



# Diagnosis and management of head and neck cancer

A national clinical guideline



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October 2006

# KEY TO EVIDENCE STATEMENTS AND GRADES OF RECOMMENDATIONS

## LEVELS OF EVIDENCE

- 1<sup>++</sup> High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias
- 1<sup>+</sup> Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias
- 1<sup>-</sup> Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
- 2<sup>++</sup> High quality systematic reviews of case control or cohort studies  
High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
- 2<sup>+</sup> Well conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
- 2<sup>-</sup> Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
- 3 Non-analytic studies, eg case reports, case series
- 4 Expert opinion

## GRADES OF RECOMMENDATION

*Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.*

- A** At least one meta-analysis, systematic review of RCTs, or RCT rated as 1<sup>++</sup> and directly applicable to the target population; *or*  
A body of evidence consisting principally of studies rated as 1<sup>+</sup>, directly applicable to the target population, and demonstrating overall consistency of results
- B** A body of evidence including studies rated as 2<sup>++</sup>, directly applicable to the target population, and demonstrating overall consistency of results; *or*  
Extrapolated evidence from studies rated as 1<sup>++</sup> or 1<sup>+</sup>
- C** A body of evidence including studies rated as 2<sup>+</sup>, directly applicable to the target population and demonstrating overall consistency of results; *or*  
Extrapolated evidence from studies rated as 2<sup>++</sup>
- D** Evidence level 3 or 4; *or*  
Extrapolated evidence from studies rated as 2<sup>+</sup>

## GOOD PRACTICE POINTS

- Recommended best practice based on the clinical experience of the guideline development group



Supplementary material available on our website [www.sign.ac.uk](http://www.sign.ac.uk)

Scottish Intercollegiate Guidelines Network

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head and neck cancer**

A national clinical guideline



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# 1 Introduction

## 1.1 THE NEED FOR A GUIDELINE

Approximately 1,000 patients with new cancers of the head and neck are registered in Scotland each year. The incidence of disease has tended to increase with age and in the UK 85% of cases are in people aged over 50. There is now evidence that the incidence of head and neck cancers is increasing amongst young people of both sexes.<sup>1,2</sup> The disease tends to be a disease of deprivation, with the risk of developing the disease four times greater for men living in the most deprived areas.

The current overall five-year survival rates vary by tumour site.<sup>3</sup> In general, patients with early disease stand a better chance of cure or increased survival. Many patients with head and neck cancer present at a late stage, and improved survival for patients may be achieved with rapid detection and treatment.

Clear guidelines for management of tumours of all stages arising at all sites are lacking and there is a lack of good quality evidence from randomised controlled trials (RCTs).

Improved awareness and the implementation of a national guideline should improve patient outcomes.

## 1.2 REMIT OF THE GUIDELINE

The guideline follows the patient's journey of care from prevention and awareness through treatment to follow up and rehabilitation, making generic recommendations which hold for all head and neck cancers. The treatment sections focus specifically on cancers of the larynx, oral cavity, oropharynx and hypopharynx, as these are the tumour sites with the highest incidences. The guideline does not cover tumours of the nasopharynx, sinuses, salivary glands or thyroid.

This guideline will be of interest to all healthcare professionals working with patients with head and neck cancers, including ear, nose and throat specialists, oral and maxillofacial surgeons, plastic surgeons, general surgeons, clinical oncologists, nurses and allied health professionals.

## 1.3 DEFINITIONS

### 1.3.1 LARYNGEAL CANCER

Laryngeal cancer includes tumours of the:<sup>4</sup>

- supraglottis
- glottis
- subglottis.

### 1.3.2 HYPOPHARYNGEAL CANCER

Hypopharyngeal cancer includes tumours of the:<sup>4</sup>

- postcricoid area
- pyriform sinus
- posterior pharyngeal wall.

### 1.3.3 OROPHARYNGEAL CANCER

Oropharyngeal cancer includes tumours of the:<sup>4</sup>

- base of tongue
- tonsil
- soft palate.

### 1.3.4 ORAL CAVITY CANCER

Oral cavity cancer includes tumours of the:<sup>4</sup>

- buccal mucosa
- retromolar triangle
- alveolus
- hard palate
- anterior two-thirds of tongue
- floor of mouth
- mucosal surface of the lip.

### 1.4 TUMOUR STAGING

For the purposes of the guideline each tumour subsite is divided into “early disease” – equivalent to stages 1 and 2 following the Union Internationale Contre le Cancer (UICC)/TNM Classification of Malignant Tumours – and “locally advanced disease” – UICC/TNM stages 3 and 4. (See *Annex 1.*)<sup>4</sup>

### 1.5 STATEMENT OF INTENT

This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient’s case notes at the time the relevant decision is taken.

### 1.6 REVIEW AND UPDATING

This guideline was issued in 2006 and will be considered for review in three years. Any updates to the guideline in the interim period will be noted on the SIGN website: [www.sign.ac.uk](http://www.sign.ac.uk).

## 2 Presentation, screening and risk factors

### 2.1 CHANGING EPIDEMIOLOGY

Head and neck cancers are traditionally associated with older men who smoke and consume alcohol. A percentage of patients will not have the traditional risk factors, but the absence of these risk factors does not preclude the diagnosis. Evidence suggests that the incidence in the younger population of both sexes is rising. This coincides with an increase in the incidence of oral cancer.<sup>1</sup> No evidence to explain these changes was identified.

### 2.2 RISK FACTORS

Healthcare professionals should be aware of the possible risk factors for head and neck cancer and that patients with a combination of risk factors may be at greater risk.

A detailed case history should be taken for patients with suspected head and neck cancer.

#### 2.2.1 SMOKING AND TOBACCO USE

Smoking is a risk factor for all tumour sites covered by this guideline.<sup>5-12</sup> Leaving a cigarette on the lip is predictive of lip cancer risk irrespective of cumulative tobacco consumption.<sup>13</sup> 2+

Chewing tobacco is a risk factor for cancer of the oral cavity.<sup>14</sup> 1++

**B The population of Scotland should be discouraged from smoking or chewing tobacco.**

The Smoking Cessation Guidelines for Scotland: 2004 Update,<sup>15</sup> commissioned by NHSScotland and ASH Scotland makes recommendations for the organisation and implementation of clinical interventions to promote smoking cessation in Scotland. 4

**D Healthcare professionals should put people in contact with the appropriate smoking cessation services.**

A small cohort study comparing smokers, ex-smokers and non-smokers showed that smoking alters gene expression in bronchial epithelium cells. Two years after discontinuation of smoking all but 13 of the 97 genes reverted to normal expression levels.<sup>16</sup> 2++

**C Patients with precancerous oral lesions who use tobacco should be advised to give up.**


#### 2.2.2 ALCOHOL CONSUMPTION

Alcohol consumption strongly increases the risk of developing cancers of the oral cavity, pharynx and larynx.<sup>17,18</sup> There is a strong relationship between the quantity of alcohol consumption and the level of risk. No threshold was identified below which there was no increased risk.<sup>17,18</sup> 2++

**B The population of Scotland should be encouraged to limit their alcohol consumption, in line with government recommended guidelines.**

Further information is available from SIGN 74, a guideline on the management of harmful drinking and alcohol dependence in primary care.<sup>19</sup> 4

**D Healthcare professionals should put people in contact with the appropriate alcohol counselling service.**

- 2.2.3 COMBINED EFFECTS OF SMOKING AND ALCOHOL CONSUMPTION  
The combination of smoking and alcohol consumption increases the risk of developing cancer for all sites covered by this guideline.<sup>20</sup> 2+
- 2.2.4 DIETARY FACTORS  
Poor diet is a risk factor for head and neck cancer. Conversely, people with a good Mediterranean diet have less than half the risk of developing oral/pharyngeal cancer and half the risk of developing laryngeal cancer (results adjusted for smoking and body mass index; BMI).<sup>21</sup> The key protective elements of the Mediterranean diet include: citrus fruit; vegetables, specifically tomatoes (fresh and processed); olive oil and fish oils.<sup>22-25</sup> An increase in N-3 polyunsaturates by 1 g per week reduces the risk of oral cancer.<sup>26</sup> 2+
- C** The population of Scotland should be encouraged to increase their intake of fruit and vegetables (specifically tomatoes), olive oil and fish oils.
- A high intake of red meat, processed meat and fried food increases the risk of pharyngeal, laryngeal and oral cancer.<sup>27-30</sup> 2+
- C** The population of Scotland should be encouraged to reduce their intake of red meat, fried food and fat.
- People should be given information about healthy eating guidelines such as the NHS Health Scotland healthy eating recommendations ([www.healthyliving.gov.uk/healthyeating](http://www.healthyliving.gov.uk/healthyeating)) and the World Health Organisation (WHO) backed '5 a day' campaign.
- 2.2.5 GASTRO-OESOPHAGEAL REFLUX DISEASE  
There is evidence to suggest that the presence of gastro-oesophageal reflux disease (GORD) is a risk factor for laryngeal and pharyngeal cancer.<sup>31</sup> 2++
- 2.2.6 GENETIC FACTORS  
There is evidence to suggest a genetic susceptibility to head and neck cancer. At present there are no valid genetic screening tools.<sup>32-36</sup> 2+
- 2.2.7 HUMAN PAPILLOMAVIRUS  
Human papillomavirus (HPV) 16 sero-positivity is associated with an increased risk of oral/pharyngeal cancer.<sup>37,38</sup> 2+
- 2.3 PUBLIC AWARENESS**  
Public awareness of head and neck cancer is low.<sup>39-43</sup>
- A randomised controlled trial found that patients attending primary care who had read an information leaflet about head and neck cancer had increased awareness of risk compared to patients who had not seen the leaflet. A questionnaire of awareness of signs and symptoms and risks of oral cancer showed that all those who received the leaflet (smokers, non-smokers and past smokers) reported greater knowledge ( $p < 0.001$ ) with smokers 16 times more likely to perceive that they were at greater risk.<sup>44</sup> 1+
- B** Leaflets about signs, symptoms and risks of head and neck cancer should be available in primary care.
-  Analysis of the impact of a campaign on public awareness of oral cancer, launched by the West of Scotland Cancer Awareness Project (WoSCAP), on the NHS is available (see supplementary material on the SIGN website).



## 2.4 PRESENTING WITH HEAD AND NECK CANCER

The most appropriate primary care setting in which to advise patients seeking help for suspected head and neck cancer has not been identified. Patients have different perceptions of the ability of dentists and doctors to diagnose and treat oral lesions. The signs and symptoms and the location of the lesions all influence a patient's choice of health professional for first consultation.<sup>45</sup>

- All healthcare practitioners, including dental and medical practitioners, should be aware of the presenting features of head and neck cancer, and the local referral pathways for suspected cancers.

## 2.5 SCREENING FOR HEAD AND NECK CANCER

There is no evidence for an effective screening programme for head and neck cancers.<sup>46</sup> In particular, toluidine blue dye does not appear to be a cost-effective method of screening for oral cancers in a primary care (dental) setting.<sup>47</sup>

- Dental practitioners should include a full examination of the oral mucosa as part of routine dental check up.

## 3 Referral and diagnosis

### 3.1 REFERRAL

The Scottish Referral Guidelines for Suspected Cancer recommend urgent referral for patients meeting the following criteria:<sup>48</sup>

- with red or red and white patches of the oral mucosa which persist for more than three weeks at any particular site
- ulceration of oral mucosa or oropharynx which persists for more than three weeks
- oral swellings which persist for more than three weeks
- unexplained tooth mobility not associated with periodontal disease
- persistent, particularly unilateral, discomfort in the throat for more than four weeks
- pain on swallowing persisting for three weeks that does not resolve with antibiotics
- dysphagia which persists for more than three weeks
- hoarseness which persists for more than three weeks
- stridor (requires same day referral)
- unresolved head or neck mass which persists for more than three weeks
- unilateral serosanguineous nasal discharge which persists for more than three weeks, particularly with associated symptoms
- facial palsy, weakness or severe facial pain or numbness
- orbital masses
- ear pain without evidence of local ear abnormalities.

Early detection and treatment improves the prognosis of oral cancer.<sup>49</sup> The longest delay in diagnosis and treatment is time to presentation to specialist services.<sup>50</sup> This may result from patients delaying attending a general practitioner (GP), delayed onward referral or a combination of both.<sup>50</sup> The longest delay is from onset of symptoms to the patient presenting to a general or dental practitioner.<sup>51</sup>

Rapid access and “one stop” clinics may provide fast diagnosis of patients suspected of having head and neck cancer.<sup>52,53</sup>

**D** **Rapid access or “one stop” clinics should be available for patients who fulfil appropriate referral criteria.**

- Patients should be seen within two weeks of urgent referral.
- Patients should be seen by an experienced clinician with access to the necessary diagnostic tools.
- General or dental practitioners should be aware of symptoms suggestive of head and neck cancer.

### 3.2 DIAGNOSIS AND STAGING

Diagnosis and staging of head and neck malignancy will normally include clinical examination by an experienced clinician, fibre optic endoscopy, fine needle aspiration (FNA)/core biopsy of any neck masses, followed by further examination under anaesthetic with additional biopsies if needed. Head and neck tumours are staged by the UICC:TNM Classification of Malignant Tumours, which describes the anatomical extent of disease based on an assessment of the extent of the primary tumour, the absence or presence and extent of regional lymph node metastasis and the absence or presence of distant metastasis (see *Annex 1*).<sup>4</sup> Patients with confirmed malignancy will also undergo radiological staging by computerised tomography (CT) or magnetic resonance imaging (MRI).

## 3.2.1 INVESTIGATING NECK LUMPS

Fine needle aspiration cytology (FNAC) of head and neck masses is an effective, safe diagnostic tool, reliable in the diagnosis of neck masses, relatively easy to perform and with low associated costs.<sup>54,55</sup>

3

**D Fine needle aspiration cytology should be used in the investigation of head and neck masses.**

## 3.2.2 ENDOSCOPY

Routine oesophagoscopy and bronchoscopy in the absence of specific symptoms appear to have minimum benefit with respect to detection of synchronous primary tumours.<sup>56</sup>

Direct pharyngolaryngoscopy and chest X-ray are recommended for patients with squamous cell carcinoma of the head and neck, while oesophagoscopy and bronchoscopy might be reserved for patients with associated symptoms.<sup>57</sup>

3

Symptom-directed selective endoscopy appears to be an effective alternative to panendoscopy for the identification of synchronous primary tumours.<sup>58</sup> When combined with a chest X-ray, symptom-directed endoscopy will detect most second primaries of the upper aerodigestive tract.<sup>59</sup>

**D All patients with head and neck cancer should have direct pharyngolaryngoscopy and chest X-ray with symptom-directed endoscopy where indicated.**

Autofluorescent endoscopy, if performed, must be carried out by an experienced operator, and should be complementary to microlaryngoscopy and/or white light endoscopy, rather than a replacement for them.<sup>60-64</sup>

3

## 3.2.3 IMAGING THE PRIMARY TUMOUR

CT is more sensitive than endoscopy or manual examination at defining the T stage of the primary tumour (size of tumour, relationship to critical deep structures).<sup>65</sup> Due to improved detection of superficial tumours and lack of artefact from dental amalgam, MRI is more accurate than CT in staging oropharyngeal and oral tumours.<sup>66</sup> There is no evidence that CT or MRI improves the accuracy of primary staging of T1 laryngeal tumours which are localised to the vocal cord.<sup>67</sup> There is evidence that CT or MRI should be performed on all tumours, apart from laryngeal tumours confined to one vocal cord without extension into the anterior commissure.<sup>67</sup> The stage of the primary tumour affects the likelihood of finding a secondary tumour in the lung.<sup>67</sup> In T1a tumours CT or MRI adds little to the staging of the primary tumour.

3

4

CT is often better tolerated than MRI.<sup>65</sup>

4

**D CT or MRI of the primary tumour site should be performed to help define the T stage of the tumour.**

**D MRI should be used to stage oropharyngeal and oral tumours.**

CT is useful for assessing cortical bone involvement. For tumours confined to the mucosa, direct endoscopy is more accurate than cross-sectional imaging.<sup>65</sup> MRI has a higher sensitivity but lower specificity than CT in the assessment of laryngeal cartilage invasion.<sup>67</sup> MRI is superior to CT in assessing perineural or perivascular extension, or in tumour suspected to involve the skull base, cervical spine or orbit (most suprahypoid tumours).<sup>65</sup>

4

**D MRI should be used in assessing:**

- laryngeal cartilage invasion
- tumour involvement of the skull base, orbit, cervical spine or neurovascular structures (*most suprahypoid tumours*).

Tumour depth of >4mm on MRI is a strong predictor of locoregional ipsilateral nodal metastases.<sup>68</sup>

2+

For laryngeal tumours, tumour volume of  $>3.5 \text{ cm}^3$  calculated from CT is a strong predictor of recurrence following radiotherapy alone.<sup>69</sup> 2<sup>++</sup>

Neither fluorodeoxy glucose positron emission tomography (FDG-PET) nor ultrasound has a specific role in the first line investigation of primary head and neck tumours, though they may occasionally be of value in difficult diagnosis.<sup>65</sup> 4

### 3.2.4 IMAGING NECK NODES

CT and MRI are of similar accuracy in detecting neck node metastases, and are superior to physical examination.<sup>70</sup> CT is marginally more accurate in detecting infrahyoid node metastasis.<sup>70</sup> MRI is more accurate than CT in detecting perivisceral nodal involvement.<sup>65</sup> 4

**D CT or MRI from skull-base to sternoclavicular joints should be performed in all patients at the time of imaging the primary tumour to stage the neck for nodal metastatic disease.**

In the clinically node negative neck, ultrasound guided fine needle aspiration (USFNA) has a higher specificity than CT for diagnosing lymph node metastases, though overall accuracy is similar.<sup>71</sup> Where CT or MRI show marginally enlarged nodes (short axis diameter 5 mm or more), targeted USFNA increases the specificity.<sup>71</sup> FDG-PET increases the accuracy of diagnosing lymph node metastases.<sup>72,73</sup> 2<sup>++</sup>

**B Where the nodal staging on CT or MRI is equivocal, USFNA and/or FDG-PET increase the accuracy of nodal staging.**

### 3.2.5 IMAGING FOR DISTANT METASTASES AND SYNCHRONOUS TUMOURS

The incidence of synchronous second malignant tumours in the thorax is 4%.<sup>74</sup> Higher rates (15%-33%) of synchronous tumours and pulmonary metastases are seen in patients with more advanced (T3/T4) primary tumours, or where there is level IV nodal involvement.<sup>75,76</sup> The sensitivity and specificity of CT scan for detecting synchronous tumours or pulmonary metastatic disease is 100% and 95% compared to 33% and 97% for chest radiograph.<sup>77</sup> 3

No studies were identified comparing CT and MR imaging.

**D All patients with head and neck cancer should undergo CT of the thorax.**

### 3.2.6 METASTATIC CERVICAL LYMPH NODES WITH UNKNOWN PRIMARY

FDG-PET is more accurate than CT and MRI in identifying occult primary tumours and in staging distant disease, detecting 24-26% more primaries, and alters the treatment plan in 20% of cases.<sup>78-80</sup> 2<sup>+</sup>  
2<sup>++</sup>

PET is highly accurate for picking up unknown primaries.<sup>80</sup>

**C In patients presenting with cervical lymph node metastases, where CT or MRI does not demonstrate an obvious primary tumour, FDG-PET should be performed as the next investigation of choice.**

### 3.2.7 RESTAGING PATIENTS WITH SUSPECTED RECURRENT DISEASE

FDG-PET has a higher accuracy (sensitivity 100%, specificity 61-71%) than CT or MRI in detecting recurrent head and neck cancer.<sup>81,82</sup> The specificity is reduced due to false positive uptake in inflammatory lesions. The accuracy is greatest when imaging is performed at least three months after completion of therapy.<sup>82</sup> 2<sup>++</sup>

**C In patients presenting with suspected recurrent head and neck cancer, where CT/MRI does not demonstrate a clear cut recurrence, FDG-PET should be performed as the next investigation of choice.**

3.2.8 ROLE OF SURVEILLANCE IN DETECTING RECURRENT HEAD AND NECK CANCER

There is no consistent evidence that surveillance with cross-sectional imaging alters outcome following treatment for head and neck cancer.

## 4 Histopathology reporting

The following factors, with the exception of proliferation indices and human papillomavirus infection,<sup>83</sup> have a direct impact on patient management.<sup>84</sup> They are included in the Royal College of Pathologists standards and minimum data set for reporting head and neck cancers ([www.rcpath.org](http://www.rcpath.org)).<sup>85</sup>

- Pathologists are advised to use the Royal College of Pathologists standards and minimum data set as a minimum standard of reporting head and neck cancers.

