cancer (accounting for approximately 15%) tends to develop in older people.

**Other:** Other malignancies of the head and neck group include cancers of the ear and nose (C30) and accessory sinuses (C31). These are mainly squamous cell carcinomas. Cancers of the external skin (C43 & C44) and mucosal surfaces of the nose and paranasal sinuses include basal cell carcinoma, squamous cell carcinoma and malignant melanoma.

Tumours of the brain are excluded from the head & neck group and are covered in our Brain & CNS factsheet. Eye cancer (C69), musculoskeletal tumours of the head and neck (C49.0) and malignant neoplasms in the bones of the skull and face (C41.0-C41.1) are covered in our Rare Cancers factsheet.

Sources: CancerBACUP Website and Cancer Research UK

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Laryngeal cancer is the most common male head & neck cancer and thyroid cancer is the most common female head & neck cancer in the South West

There were 1234 registrations of cancer of the head and neck, 484 women and 750 men in 2000

Laryngeal cancer is the 28th most common cause of cancer death and thyroid cancer is the 37th most common cause of cancer death in the South West

Source: South West Cancer Intelligence Service Registry

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**Symptoms**

Most head and neck cancers are asymptomatic in their early stages. Symptoms may vary according to the site of the tumour, and may not be indicative of cancer. Symptoms of head and neck cancer include an ulcer or sore throat that does not heal, difficulty or pain in swallowing or chewing, a swelling or lump in the mouth or neck, breathing trouble, voice changes, a persistent blocked nose or earache. In people who smoke or chew tobacco, pre-cancerous changes may occur in the lining of the mouth or on the tongue as white patches (leukoplakia) or red patches (erythroplakia). The usual presentation of thyroid cancer is that of a palpable mass or a hoarse voice. Patients with suspected head and neck cancer should be referred to a hospital specialist within 2 weeks according to national guidelines from the Department of Health.

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*International Classification of Diseases, 10th Revision*

Acknowledgements: Professor Martin Birchall, Lead Clinician for the Bristol Head and Neck Cancer Multidisciplinary Team and member of the Head and Neck Tumour Panel

For more information please visit www.thescis.nhs.uk or telephone 0117 970 6474
**Diagnosis**

A full ear nose and throat (ENT) examination is necessary to examine the entire head and neck region, and in all cases an oral biopsy is essential to make a definite diagnosis. Nasendoscopy using fibre-optic scopes is essential, especially to look for the extent of a tumour and any secondary primaries. A biopsy from the head and neck region may be taken directly or through an endoscope, and a fine needle aspiration (FNA) biopsy may be performed on patients under general anaesthetic who have a palpable mass that can be felt. Imaging techniques such as computerised tomography (CT), magnetic resonance imaging (MRI), x-rays, ultrasound, thyroid scan (isotope/gamma camera scan) and bone scans may be performed to outline the full extent of the tumour, assist staging and identify any metastasis or impalpable neck nodes.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Oral cavity, Oropharynx, Hypopharynx, Larynx</th>
<th>Nasopharynx</th>
<th>Paranasal Sinuses</th>
<th>Salivary Gland</th>
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<tbody>
<tr>
<td>I</td>
<td>Tumour 2cm or less, or limited to one subsite.</td>
<td>Tumour confined to nasopharynx</td>
<td>Tumour confined to the antral mucosa with no erosion of bone, or confined to ethmoid with or without bone destruction.</td>
<td>Tumour 0-4cm without extraparenchymal extension.</td>
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<tr>
<td>II</td>
<td>Tumour 2-4cm.</td>
<td>(IIA) Tumour confined to soft tissue of oropharynx and/or nasal fossa with parapharyngeal extension. (IIB) Tumour confined to nasopharynx or soft tissue of oropharynx and/or nasal fossa with unilateral metastasis in lymph node(s) 6cm or less above supraclavicular fossa.</td>
<td>Tumour causes bone erosion and extends into the hard palate and/or nasal cavity.</td>
<td>Tumour between 4-6cm with extraparenchymal extension without seventh nerve involvement.</td>
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<tr>
<td>III</td>
<td>Tumour 0-4cm with metastasis in a single ipsilateral lymph node 3cm or less, or a tumour greater than 4cm with larynx fixation, with or without metastasis in a single ipsilateral lymph node 3cm or less.</td>
<td>Tumour confined to the nasopharynx or soft tissue of oropharynx and/or nasal fossa, with metastasis in bilateral lymph node(s) 6cm or less, above supraclavicular fossa. Tumour may invade bony structures and/or paranasal sinuses with or without metastasis in unilateral or bilateral lymph node(s) 3cm or less.</td>
<td>Tumour confined to the antral mucosa or ethmoid or extends into the hard palate and/or nasal cavity with or without bone destruction, with metastasis in a single ipsilateral lymph node 3cm or less. Tumour may extend to anterior/lower border of orbit, posterior wall of sinus, skin of cheek and subcutaneous tissues, with or without metastasis in a single ipsilateral lymph node 3cm or less.</td>
<td>Tumour 0-4cm without extraparenchymal extension and metastasis in a single ipsilateral lymph node 3cm or less.</td>
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<td>IV</td>
<td>(IVA) Tumour invades adjacent structures with or without metastasis in a single ipsilateral lymph node 3cm or less, or tumour of any size with a single ipsilateral lymph node 3-6cm, or ipsilateral multiple or bilateral contralateral lymph node(s) less than 6cm. (IVB) Tumour of any size, with or without invasion, with metastasis in lymph node(s) greater than 6cm. (IVC) Tumour with or without regional lymph node involvement, with distant metastasis.</td>
<td>(IVA) Tumour shows intracranial extension and involvement of cranial nerves, infratemporal fossa, hypopharynx and orbit with or without metastasis in unilateral or bilateral lymph node(s) 6cm or less. (IVB) Tumour shows metastasis in lymph node(s) 6cm or greater, or in the supraclavicular fossa. (IVC) Tumour with or without regional lymph node involvement with distant metastasis.</td>
<td>(IVA) Tumour invades orbital contents and other adjacent structures with or without metastasis in a single ipsilateral lymph node, 3cm or less. (IVB) Tumour of any size/invasion with metastasis in a single ipsilateral lymph node 3-6cm, or in lymph nodes more than 6cm. (IVC) Tumour of any size/invasion with or without regional lymph node involvement with distant metastasis.</td>
<td>Tumour of any size/invasion with or without regional lymph node involvement and/or distant metastasis.</td>
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The staging for thyroid cancer is slightly different from those above in that separate number stage groupings are recommended for papillary and follicular, medullary and undifferentiated (anaplastic) thyroid carcinomas.