### 4.1 PRIMARY TUMOUR

#### 4.1.1 TUMOUR GRADE

There is consistent evidence of the value of tumour grade in determining prognosis: a higher grade equates to a poorer prognosis.<sup>86-89</sup> | 3  
2+

#### 4.1.2 T STAGE

This includes the maximum tumour dimension and the presence or absence of invasion of adjacent structures. Higher T stage correlates with poorer prognosis (see *Annex 1*).<sup>87,90-92</sup> | 2+  
2++

#### 4.1.3 DEPTH OF INVASION

Tumour thickness of greater than 4 mm imparts a worse prognosis.<sup>87,90-92</sup> | 2+  
2++

#### 4.1.4 TUMOUR TYPE

Certain tumour types behave differently from conventional squamous carcinomas.<sup>93</sup> Papillary and verrucous carcinomas generally have a better prognosis, whilst basaloid and spindle cell variants behave more aggressively. | 4

#### 4.1.5 PATTERN OF INFILTRATION

A non-cohesive, infiltrative pattern of growth, as opposed to a cohesive pattern with broad strands and sheets of tumour, is related to a poorer outcome, especially in the tongue, floor of mouth and supraglottis.<sup>94-96</sup> | 2++

#### 4.1.6 EXCISION MARGINS

The margin of excision of the invasive tumour and the presence of severe dysplasia at the excision margin predict local recurrence. A distance of less than 1 mm between the invasive tumour and the surgical margin is considered to be a 'positive margin'.<sup>97-100</sup> The use of frozen sections to assess margins has not been shown to alter prognosis.<sup>101,102</sup> | 2+  
2++  
3

#### 4.1.7 VASCULAR AND PERINEURAL INFILTRATION

Perineural infiltration is a sensitive predictor of local recurrence and prognosis.<sup>99</sup> | 3

#### 4.1.8 PRIMARY SITE

Few studies compared directly different sites in the head and neck but supraglottic tumours have a worse prognosis than glottic tumours and hypopharynx fares worse than larynx.<sup>83,103-105</sup> | 2+  
2++

### 4.2 METASTATIC DISEASE

#### 4.2.1 NODAL INVOLVEMENT

Nodal involvement affects prognosis adversely. Higher numbers and more inferior levels of nodes involved are adversely related to prognosis (see *Annex 2*) as is extracapsular spread (microscopic or macroscopic).<sup>68,86,105-111</sup> | 2+  
2++

The presence of microscopic foci of disease and disease detected only by immunochemistry is of uncertain significance at present.<sup>112</sup>

4

- The reporting of nodal dissections should include a description of the type of dissection (*comprehensive, selective or extended*) and the levels and structures included in the specimen.

### 4.3 OTHER PROGNOSTIC FACTORS

#### 4.3.1 HPV INFECTION

Six studies were identified that address the role of HPV in head and neck cancer. Five showed that for oropharyngeal tumours, HPV infection was associated with younger age, absence of additional risk factors (such as smoking and alcohol consumption), high proliferation indices, high grade, basaloid subtype, better response to radiotherapy and a better survival.<sup>37,113-116</sup>

2+  
2++

In patients that fall into the above category HPV subtyping may be appropriate although this is outwith the remit of most pathology departments at present.<sup>116</sup>

#### 4.3.2 PROLIFERATION INDICES AND OTHER MOLECULAR MARKERS

Results from studies addressing the value of proliferation indices and other molecular markers in predicting progressive disease are inconsistent, although there is a tendency to support the use of Ki-67 in identifying patients with a higher risk of progression.<sup>100,117,118</sup>

2+  
4

### 4.4 RECOMMENDED ESSENTIAL DATA ITEMS

#### 4.4.1 PRIMARY SITE

**C** Histopathology reporting of specimens from the primary site of head and neck cancer should include:

- tumour site
- tumour grade
- maximum tumour dimension
- maximum depth of invasion
- margin involvement by invasive and/or severe dysplasia
- pattern of infiltration
- perineural involvement

**D** ▪ tumour type

- lymphatic/vascular permeation.

#### 4.4.2 METASTATIC DISEASE

**C** Histopathology reporting of specimens from areas of metastatic disease in patients with head and neck cancer should include:

- number of involved nodes
- level of involved nodes
- extracapsular spread of tumour

- type of nodal dissection
- size of largest tumour mass.

## 5 Overview of treatment of the primary tumour and neck

This section addresses the first line treatment of head and neck cancer. Management of recurrent tumour is discussed in section 9.

The aim of treatment is to maximise locoregional control and survival with minimal resulting functional damage. The most important functions that must be considered when planning treatment are swallowing, respiration and speech.

Cancers of the head and neck are relatively rare and should be managed by specialists as part of a multidisciplinary team. The team should include:

- a radiologist
- a pathologist
- specialist head and neck cancer surgeons (ear, nose and throat; maxillofacial and plastic)
- a clinical oncologist
- a restorative dentist
- a clinical nurse specialist
- a speech and language therapist
- a dietitian.

There is evidence that patients experience greater dental toxicity including tooth loss and periodontal attachment loss in teeth included in higher dose radiotherapy fields.<sup>119,120</sup>

Patients with head and neck cancer require early nutritional screening to identify those who should be referred to a specialist dietitian, who can assess the patient's nutritional needs and evaluate how treatment will impact on their nutritional status. Early nutritional intervention, either by gastrostomy tube or by nasogastric (NG) tube feeding, and ongoing nutritional support for patients with head and neck cancer are important issues in terms of treatment outcomes and quality of life (see section 15.2.3).

Treatment plans should be formulated by a multidisciplinary team in consultation with the patient. As part of this process, dental, speech and language and nutritional assessments are essential.

**C Patients with head and neck cancer, especially those planned for resection of oral cancers or whose teeth are to be included in a radiotherapy field, should have the opportunity for a pre-treatment assessment by an appropriately experienced dental practitioner.**

- All head and neck cancer patients should be screened at diagnosis for nutritional status using a validated screening tool appropriate to the patient population.
  - Patients at risk of undernutrition should be managed by an experienced dietitian.

Individual patient characteristics, local expertise and patient preference should guide management of head and neck cancer.

### 5.1 TREATMENT OF THE PRIMARY TUMOUR

#### 5.1.1 CHOICE OF DEFINITIVE LOCOREGIONAL TREATMENT

There is little good quality evidence to help define the optimal treatment for each tumour subsite. The single published RCT comparing survival following surgery and postoperative radiotherapy with definitive radiotherapy and concurrent chemotherapy was underpowered.<sup>121</sup>

A large number of non-randomised single centre case series report the local control, survival and morbidity rates associated with both surgical resection and radiotherapy, but this evidence is not of sufficient quality to support a clear recommendation regarding the best modality for treating the primary tumour in each subsite.<sup>122-141</sup>



Surgery may be the treatment of choice if the primary tumour can be excised with an appropriate margin of normal tissue without resulting in major functional compromise.

Given the lack of good quality evidence, the choice of definitive local therapy must take into account:

- likely functional outcome of treatment
  - resectability of the tumour
  - general medical condition of the patient
  - patient's wishes.
- ☑
- Whenever possible, surgery for a primary head and neck cancer should preserve organ function.
  - Where necessary, surgical resection should be followed by reconstruction using the most appropriate technique.
  - Non-surgical treatment (radiotherapy with or without chemotherapy) should be offered to patients if survival rates are comparable with surgical resection.
  - Salvage surgery must be available if an organ preservation approach is to be pursued.
  - Following surgical resection of the primary tumour, adjuvant postoperative radiotherapy should be considered where indicated.

Non-surgical treatment of the primary tumour is described in detail in sections 6 and 8.

## 5.2 TREATMENT OF THE NECK

### 5.2.1 LYMPH NODE LEVELS

Six levels are used to describe the topographical anatomy of the neck (see *Table 1 and Annex 2*).<sup>142</sup>

*Table 1: Lymph node levels and sublevels*<sup>142</sup>

Level	Terminology	Surgical/anatomical landmarks
IA IB	Submental nodes and Submandibular nodes	Bounded by the anterior belly of the digastric muscles, hyoid bone inferiorly, and body of the mandible superiorly.
II	Upper internal jugular nodes	Extends from the level of the hyoid bone inferiorly to the skull base superiorly.
III	Middle internal jugular nodes	Extends from the hyoid bone superiorly to the cricothyroid membrane inferiorly.
IV	Lower internal jugular nodes	Extends from the cricothyroid membrane superiorly to the clavicle inferiorly.
V	Posterior triangle nodes	Bounded by the anterior border of the trapezius posteriorly, the posterior border of the sternocleidomastoid muscle anteriorly, and the clavicle inferiorly.
VI	Anterior compartment group lymph nodes	Extends from the hyoid bone superiorly to the suprasternal notch inferiorly. The lateral borders are formed by the medial border of the carotid sheath.

5.2.2 SURGICAL TREATMENT

Neck dissection removes both the soft tissue and the lymph nodes. A number of modifications of neck dissection have been described (see Table 2).<sup>85,143</sup>

Table 2: Definitions of previously described neck dissection techniques

<b>Comprehensive neck dissection</b>	
Radical neck dissection	All ipsilateral lymph nodes from level I-V are removed along with the spinal accessory nerve, internal jugular vein and sternocleidomastoid muscle.
Modified radical neck dissection	As for radical neck dissection with preservation of one or more non-lymphatic structures. This is sometimes referred to as a “functional” neck dissection.
<b>Selective neck dissection</b>	
One or more of the lymphatic groups normally removed in the radical neck dissection is preserved. The lymph node groups removed are based on patterns of metastases which are predictable for each site of the disease.	
<b>Extended neck dissection</b>	
Additional lymph node groups or non-lymphatic structures are removed.	

5.2.3 MANAGEMENT OF THE CLINICALLY NODE NEGATIVE NECK

Clinical and radiological examinations are unable to detect microscopic disease in lymph nodes. Several large retrospective series have reported the incidence of metastases found on histological examination of neck specimens after radical neck dissections in patients with clinically node negative (N0) necks (see Table 3).<sup>68,86,144-167</sup>

3

Table 3: Nodal status in node negative neck after elective surgery, all T stages (dependent on stage of primary)

<b>Subsite</b>	<b>Percentage of metastases reported in prophylactically treated necks</b>
Oral cavity <sup>68,86,144,145,153,159-167</sup>	> 20%
Glottic <sup>68,146</sup>	0-15%
Supraglottic <sup>147-149,151,154-157</sup>	8-30%
Oropharyngeal <sup>68,150-152</sup>	> 50%
Hypopharyngeal <sup>68,150-152</sup>	> 50%

The risk of occult metastases in clinically node negative necks may be used to guide clinicians when deciding whether prophylactic treatment of the neck is appropriate. No randomised controlled evidence was identified defining a threshold of risk over which prophylactic treatment of the neck is required.

A study of computer assisted decision analysis, using data from retrospective series, suggested that prophylactic treatment of the neck is required if the risk of occult nodal metastases rises above 20%.<sup>168</sup>

3

No adequately powered RCTs compare prophylactic treatment of the N0 neck with observation and therapeutic neck dissection on recurrence. There is a body of evidence from retrospective studies suggesting that in patients who do not have prophylactic therapy of the clinically N0 neck there is often a low salvage rate on disease recurrence.<sup>166,169-174</sup>

Appropriate selective neck dissection by experienced surgeons for the management of patients with clinically node negative carcinoma of the upper aerodigestive tract can result in equivalent locoregional control to that achieved by modified radical neck dissection.<sup>144,166,175-181</sup>

3

A large retrospective series comparing elective neck dissection and prophylactic radiation of the neck in patients with oral cavity, oropharyngeal and laryngeal cancer reported no statistically significant difference in local control at five years. In patients with hypopharyngeal cancers, local control was significantly better with radiotherapy compared to surgery.<sup>182</sup>

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**C Patients with a clinically N0 neck, with more than 20% risk of occult nodal metastases, should be offered prophylactic treatment of the neck, either by appropriate selective or modified radical neck dissection or by external beam radiotherapy.**

#### 5.2.4 MANAGEMENT OF THE CLINICALLY NODE POSITIVE NECK

When there is clinical or radiological evidence of disease in neck lymph nodes, active treatment is required. No randomised controlled evidence was identified that clearly defines the best treatment for patients with a clinically node positive neck. If the involved nodes are fixed and unresectable, radiotherapy or chemoradiotherapy may be the only therapeutic option.

The risk of occult metastases in other apparently uninvolved levels of the neck is high, and prophylactic treatment of these nodes is also required.<sup>152,183</sup> Three per cent of patients undergoing radical neck dissection have positive nodes at level V, the highest prevalence being in patients with hypopharyngeal and oropharyngeal tumours (7% and 6%) and lowest in those with oral cavity (1%) and laryngeal cancers (2%).<sup>184</sup>

3

Large retrospective series have reported on the risk of nodal involvement of the contralateral side of the neck for each tumour subsite (see sections 11-14).<sup>185, 186</sup>

3

Modified radical and radical neck dissection result in equivalent rates of disease control in the neck when performed in appropriately selected patients.<sup>180,187-192</sup> In selected patients without locally advanced neck disease, appropriate selective neck dissection in combination with postoperative radiotherapy may result in neck control rates equivalent to those achieved by more radical neck dissection.<sup>193,194</sup> Currently there is insufficient evidence to recommend this approach.

3

Retrospective data suggest that there is an increased risk of local recurrence following neck dissection if histological examination reveals any single node greater than 3 cm in size (N2) or two or more positive nodes.<sup>195</sup> Postoperative radiotherapy or chemoradiotherapy reduces the risk of recurrence in these circumstances (see sections 7.3 and 7.4).

3

Neck node size and fixity predict response rate and local control with radiotherapy alone.<sup>196-198</sup> Complete response rates are much higher in patients with nodes less than 3 cm in size and local control rates following radiotherapy alone are best in patients with nodes less than 2 cm in size.<sup>198,199</sup>

3

In patients with clinical N2 or N3 disease, there is poor correlation between clinical and pathological response following chemoradiotherapy.<sup>200</sup> No clinical parameter accurately predicts a pathological complete response after chemoradiation in patients with N2/3 neck disease.<sup>201</sup> Even if a clinical and radiological complete response has been achieved following chemoradiotherapy, more than 30% of patients with N2 and N3 necks will have pathological evidence of residual disease on histological examination of neck dissection specimens.<sup>200,202,203</sup>

3

In patients with N2/3 disease without a complete clinical response to chemoradiotherapy, neck dissection improves locoregional control, neck progression-free survival and overall survival compared to observation only.<sup>204,205</sup> Modified radical neck dissection following chemoradiotherapy irrespective of the response to treatment confers a disease-free and overall survival advantage to patients with N2 and N3, but not N1 disease.<sup>200</sup>

3

The likelihood of successful salvage treatment of neck recurrence after radiotherapy is low.<sup>206</sup>

3

If the primary tumour is small it is possible to resect advanced nodal disease prior to treating the primary tumour with definitive radiotherapy whilst delivering postoperative adjuvant radiotherapy to the neck without compromising cancer control.<sup>207,208</sup>

3

- D** Patients with clinically N1 disease should be treated by appropriate neck dissection or radical radiotherapy (*with or without chemotherapy*).
- D** In patients with clinically N1 disease and a complete clinical response to radiotherapy, observation rather than further surgical management is recommended.
- D** Following neck dissection for clinically N1 disease, adjuvant postoperative radiotherapy must be considered for those patients who are at high risk of locoregional recurrence.
- D** Patients with clinical N2 or N3 disease should be treated either by:
  - comprehensive neck dissection followed by external beam radiotherapy, or
  - radical radiotherapy followed by comprehensive neck dissection.
- D** In patients where the primary tumour is small and the nodal disease is resectable, neck dissection may be performed before treating both the primary tumour and the neck with radiotherapy (*with or without chemotherapy*).

## 6 Treatment: radiotherapy as the major treatment modality

Radiotherapy uses ionising radiation to treat malignancy. Ionising radiation may be delivered as an external radiation beam targeting the tumour (external beam radiotherapy), or by directly implanting radioactive sources within the tumour (brachytherapy). External beam radiotherapy is usually fractionated which means that the total dose is delivered over time in smaller doses or fractions. The dose of radiation that can be delivered to a tumour is limited by the tolerance of the surrounding normal tissues, which are also unavoidably irradiated during treatment. There are several different systems used for grading radiotherapy side effects (toxicities) caused by irradiation of normal tissues.<sup>209-211</sup> In general grade 1 toxicity is the mildest, whilst grade 4 toxicity is very severe.

Radiotherapy can be delivered with curative intent (radical radiotherapy), in order to improve local control following surgery (adjuvant radiotherapy, see *section 7.3*) or to provide symptomatic relief only (palliative radiotherapy, see *section 10.2*).

### 6.1 RADIOTHERAPY SCHEDULES

The effect of radiotherapy on the tumour and surrounding normal tissue is dependent on:

- the total dose administered
- the size of each fraction
- the overall time over which the total dose is delivered.

### 6.2 CONVENTIONAL FRACTIONATION

Conventional fractionation schedules deliver treatment in single daily fractions of 1.8-2Gy, five days per week. This results in dose accumulation of approximately 10Gy per week.

### 6.3 MODIFIED FRACTIONATION

Modified fractionation can be divided into:

- hypofractionation
- hyperfractionation
- accelerated fractionation.

#### 6.3.1 HYPOFRACTIONATION

Hypofractionation is a modified fractionation schedule where the dose per fraction substantially exceeds the conventional level of 1.8-2Gy.

Studies of hypofractionated radiotherapy have been mainly confined to the treatment of patients with glottic cancer. In patients with early glottic cancer hypofractionated radiotherapy results in excellent local control with no increase in late normal tissue toxicity (see *section 11.1.1*).<sup>212-214</sup>

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#### 6.3.2 HYPERFRACTIONATION

Hyperfractionation is a modified fractionation schedule where the total dose is delivered in an increased number of fractions, and fraction size is below the conventional level of 1.8-2Gy.

Pooled data suggest that hyperfractionated radiotherapy using an increased total radiation dose in patients with locally advanced head and neck cancer results in a significantly reduced risk of death and significantly enhanced locoregional control when compared to conventionally fractionated treatment.<sup>215</sup> Randomised controlled trial data confirms an increase in locoregional control but no survival advantage with this approach.<sup>216</sup> Hyperfractionation results in significantly increased grade 3 or 4 acute toxicity, but no increase in late toxicity at 24 months.<sup>216</sup>

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## 6.3.3 ACCELERATED FRACTIONATION

During accelerated fractionation the rate of dose delivery exceeds 10Gy per week, resulting in a reduction of overall treatment time.

A systematic review comparing both moderately accelerated and very accelerated fractionated radiotherapy with conventional fractionation in patients with head and neck cancer shows significant improvement in locoregional control with accelerated radiotherapy but no significant difference in two year overall survival.<sup>217</sup>

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Moderately accelerated fractionated radiotherapy (six fractions per week whilst maintaining the same total dose) in patients with laryngeal, pharyngeal and oral cavity tumours results in better local control of the primary tumour and increased disease specific, but not overall survival compared to conventional fractionation. Neither local control of bulky nodal disease,<sup>218</sup> locoregional control or survival in patients with T1-3 glottic or supraglottic cancer are improved by this fractionation regimen,<sup>219</sup> and acute toxicity is significantly increased.<sup>218,219</sup> Late skin changes may be more frequent, but there is no evidence that other late toxicities are increased.<sup>218,219</sup>

1++

72Gy in six weeks using a concomitant boost technique results in a 9% improvement in locoregional control compared to conventional radiotherapy but no difference in survival. Acute but not late toxicity is increased.<sup>216</sup>

1++

A more rapidly accelerated regimen of 72Gy in five weeks (three fractions per day at four hourly intervals) improves locoregional control, but also significantly increases grade 3 and 4 acute and late effects.<sup>220</sup>

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## 6.3.4 DECREASED TOTAL DOSE AND VERY ACCELERATED FRACTIONATION

Very rapid acceleration of radiotherapy with a decreased total dose, for example, continuous hyperfractionated accelerated radiotherapy (CHART, 54Gy in 36 fractions over 12 days) does not improve or reduce locoregional control or survival in patients with early (excluding T1N0) or locally advanced disease.<sup>221,222</sup> This fractionation schedule significantly increases acute toxicity, although there may be a significant reduction in late toxicity, particularly grade 2 or worse affecting the skin and subcutaneous tissue, laryngeal oedema and deep mucosal ulceration, when compared to conventional fractionation.<sup>221,222</sup>

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## 6.3.5 MODIFIED FRACTIONATION AND CHEMOTHERAPY

The addition of concurrent chemotherapy to altered fractionation radiotherapy improves locoregional control, but increases mucosal toxicity, when compared to the same dose of altered fractionation radiotherapy alone.<sup>223,224</sup> The long term morbidity of this approach is not clear.

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No RCTs were identified comparing survival following conventionally fractionated chemoradiotherapy with that following altered fractionation radiotherapy alone. There is a body of evidence demonstrating a survival advantage when chemotherapy is administered concurrently with radiotherapy and the majority of this relates to conventionally fractionated radiotherapy (see section 8).

A randomised trial comparing hyperfractionated accelerated radiotherapy (total dose 70.6Gy) with concurrent mitomycin and 5FU (5-fluorouracil) and dose-escalated hyperfractionated accelerated radiotherapy alone (total dose 77.6Gy) showed significantly better five-year locoregional control and overall survival with chemoradiotherapy.<sup>225</sup>

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The evidence suggests that modified fractionation radiotherapy should be reserved for those patients undergoing radical radiotherapy who are unable to receive concurrent chemotherapy or cetuximab (see section 8.2).<sup>226</sup>

**A** Where radiotherapy is the primary treatment modality, moderately accelerated schedules (six fractions/week) or hyperfractionated schedules with increased total dose should be considered for patients with head and neck cancer (except T1-3 glottic or supraglottic) who are unable to receive concurrent chemotherapy or cetuximab.

- If modified fractionation is being considered there must be:
  - adequate monitoring of acute toxicity suffered by the patient during and after treatment
  - access to outpatient and inpatient services for treatment of acute toxicity and nutritional support.

#### 6.4 INTERRUPTIONS TO PLANNED RADIOTHERAPY TREATMENT SCHEDULES

Prolonging the overall time taken for the delivery of a radical course of radiotherapy due to an unscheduled interruption in treatment affects local control.<sup>227,228</sup>

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##### **C** Interrupting and prolonging a course of radical radiotherapy should be avoided.

Guidance on the management of unscheduled interruption to planned radiotherapy schedules can be found in "Guidelines for the Management of the Unscheduled Interruption or Prolongation of a Radical Course of Radiotherapy".<sup>229</sup>

#### 6.5 BRACHYTHERAPY

No randomised controlled evidence was identified comparing outcome following brachytherapy with outcome following external beam radiotherapy or surgery for patients with head and neck cancer. Evidence supporting the use of brachytherapy comes from large case series from centres experienced in the technique.

Local control rates at five years of 79-97% (T1) and 65-87% (T2) have been achieved for patients with early cancers of the oral tongue and floor of mouth treated with interstitial brachytherapy alone.<sup>230-238</sup> The five-year local control rate in one series was equivalent to that following surgical resection in the same centre.<sup>236</sup> The five-year local control rate for patients following interstitial brachytherapy for T3 oral cavity tumours is 49-70%.<sup>232,236,237,239</sup>

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A dose of 65Gy results in optimal local control.<sup>233</sup> Doses in excess of 65Gy result in an increased risk of necrosis and bone complication.<sup>239-241</sup>

In patients with oropharyngeal tumours a brachytherapy boost of 25-30Gy following external beam radiotherapy (45-50Gy) results in local control of 89% (T1), 86% (T2) and 57% (T3).<sup>242,243</sup>

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There is no clear evidence to determine whether local control in oropharyngeal cancer treated with a brachytherapy boost following external beam radiotherapy is better than with external beam radiotherapy alone.<sup>244,245</sup> There is also no robust evidence to determine whether brachytherapy used as a boost following external beam radiotherapy results in reduced morbidity and better quality of life than when the same total dose of radiation is delivered entirely as external beam radiotherapy.<sup>246</sup>

A dose rate in excess of 0.55Gy/hour and intersource spacing of more than 15 mm significantly increases bone and soft tissue necrosis.<sup>235,242,243,247</sup>

3

There is no reported role for brachytherapy in the treatment of laryngeal or hypopharyngeal tumours.

##### **D** Patients with small accessible (T1/2) tumours of the oral cavity and oropharynx may be treated by interstitial brachytherapy to a dose of 65-70Gy at a dose rate of less than 0.55Gy/hour.

- Interstitial brachytherapy for patients with head and neck cancer should be performed by experienced teams in centres with adequate radiation protection facilities.

#### 6.6 INTENSITY MODULATED RADIOTHERAPY

Intensity modulated radiotherapy (IMRT) is currently under development in UK cancer centres. No randomised controlled evidence was identified comparing outcome following IMRT with that



following conventionally delivered radiotherapy for patients with head and neck cancer. Case series were identified which describe the use of IMRT to reduce radiation toxicity, particularly xerostomia (see section 6.7.2) and its use in re-irradiation following tumour recurrence (see section 9.2).

## 6.7 PREVENTION AND MANAGEMENT OF RADIATION SIDE EFFECTS

The side effects of radiotherapy are caused by unavoidable irradiation of the normal tissues surrounding the tumour. They can be described as “acute” (those that occur during or immediately after radiotherapy) or “late” (those that occur months or years after treatment has been completed). In patients with head and neck cancer common side effects that are likely to cause patient discomfort are:

- mucositis (inflammation and desquamation of the mucosal lining of irradiated areas of the upper aerodigestive tract)
- xerostomia (dry mouth) caused by irradiation of the salivary glands, particularly the parotid glands, and consequent reduction in salivary flow. Xerostomia is often permanent and results in discomfort, eating difficulties, taste alteration and high risk of rampant dental caries.

Skin included in the irradiated volume may also suffer from acute and late toxicity from radiotherapy.

### 6.7.1 PREVENTION AND TREATMENT OF RADIATION-INDUCED MUCOSITIS

The use of benzydamine oral rinse reduces the frequency and severity of ulcerative oral lesions and decreases pain in radiation-induced oral mucositis.<sup>248-250</sup> The largest of these trials used a regimen of 15 mls four to eight times daily starting before radiotherapy, continuing throughout treatment and for two to three weeks after completion.<sup>248</sup> Most patients included in these studies were treated with conventionally fractionated radiotherapy, and the benefit of benzydamine used with chemoradiotherapy or modified fractionation regimens is less clear.

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**A Patients with oral cavity, laryngeal, oropharyngeal or hypopharyngeal tumours who are being treated with radiotherapy should be offered benzydamine oral rinse before, during, and up to three weeks after completion of radiotherapy.**

There is no evidence to support any other intervention for prevention or treatment of radiation-induced mucositis.<sup>251-265</sup>

- Patients should be advised on how to maintain good oral hygiene during and after radiotherapy.
- Patients’ mucosa should be inspected regularly during treatment, and analgesia and antimicrobial/antifungal agents to treat infection should be made available.

### 6.7.2 PREVENTION AND TREATMENT OF RADIATION-INDUCED XEROSTOMIA

The evidence does not support a specific intervention for the prevention of radiation-induced xerostomia.

Amifostine given concurrently with radiotherapy or chemoradiotherapy significantly reduces the rate of acute and late xerostomia.<sup>252</sup> There is no evidence that amifostine affects survival at 24 months or recurrence at 18 months after cancer therapy, or the rate of incomplete response to radiotherapy.<sup>251,253</sup> Survival data are only available for 24 months post-treatment. Without longer follow up, the protective effect of amifostine on the tumour is unclear. Vomiting is significantly increased with amifostine compared to control, but hypotension and nausea are not.<sup>253</sup>

The use of amifostine in the prevention of radiation-induced xerostomia cannot be recommended outside clinical trials. No randomised controlled evidence was identified addressing the use of IMRT in the prevention of radiation-induced xerostomia. Observational evidence suggests that decreasing the mean radiation dose to the parotid gland, whether by IMRT or 3-dimensional conformal radiotherapy, results in improved stimulated salivary flow and quality of life (in terms of oral discomfort, eating and speaking) at six months after completion of radiotherapy.<sup>266</sup>

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Administration of oral pilocarpine during a course of radiotherapy to an area containing salivary tissue resulted in significantly improved salivary flow at three months post-treatment compared to placebo in a single RCT.<sup>267</sup> This did not translate into improved quality of life.

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Analysis of pooled data suggests that administration of oral pilocarpine (5-10 mg orally three times per day) to patients with xerostomia (and evidence of pre-existing salivary function) following conventionally fractionated radiotherapy results in statistically significant improvements in subjective overall xerostomia and the need for salivary substitutes compared to placebo.<sup>268</sup>

1<sup>++</sup>

No randomised controlled data were identified which define the optimum duration of pilocarpine therapy.

**A** **Pilocarpine (5-10 mg three times per day) may be offered to improve radiation-induced xerostomia following radiotherapy to patients with evidence of some intact salivary function, providing there are no medical contraindications to its use.**

Duration of pilocarpine therapy should be determined by clinical judgement regarding its effectiveness in individual patients.

Patients with chronic xerostomia following radiotherapy should be encouraged to maintain good oral hygiene. They should have regular dental assessment with access to a restorative dentist where necessary.

### 6.7.3 PREVENTION AND TREATMENT OF SKIN COMPLICATIONS

No randomised controlled trials were identified which examine skin care during radiotherapy in head and neck cancer patients. Most studies also include patients undergoing breast or chest wall radiotherapy. There is no evidence to suggest that washing during radiotherapy increases acute radiation skin toxicity.<sup>269</sup>

Prophylactic administration of aloe vera gel, aqueous cream or sucralfate cream does not reduce frequency or severity of acute skin toxicity.<sup>270-272</sup> In a single small RCT, Cavilon™ No-sting Barrier Film (3M®) reduced the duration of moist desquamation compared to 10% glycerine cream.<sup>270</sup>

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Based on this evidence it is not possible to recommend specific interventions for the prevention or treatment of radiation skin toxicity.

## 7 Treatment: surgery as the major treatment modality

The main aim of surgery is to excise the area of malignancy completely by ensuring, where possible, that a margin of normal tissue surrounding the tumour is also removed and that radical excision is performed with curative intent. Access to the hidden recesses of the head and neck is essential to excise the tumour and perform surgical reconstruction. The open approach uses facial splits and incorporates skeletal osteotomies so that the tumour can be widely exposed. A minimally invasive approach, incorporating the use of endoscopes, is a surgical alternative in areas such as the sinuses and larynx.

In many instances the scalpel has been replaced by newer technology, such as cutting diathermy and the use of lasers, both as a cutting tool and as a method of ablation (vaporisation).

The wide variety of surgical techniques now available for head and neck tumour surgery demands a multidisciplinary approach with surgeons experienced in several techniques.

### 7.1 RESECTION

No randomised controlled evidence was identified comparing different resection techniques in the tumour subsites. Evidence exists mainly in the form of retrospective case series. Resection techniques vary between different tumour subsites, and are discussed in sections 11-14.

The evidence to support positive margins as a predictor for recurrence is inconsistent among head and neck cancer subsites. For squamous carcinoma of the oral cavity,<sup>101,273-275</sup> and larynx,<sup>276</sup> evidence suggests that the presence of positive margins leads to locoregional recurrence. In oropharyngeal and hypopharyngeal tumours, there is some evidence that margins may be as important as T stage and N stage for predicting recurrence (all  $p < 0.0001$  for locoregional relapse).<sup>277</sup>

Inadequate initial excision biopsy can be managed effectively by re-excision.<sup>98</sup> A small case series reported 88.5% of patients with oral cancer had positive margins after biopsy. After re-excision 96% of those treated were alive and disease free.

**D** If an inadequate initial excision biopsy has been performed or if the tumour has been excised with positive excision margins, re-resection should be considered.

If re-resection is not possible, postoperative radiotherapy should be considered.

The role of postoperative radiotherapy is discussed in section 7.3.

### 7.2 RECONSTRUCTION

To completely excise a tumour with an adequate margin of surrounding normal tissue it is often necessary to perform an extensive surgical resection, which may involve the removal of soft tissue, bone or cartilage. This may leave a major physical deficit that cannot be repaired by primary mucosal closure or skin grafting. Surgical reconstruction aims to repair any physical deficit and restore or minimise functional deficit that would arise from the loss of resected tissue.

Reconstruction techniques are diverse and vary by anatomical region. No randomised controlled evidence was identified comparing the outcomes of different techniques. The evidence is from retrospective case series, mainly relating to intraoral and hypopharyngeal tumours.

Free flap transfer is a safe and reliable technique for reconstruction in patients with head and neck cancer in general, and particularly for oral cavity and hypopharyngeal cancer.<sup>278-285</sup> A retrospective case series of 400 consecutive microvascular free flap procedures performed by a single surgeon over a seven year period showed a 0.8% incidence of free flap failure, 3% partial necrosis rate and perioperative mortality rate of 1.3%.<sup>286</sup>

There is evidence that free jejunal autograft is effective for aiding swallowing, but is poor for speech rehabilitation following surgical resection for hypopharyngeal cancer.<sup>287</sup> Pectoralis major myocutaneous flap is suitable for elderly and frail patients.<sup>288</sup>

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- ☑
  - Surgical reconstruction should be available for patients undergoing extensive surgical resection for head and neck cancer.
  - Reconstruction should be performed by appropriately trained and experienced surgical teams who should be familiar with a variety of reconstruction techniques.
  - Choice of reconstruction technique should be made on an individual basis for each patient according to the tumour's anatomical location, patient's general condition, and patient's and surgeon's preference.

### 7.3 ADJUVANT RADIOTHERAPY FOLLOWING SURGERY

Patients who are considered to be at high risk of locoregional recurrence following surgery are often treated with adjuvant radiotherapy to improve local control and survival. No good quality randomised controlled trials examining the role of adjuvant radiotherapy in combination with surgery were identified.

Non-randomised studies suggest that adjuvant radiotherapy improves local control, disease-free and overall survival at three years in patients with extracapsular lymph node spread and/or positive margins (defined as <1 mm) after radical surgery for laryngeal, oral cavity, oropharyngeal and hypopharyngeal cancer.<sup>289</sup> It also decreases neck recurrence rates especially in patients with high risk pathology.<sup>178,195,290-292</sup>

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When compared to preoperative radiotherapy, postoperative radiotherapy results in better local control, but not overall survival, in patients with surgically resected T2-4, N0-2 oral cavity, oropharyngeal, supraglottic laryngeal and hypopharyngeal cancer.<sup>293,294</sup> Preoperative and postoperative radiotherapy result in similar rates of surgical and radiotherapy complications.

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The role of adjuvant postoperative radiotherapy has not been clearly defined from randomised controlled trials. Pathological risk factors that predict local recurrence have been assessed in prospective studies and retrospective case series and indications for adjuvant radiotherapy have been extrapolated from these risk factors. Extracapsular lymph node spread, even when microscopic, is the most important predictor for local recurrence after neck dissection.<sup>105,107,295-299</sup> Increased local recurrence rates after surgery are also associated with close or positive surgical margins, increased T stage, an oral cavity primary tumour, any positive node >3 cm, microvascular invasion and perineural invasion.<sup>99,107,295,298-302</sup> Recurrence rates in the neck are higher after neck dissection if any nodes are found to be histologically positive. The risk of recurrence increases as the number of histologically positive nodes increases.<sup>150,291,296,298,303,304</sup> Since the evidence is from heterogeneous retrospective studies, it is difficult to determine whether it is appropriate to offer adjuvant radiotherapy to all patients with any positive neck nodes, or to restrict it to those who have more than one, or even more than two positive nodes.

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Locoregional control significantly decreases in the presence of two or more histological indicators of poor prognosis.<sup>295,296,305</sup>

3

**C Postoperative radiotherapy should be considered following surgical resection of oral cavity, oropharyngeal, laryngeal and hypopharyngeal cancers for patients with the following adverse risk features:**

- oral cavity primary tumour
- advanced T stage
- close or positive surgical margins
- perineural invasion
- lymphovascular invasion
- any positive lymph nodes , but especially if more than one node is positive
- positive nodes at level IV or V
- any node 3 cm or greater
- extracapsular lymph node spread.

For patients with advanced head and neck cancer, where postoperative radiotherapy is indicated, the optimal dose of conventionally fractionated postoperative radiotherapy is no less than 57.6Gy in 1.8Gy fractions (56.6Gy-2Gy per fraction equivalent) to areas at low risk. At sites of increased risk, especially sites of extracapsular spread, a higher dose of at least 63Gy in 1.8Gy fractions (62Gy-2Gy per fraction equivalent) is required.<sup>306</sup> 1++

A dose of 54-60Gy in 27-30 fractions, five days per week to the primary site and nodes at risk with boost to 66Gy in 33 fractions in 6.5 weeks to high risk areas has also been used effectively.<sup>307,308</sup> 1++

Accelerated fractionation radiotherapy offers no significant improvement in locoregional control or survival compared to conventional fractionation radiotherapy when delivered postoperatively to patients with high risk adverse pathological factors.<sup>300,309</sup> 2++

The cumulative time of combined therapy (from surgery to completion of adjuvant radiotherapy) significantly affects locoregional control and survival in high risk patients.<sup>300,310</sup>

- A Postoperative radiotherapy should be conventionally fractionated:**
- 54-60Gy in 27-30 fractions over 5.5-6 weeks to the primary site and nodes at risk
  - 66Gy in 33 fractions over 6.5 weeks to areas of very high risk.

- B Overall treatment time from surgery to completion of radiotherapy should be 10-11 weeks or less in the absence of postoperative medical or surgical complications.**

In patients with high risk pathological features following surgical resection of oral cavity, oropharyngeal, laryngeal and hypopharyngeal cancers, the addition of concurrent chemotherapy (cisplatin) to postoperative radiotherapy improves local control,<sup>307,308</sup> disease-free survival,<sup>308,311</sup> and overall survival at five years.<sup>307,311</sup> Retrospective subgroup analysis shows that this benefit is greatest in those patients with extracapsular extension and/or positive surgical margins.<sup>312</sup> 1++

Acute, but not late, toxicity is significantly increased with postoperative chemoradiation compared to radiotherapy alone.<sup>307,308</sup>

The addition of cisplatin/5FU chemotherapy prior to postoperative radiotherapy for completely resected stage III/IV cancer of the oral cavity, oropharynx, larynx or hypopharynx does not confer any advantage in terms of locoregional control or survival.<sup>313</sup> 1++

No evidence was identified supporting the addition of concurrent chemotherapy to altered fractionation radiotherapy in the postoperative setting.

- A In patients with extracapsular spread and/or positive surgical margins, who are medically fit, postoperative concurrent chemoradiotherapy with single agent cisplatin and conventionally fractionated radiotherapy should be considered.**

- In patients who are not fit for chemotherapy conventionally fractionated radiotherapy alone may be used.
- The decision to undertake a course of postoperative radiotherapy or chemoradiotherapy should be made in consultation with the patient and multidisciplinary team.

**7.4 CHEMOTHERAPY IN COMBINATION WITH SURGERY**

There is no evidence to support the use of neoadjuvant or adjuvant chemotherapy in combination with surgery in laryngeal, oral cavity, oropharyngeal or hypopharyngeal cancer (see section 8).

## 8 Treatment: chemotherapy in combination with surgery or radiotherapy

No evidence was identified to support the use of chemotherapy alone as a curative treatment for squamous carcinoma of head and neck.

In patients with head and neck cancer the administration of chemotherapy in combination with locoregional therapy (surgery or radiotherapy) may be:

- neoadjuvant – delivered in the weeks before surgery or radiotherapy
- adjuvant – delivered following radiotherapy or surgery
- concurrent with radiotherapy – delivered during the course of radiotherapy.