For papillary and follicular thyroid cancer, stage 1 shows a cancer confined to the thyroid. If the cancer has spread outside the thyroid and the patient is under 45 the tumour is classed as stage 2. For those over 45 with a tumour larger than 1cm in diameter, the tumour is classed as stage 2 and spread to the lymph nodes or soft tissues in the neck is classed as stage 3. Stage 4 thyroid cancer shows spread to other organs. Medullary thyroid cancer less than 1cm in diameter is classed as stage 1, between 1cm and 4cm is stage 2. Stage 3 includes spread to the lymph nodes and stage 4 shows spread to other organs. For anaplastic thyroid cancer there is no number staging as all cases are treated as stage 4 due to the high risk of spread.

Source: TNM Classification of Malignant Tumours, Fifth Edition. Note: Ear and nose has been classified under oral cavity.
Risk Factors

Smoking & Alcohol - Smoking and alcohol consumption act separately and synergistically. Tobacco is the main factor associated with the development of head and neck cancers with over 90% of patients having a history of smoking. Together, smoking and excessive alcohol intake increase the risk of head and neck cancers by up to 15 times. The larynx and floor of mouth is a high-risk site from cigarette smoke and pipe smoking is particularly associated with carcinoma of the lip, tongue and floor of mouth. Excessive alcohol intake predisposes to oral cavity and hypopharyngeal tumours. Snuff and chewing tobacco or betel nuts are also implicated.

Age & Sex - Head and neck cancers are more common in men than in women (2:1 ratio) and occur mainly in middle-aged and older people. Thyroid cancer is the exception as it is more common in females and different types develop at different ages.

Conditions & Viruses - Oral lesions and conditions may indicate a cancerous or pre-cancerous condition. The most common of these are leukoplakia (white patches) and erythroplakia (red patches) which are mainly found in people who smoke or chew tobacco. Leukoplakia is more common, but less likely to progress to malignancy than erythroplakia. Human papillomavirus (HPV) has been detected in squamous cell carcinomas of the head and neck, and Epstein-Barr virus (EBV) is well recognised in association with nasopharyngeal carcinoma. Inheriting the abnormal genes MEN2a and MEN2b increase the risk of developing medullary thyroid cancer. Approximately 1 in 4 people who develop medullary thyroid cancer carry an abnormal gene. Other conditions that can run in families that are linked to an increased risk of thyroid cancer are Gardner’s syndrome and Cowden’s disease.