### 8.1 CHEMOTHERAPY WITH LOCOREGIONAL THERAPY

The addition of chemotherapy to locoregional treatment for patients with non-metastatic squamous carcinoma of the head and neck (primarily locally advanced, stage III and IV disease) significantly improves survival, with an absolute survival benefit of 5% at two and five years.<sup>314,315</sup>

1++

Chemotherapy results in a small statistically non-significant (2%) overall survival benefit at five years when given neoadjuvantly and no survival benefit at five years when given adjuvantly. Neoadjuvant chemotherapy using cisplatin/5FU chemotherapy results in a significant survival benefit compared to locoregional treatment alone.<sup>314,316</sup>

1++

When chemotherapy is administered concurrently with radiotherapy in resectable and non-resectable disease there is an absolute overall survival benefit of 8% at five years (percentage risk reduction; RR, of death 19% compared to no chemotherapy,  $p < 0.0001$ ), and a benefit of event-free survival at five years of 8%. The absolute survival benefit at five years for concurrent single agent cisplatin as opposed to all other drugs is 11%. The reduction in risk of death has been calculated for each subsite (see Table 4).<sup>315</sup> The size of benefit with concurrent chemoradiotherapy is age dependent, with the largest benefit in those aged 60 or less (see Table 5). The survival benefit with concurrent chemoradiotherapy is seen with conventional fractionation and altered fractionation when radiation is the main modality of treatment, and also in postoperative radiotherapy following surgery (see section 7.3).<sup>314,315</sup>

1++

Table 4: Risk reduction of death after concurrent chemotherapy and radiotherapy compared to no chemotherapy<sup>315</sup>

Subsite	Percentage reduction in risk of death
oropharynx	23%
larynx	22%
oral cavity	17%
hypopharynx	16%

Table 5: Risk reduction of death after concurrent chemotherapy by age<sup>314,315</sup>

Age	Percentage reduction in risk of death
60 or less	22-24%
60-70	12%
over 70	3%

Platinum monochemotherapy is as effective as polychemotherapy containing platinum when given concurrently with radiotherapy. Non-platinum chemotherapy is less effective.<sup>314,315</sup> 1++

The survival benefits associated with concurrent chemoradiotherapy are at the expense of increased acute toxicity (mucosal and haematological)<sup>120,224,317-326</sup> and possibly late toxicity, particularly dental problems.<sup>120,318</sup> Late toxicity reporting in RCTs is frequently absent or is reported after short follow up in a small number of patients. Most acute toxicity and late toxicity data relate to chemoradiation with conventionally fractionated radiotherapy.<sup>120,323,327-329</sup> 1++  
1+

The addition of concurrent chemotherapy to modified fractionation radiotherapy improves locoregional control, but increases mucosal toxicity, when compared to the same dose of modified fractionation radiotherapy alone.<sup>223, 224</sup> There is little evidence describing the long term morbidity of this approach. 1++

When compared to dose-escalated hyperfractionated accelerated radiotherapy alone (total dose 77.6Gy), hyperfractionated accelerated radiotherapy (total dose 70.6Gy) with concurrent mitomycin and 5FU showed significantly better five-year locoregional control and overall survival, with increased acute toxicity, but not late toxicity.<sup>225</sup>

In patients with T2-T4 N0-N2b and N3 stage II-IV hypopharyngeal cancer, who have a complete response to chemotherapy, the larynx can be preserved without compromising survival using induction chemotherapy (cisplatin/5FU) with radical radiotherapy.<sup>315,330</sup> 1++

There is no evidence to support the use of neoadjuvant or adjuvant chemotherapy in combination with surgery alone.<sup>314,315,331</sup>

There is no published RCT validating the routine use of taxanes in combination with locoregional therapy in head and neck cancer. Initial results from a large phase III trial, published only in abstract, reported a significant improvement in progression-free and overall survival following neoadjuvant cisplatin/5FU and docetaxel compared to cisplatin and 5FU prior to radical radiotherapy in patients with unresectable locally advanced head and neck cancer.<sup>332</sup> Another large phase III trial, published only in abstract, reported a significant improvement in overall survival with a risk reduction of 30% (p=0.006) following the addition of docetaxel to cisplatin/5FU induction chemotherapy followed by concurrent carboplatin and irradiation compared to cisplatin/5FU induction chemotherapy followed by concurrent carboplatin and irradiation.<sup>333</sup>

- A** In patients with locally advanced non-metastatic squamous carcinoma of the oral cavity, oropharynx, larynx and hypopharynx, who are medically fit for chemotherapy, (especially those aged 70 or under), concurrent chemoradiotherapy should be considered rather than radiotherapy alone if:
  - organ preservation is being pursued
  - the primary tumour is unresectable.
- A** Single agent cisplatin is recommended as the chemotherapeutic agent of choice in concurrent chemoradiotherapy.
- A** The routine use of neoadjuvant chemotherapy in oral cavity, oropharyngeal and laryngeal cancer is not recommended.
- A** Neoadjuvant cisplatin/5FU followed by radical radiotherapy alone may be used in patients with locally advanced resectable hypopharyngeal cancers who have a complete response to chemotherapy.
- A** The routine use of adjuvant chemotherapy following radiotherapy is not recommended.
- A** The routine use of neoadjuvant or adjuvant chemotherapy in combination with surgery is not recommended.
- A** Concurrent chemoradiotherapy should only be administered where there are appropriate facilities for monitoring toxicity, with rapid access to appropriate outpatient and inpatient support for the treatment of acute radiotherapy and chemotherapy toxicity.

## 8.2 CETUXIMAB IN ADDITION TO RADICAL RADIOTHERAPY

A multicentre randomised controlled trial involving 424 patients has demonstrated that concurrent administration of cetuximab, a monoclonal antibody against the epidermal growth factor (EGF) receptor, with radical external beam radiotherapy in locoregionally advanced head and neck cancer resulted in an 11% improvement in progression-free survival and a 10% improvement in overall survival compared to external beam radiotherapy alone.<sup>226</sup> There was no increase in radiotherapy-related toxicity. Patients receiving cetuximab had a 17% incidence of grade 3 or more acneiform rash and a 3% incidence of grade 3 or more infusion-related toxicity. Radiotherapy was either conventionally fractionated, hyperfractionated or accelerated.

1<sup>++</sup>

No randomised controlled trial has compared chemoradiotherapy with and without concurrent cetuximab administration.

**A** In patients undergoing radical radiotherapy for locally advanced head and neck cancer, who are medically unfit for concurrent chemoradiotherapy, concurrent administration of cetuximab with radiotherapy should be considered.



## 9 Treatment: management of locoregional recurrence

Local recurrence at the site of the primary tumour is the most common cause of treatment failure and disease-related death in patients with head and neck cancer.

Therapeutic options for patients with head and neck cancer whose first line treatment has failed include:

- surgery (salvage)
- radiotherapy (including re-irradiation)
- palliative treatment only, including best supportive care, if a further attempt at cure is not appropriate either due to advanced nature of the tumour, poor general condition of the patient, or at the patient's request (see section 10).

- ☑ Decisions regarding the appropriate management of a locoregional recurrence of head and neck cancer should be made on an individual basis taking into account:
  - the stage of recurrent tumour and its potential resectability
  - previous treatment
  - likely treatment efficacy
  - likely treatment-related morbidity and functional outcome and consequent effects on quality of life
  - the patient's general health
  - the patient's wishes.

- ☑ Decisions regarding the management of locoregional recurrence of head and neck cancer should be made by the multidisciplinary team in consultation with the patient following histological confirmation of recurrence and full restaging (clinical and radiological).

- ☑ Patients and their relatives/carers should be carefully counselled about the likely outcome of surgical and radiotherapeutic salvage, with respect to survival, risk of treatment-related morbidity and mortality, and likely resulting quality of life.

- ☑ Early referral to palliative care services for symptom control should be considered.

### 9.1 SALVAGE SURGERY AFTER PREVIOUS RADIOTHERAPY OR SURGERY

A meta-analysis of retrospective case series reported the weighted average of five-year survival following salvage surgery for recurrent, previously irradiated laryngeal, pharyngeal and oral cavity tumours as 39% in 1,080 patients from 28 different institutions.<sup>334</sup> Site-specific five-year survival was 43.4% (oral cavity), 26% (pharynx), and 47.5% (larynx). 3

Disease-free survival following salvage therapy decreases with increasing stage of recurrence.<sup>72,334</sup> There is no correlation between outcome and tumour subsite, time from initial presentation to recurrence, or stage of the original tumour. Disease-free survival following salvage is not influenced by the modality (surgery or radiotherapy) used to treat the original tumour.<sup>334</sup> 3

Following salvage surgery for head and neck cancer, the total complication rate varies from 39-53%.<sup>334,335</sup> Significant complications have been reported in 18.5-27% of patients undergoing salvage surgery, with an operative mortality rate of 3.2-5.2%.<sup>334,335</sup> An increased rate of postoperative complications is seen with increasing stage of recurrent tumour.<sup>335</sup> From the available evidence it is not clear whether there is an increased complication rate following salvage surgery in previously irradiated compared to non-irradiated tissues.<sup>334,335</sup> 3

In 109 patients, 50% returned to their baseline preoperative quality of life (functional living index for cancer, FLIC score) after salvage surgery. Quality of life following salvage correlates with the stage but not site of the recurrence.<sup>334</sup> 3



**D** Salvage surgery should be considered in any patient with a resectable locoregional recurrence of oral cavity, oropharyngeal, laryngeal or hypopharyngeal cancer following previous radiotherapy or surgery.

Salvage surgery should only be performed by an experienced surgical team with adequate experience in reconstructive techniques, in centres with appropriate facilities for medical support and rehabilitation.

## 9.2 RADIOTHERAPY AND RE-IRRADIATION

If the tumour was previously treated surgically, without the addition of radiotherapy, it may be possible to achieve long term tumour control or cure following a locoregional recurrence with radical external beam radiotherapy (or chemoradiotherapy). This assumes that the recurrent disease can be encompassed in a reasonable treatment volume. No evidence was identified reporting local control, survival or morbidity rates using this approach.

External beam radiotherapy should be considered as potentially curative salvage treatment for patients with locoregionally recurrent disease after previous surgery, particularly if the recurrence is unresectable, or resection would result in unacceptable loss of function or cosmesis.

If the site of the locoregional recurrence has been previously irradiated, it may be possible to offer re-irradiation as a therapeutic option. No RCTs were identified comparing survival or quality of life following re-irradiation, salvage surgery or palliative chemotherapy in locally recurrent head and neck cancer.

In patients with small, early (T1N0 and T2N0) recurrences or new primaries in previously irradiated oropharynx, interstitial brachytherapy alone (60Gy) can result in a five-year local control rate of 69-80%,<sup>336,337</sup> with a five-year overall survival of 30%, most deaths being due to causes other than the cancer.<sup>336</sup>

In patients with unresectable recurrent disease following previous radiotherapy, re-irradiation with potentially curative doses of external beam radiotherapy with or without concurrent chemotherapy has been used in a number of centres on the basis that it offers the only chance of cure under these circumstances. Several small series of highly selected patients reported five-year survival ranges from 9-20%<sup>338-342</sup> and local control rates of 11-48%.<sup>340-343</sup>

Local control is significantly better if the radiotherapy dose for re-irradiation is > 50Gy.<sup>340,341,343</sup>

Normal tissue toxicity may be considerable. Severe late radiation toxicity is reported in 9-18% of patients.<sup>338,342,344</sup> In one large series, 41% of patients had cervical fibrosis, 41% mucosal necrosis and 30% trismus following re-irradiation,<sup>339</sup> and an 11% fatal complication rate has been reported.<sup>340</sup> Severe acute toxicity is more likely in those older than 80 years, and if the neck rather than the head is being re-irradiated.<sup>344</sup> No apparent improvement in efficacy or toxicity was seen with conformal radiotherapy techniques.<sup>338</sup>

There may be a role for IMRT in improving the therapeutic index during re-irradiation.<sup>345</sup>

**D** Selected patients who have unresectable locally recurrent disease following previous radiotherapy may be considered for potentially curative re-irradiation.

**D** Patients with small accessible recurrences in a previously irradiated region may be considered for interstitial brachytherapy in centres with appropriate facilities and expertise.

Re-irradiation should only be performed in centres with adequate expertise, and ideally only in the context of a clinical trial. Centres must be experienced in the recognition and management of acute and late radiation toxicity.

## 10 Treatment: palliation of incurable disease

Head and neck cancer may be incurable because:

- the disease is very locoregionally advanced at presentation, rendering it both unresectable and incurable by radiotherapy
- the patient's general medical condition precludes surgical resection or radical radiotherapy
- the patient is suffering from a locoregional recurrence after earlier definitive treatment, which is not amenable to salvage therapy or re-irradiation
- the patient has presented with or developed distant metastases.

Patients with incurable head and neck cancer often have multiple physical and psychological problems, which may be difficult to manage. They may benefit from input from a wide variety of clinical services. Guidance on palliative care is available from the NHSScotland publication "Clinical Standards: Specialist Palliative Care".<sup>346</sup>

- The care of patients with incurable head and neck cancer should be managed by the palliative care services in conjunction with the multidisciplinary team.
- All modalities of therapy should be considered as options for the palliation of head and neck cancer.
- Short term toxicity and length of hospital stay should be balanced against likely symptomatic relief.
- A documented pathway of care should be discussed and agreed with the patient, relatives, carers and GP.

### 10.1 PALLIATIVE CHEMOTHERAPY

No randomised controlled evidence was identified demonstrating that palliative chemotherapy improves symptom control, quality of life or survival compared to best supportive care alone. There are no randomised controlled comparisons of symptomatic benefit and quality of life achieved with differing palliative chemotherapy regimens.

In patients with advanced, recurrent or metastatic head and neck cancer, the response rate to chemotherapy ranges from 10-35%.<sup>347-351</sup> A trial of high dose cytarabine in combination with cisplatin and 5FU reported a response rate of 57%.<sup>352</sup> Patients with good performance status have a better response rate to chemotherapy.<sup>350</sup>

1++

- A Patients of adequate performance status should be considered for palliative chemotherapy which may reduce tumour volume.**

Palliative treatment with single agent cisplatin chemotherapy may result in longer survival than single agent methotrexate, but is more toxic.<sup>347</sup> The response rate to palliative chemotherapy may be improved by the combination of chemotherapeutic agents. There is no evidence that combination chemotherapy improves survival compared to treatment with single agents.<sup>347-350,352</sup> The increased response rate with combination chemotherapy is at the expense of increased haematological and non-haematological toxicity.<sup>348-350</sup> Cisplatin and paclitaxel in combination, using a 3-hour paclitaxel infusion, results in similar toxicity rates to cisplatin/5FU, but no difference in response rate or survival.<sup>353</sup> The use of a 24-hour infusion of paclitaxel in combination with cisplatin is excessively haematologically toxic.<sup>354</sup>

1++

- A Single agent methotrexate, single agent cisplatin, or cisplatin/5FU combination should be considered for palliative chemotherapy in patients with head and neck cancer.**

- A Excessive toxicity from intensive chemotherapeutic combination regimens should be avoided.**

## 10.2 PALLIATIVE RADIOTHERAPY

No randomised controlled evidence demonstrating the effectiveness of palliative radiotherapy in advanced head and neck cancer was identified. Optimal dose and scheduling for palliative radiotherapy has not been defined in clinical trials.

In a single case series of 505 patients, short course palliative radiotherapy (20Gy in five fractions over five days) provided durable symptom relief in 55% of patients.<sup>355</sup>

3

**D** Radiotherapy may be considered for palliative treatment in patients with locally advanced incurable head and neck cancer.

## 10.3 PALLIATIVE SURGERY

The aim of palliative surgery is to debulk tumour mass, reducing symptoms, especially pain, bleeding and breathing problems associated with tumour growth and expansion.

The efficacy of, and indications for, palliative surgery in head and neck cancer have not been defined in RCTs. Small retrospective case series and clinical experience suggest that palliative surgical or interventional radiology procedures such as tracheotomy, laser debulking, embolisation, percutaneous endoscopic gastrostomy (PEG) tube insertion and nerve block have a role in the management of specific problems such as airway obstruction, debridement of fungating malodorous tumours, haemorrhage, dysphagia and pain.<sup>356-361</sup>

Appropriate surgical procedures should be considered for palliation of particular symptoms, taking local expertise into consideration.

# 11 Laryngeal cancer

## 11.1 EARLY LARYNGEAL CANCER (STAGE I AND II)

### 11.1.1 EARLY GLOTTIC CANCER

There is no good quality randomised controlled evidence which defines the optimal treatment for early glottic cancer.<sup>362</sup>

There is no evidence that total laryngectomy results in improved survival compared to laryngeal preservation approaches. Good local control may be achieved by external beam radiation or surgical resection (either endoscopic laser excision or partial laryngectomy).<sup>122,123,214,363-379</sup>

3

Hypofractionated external beam radiotherapy schedules, using a fraction size greater than 2Gy, result in equivalent or possibly better local control and disease-free survival than longer schedules, with no difference in acute and late toxicity.<sup>212-214,380-383</sup>

1+  
2++

There is no evidence to support the use of concurrent chemoradiation in the management of patients with early glottic cancer.

The incidence of occult metastases in cervical nodes is low.<sup>68,146,384</sup>

3

At least one member of the multidisciplinary team should be familiar with the technique of endoscopic resection.

**D** Patients with early glottic cancer may be treated either by external beam radiotherapy or conservation surgery.

**B** When external beam radiotherapy is used as the primary treatment modality in patients with early glottic cancer, hypofractionated regimens with fraction size > 2Gy (eg 53-55Gy in 20 fractions over 28 days or 50-52Gy in 16 fractions over 22 days) without concurrent chemotherapy should be used.

Patients with early glottic cancer should not receive concurrent chemotherapy with radical radiotherapy treatment.

**D** Surgery for patients with early glottic cancer may be either endoscopic laser excision or partial laryngectomy.

**D** Prophylactic treatment of the neck nodes is not required for patients with early glottic cancer.

### 11.1.2 EARLY SUPRAGLOTTIC CANCER

No RCTs were identified comparing surgery with external beam radiotherapy for treatment of early supraglottic cancer. There has been no randomised controlled comparison of the various surgical resection techniques available for early supraglottic cancer.

Comparison of conservative surgical resection with radical radiotherapy is difficult as the evidence from case series may be biased in favour of surgery since radiotherapy is often reserved for patients with a poorer prognosis. Radiotherapy and surgery appear to have similar survival outcomes. Local control with conservative resection may be better than with radiotherapy if performed in highly selected patient groups by experienced surgeons.<sup>135,157,185,377,385-396</sup>

3

There is no evidence to support the use of concurrent chemoradiation in the management of early supraglottic cancer.

In patients with early supraglottic carcinoma, survival rates are similar following supraglottic laryngectomy and endoscopic laser resection.<sup>363,397</sup>

3

Appropriate management of the clinically node negative neck in patients with supraglottic cancer has not been addressed in an RCT. From the evidence it is not possible to determine whether prophylactic treatment of nodes results in a survival advantage over observation and therapeutic intervention as required.

3

The reported incidence of occult lymph node metastases in supraglottic cancer is high (21-38%).<sup>148,149,151,154-157</sup> Bilateral metastases are more common if the tumour is not strictly lateralised.<sup>155</sup> The incidence of pathologically positive nodes in the contralateral neck in clinically N0 patients has been reported as 26-44%.<sup>147,154,156</sup> and contralateral neck recurrence rates are 11-21% without prophylactic treatment.<sup>157,398,399</sup> Recurrence in the contralateral neck following routine bilateral neck dissection is reduced to 6-9%.<sup>157,400,401</sup>

3

Nodes at levels II, III and IV are most commonly involved in laryngeal cancer.<sup>151,152,402</sup> There is some evidence that in supraglottic cancer the incidence of disease at level IV in patients with clinically N0 neck may be less than 10%.<sup>154,155,403</sup> The incidence of occult positive nodes at level I and V is low, especially if other nodal levels are uninvolved.<sup>151,154,155,158,184,404-406</sup>

3

A small RCT reported no difference in locoregional control or disease-specific survival following either a selective (lateral) or modified radical neck dissection in patients with clinically N0 supraglottic and transglottic cancer.<sup>407</sup>

1+

Radiotherapy is also an effective prophylactic treatment for the clinically N0 neck. Tumour control is equivalent to that reported for surgery<sup>182,408</sup> When both sides of the neck are included in the radiation field, a reduction in contralateral metastases to 1.5% from 11-21% is reported.<sup>385</sup> Locoregional control increases with increasing radiotherapy field size and corresponding increased inclusion of the cervical nodes.<sup>394,396,409</sup> Treating the primary tumour and adjacent nodes using modest field sizes (30-50 cm<sup>2</sup>, with a total dose of 50-55Gy in 16 fractions over 21 days), and with close monthly follow up and early surgical intervention for relapse, survival and locoregional control is comparable to prophylactic treatment of the whole neck.<sup>410</sup>

3

**D Patients with early supraglottic cancer may be treated by either external beam radiotherapy or conservation surgery.**

**D Radiotherapy for patients with early supraglottic cancer should include prophylactic bilateral treatment of levels II-III lymph nodes in the neck.**

**D Endoscopic laser excision or supraglottic laryngectomy with selective neck dissection to include levels II-III nodes should be considered for patients with early supraglottic cancer.**

**D Neck dissection should be bilateral if the tumour is not well lateralised.**

## 11.2 LOCALLY ADVANCED LARYNGEAL CANCER (STAGE III AND IV)

Total laryngectomy is frequently used to treat advanced laryngeal cancer. There is, however, increasing evidence to support alternative organ preservation approaches.

Induction chemotherapy followed by radical external beam radiotherapy allows preservation of the larynx in patients with resectable stage III-IV laryngeal cancer who respond to chemotherapy. Survival is comparable to those patients undergoing immediate total laryngectomy and postoperative radiotherapy.<sup>411</sup> Surgery may be reserved for patients who do not respond to chemotherapy.<sup>411</sup>

1++

Treatment of resectable disease with concomitant chemoradiation (single agent cisplatin) gives better locoregional control and laryngeal preservation rates with comparable survival rates than induction chemotherapy followed by radiotherapy alone.<sup>328</sup>

1++

The addition of concurrent chemotherapy to external beam radiotherapy in the treatment of patients with laryngeal cancer results in a significant survival benefit compared to external beam radiotherapy alone (22% reduction in the risk of death, see *section 8.1*).<sup>314,315</sup>

1++

Administration of cetuximab concurrently with radiotherapy in locally advanced laryngeal cancer results in significantly improved locoregional control, progression-free survival and overall survival compared with radiotherapy alone (see section 8.2).<sup>226</sup> 1++

No randomised controlled evidence was identified comparing neoadjuvant chemotherapy followed by chemoradiation with chemoradiation alone.

Accelerated radiotherapy or hyperfractionated radiotherapy with increased total dose results in improved locoregional control compared with conventionally fractionated radiotherapy alone (see section 6.3). 1++

Radical radiotherapy alone in locally advanced supraglottic laryngeal cancer results in decreased survival compared with surgery and postoperative radiotherapy alone.<sup>412</sup> 1+

Organ conservation may be possible in patients with advanced laryngeal cancer who have no cartilage invasion. Evidence to support the organ conservation approach in patients with T4 tumours with cartilage invasion extending into soft tissue is lacking.<sup>328</sup> 1++

**A Patients with locally advanced resectable laryngeal cancer should be treated by:**

- total laryngectomy with or without postoperative radiotherapy
- an initial organ preservation strategy reserving surgery for salvage.