Other Factors - A deficient diet is thought to predispose towards the development of oral cancers, particularly diets deficient in vitamin A, C, E, iron and selenium. There is also a recognised association between the furniture industry (wood dust) and malignancies of the paranasal sinuses. Exposure to polycyclic hydrocarbons, as in the textile industry, has been linked to tumours of the oral cavity. Thyroid cancer can occur in patients who have had radiotherapy to the neck earlier in their lives, the highest risk being for people treated at a young age. The cancer is also observed in survivors of atomic explosions or accidents. Exposure to the sun is an important risk factor for cancers of the lips and skin.

Treatment

The treatment of head and neck cancer is dependent on factors relating to the disease site(s), stage, anatomical accessibility and the patients' general health. The overall aim is to eradicate the tumour whilst maintaining the best function and cosmetic appearance. Surgery and radiotherapy are the main forms of curative treatment for head and neck cancer.

In general, small primary lesions are best treated with surgery or radiotherapy alone, while advanced lesions are more likely to need both surgery and radiotherapy.

Surgery - Surgical resection aims to remove the whole tumour with a margin adequate to allow for the removal of surrounding microscopic invasion. Laser surgery may be used to remove small tumours in the oral cavity and the larynx. Surgical excision is preferable for advanced tumours invading bone or cartilage, as radiotherapy may cause osteoradionecrosis. In many circumstances a neck dissection may be performed depending on the site, stage and location of the tumour. The degree of dissection will be determined by the risk of nodal involvement and may involve the removal of ipsilateral lymph nodes, the internal jugular vein, the accessory nerve and sternocleidomastoid muscle. Surgical techniques may allow for extensive resections by performing reconstructions using free flaps from the skin, fascia, muscle or bone, as well as skin or bone grafting. For thyroid cancer a total thyroidectomy may be performed to remove the thyroid gland. A partial thyroidectomy to remove part of the gland is usually only performed for stage 1 or 2 papillary or follicular thyroid cancer.

Radiotherapy - Smaller tumours may be initially treated with radiotherapy, reserving surgery for local recurrence. Radiotherapy has the advantage of preserving the voice, speech, swallowing and tissues that surgery would sacrifice and is therefore better for smaller tumours. It can be given as external beam therapy, interstitial brachytherapy using iridium hairpins, or as a combination. Radiotherapy may be used if an excision has been incomplete or if there is recurrence after surgery. In sites where primary closure is difficult such as the temple, forehead or nose, radiotherapy may be preferable over surgery.

Radiotherapy is inappropriate for treating locally advanced or bulky disease, but can be used after surgery or in the palliative setting, where bleeding or ulceration are problematic symptoms. For papillary or follicular thyroid cancer that has recurred or spread, or after treatment with surgery, targeted radiotherapy with a radioactive form of iodine (¹³¹I) is used to kill the cancer cells. Anaplastic thyroid cancer may be treated with external beam radiotherapy if surgery cannot remove the tumour. Most laryngeal cancers present relatively early and radiotherapy confined to the larynx plus a margin may be the preferred initial treatment. Larger advanced tumours may require a total laryngectomy (removal of the larynx), with postoperative radiotherapy. Unlike other head and neck cancers, the primary treatment for nasopharyngeal carcinoma is radiotherapy, often in combination with chemotherapy.

Chemotherapy - Chemotherapy is generally not used for small lesions, but may be used to eradicate or control early metastasis, shrink a tumour before surgery or radiotherapy, or be used as palliation.

Clinical Trials - Chemotherapy is the subject of some clinical trials. Patients may volunteer to participate in clinical trials to evaluate promising cancer therapies, such as growth factor treatment. Clinical trials of surgical techniques are now being planned, for example of early laryngeal cancer.
Average Age Standardised Incidence Rates For 1998-2000
At County Level
Head and Neck Cancer (C00-C14, C30-C32, C73)

For England and Wales the estimated 1997 national age standardised rate for head and neck cancer in males is 14.4 per 100,000 population and 4.8 per 100,000 in females. This is comparable with South West figures. The England and Wales incidence rate for head and neck cancer in both males and females under 30 years old is below 1 per 100,000 population.

Source: South West Cancer Intelligence Service Registry Data (County Areas as in 1996)

Age Specific Incidence Rates For The South West In 2000
Head and Neck Cancer (C00-C14, C30-C32, C73)

For England and Wales the 1990 -1999 average national age standardised mortality rate for head and neck cancer in males is approximately 4.0 per 100,000 population. This is comparable with South West mortality figures. The 1 year survival rate for males with head and neck cancer diagnosed between 1992 and 1994 in the South West region is 75.3%, and 55.4% for 5 year survival. Female 1 year survival rates are 71.6%, and 52% for 5 year survival. These figures are in accordance with England and Wales 1 and 5 year survival figures.

Source: South West Cancer Intelligence Service Registry Data England & Wales Life Tables from Government Actuary’s Department.