The choice of approach will be dependent on the patient's desire for organ preservation and general performance status.

**A Treatment for organ preservation or non-resectable disease should be concurrent chemoradiation with single agent cisplatin.**

**A In patients medically unsuitable for chemotherapy, concurrent administration of cetuximab with radiotherapy should be considered.**

**A Radiotherapy should only be used as a single modality when comorbidity precludes the use of concurrent chemotherapy, concurrent cetuximab or surgery.**

**A Where radiotherapy is being used as a single modality without concurrent chemotherapy or cetuximab, a modified fractionation schedule should be considered.**

Salvage surgery should be available if an organ preservation approach is being pursued.

Patients with T4 tumours extending through cartilage into soft tissue may be best treated by total laryngectomy with postoperative radiotherapy.

Occult nodal metastases may be present in 19-40% of patients with locally advanced laryngeal cancer (both glottic and supraglottic) and clinically N0 neck.<sup>146,167,407,413</sup> Nodal metastases may be bilateral in 27% of patients.<sup>158</sup> Occult disease is most common at neck nodal levels II, III and IV.<sup>151,152,402</sup> The incidence of nodal metastases at levels I and V is low (7-14%).<sup>158,404,405,407</sup> 1+  
3

A small RCT reported no significant difference in overall survival or neck recurrence rate following either modified radical neck dissection or lateral (selective) neck dissection in patients with clinically N0 disease.<sup>407</sup> 1+

Prophylactic radiotherapy is an effective treatment for patients with clinically N0 neck. Tumour control is equivalent to that reported in surgical series (see section 5.2.2).<sup>182,408</sup> Including both sides of the neck in the target volume results in an incidence of subsequent contralateral metastases of 1.5%.<sup>385</sup> 3

In patients with a clinically node positive neck, the incidence of metastases at levels I and V remains low (2-6%). Levels II, III and IV are most commonly involved.<sup>151,414</sup> The incidence of contralateral metastases is 37-40%<sup>147,158</sup> and has been reported as 100% in patients with N2b disease.<sup>185</sup> 3

No studies comparing selective neck dissection with modified radical neck dissection in node positive laryngeal cancer were identified (see section 5.2.3).

No RCTs were identified comparing surgery with radiotherapy (or chemoradiotherapy) for treatment of patients with laryngeal cancer and clinically node positive neck (see section 5.2.4). Nodal size predicts response to radiotherapy.<sup>196,198</sup> In patients with laryngeal cancer it may be possible to treat a single node < 3 cm by radiotherapy and to reserve neck dissection for those patients without a complete clinical response four to six weeks after definitive radiotherapy.<sup>199</sup>

3

N2 and N3 disease is better treated by a combination of surgery and chemoradiotherapy, (or radiotherapy in those unable to tolerate chemotherapy) rather than by either modality alone (see sections 5.2.4 and 8.1).

**D** In patients with clinically N0 disease, nodal levels II-IV should be treated prophylactically by:

- surgery (*selective neck dissection*)
- external beam radiotherapy.

If the tumour is not well lateralised both sides of the neck should be treated.

**D** Patients with a clinically node positive neck should be treated by:

- modified radical neck dissection, with postoperative chemoradiotherapy or radiotherapy when indicated
- chemoradiotherapy followed by neck dissection when there is clinical evidence of residual disease following completion of therapy (*N1 disease*)
- chemoradiotherapy followed by planned neck dissection (*N2 and N3 disease*).

The target volume should include neck nodal levels II-IV.

Radiotherapy delivered postoperatively to the primary site and/or neck in patients at high risk of locoregional recurrence may improve locoregional control<sup>178,195,289-292</sup> and survival<sup>289,292</sup> (see section 7.3).

3

The administration of cisplatin chemotherapy concurrently with postoperative irradiation results in significantly better locoregional control<sup>307,308</sup> and survival<sup>307</sup> than with radiotherapy alone particularly in patients with extracapsular spread and/or positive surgical margins.

1++

**D** Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.

**A** Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.



# 12 Hypopharyngeal cancer

## 12.1 EARLY HYPOPHARYNGEAL CANCER (STAGE I AND II)

Early hypopharyngeal cancer is uncommon. The majority of patients have locoregionally advanced disease at presentation.<sup>415,416</sup>

No RCTs were identified comparing outcomes following laryngopharyngectomy, partial surgical procedures or radiotherapy in early hypopharyngeal cancer.

Conservation surgery with laryngeal preservation is possible with careful case selection and surgical expertise.<sup>128,417-419</sup>

Local control can be achieved by treating patients with definitive radiotherapy alone.<sup>420-422</sup> The addition of concurrent chemotherapy to external beam radiotherapy for treatment of patients with hypopharyngeal cancer results in a significant survival benefit (16% reduction in the risk of death, see section 8.1).<sup>314,315</sup>

Prophylactic treatment of the neck of patients with early hypopharyngeal cancer is necessary due to the high incidence of occult disease in the cervical lymph nodes.<sup>68,150-152,158</sup> Occult nodal metastases predominate in nodal levels II, III and IV and are uncommon in levels I and V.<sup>154,158</sup> Contralateral nodal metastases are found in 27-59% of patients who have had elective neck dissections.<sup>154,158</sup>

No evidence was identified comparing selective neck dissection with modified radical neck dissection in patients with hypopharyngeal cancer and clinically N0 neck.

Neck recurrence rates following selective procedures in patients with clinically N0 neck are comparable to those achieved by more extensive neck dissection.<sup>150,178,363</sup>

Local control in the neck is better following prophylactic bilateral radiotherapy of the neck than prophylactic unilateral neck dissection.<sup>182</sup>

- D** Patients with early hypopharyngeal cancer may be treated by:
- radical external beam radiotherapy with concomitant cisplatin chemotherapy and prophylactic irradiation of neck nodes (*levels II-IV bilaterally*)
  - conservative surgery and bilateral selective neck dissection (*levels II-IV, where local expertise is available*)
  - radiotherapy alone in those patients who are not suitable for either concurrent chemoradiation or surgery due to comorbidity.

Radiotherapy delivered postoperatively to the primary site and/or neck in patients at high risk of locoregional recurrence may improve locoregional control<sup>178,195,289-292</sup> and survival<sup>289,292</sup> (see section 7.3).

The administration of cisplatin chemotherapy concurrently with postoperative irradiation results in significantly better locoregional control<sup>307, 308</sup> and survival<sup>307</sup> than with radiotherapy alone, particularly in patients with extracapsular spread and/or positive surgical margins.

- D** Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.

- A** Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.



## 12.2 LOCALLY ADVANCED HYPOPHARYNGEAL CANCER (STAGE III AND IV)

Locally advanced hypopharyngeal cancer may be treated by surgery or an organ preservation approach. No randomised controlled comparisons of surgical resection or reconstruction techniques were identified. Choice of resection technique will depend on local expertise, tumour size and location within the hypopharynx.

There is some evidence for the role of near-total laryngectomy in highly selected patients with pyriform fossa tumours.<sup>423</sup> Reconstruction technique will depend on the tumour, patient and surgeon's preference and expertise (see section 7.2).

Induction chemotherapy (cisplatin/5FU) with radical external beam radiotherapy allows preservation of the larynx in patients with resectable stage II-IV hypopharyngeal cancer who have a complete response to chemotherapy.<sup>330</sup> Survival is comparable to immediate laryngopharyngectomy and postoperative radiotherapy.<sup>330</sup> External beam radiotherapy with concurrent chemotherapy, rather than radiotherapy alone improves the laryngeal preservation rate in patients with resectable disease<sup>328</sup> and results in a survival benefit for those with resectable and non-resectable disease.<sup>314</sup>

Administration of cetuximab concurrently with radiotherapy in locally advanced hypopharyngeal cancer results in significantly improved locoregional control and progression-free survival compared with radiotherapy alone (see section 8.2).<sup>226</sup>

No randomised controlled evidence was identified comparing induction chemotherapy followed by radiotherapy alone with induction chemotherapy followed by concurrent chemoradiotherapy in responders.

Accelerated radiotherapy or hyperfractionated radiotherapy with increased total dose results in improved locoregional control compared with conventionally fractionated radiotherapy alone (see section 6.3).

3

1<sup>++</sup>1<sup>++</sup>

- A** Patients with resectable locally advanced hypopharyngeal cancer may be treated by:
- surgical resection
  - an organ preservation approach.
- Surgical resection is usually laryngopharyngectomy with appropriate reconstruction and should be performed in centres with adequate expertise in the surgical technique and postoperative rehabilitation.
- A** For patients with resectable locally advanced hypopharyngeal cancer who wish to pursue an organ preservation strategy, external beam radiotherapy with concurrent cisplatin chemotherapy should be considered.
- A** Neoadjuvant cisplatin/5FU followed by radical radiotherapy alone may be used in patients who have a complete response to chemotherapy.
- D** Patients with resectable locally advanced disease should not be treated by radiotherapy alone unless comorbidity precludes both surgery and concurrent chemotherapy.
- A** Patients with unresectable disease should be treated by external beam radiotherapy with concurrent cisplatin chemotherapy.
- A** In patients medically unsuitable for chemotherapy, concurrent administration of cetuximab with radiotherapy should be considered.
- A** Where radiotherapy is being used as a single modality without concurrent chemotherapy or cetuximab, a modified fractionation schedule should be considered.
- Salvage surgery should be available if an initial organ preservation approach is pursued.

Prophylactic treatment of the neck is necessary in patients with clinically N0 neck because of the high incidence of occult nodal disease.<sup>68,150-152,158</sup> Occult nodal metastases tend to predominate in levels II, III and IV and are uncommon in levels I and V.<sup>154,158</sup> Occult contralateral nodal metastases are found in 27-59% of patients.<sup>154,158</sup> Local control in the neck of patients with hypopharyngeal cancer is better following prophylactic radiotherapy than prophylactic unilateral neck dissection.<sup>182</sup>

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In patients with a clinically node positive neck, levels II, III and IV are most commonly involved. Level I is positive in 12.6% of patients and level V in 9.7–23%.<sup>151,165</sup> Level V is only involved if there are positive nodes at other levels.<sup>151,152</sup>

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In patients with a small primary tumour, it is possible to resect advanced nodal disease prior to treating the primary with definitive radiotherapy, whilst delivering postoperative adjuvant radiotherapy to the neck without compromising cancer control.<sup>207,208,424</sup>

Surgery has not been compared with radiotherapy for treatment of the node positive neck in a randomised controlled trial. Nodal size predicts response to radiotherapy.<sup>196</sup> It may be possible to treat patients with a single node < 3 cm by radiotherapy or chemoradiotherapy alone.<sup>196,198</sup>

3

Patients with N2 and N3 disease are better treated by a combination of surgery and chemoradiotherapy (or radiotherapy in those unable to tolerate chemotherapy) rather than by either modality alone (see sections 5.2.4 and 8.1).

There is insufficient evidence to support the use of selective neck dissection in hypopharyngeal cancer with advanced nodal disease.

**D** Patients with a clinically N0 neck should undergo prophylactic treatment of the neck, either by selective neck dissection or radiotherapy, including nodal levels II-IV bilaterally.

**D** Patients with a clinically node positive neck should be treated by:

- modified radical neck dissection, with postoperative chemoradiotherapy or radiotherapy when indicated
- chemoradiotherapy followed by neck dissection when there is clinical evidence of residual disease following completion of therapy (N1 disease)
- chemoradiotherapy followed by planned neck dissection (N2 and N3 disease)

The target volume should include neck nodal levels II-IV.

**D** In patients with a small primary tumour, locally advanced nodal disease may be resected prior to treating the primary with definitive radiotherapy (with or without chemotherapy) and the neck with adjuvant radiotherapy (with or without chemotherapy).

Radiotherapy delivered postoperatively to the primary site and/or neck in patients at high risk of locoregional recurrence may improve locoregional control<sup>178,195,289-292</sup> and survival<sup>289,292</sup> (see section 7.3).

3

The administration of cisplatin chemotherapy concurrently with postoperative irradiation results in significantly better locoregional control<sup>307,308</sup> and survival<sup>307</sup> than with radiotherapy alone particularly in those patients with extracapsular spread and/or positive surgical margins.

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**D** Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.

**A** Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.

## 13 Oropharyngeal cancer

Oropharyngeal tumours may arise from the base of tongue, vallecula, tonsil and tonsillar fossa, posterior wall and the inferior surface of the soft palate and uvula. The choice of therapeutic option for patients with cancer of the oropharynx should be determined by the tumour's site and extent, the patient's general condition and preference and availability of local expertise. It is important to consider the treatment related morbidity, and likely cosmetic and functional outcome of treatment as well as tumour control when making decisions about treatment.

### 13.1 EARLY OROPHARYNGEAL CANCER (STAGE I AND II)

No RCTs were identified comparing surgical treatment with non-surgical treatment in early oropharyngeal cancer.

There is no difference in local control, five-year cause specific and five-year absolute survival when surgery with or without radiotherapy is compared to radiotherapy with or without neck dissection in patients with tonsillar and base of tongue carcinoma.<sup>425</sup> The risk of severe and fatal complications is lower in patients treated with primary radiotherapy.<sup>425</sup>

No evidence comparing functional outcome following surgery or radiotherapy was identified. There is no evidence to support the routine use of concurrent chemotherapy with radiotherapy in early oropharyngeal cancer.

If appropriate expertise is available it may be possible to treat patients with small oropharyngeal tumours with a combination of external beam radiotherapy and interstitial brachytherapy.<sup>242,243,426</sup>

Although the incidence of occult metastases in the lymph nodes of the neck of patients with oropharyngeal cancer is high (> 50%),<sup>68,150-152</sup> there is no randomised controlled evidence showing that prophylactic treatment of the neck improves survival. Occult metastases predominate in levels II, III and IV,<sup>150-152,154</sup> although distribution varies with the anatomical site of the tumour within the oropharynx. If the primary is in the base of tongue 17% of patients may have level V nodal involvement, and 55% may have bilateral involved nodes.<sup>154</sup> Only 3% of patients with early carcinoma of the tonsil develop contralateral nodal metastases after ipsilateral radiation to the primary tumour and neck.<sup>427</sup>

No RCTs comparing selective neck dissection to modified radical neck dissection in patients with clinically N0 oropharyngeal cancers were identified.

Neck recurrence rates following selective procedures in patients with clinically N0 neck compare favourably with those achieved by more extensive neck dissection.<sup>150,178,428</sup> Radiotherapy and surgery are equally effective for prophylactic treatment of patients with N0 neck.<sup>182,429</sup>

- Management of early oropharyngeal cancer should be individualised for each patient.
- Decisions regarding the choice of primary treatment modality should be made in consultation with the patient and should take into account the anatomical location of the tumour and availability of local expertise.

#### **D** Patients with early oropharyngeal cancer may be treated by:

- **primary resection, with reconstruction as appropriate, and neck dissection** (*selective neck dissection encompassing nodal levels II-IV, or II-V if base of tongue*)
- **external beam radiotherapy encompassing the primary tumour and neck nodes** (*levels II-IV, or levels II-V if base of tongue*).

#### **D** Patients with small accessible tumours may be treated by a combination of external beam radiotherapy and brachytherapy in centres with appropriate expertise.

#### **D** In patients with well-lateralised tumours prophylactic treatment of the ipsilateral neck only is required.

#### **D** Bilateral treatment of the neck is recommended when the incidence of occult disease in the contralateral neck is high (*tumour is encroaching on base of tongue or soft palate*).

<p>Radiotherapy delivered postoperatively to the primary site and/or neck in patients at high risk of locoregional recurrence may improve locoregional control<sup>178,195,289-292</sup> and survival<sup>289,292</sup> (see section 7.3).</p>	3
<p>The administration of cisplatin chemotherapy concurrently with postoperative irradiation results in significantly better locoregional control<sup>307,308</sup> and survival<sup>307</sup> than with radiotherapy alone particularly in those patients with extracapsular spread and/or positive surgical margins.</p>	1++
<p><b>D Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.</b></p>	
<p><b>A Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.</b></p>	

### 13.2 LOCALLY ADVANCED OROPHARYNGEAL CANCER (STAGE III AND IV)

No good quality RCTs were identified comparing radiotherapy or chemoradiotherapy with surgery and postoperative radiotherapy in patients with locally advanced head and neck cancer.

<p>Local control and overall survival are comparable in patients treated with primary radiotherapy followed by neck dissection and those receiving primary surgery followed by postoperative irradiation.<sup>425</sup> The risk of severe and fatal complications is lower in patients treated by primary radiotherapy.<sup>425</sup></p>	3
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No evidence was identified comparing functional outcome in patients following either surgery or radiotherapy.

<p>If external beam radiotherapy is used as the primary modality of treatment, concurrent administration of chemotherapy results in a 23% reduction in the risk of death at five years when compared with radiotherapy alone.<sup>298</sup></p>	1++
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<p>Administration of cetuximab concurrently with radiotherapy in advanced oropharyngeal cancer results in significantly improved locoregional control, progression-free survival compared with radiotherapy alone (see section 8.2).<sup>226</sup></p>	1++
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<p>Accelerated radiotherapy or hyperfractionated radiotherapy with increased total dose results in improved locoregional control compared with conventionally fractionated radiotherapy alone (see section 6.3).</p>	1++
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<p>There are no RCTs comparing surgery with radiotherapy (with or without chemotherapy) in the treatment of patients with oropharyngeal cancer and node positive neck. In node positive oropharyngeal cancer, levels II, III and IV are most commonly involved. Level V is positive in 6-11% of patients.<sup>151,152,165,184</sup> Levels I and V are only involved if there are positive nodes at other levels.<sup>151,152</sup></p>	3
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There is currently insufficient evidence to support the use of selective neck dissection in patients with oropharyngeal cancer and advanced nodal disease.<sup>314</sup>

<p>In patients with a small primary tumour, it is possible to resect advanced nodal disease prior to treating the primary with definitive radiotherapy whilst delivering postoperative adjuvant radiotherapy to the neck without compromising cancer control (see section 5.2.4).<sup>207,208,424</sup></p>	3
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<p>Nodal size predicts response to radiotherapy and it may be possible to treat a single node &lt; 3 cm with radiotherapy or chemoradiotherapy alone.<sup>196,198</sup></p>	3
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Patients with N2 and N3 disease are better treated by a combination of surgery and chemoradiotherapy (or radiotherapy in those unable to tolerate chemotherapy) rather than by either modality alone (see sections 5.2.4 and 8.1).

In patients with N2 or N3 oropharyngeal tumours with clinically detectable residual disease after chemoradiotherapy, there is evidence of improved overall survival if a neck dissection is performed.<sup>205</sup> It is unclear from current evidence whether it is safe to omit neck dissection for patients with N2 and N3 disease who have a complete clinical response to chemoradiotherapy. After definitive radiotherapy it may be possible to dissect nodal levels II-IV only and omit levels I and V if there is no clinical or radiological sign of residual disease at these levels.<sup>430</sup>

3

The administration of cisplatin chemotherapy concurrently with postoperative irradiation results in significantly better locoregional control<sup>307,308</sup> and survival<sup>307</sup> than with radiotherapy alone particularly in those patients with extracapsular nodal spread and/or positive surgical margins.

1++

- The decision regarding the choice of primary treatment modality in advanced oropharyngeal cancer should be made in consultation with the patient and be dependent on local expertise.
- In patients where surgical resection is possible, the likelihood of obtaining adequate surgical margins with acceptable morbidity, functional outcome and quality of life must be taken into account.

**D Patients with advanced oropharyngeal cancer may be treated by:**

- **primary surgery** (*if a clear surgical margin can be obtained*)
- **an organ preservation approach.**

### 13.2.1 PRIMARY SURGERY

- Resection of the primary tumour should be followed by reconstruction as necessary.

**D Patients treated by primary surgery who have a clinically node positive neck should have a modified radical neck dissection.**

- Ipsilateral neck dissection may be performed if the tumour is well lateralised.
- Prophylactic treatment of the contralateral neck should be considered, especially when tumours encroach on the midline.

**D Postoperative chemoradiotherapy to the primary site and neck should be considered for patients treated by primary surgery who show high risk pathological features.**

- A Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.**

## 13.2.2 ORGAN PRESERVATION THERAPY

- A** Radiotherapy should be administered with concurrent cisplatin chemotherapy.
- D** The primary tumour and neck node levels (II-V) should be treated bilaterally.
- A** In patients medically unsuitable for chemotherapy, concurrent administration of cetuximab with radiotherapy should be considered.
- A** Where radiotherapy is being used as a single modality without concurrent chemotherapy or cetuximab, a modified fractionation schedule should be considered.
- D**
  - Patients with N1 disease should be treated with chemoradiotherapy followed by neck dissection where there is clinical evidence of residual disease following completion of therapy.
  - Patients with N2 and N3 nodal disease should be treated with chemoradiotherapy followed by planned neck dissection.
- D** In patients with a small primary tumour, locally advanced nodal disease may be resected prior to treating the primary with definitive chemoradiotherapy and the neck with adjuvant chemoradiotherapy.
- Salvage surgery should be available if an initial organ preservation approach is pursued.

## 14 Oral cavity cancer

Oral cavity tumours may arise from the anterior two-thirds of tongue (the oral tongue), floor of mouth, buccal mucosa, retromolar trigone, hard palate, or gingiva. Choice of therapeutic option for patients with early cancer of the oral cavity should be determined by the tumour's site and extent, the patient's general condition and preference and availability of local expertise. It is important to consider the treatment related morbidity, and likely cosmetic and functional outcome of treatment, as well as tumour control, when making decisions about treatment.

### 14.1 EARLY ORAL CAVITY CANCER (STAGE I AND II)

No RCTs comparing surgery with radiotherapy in patients with early oral cavity tumours were identified.

Small and superficial tumours of the oral cavity may be cured either by surgical resection or radiation.<sup>236,431-434</sup> No evidence was identified to support the belief that local control is better with surgery rather than radiotherapy in patients with tumours invading bone. The risk of osteoradionecrosis (ORN) following radiotherapy is increased if the tumour involves bone.<sup>163,435</sup>

3

Histologically involved soft tissue margins are predictive of local recurrence and decreased survival following surgery.<sup>305,431,436-439</sup> This may reflect the biologically aggressive nature of tumours likely to have positive margins, rather than margin status itself.<sup>99,440</sup> Re-excision of involved surgical margins to achieve histologically clear margins results in good local control.<sup>98</sup> If resection of bone is required to achieve histologically clear margins, segmental resection is not always necessary, and rim resection is adequate in selected patients.<sup>441-443</sup> Postoperative radiotherapy with doses of 60Gy or more results in good local control in patients with close or positive margins (92%), although this is less effective in oral tongue primaries.<sup>444</sup>

3

Treatment of patients with early (T1 and T2) cancers of the oral tongue and floor of mouth with an interstitial brachytherapy implant results in local control rates at five years of between 75-97% (T1) and 51-87% (T2).<sup>230-234,236-238,445</sup> Brachytherapy as a single modality is more effective than in combination with external beam radiotherapy for local control of the primary tumour.<sup>239</sup>

3

There is insufficient evidence to support the use of concurrent chemoradiotherapy in the treatment of early oral cavity carcinoma.

A high rate of occult nodal metastases (20-40%) is reported in patients with oral cavity tumours and a clinically N0 neck. On histological examination of elective neck dissection specimens extracapsular spread is reported in a high number of clinically occult nodes.<sup>68,86,144,145,153,159-167</sup> Depth of invasion of the primary lesion in the oral tongue and floor of mouth may predict the likelihood of occult disease in the lymph nodes in the neck. A threshold depth below which prophylactic neck treatment can safely be omitted cannot be determined.<sup>68,446-450</sup>

3

Nodal levels I, II and III are most commonly involved in patients with oral cavity cancer. Level V is rarely involved in patients with clinically N0 neck (0-1%).<sup>152,154</sup> Tumours arising in the midline and floor of mouth have an increased risk of contralateral neck node spread.<sup>451</sup> Retrospective data suggests that prophylactic treatment of the neck improves regional control.<sup>452,453</sup> The salvage rate on disease relapse is poor if the neck is not treated prophylactically.<sup>172,174,454,455</sup>

3

In patients with clinically N0 oral cavity tumours, locoregional control and survival are comparable following either radical neck dissection or modified radical neck dissection.<sup>183</sup> Locoregional control and survival are comparable for patients with clinically N0 oral cavity primary tumours undergoing either modified radical or supraomohyoid (levels I-III) neck dissection performed by experienced surgeons.<sup>456</sup>

1+

Good local control following supraomohyoid neck dissection in patients with clinically N0 oral cavity tumours has been confirmed in other retrospective series.<sup>144,161,166,428</sup> Local control is improved when radiotherapy is given postoperatively to those patients with positive nodes on pathological assessment.<sup>144,161,166,428</sup>

3



Radiotherapy is an effective prophylactic treatment for patients with a clinically N0 neck.<sup>182,408,457,458</sup>  
 Tumour control is equivalent to that reported in surgical series.<sup>144,161,166,428</sup>

3

- ☑ Management of early oral cavity tumours should be individualised for each patient.
- Decisions regarding the choice of primary treatment modality should be made in consultation with the patient and should take into account the anatomical location of the tumour and availability of local expertise.
- In those patients where surgical resection is possible, the likelihood of obtaining adequate surgical margins with acceptable morbidity, functional outcome and quality of life must be considered.
- The likely short and long term morbidity resulting from radiotherapy must be considered.

**D Patients with early oral cavity cancer may be treated by:**

- surgical resection, where rim rather than segmental resection should be performed, where possible, in situations where removal of bone is required to achieve clear histological margins
- brachytherapy in accessible, well demarcated lesions.

**D Re-resection should be considered to achieve clear histological margins if the initial resection has positive surgical margins.**

☑ Reconstruction should be performed where necessary following surgical resection to achieve a good functional and cosmetic result.

- D**
  - **The clinically N0 neck (levels I-III) should be treated prophylactically either by external beam radiotherapy or selective neck dissection.**
  - **Postoperative radiotherapy should be considered for patients who have positive nodes after pathological assessment.**

Radiotherapy delivered postoperatively to selected patients at high risk of locoregional recurrence may improve locoregional control<sup>178,195,289-292</sup> and survival<sup>289,292</sup> (see section 7.3).

3

The administration of cisplatin chemotherapy concurrently with postoperative irradiation results in significantly better locoregional control<sup>307,308</sup> and survival<sup>307</sup> than with radiotherapy alone particularly if there is extracapsular spread and/or positive surgical margins.

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**D Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.**

**A Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.**

## 14.2 ADVANCED ORAL CAVITY CANCER (STAGE III AND IV)

No randomised controlled evidence was identified which compared outcome following surgical resection with outcome following radiotherapy alone or in combination with chemotherapy.

Recurrence rates following radical radiotherapy alone in locally advanced oral cavity cancer may be higher than in other head and neck sites.<sup>459</sup> Patients with advanced floor of mouth tumours may be best treated by a combination of surgery and radiotherapy rather than radiotherapy or surgery alone.<sup>434</sup>

3

No randomised controlled evidence was identified to demonstrate the superiority of a particular resection or reconstruction technique in surgical management of patients with oral cavity tumours. Choice will depend on individual factors relating to the patient and tumour, and the preference of the surgeon and the patient (see section 7.2).



Addition of concurrent chemotherapy to radical radiotherapy for treatment of patients with locally advanced oral cavity cancer results in a 17% reduction in the risk of death.<sup>314,315</sup>

Administration of cetuximab concurrently with radiotherapy in locally advanced oral cavity cancer results in significantly improved locoregional control, progression-free survival compared with radiotherapy alone (see section 8.2).<sup>226</sup>

Accelerated radiotherapy or hyperfractionated radiotherapy with increased total dose results in improved locoregional control compared with conventionally fractionated radiotherapy alone (see section 6.3).

Nodal levels I, II and III are most frequently involved in advanced oral cavity cancer. Level IV is involved in 7-17% of patients and level V in 0-6%.<sup>152,165</sup> In patients with unilateral oral cavity tumours, there is increased risk of contralateral neck node metastasis with increased T stage, multi-involvement of ipsilateral neck nodes and high grade histology.<sup>460</sup> Tumours arising in the midline and floor of mouth have an increased risk of contralateral neck node spread.<sup>451</sup>

There are no RCTs comparing surgery with radiotherapy (with or without chemotherapy) for the treatment of node positive neck in patients with oral cavity carcinoma.

Nodal size predicts response to radiotherapy<sup>193,198</sup> and it may be possible to treat patients with a single node <3 cm by radiotherapy or chemoradiotherapy alone.<sup>196,198</sup>

N2 and N3 disease is better treated by a combination of surgery and chemoradiotherapy (or radiotherapy in those unable to tolerate chemotherapy) rather than by either modality alone (see sections 5.2.4 and 8.1).

**D** Patients with resectable disease who are fit for surgery should have surgical resection with reconstruction.

The likelihood of obtaining adequate surgical margins with acceptable morbidity, functional outcome and quality of life must be considered before undertaking surgical resection.

**D**

- Patients with node positive disease should be treated by modified radical neck dissection.
- Elective dissection of the contralateral neck should be considered if the primary tumour is locally advanced, arises from the midline, or if there are multiple ipsilateral nodes involved.

**A** Radical external beam radiotherapy with concurrent cisplatin chemotherapy should be considered when:

- the tumour cannot be adequately resected
- the patient's general condition precludes surgery
- the patient does not wish to undergo surgical resection.

**D** Nodal levels I-IV should be irradiated bilaterally.

**D**

- Patients with N1 disease who are receiving radiotherapy to the primary tumour should be treated with chemoradiotherapy where there is clinical evidence of residual disease following completion of therapy.
- Patients with N2 and N3 nodal disease who are receiving radiotherapy to the primary tumour should be treated with chemoradiotherapy followed by planned neck dissection.

**A** In patients medically unsuitable for chemotherapy, concurrent administration of cetuximab with radiotherapy should be considered.

**A** Where radiotherapy is being used as a single modality without concurrent chemotherapy or cetuximab, a modified fractionation schedule should be considered.

1<sup>++</sup>1<sup>++</sup>

3

3

Radiotherapy delivered postoperatively to selected patients at high risk of locoregional recurrence may improve locoregional control<sup>178,195,289-292</sup> and survival<sup>289,292</sup> (see section 7.3).

3

The administration of cisplatin chemotherapy concurrently with postoperative irradiation results in significantly better locoregional control<sup>307,308</sup> and survival<sup>307</sup> than with radiotherapy alone in patients with extracapsular spread and/or positive surgical margins.

1++

**D Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.**

**A Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.**

# 15 Follow up, rehabilitation and patient support

## 15.1 FOLLOW UP

### 15.1.1 FREQUENCY OF FOLLOW UP

In patients with head and neck cancer, 76% of recurrences occur within the first two years post-treatment, and 11% occur in the third year.<sup>461</sup> In one study, 61% of patients with recurrence reported symptoms but 39% had no symptoms.<sup>461</sup>

4

**D** Patients should be seen frequently and regularly within the first three years post-treatment.

### 15.1.2 IMPACT ON QUALITY OF LIFE

Although patients are most anxious at the earliest part of diagnosis, evidence suggests that the time patients experience their most severe depression is at two to three months post-diagnosis.<sup>462</sup> Quality of life scores show improvement over time, unless the patient experiences recurrent disease.<sup>463</sup> Patients need social and psychological help and palliative care to support them as they deal with these issues and with the discovery that functions such as dry mouth, taste, smell and sexuality may not return to normal.<sup>464</sup>

2<sup>++</sup>

Patients receiving chemoradiotherapy are more likely than those receiving radiotherapy alone to suffer from post-treatment dental problems and require access to dental expertise.<sup>120</sup>

1<sup>+</sup>

Patients should be offered multidisciplinary follow up.

### 15.1.3 INTERVENTIONS

PET scanning is useful for assessing recurrence of tumour (distant and metastatic, see sections 3.2.6 and 3.2.7). It is less useful for assessing the primary site in the first three months post-treatment due to false positive results caused by local inflammation, infection and ORN at the postoperative site.<sup>82,465</sup>

2<sup>+</sup>

**C** Patients should have access to PET scanning, if appropriate, when recurrence is suspected.

Two simple assessments during follow up that are useful markers for recurrent disease are patient pain<sup>466</sup> and weight loss.<sup>467</sup>

2<sup>+</sup>

**C** Patients' weight should be monitored at follow up.

**C** Patients' complaints of pain should be investigated.

Analysis of pooled data from two RCTs involving 347 patients suggests that in patients with xerostomia following conventionally fractionated radiotherapy, with evidence of pre-existing salivary function, administration of oral pilocarpine (5-10 mg orally three times per day) results in statistically significant improvements in subjective overall xerostomia and the need for salivary substitutes compared to placebo.<sup>261</sup> No randomised controlled data are available regarding the optimum duration of pilocarpine therapy.

1<sup>++</sup>

**A** Pilocarpine (5-10 mg three times per day) may be offered to improve radiation-induced xerostomia in those patients with evidence of some intact salivary function, providing there are no medical contraindications to its use.

Duration of pilocarpine therapy should be determined by clinical judgement regarding its effectiveness in individual patients.

There is no evidence to support the use of:

- routine chest X-ray<sup>468-470</sup>
- routine testing of serum markers<sup>471,472</sup>
- supplemental beta carotene.<sup>473</sup>

2++

1+

**B Routine use of chest X-rays or serum markers is not recommended.**

**A During follow up, routine supplementation with beta carotene is not recommended.**

## 15.2 REHABILITATION

### 15.2.1 ORAL AND DENTAL REHABILITATION

The occurrence of oral and dental problems in patients with head and neck cancer is well documented.<sup>474</sup> Ninety per cent of patients presenting with head and neck cancer have dental disease (caries, periodontal disease or sepsis), yet dental management is regarded by many patients as a low priority in their treatment.<sup>475</sup>

Radiotherapy accelerates periodontal disease in high dose areas. Dental extractions in irradiated bone have much higher healing complication rates, and this is exacerbated by adjuvant chemotherapy.<sup>119,120</sup>

2+

During resection of oral cancers, teeth and their supporting bone are often removed. Partially dentate patients who do not wear dentures appear to have a lower quality of life with regards to eating and food enjoyment than patients who wear dentures.<sup>476</sup> Patients may find dentures difficult or impossible to wear because of distorted anatomy and tissue loss after surgery.

3

Dental implants into either remaining bone or in free transfer vascularised bone grafts are a well established method of oral/dental rehabilitation. The failure rate of implants is higher in irradiated bone, especially in smokers.<sup>477,478</sup>

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There is little good quality evidence for the most appropriate prosthetic management for patients with oral cancer.<sup>479</sup>

2++

Oral/dental rehabilitation should be carried out by specialist practitioners with a working knowledge of the principles of radiotherapy and surgery.<sup>119</sup> Even in such an environment, attendance is poor with a reported 51% of patients lost to follow up.<sup>119</sup>

2+

**C Patients receiving oral surgery or radiotherapy to the mouth (with or without adjuvant chemotherapy) should have post-treatment dental rehabilitation.**

**C Patients should access lifelong dental follow up and dental rehabilitation.**

**C Dental extractions in irradiated jaws should be carried out in hospital by a specialist practitioner.**

Patients should have access to a consultant restorative dentist.

The most serious complication after radiotherapy/chemotherapy for patients with oropharyngeal cancer (especially the tonsillar/retromolar region) is ORN with an incidence of around 5%.<sup>480</sup> The mandibular molar area is the most affected site, often precipitated by dental extraction.<sup>480</sup>

2++

Recurrent cancer is responsible for 20% of the cases of suspected ORN in patients with head and neck cancer.<sup>481</sup> Radiotherapy doses above 60Gy and concomitant chemotherapy greatly increase the risk of ORN.<sup>481,482</sup> The management of patients with ORN depends on the severity of the necrosis and may be by local irrigation, antibiotic treatment, local sequestrectomy or wide segmental excision with or without reconstruction.<sup>482-484</sup>

Good quality evidence for the use of hyperbaric oxygen therapy (HBOT) to prevent or treat ORN or to improve the success of dental implant treatment in irradiated patients is lacking and the efficacy of HBOT in these areas is controversial.

A multicentre RCT showed no benefit from HBOT for patients with overt ORN without surgical intervention. <sup>485</sup>	1+
There is weak evidence from a systematic review for the role of HBOT as an adjunctive treatment to prevent ORN in irradiated jaws after dental extractions. <sup>486</sup> Evidence also exists for the use of HBOT as an adjunct to surgery and reconstruction for the management of ORN. <sup>484,486</sup>	1+
Despite some observational evidence that adjuvant HBOT can reduce implant failures, <sup>478</sup> a systematic review found no reliable randomised controlled evidence for or against the clinical effectiveness of HBOT. <sup>487</sup>	1+ 2++

**C** Hyperbaric oxygen facilities should be available for selected patients.

## 15.2.2 SPEECH AND LANGUAGE THERAPY

The speech and language therapist (SLT) will consider the impact and possible consequences of a communication and/or swallowing disorder in patients with head and neck cancer.<sup>488</sup>

### Dysphagia

Any patient with dysphagia and the inability to take adequate nutrition and hydration by mouth is considered at high nutritional risk. Untreated or poorly managed dysphagia adversely affects quality of life, interferes with cancer treatment and may lead to life threatening conditions, such as aspiration pneumonia.<sup>489</sup> Patients with head and neck cancer often have multiple risk factors for aspiration pneumonia. Predicting the likelihood of aspiration and its prevention are primary goals for SLTs.<sup>489</sup> Swallow posture modification can markedly reduce aspiration in head and neck cancer patients.<sup>489</sup>

SLT involvement is crucial for planning appropriate swallowing rehabilitation.<sup>490,491</sup> 2+

**C** Head and neck cancer patients with dysphagia should receive appropriate speech and language therapy to optimise residual swallow function and reduce aspiration risk.

Modified barium swallow (MBS) via videofluoroscopy can be used to link tumour site to aspiration risk prior to commencement of treatment.<sup>491</sup> The risk of aspiration prior to the onset of treatment is 14% for patients with oral cancer, 30% for those with oropharyngeal cancer, 67% for those with laryngeal cancer and 80% for those with hypopharyngeal cancer. Aspiration is also common after partial laryngectomy especially if the arytenoid cartilage is included in the resection.<sup>490</sup> 2+

Fibre optic endoscopic evaluation of swallow (FEES) is a valid tool for identifying dysphagia and planning appropriate dysphagia rehabilitation. FEES is an inexpensive, portable and reliable alternative to MBS.<sup>492</sup>

**C** All patients with oral, oropharyngeal, hypopharyngeal and laryngeal cancer should have access to instrumental investigation for dysphagia.

- MBS and FEES are both valid methods for assessing dysphagia
- the SLT should consider which is the most appropriate for different patients in different settings.

Patients treated with chemoradiation are at risk of developing aspiration-associated pneumonia. One study showed a third of patients with advanced cancer who were treated with chemoradiation had aspiration pneumonia.<sup>493</sup> 2+

Videofluoroscopy can be used to screen head and neck cancer patients undergoing chemoradiation for risk of pneumonia<sup>493</sup> and can be used to aid diagnosis of tumour recurrence or other structural disorders such as fistulae and strictures.<sup>490</sup> 2+

**C** All patients undergoing chemoradiation should have access to a specialist speech and language therapist before, during and after treatment.

**Communication**

The goal of speech rehabilitation is to maximise the mobility of the remaining oral structures and to regain functional communication.

Speech and language therapy is effective in improving the intelligibility of patients undergoing glossectomy and major resection.<sup>494</sup>

2+

**C** Where communication problems are likely to occur, patients should be seen by a specialist head and neck speech and language therapist soon after diagnosis and before treatment commences.

In patients who have had a laryngectomy, tracheoesophageal and/or oesophageal speech should be taught by a speech therapist.<sup>495</sup> The SLT should start voice restoration by 14 days postoperatively where appropriate.<sup>496</sup> Surgical voice restoration offers the best opportunity for achieving good quality voice in the shortest time.<sup>494</sup>

2+

An electrolarynx may be appropriate for some patients.

**C** Patients undergoing laryngectomy should have specialist speech and language therapy to restore voice either by a tracheoesophageal voice prosthesis and/or oesophageal speech.

**C** Patients with communication impairment should have access to a speech and language therapist.

Electrolarynx should be offered where appropriate.

15.2.3 NUTRITIONAL SUPPORT

Early nutritional intervention, either by gastrostomy tube or by nasogastric tube feeding, and ongoing nutritional support for patients with head and neck cancer impacts on treatment outcome and quality of life.

All head and neck cancer patients should be screened at diagnosis for nutritional status using a validated screening tool appropriate to the patient population.

An example of an appropriate tool is the malnutrition universal screening tool (MUST),<sup>497</sup> which is endorsed by the British Dietetic Association. Further information is available at [www.bapen.org.uk](http://www.bapen.org.uk).

A retrospective review of preoperative risk assessment for gastrostomy tube placement, reported significant factors for patients requiring nutritional support.<sup>498</sup>

Risk factors included:

- heavy alcohol use
- involvement of the base of tongue
- pharyngectomy
- reconstruction with pectoralis major flap
- radiation therapy
- large tumour size
- moderately or poorly differentiated pathology (higher T stage).

2+

Gastrostomy feeding is safe and effective and gastrostomy tubes must be placed by a trained practitioner.<sup>499,500</sup> There is little evidence to support the timing of placement. One study suggested prophylactic placement in patients receiving intensive chemoradiation or radiotherapy.<sup>501</sup> Patients find percutaneous endoscopic gastrostomy more acceptable than an NG tube but PEG is associated with more persistent dysphagia and an increased need for pharyngeal-oesophageal dilation.<sup>502</sup>

**C** After screening, at-risk patients should receive early intervention for nutritional support by an experienced dietitian.

**C** The multidisciplinary team should include healthcare professionals skilled in gastrostomy placement.

- Patients should be offered information about feeding tube alternatives, including possible complications.

Further information about tube feeding is available from the European Society of Parenteral and Enteral Nutrition (ESPEN) [www.espen.org](http://www.espen.org).

### 15.3 PATIENT SUPPORT

There is evidence that patients with head and neck cancer suffer from anxiety, depression, disturbance of body image and difficulty in maintaining quality of life.<sup>503,504</sup> The complex needs of patients with head and neck cancer require psychological support to address the problems they may encounter. There is some evidence that maximum psychological support should continue for three months post-radiotherapy.<sup>503</sup> No studies have addressed the clinical benefit of psychological support, or who should provide the support.

- Head and neck cancer patients should be offered emotional support, which may be provided by clinical nurse specialists and non-clinically trained counsellors.
- In some situations it may be appropriate to refer patients to a clinical psychologist.

#### 15.3.1 SUPPORT REQUIREMENTS

There is no evidence to indicate what package of social support (hospice care and other outside agencies) would be of most benefit to patients with head and neck cancer.

One systematic review described using a checklist at clinic check in to screen for at-risk patients pre-diagnosis so that early support could be offered.<sup>505</sup> Key risk factors were:

- low secondary education
- no children
- male gender
- high alcohol abuse
- unemployment.

Interviews with people attending a self help group following laryngectomy highlighted problems that they experienced, such as talking on the telephone and getting along with their families. The worst points of the patient journey were seen to be at diagnosis and surgery.<sup>506</sup> No studies have addressed similar issues for other groups of head and neck cancer patients.

One study reported that patients suffering from disfigurement who attended a support group had lower life happiness. Women seemed to have more depressive symptoms but also seem to benefit more from support.<sup>507</sup>

- Patients should be assessed for support requirements at initial diagnosis by a suitably skilled individual who is aware of the complex needs of the patient group.
- Patients should be offered information about support groups.

#### 15.3.2 INFORMATION NEEDS

Availability of information in primary care reduces anxiety. Both men and women find written information useful. Patient information leaflets about risk factors, prevention and early detection of oral cancer increased knowledge, decreased anxiety and increased patients' intention to have an oral cancer screen.<sup>508,509</sup>

**B** Leaflets about risk factors, prevention and early detection of head and neck cancer should be available in primary care.

2<sup>-</sup>2<sup>+</sup>1<sup>+</sup>

A small study of structured interviews with patients and carers demonstrated the need for individualised information. The study also showed that patients are not able to absorb other information that is given at the same time as their diagnosis.<sup>510</sup> 3

- ☑ ▪ Patients should be given information about their diagnosis and treatment at separate meetings
- Individualised information should be made available.



## 16 Information for discussion with patients and carers

### 16.1 INTRODUCTION

This section of the guideline is to help patients, who have been diagnosed with head and neck cancer, and their carers understand all the stages of their care. It will focus on diagnosis, investigation, treatment and follow up for head and neck cancer. It can only give a broad view as each patient's cancer and treatment will be different. Detailed verbal, written and visual information regarding specific cancers and their treatment should be readily available to patients from the specialist cancer team at all stages of their care.

The following information may be useful in guiding the production of local patient information material.

### 16.2 WHAT IS HEAD AND NECK CANCER?

Head and neck cancer generally means any cancer arising in the mouth or throat but includes cancers of the ear, nose and salivary glands. It does not include cancers arising in the brain or eyes. Diagrams of the head, neck, mouth and throat may be helpful in illustrating where a patient's cancer is situated (see *Annex 3*).

### 16.3 WHO WILL BE INVOLVED IN MY CARE?

Members of the team may vary from centre to centre, but the people that you are likely to meet are:

#### **Clinical nurse specialist (CNS) or support nurse**

These senior nurses have expertise in head and neck cancer and may often be your first contact for information and queries. He or she may be the main link between you and other members of the team and will monitor your treatment.

#### **Head and neck surgeon**

Surgeons who treat head and neck cancer may have different specialties. For example, your surgeon may be:

- an ear nose and throat (ENT) surgeon and have particular expertise in these areas
- a maxillofacial surgeon with oral and dental expertise
- a plastic surgeon with a specialist interest in reconstructive techniques.

#### **Oncologist**

These doctors specialise in the non-surgical treatments for your cancer. They will decide on the correct combination of radiotherapy and/or chemotherapy and will prescribe the optimum dose.

A **speech and language therapist (SLT)** will advise you on swallowing and speech techniques and the provision of specialist equipment such as speaking valves.

A **dietitian** will advise you on nutrition and feeding. Some patients require a feeding tube and the dietitian will help to assess when tube feeding is necessary. Specialist nurses or doctors will insert the feeding tube and give advice on how to use it.

#### **Restorative dentist**

A dentist who specialises in oral rehabilitation after surgery or radiotherapy to the mouth will assess your teeth before, during and after treatment. You may also be asked to see:

- your own dentist, or
- a hospital dentist, or
- a dental hygienist.

**Ward nurses** are responsible for your day-to-day care whilst you are in hospital. The **radiotherapy nurse/CNS** will regularly check how you are getting on during your treatment. They will give you advice on mouth care and help you to cope with the side effects of treatment.

The **chemotherapy nurse** will deliver your chemotherapy, give you advice and help you to cope with the side effects of treatment.

If you are eligible, you may be invited to participate in a clinical trial and **research nurses** will give you information and help with this.

A **specialist counsellor** can offer you emotional support and help following diagnosis and treatment. A **clinical psychologist** will be able to offer you specialist psychological support.

If you are having radiotherapy you will meet the **mould room technician** who will fit the head support that you will need to keep your head still during treatment.

A **specialist head and neck radiographer** will make sure that your radiotherapy is delivered correctly and will work with the oncologist to make any adjustments.

A **physiotherapist** will assess any postoperative complications and mobility problems you may have. They will help by giving exercises, if you need them, and support and advice to improve your quality of life.

An **occupational therapist** will offer you advice on how to cope with the effects of your cancer on your day-to-day activity.

There is also a large number of people whom you are less likely to meet, who work “behind the scenes” but have valuable input into your care.

A **pathologist**, who looks at your biopsies under the microscope, will confirm the diagnosis and assess the tumour. Your X-rays and scans will be reviewed by a **radiologist** who has a specialist interest in head and neck cancer.

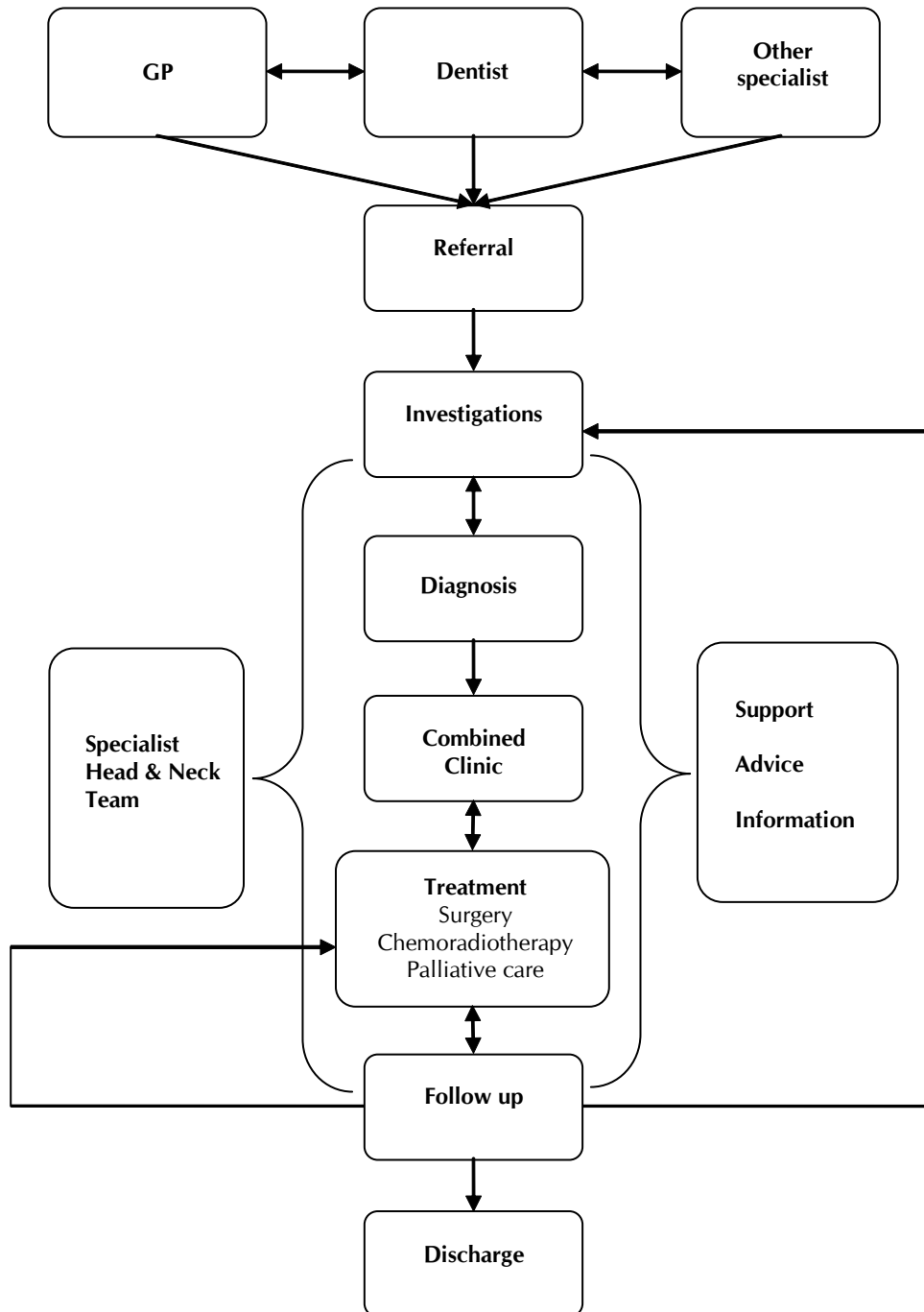
All new cases of head and neck cancer are discussed at the cancer team meeting where many of the people above will be present. Other healthcare professionals with specialist skills may be invited to these meetings when necessary. These team meetings require a significant amount of administration and will often have the **team secretary** in attendance. An **audit assistant** will also be present to collect data so that the cancer centre performance can be monitored.

**Radiographers** and **physics staff** will set up and check the plans and prescription of radiotherapy. The **pharmacist** will prepare your chemotherapy.

## 16.4 PATHWAY OF CARE

This section describes a general outline of how you should be cared for. Every patient is different and information specific to you will be available from the specialist head and neck team at all stages of your care.

Figure 1: Outline of the pathway of care for a person with suspected head and neck cancer



#### 16.4.1 WHEN SHOULD I BE REFERRED?

Often the first step of your patient journey is a visit to your general practitioner or dentist with symptoms. These symptoms will vary for cancers at different sites in the head and neck. Symptoms are usually non-specific and do not indicate that someone definitely has cancer. For example, hoarseness could be due to a simple infection. Your GP or dentist will refer you to the hospital or dental hospital when a symptom appears to be persistent despite usual treatment.

If hospital investigations suggest that cancer is likely or is confirmed, then the specialist head and neck cancer team will be asked to take over your care. You may have to travel to another hospital where the specialist head and neck cancer team is based and treatments are available.

#### 16.4.2 WHAT TESTS AM I LIKELY TO RECEIVE?

When you go to hospital, the surgeon will:

- ask you about your symptoms
- perform an examination of the mouth and throat
- examine the neck for swollen lymph glands
- take a sample of cells or a small piece of tissue that looks suspicious (biopsy) and send it to the pathologist to find out what it is and to check for cancer.

A biopsy can be done as an outpatient under local anaesthetic. It can also be done as an inpatient under general anaesthetic. This allows the surgeon to have a good look at the cancer and is known as examination under anaesthetic (EUA). A sample of cells can be taken with a syringe and needle. This is known as fine needle aspiration (FNA) and can be done in the outpatient department.

#### 16.4.3 HOW WILL THE CANCER TEAM KNOW I HAVE CANCER?

The pathologist will determine if your biopsy contains cancer cells. Other investigations will be needed to see the size, exact position and any possible spread of the cancer. These may include X-rays or scans, for example, CT or MRI scans.

Results of biopsies and investigations should be discussed with you at all stages of your care.

#### 16.4.4 WHO WILL DECIDE ON MY TREATMENT?

At the combined clinic members of the cancer team will discuss with you their recommendations for the best treatment for you along with alternatives. They will agree a plan with you.

#### 16.4.5 WHAT TREATMENT WILL I RECEIVE?

There are several treatments for cancer such as:

- surgery to remove some or all of the cancer. For some people laser treatment may be used
- radiotherapy, a course of treatment using high energy X-rays or radioactive implants
- chemotherapy, a course of drug treatment, usually given into a vein but sometimes in tablet form.

These treatments are given alone or in combination. There may be an opportunity to take part in a clinical trial and the cancer team will discuss the implications of this with you.

#### 16.4.6 WHAT WILL HAPPEN AFTER I LEAVE HOSPITAL?

Once you have been discharged from hospital you should continue to see the cancer team regularly. You should receive examinations to help the cancer team decide if you need extra help such as social help, psychological help and palliative care. Patients are usually discharged from follow up at five years.

## 16.5 NOTES FOR DISCUSSION WITH PATIENTS

When attending an appointment at a clinic, patients may find it useful to:

- write down all of the questions that they would like answered and bring them to the clinic
- bring a family member or close friend for support
- write down the answers to their questions to discuss with family and friends after the visit
- ask for written information at any stage of their treatment
- ask for name and telephone number of the person who is their first point of contact (usually the CNS)
- bring any medication they are currently taking.

The following questions were drawn up by the guideline development group and may be of use to healthcare professionals when discussing head and neck cancer with patients, family, friends and carers. The questions are divided into sections to highlight issues that may be appropriate at different stages of the patient's care. Annex 4 shows an example of an information sheet that patients could use to record useful information.

### 16.5.1 TREATMENT

Will I be involved fully in treatment decision making?

What has caused this?

How long will my treatment last?

How long will my operation take?

Will I be in pain?

What are the side effects?

Will my hair fall out?

How successful is this treatment?

Will it come back?

What happens if it does come back?

How can I stop it coming back?

Can I have a second opinion?

Are there alternative therapies?

Who do I contact if I'm worried between appointments?

### 16.5.2 COPING

Will I return to normal?

How will I look?

Will I be able to talk?

Will I be able to eat?

What can I eat?

Can I use my dentures?

Will I need new dentures?

Will I be able to kiss?

Can other people catch this?

Can I still use make-up/hair dye?

Who can I talk to?

Are there other patients that I can talk to?

Where can my family and friends find more information?

## 16.5.3 PRACTICALITIES

- How will I get to the hospital?
- Can I have relatives/friends at the clinic with me?
- Where will my partner/relative/friend stay?
- When can my relatives/friends visit?
- Can I still go to work?
- How much sick leave will I need?
- Who will give me my 'sick line'?
- What benefits am I entitled to? Who do I ask?
- Who will look after my children/dependants?
- Who will look after my pet?
- Can I get help at home?
- Will my GP or dentist be kept informed?

## 16.5.4 SOCIAL ACTIVITIES

- Can I carry on with my usual sports/activities?
- Can I still drive?
- Can I go on holiday? Can I fly?
- Will I need extra insurance?

## 16.6 SOURCES OF FURTHER INFORMATION

Many cancer care centres and public libraries have access to the internet. While the internet can provide a vast range of information, patients should be advised to act cautiously as they may not have the means of determining the accuracy or reliability of a site. Healthcare professionals should guide patients to appropriate sites and advise patients that any information found on the internet should be discussed with members of their multidisciplinary team.

## 16.6.1 NATIONAL ORGANISATIONS

**Alcoholics Anonymous**

PO Box 1, Stonebow House, Stonebow, York YO1 7NJ  
 Tel: 01904 644026 • National Helpline: 0845 769 7555  
[www.alcoholics-anonymous.org.uk](http://www.alcoholics-anonymous.org.uk)

Alcoholics Anonymous is a fellowship of men and women who share their experience, strength and hope with each other that they may solve their common problem and help others to recover from alcoholism.

**ASH Scotland**

8 Frederick Street, Edinburgh EH2 2HB  
 Tel: 0131 225 4725 • Fax: 0131 220 6604  
[www.ashscotland.org.uk](http://www.ashscotland.org.uk) • Email: [ashscotland@ashscotland.org.uk](mailto:ashscotland@ashscotland.org.uk)

ASH Scotland is the leading voluntary organisation campaigning for effective tobacco control legislation and providing an expert information service.

**Ben Walton Trust**

The Ben Walton Trust, The Bank House, Main Street, West Linton, Peeblesshire, EH46 7EE  
 Fax: 01968 660514  
[www.benwaltontrust.org](http://www.benwaltontrust.org) • Email: [info@benwaltontrust.org](mailto:info@benwaltontrust.org)

The Ben Walton Trust is a charity which offers direct patient support and advice and information on oral cancers. The trust has a particular interest in younger patients.

**British Dental Health Foundation**

Dental Helpline: 0845 063 1188 (local rate) 9am-5pm Monday to Friday  
[www.mouthcancer.org.uk](http://www.mouthcancer.org.uk)

Offers free expert advice on oral health problems including mouth cancer. Provides an information leaflet "Tell me about mouth cancer" which has information on the causes, diagnosis and treatments of mouth cancer.

**Cancer in Scotland**

Scottish Executive Health Department, St Andrew's House,  
 Regent Road, Edinburgh, EH1 3DG  
 Tel: 0131 244 2346 • Fax: 0131 244 2989  
[www.show.scot.nhs.uk/sehd/cancerinscotland/](http://www.show.scot.nhs.uk/sehd/cancerinscotland/) • Email: [Cancer@scotland.gsi.gov.uk](mailto:Cancer@scotland.gsi.gov.uk)

Cancer in Scotland identifies the wide range of actions necessary to prevent, detect and improve treatment and care for people with cancer in Scotland.

**Cancer Laryngectomy Trust**

PO Box 618, Halifax, West Yorkshire, HX3 8WX  
 Tel: 01422 205522 • Fax: 01422 205522  
[www.cancerlt.org](http://www.cancerlt.org)

Offers free help for sufferers of cancer of the larynx, people who have had a laryngectomy and their carers.

**Cancer Research UK Scotland**

Federation House, 222 Queensferry Road, Edinburgh EH4 2BN  
 Tel: 0131 343 1344  
[www.cancerresearchuk.org](http://www.cancerresearchuk.org)

A free information service for patients with cancer and their families. Provides a reading list for head and neck cancer and produces an e-newsletter called Cancer Spotlight for anyone affected by cancer.

**CancerBACUP Scotland**

Suite 2, Third Floor, Cranston House 104/114 Argyle Street, Glasgow G2 8BH  
 Tel: 0141 223 7676/0800 800 1234 • Fax: 0141 248 8422  
[www.cancerbacup.org.uk](http://www.cancerbacup.org.uk)

A free one to one service which provides counselling and emotional support for people with cancer and their families and friends. Produces over 50 booklets and a BACUP NEWS three times a year.

**Changing Faces**

33-37 University Street, London  
 Freephone: 0845 4500 275  
[www.changingfaces.co.uk](http://www.changingfaces.co.uk) • Email: [info@changingfaces.co.uk](mailto:info@changingfaces.co.uk)

Offers help with any concerns about disfigurement and disfiguring conditions.

**DIPex (Database of individual experiences)**

[www.dipex.org/main.asp](http://www.dipex.org/main.asp)

Dipex is a website that reports on a wide variety of personal experiences of health and illness. People can watch, listen to or read interviews, find reliable information on treatment choices and where to find support. The site covers heart disease, epilepsy, screening programmes and cancers.

**Guise and Dolls**

Patience Ward, 15th Floor, The Tower, Guy's Hospital,  
 St Thomas Street, London, SE1 9RT  
 Tel: 020 7955 2633/4

Support for people who have had treatment for head and neck cancer and their carers. An informal patient to patient scheme operates.

**Headstart**

Maxillofacial Unit, The Queen Victoria NHS Trust,  
Holtze Road, East Grinstead, RH19 3DZ  
Tel: 01342 410210

A group for patients with head and neck cancer and their families that provides telephone support and information. The group is facilitated by health professionals including a speech and language therapist, pain control nurse and physiotherapist.

**healthyliving**

Helpline: 0845 2 78 88 78  
[www.healthyliving.gov.uk/](http://www.healthyliving.gov.uk/)

Promotes Scotland's healthy living programme and is designed to help people attain a healthier diet and a more active lifestyle by providing resources, advice and support on healthy eating and physical activity.

**Let's Face It (Head and Neck Cancer Support Group)**

72 Victoria Avenue, Westgate on Sea, Kent, CT8 8BH  
Tel: 01843 833724  
[www.lets-face-it.org.uk](http://www.lets-face-it.org.uk)

Offers one to one support and befriending, telephone communication and letter writing. Provides literature, information and resources for recovery.

**Macmillan Cancer Relief (Scotland)**

Osborne House, 1-5 Osborne Terrace, Edinburgh EH1 2DP  
Tel: 0131 346 5346 • Fax: 0131 346 5347  
[www.macmillan.org.uk](http://www.macmillan.org.uk) • Email: [agow@macmillan.org.uk](mailto:agow@macmillan.org.uk)

The Scottish office of the UK charity, which supports people with cancer and their families with specialist information, treatment and care.

**Maggie's Centres Scotland**

- Maggie's Dundee, Tom McDonald Avenue,  
Ninewells Hospital, Dundee DD2 1ZV  
Tel: 01382 632 999
- Maggie's Edinburgh, The Stables,  
Western General Hospital, Crewe Road South, Edinburgh EH4 2XU.  
Tel: 0131 537 3131 • Fax: 0131 537 3130
- Maggie's Glasgow, The Gatehouse,  
Western Infirmary, 10 Dumbarton Road, Glasgow G11 6PA  
Tel: 0141 330 3311 • Fax: 0141 330 3363
- Maggie's Highlands,  
Raigmore Hospital, Old Perth Road, Inverness IV2 3UJ  
Tel: 01463 706306

[www.maggiescentres.org](http://www.maggiescentres.org) • Email: [maggies.centre@ed.ac.uk](mailto:maggies.centre@ed.ac.uk)

The aim of Maggie's Centres is to help people with cancer to be as healthy in mind and body as possible and enable them to make their own contribution to their medical treatment and recovery.

**Marie Curie Cancer Care (Scotland)**

29 Albany Street, Edinburgh, EH1 3QN  
Tel: 0131 456 3700 • Fax: 0131 456 3701  
[www.mariecurie.org.uk](http://www.mariecurie.org.uk)

Marie Curie Cancer Care, a comprehensive cancer care charity, provides practical nursing care at home and specialist multidisciplinary care through its ten Marie Curie Centres.



**Mouth Cancer Foundation (MCF)**

[www.rdoc.org.uk/](http://www.rdoc.org.uk/)

The MCF aims to help patients, carers and health professionals find free information on mouth cancers easily. It provides direct links to the relevant sections of existing cancer sites and includes patient experiences as well as an online support group.

**National Association of Laryngectomy Clubs (NALC)**

Ground floor, 6 Rickett Street, Fulham, London, SW6 1RU

Tel: 020 7381 993 • Fax: 020 7381 0025

Membership of the clubs consists of patients who, in the company of relatives, friends and interested professional people, meet regularly to try their new voices, achieve fluency and give and receive encouragement.

**Pain Association Scotland**

[www.painassociation.com](http://www.painassociation.com)

For all cancer patients suffering from pain. Offers the opportunity for patients and their carers to join support groups.

**Samaritans**

The Upper Mill, Kingston Road, Ewell, Surrey, KT17 2AF

Tel: 020 8394 8300 • Fax: 020 8394 8301

[www.samaritans.org.uk](http://www.samaritans.org.uk) • Email: [admin@samaritans.org](mailto:admin@samaritans.org)

Helpline: 0845790 90 90

Email: [jo@samaritans.org](mailto:jo@samaritans.org)

Write to: Chris, P.O. Box 90 90, Stirling, FK8 2SA

Samaritans is available 24 hours a day to provide confidential emotional support for people who are experiencing feelings of distress or despair, including those which may lead to suicide.

**Smokeline and Tobacco unwrapped**

Tel: 0800 848484

[www.hebs.org/topics/smoking/index.htm](http://www.hebs.org/topics/smoking/index.htm)

For advice and support on giving up smoking.

**Tak Tent Cancer Support Scotland**

Flat 5, 30 Shelley Court, Gartnavel Complex, Glasgow G12 0YN

Tel: 0141 211 0122 • Fax: 0141 211 3988

[www.taktent.org.uk](http://www.taktent.org.uk) • Email: [tak.tent@care4free.net](mailto:tak.tent@care4free.net)

Promotes the care of cancer patients, their families, friends and the staff involved professionally in cancer care by providing practical and emotional support, information, counselling and therapies as required. Network of local support groups throughout Scotland, including a youth project for 16-25 year olds.

## 16.6.2 LOCAL ORGANISATIONS

**Aberdeen Laryngectomy Club**

Speech and Language Therapy Department, Aberdeen Royal Infirmary, AB9 2ZB

Tel: 01224 681818 x 53143

Support group for laryngectomees and other head and neck cancer patients. ENT nursing staff, speech and language therapists and social workers are available to give the group support, information and advice. They have occasional guest speakers.

**Cancer Link Aberdeen and North (CLAN)**

Cancer Support Centre, Clan House, Caroline Place Aberdeen AB25 2TH  
Tel: 01224 647 000 • Freephone: 0800 783 7922  
www.clanhouse.org • Email: clan@btinternet.com

Provides emotional support and information through a team of volunteers trained in listening skills; CLAN counsellors, with their personal experience of cancer, provide the opportunity to talk with someone who cares and understands.

**Lothian Laryngectomy Association**

Ward 11, Western General Hospital, Crewe Road, Edinburgh EH4 2XU  
Tel: 0131 537 1256

**NoSCAN (North of Scotland cancer network)**

www.noscan.scot.nhs.uk • Email: ruth.nisbet@arh.grampian.scot.nhs.uk

A network of the people in the north of Scotland striving to improve cancer care and improve information to patients, the public and health professionals.

**SCAN (South East Scotland cancer network)**

www.scan.scot.nhs.uk • Email: scan@lhb.scot.nhs.uk

Aims to bring together up to date, relevant and accurate information about local services for people affected by cancer and healthcare professionals in south east Scotland.

**Scottish Centre of Technology for the Communication Impaired**

Email: sctci@sgh.scot.nhs.uk  
SCTCI, Westmarc, Southern General Hospital, 1345 Govan Road, Glasgow G51 4TF  
Tel: 0141 201 2619 • Fax: 0141 201 2618

**West of Scotland cancer patient information and support**

The West of Scotland Head and Neck Cancer Service Managed Clinical Network Manager,  
Ward 38, Surgical Block, Glasgow Royal Infirmary, 84 Castle Street, Glasgow, G4 0SF  
www.cancerinfosupport.org.uk

A website designed to complement the information available in the West of Scotland Cancer Service Information Folders. High quality, reliable information relevant to those persons directly or indirectly associated with head and neck cancer in the west of Scotland.

**WoSCAN (West of Scotland cancer network)**

www.show.scot.nhs.uk/woscan/index.htm

Strives to produce a regional service, which provides equitable access to good quality clinical care for all cancer patients regardless of any geographical or socioeconomic factors.

# 17 Implementation, resource implications, audit and further research

## 17.1 LOCAL IMPLEMENTATION

Implementation of national clinical guidelines is the responsibility of each NHS Board and is an essential part of clinical governance. It is acknowledged that every Board cannot implement every guideline immediately on publication, but mechanisms should be in place to ensure that the care provided is reviewed against the guideline recommendations and the reasons for any differences assessed and, where appropriate, addressed. These discussions should involve both clinical staff and management. Local arrangements may then be made to implement the national guideline in individual hospitals, units and practices, and to monitor compliance. This may be done by a variety of means including patient-specific reminders, continuing education and training, and clinical audit.

## 17.2 RESOURCE IMPLICATIONS

Group members identified the following recommendations which have resource implications for NHSScotland.

### 17.2.1 FROM SECTION 3.2.5

**D All patients with head and neck cancer should undergo CT of the thorax.**

Around 690 cases of head and neck cancer are diagnosed each year in Scotland.<sup>48</sup> This recommendation will increase the number of CT scans required across Scotland. This may have a resulting effect on waiting times for CT for other patients.

### 17.2.2 FROM SECTION 5

**C Patients with head and neck cancer, especially those planned for resection of oral cancers or whose teeth are to be included in a radiotherapy field, should have the opportunity for a pre-treatment assessment by an appropriately experienced dental practitioner.**

Access to restorative dentistry varies widely across Scotland. Implementation of this recommendation may require further sessions to be made available. This may have staffing and training implications.

### 17.2.3 FROM SECTION 8.2 AND 11.2 AND 12.2 AND 13.2.2 AND 14.2

**A In patients undergoing radical radiotherapy for locally advanced head and neck cancer, who are medically unfit for concurrent chemoradiotherapy, concurrent administration of cetuximab with radiotherapy should be considered.**

**A In patients medically unsuitable for chemotherapy, concurrent administration of cetuximab with radiotherapy should be considered.**

Recent advice from the Scottish Medicines Consortium approved cetuximab for this indication. SMC analysis of budgetary impact includes an estimate of 180 patients per annum who are intolerant of chemoradiotherapy and consequently receiving radiotherapy. It is estimated that up to 80% of these patients may be prescribed cetuximab, at an estimated annual cost of £780,500 to NHSScotland.

### 17.3 KEY POINTS FOR AUDIT

The National Clinical Dataset Development Programme (NCDDP) is part of a national eHealth strategy that aims to standardise data items across NHSScotland. National data sets take into account audit and evidence based guidelines, NHS Quality Improvement Scotland (NHS QIS) standards for the basic elements of the patient's journey and the collection of core cancer registration data items. They also support the measurement of national cancer waiting times targets. The Head and Neck Cancer National Minimum Core Data Set Definitions were developed by Information Services, NHS National Services Scotland, (ISD Scotland) in collaboration with the regional cancer networks. The dataset was published in March 2005 and is available from:

[www.isdscotland.org/isd/files/Head\\_and\\_Neck\\_Definitions\\_March%202005.pdf](http://www.isdscotland.org/isd/files/Head_and_Neck_Definitions_March%202005.pdf)

### 17.4 RECOMMENDATIONS FOR RESEARCH

Further research is required to address the numerous areas mentioned within this document where there is insufficient evidence to make a recommendation or to support current clinical practice. The following areas are identified as especially important:

- the aetiological factors responsible for the changing incidence and age distribution of head and neck cancer
- tumour biology that may direct new treatment strategies
- collaborative clinical trials supported by bodies such as the National Cancer Research Institute (NCRI)
- the efficacy of hyperbaric oxygen therapy in three areas: prevention and management of osteoradionecrosis and increasing implant success rates in irradiated bone
- methods of improving quality of life for cancer sufferers
- patients' support needs, experiences and views.

## 18 Development of the guideline

### 18.1 INTRODUCTION

SIGN is a collaborative network of clinicians and other healthcare professionals, funded by NHS Quality Improvement Scotland. SIGN guidelines are developed by multidisciplinary groups of practicing clinicians using a standard methodology based on a systematic review of the evidence. Further details about SIGN and the guideline development methodology are contained in "SIGN 50; A Guideline Developer's Handbook", available at [www.sign.ac.uk](http://www.sign.ac.uk)

### 18.2 THE GUIDELINE DEVELOPMENT GROUP

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Dr Don Collie	<i>Consultant Neuroradiologist, Western General Hospital, Edinburgh</i>
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Dr Lorna McCaul	<i>Consultant Restorative Dentist, Crosshouse Hospital, Kilmarnock</i>
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Ms Paula Morrison	<i>Pharmacist, Beatson Oncology Centre, Glasgow</i>
Dr Tim Palmer	<i>Consultant Pathologist, Raigmore Hospital, Inverness</i>
Ms Tracey Rapson	<i>Statistician, Scottish Cancer Intelligence Unit, Edinburgh</i>
Dr Gerry Robertson	<i>Consultant Clinical Oncologist, Beatson Oncology Centre, Glasgow</i>
Ms Elaine Ross	<i>Macmillan Head and Neck Nurse Specialist, Southern General Hospital, Glasgow</i>
Ms Emer Scanlon	<i>Specialist Speech and Language Therapist, Western General Hospital, Edinburgh</i>
Ms Moira Smith	<i>Senior Dietitian, St John's Hospital, Livingston</i>
Ms Maria Smith	<i>Head and Neck Nurse, Royal Alexandra Hospital, Paisley</i>
Mr David Soutar	<i>Consultant Plastic Surgeon, Canniesburn Plastic Surgery Unit, Glasgow</i>

Mrs Maureen Thomson	<i>Superintendent II – Radiographer, Beatson Oncology Centre, Glasgow</i>
Mr Michael Walton	<i>Patient representative, The Ben Walton Trust, Peebleshire</i>
Ms Joanna Welsh	<i>Information Officer, SIGN</i>

The membership of the guideline development group was confirmed following consultation with the member organisations of SIGN. All members of the guideline development group made declarations of interest and further details of these are available on request from the SIGN Executive. Guideline development and literature review expertise, support and facilitation were provided by the SIGN Executive.

The guideline development group wishes to extend special thanks to Dr Emma Brown for the outstanding contribution that she made to this guideline, in terms of time, effort and attention to detail.

### 18.3 ACKNOWLEDGEMENTS

SIGN is grateful to the following former members of the guideline development group.

Ms Jenni Brockie	<i>Information Officer, SIGN</i>
Mr Wesley Finegan	<i>Lay representative, Larbert, Stirlingshire</i>
Ms Oighrig Park	<i>Clinical Nurse Specialist, Beatson Oncology Centre, Western Infirmary, Glasgow</i>
Dr Nick Grey	<i>Consultant Restorative Dentist, The University Dental Hospital of Manchester</i>

### 18.4 SYSTEMATIC LITERATURE REVIEW

The evidence base for this guideline was synthesised in accordance with SIGN methodology. A systematic review of the literature was carried out using an explicit search strategy devised by a SIGN Information Officer. Databases searched include Medline, Embase, Cinahl, and the Cochrane Library. The year range covered was 1998-2004, although searches for certain questions went back to 1990. Internet searches were carried out on various websites including the New Zealand Guidelines Programme, the Canadian Medical Association, NELH Guidelines Finder, and the US National Guidelines Clearinghouse. The Medline version of the main search strategies can be found on the SIGN website, in the section covering supplementary guideline material. The main searches were supplemented by material identified by individual members of the development group. Each of the selected papers was evaluated by two members of the group using standard SIGN methodological checklists before conclusions were considered as evidence.

### 18.5 CONSULTATION

#### 18.5.1 NATIONAL OPEN MEETING

A national open meeting is the main consultative phase of SIGN guideline development, at which the guideline development group presents its draft recommendations for the first time. The national open meeting for this guideline was held on 21<sup>st</sup> September 2004 and was attended by representatives of all the key specialties relevant to the guideline. The draft guideline was also available on the SIGN website for a limited period at this stage to allow those unable to attend the meeting to contribute to the development of the guideline.

#### 18.5.2 SPECIALIST REVIEW

This guideline was also reviewed in draft form by the following independent expert referees, who were asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence base supporting the recommendations in the guideline. SIGN is very grateful to all of these experts for their contribution to the guideline.

Dr Frazer Andrews	<i>General Dental Practitioner, Edinburgh</i>
Mr David Conway	<i>Lecturer in Dental Public Health, Glasgow Dental School</i>
Ms Christine Currie	<i>Speech and Language Therapist, Southern General Hospital, Glasgow</i>
Ms Fiona Dawson	<i>Senior Dietitian, Glasgow Royal Infirmary</i>
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Mr Vinod Joshi	<i>Reconstructive Dental Surgeon, Mouth Cancer Foundation, Wakefield</i>
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Mr Stephen Moralee	<i>Consultant Ear, Nose and Throat Surgeon, Borders General Hospital, Melrose</i>
Dr Andrew Murray	<i>Accident and Emergency Consultant, Crosshouse Hospital, Kilmarnock</i>
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Mr Nick Renny	<i>Consultant Oral and Maxillofacial Surgeon, Aberdeen Royal Hospitals NHS Trust</i>
Dr John Ross	<i>Senior Lecturer, School of Medicine, Environmental and Occupational Medicine, University of Aberdeen</i>
Mr Brendan Scott	<i>Senior Lecturer/Consultant in Restorative Dentistry, Dundee</i>
Dr Andrew Wight	<i>General Dental Practitioner, Dundee</i>
Mr Ian Watson	<i>Consultant in Restorative Dentistry, Glasgow Dental Hospital and School</i>

### 18.5.3 SIGN EDITORIAL GROUP

As a final quality control check, the guideline was reviewed by an editorial group comprising the relevant specialty representatives on SIGN Council to ensure that the specialist reviewers' comments were addressed adequately and that any risk of bias in the guideline development process as a whole has been minimised. The editorial group for this guideline was as follows.

Dr Hugh Gilmour	<i>Senior Lecturer in Pathology, Royal Infirmary of Edinburgh</i>
Dr Grahame Howard	<i>Consultant Radiation Oncologist, Western General Hospital, Edinburgh</i>
Professor Gordon Lowe	<i>Chair of SIGN; Co-Editor</i>
Mr Chris Oliver	<i>Consultant Trauma Orthopaedic Surgeon, Edinburgh Orthopaedic Trauma Unit</i>
Dr Safia Qureshi	<i>SIGN Programme Director; Co-Editor</i>
Dr Sara Twaddle	<i>Director of SIGN; Co-Editor</i>



## Abbreviations

<b>5FU</b>	5-fluorouracil
<b>BMI</b>	body mass index
<b>CNS</b>	clinical nurse specialist
<b>CT</b>	computerised tomography
<b>CHART</b>	continuous hyperfractionated accelerated radiotherapy
<b>EGF</b>	epidermal growth factor
<b>ENT</b>	ear nose and throat
<b>ESPEN</b>	European Society of Parenteral and Enteral Nutrition
<b>EUA</b>	examination under anaesthetic
<b>FEES</b>	fibre optic endoscopic evaluation of swallow
<b>FNA</b>	fine needle aspiration
<b>FNAC</b>	fine needle aspiration cytology
<b>FDG-PET</b>	fluorodeoxy glucose positron emission tomography
<b>FLIC</b>	functional living index for cancer
<b>GORD</b>	gastro-oesophageal reflux disease
<b>GP</b>	general practitioner
<b>Gy</b>	Gray
<b>HBOT</b>	hyperbaric oxygen therapy
<b>HPV</b>	human papillomavirus
<b>ISD</b>	Information Services, NHS National Services Scotland
<b>IMRT</b>	intensity modulated radiotherapy
<b>MBS</b>	modified barium swallow
<b>MRI</b>	magnetic resonance imaging
<b>MUST</b>	malnutrition universal screening tool
<b>NCDDP</b>	The National Clinical Dataset Development Programme
<b>NCRI</b>	National Cancer Research Institute
<b>NG</b>	nasogastric
<b>NICE</b>	National Institute for Health and Clinical Excellence
<b>NHS QIS</b>	NHS Quality Improvement Scotland
<b>N0</b>	node negative
<b>ORN</b>	osteoradionecrosis
<b>PET</b>	positron emission tomography
<b>PEG</b>	percutaneous endoscopic gastrostomy
<b>RCT</b>	randomised controlled trial
<b>RR</b>	risk reduction
<b>SIGN</b>	Scottish Intercollegiate Guidelines Network
<b>SLT</b>	speech and language therapist



<b>TNM</b>	T: the extent of the primary tumour N: the absence or presence and extent of regional lymph node metastasis M: the absence or presence of distant metastasis
<b>USFNA</b>	ultrasound guided fine needle aspiration
<b>UICC</b>	Union Internationale Contre le Cancer
<b>WHO</b>	World Health Organisation

## Annex 1

### Staging of head and neck cancer

T categories for oral cavity, oropharyngeal and hypopharyngeal cancers from UICC:TNM Classification of Malignant Tumours<sup>4</sup>

Stage	
<b>TX</b>	Primary tumour cannot be assessed
<b>T0</b>	No evidence of primary tumour
<b>Tis</b>	Carcinoma in situ
<b>Oral cavity</b>	
<b>T1</b>	≤ 2 cm
<b>T2</b>	> 2 cm to 4 cm
<b>T3</b>	> 4 cm
<b>T4a</b>	Through cortical bone, deep/extrinsic muscle of tongue, maxillary sinus, skin
<b>T4b</b>	Masticator space, pterygoid plates, skull base, internal carotid artery
<b>Oropharynx</b>	
<b>T1</b>	≤ 2 cm
<b>T2</b>	> 2 cm to 4 cm
<b>T3</b>	> 4 cm
<b>T4a</b>	Larynx, deep/extrinsic muscle of tongue, medial pterygoid, hard palate, mandible
<b>T4b</b>	Lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, skull base, carotid artery
<b>Hypopharynx</b>	
<b>T1</b>	≤ 2 cm and limited to one subsite
<b>T2</b>	> 2 cm to 4 cm or more than one subsite
<b>T3</b>	> 4 cm or with hemilarynx fixation
<b>T4a</b>	Thyroid/cricoid cartilage, hyoid bone, thyroid gland, oesophagus, central compartment soft tissue
<b>T4b</b>	Prevertebral fascia, carotid artery, mediastinal structures

## Annex 1 (continued)

T categories for laryngeal cancers from UICC:TNM Classification of Malignant Tumours<sup>4</sup>

<b>Larynx</b>	
<b>Supraglottis</b>	
<b>T1</b>	One subsite, normal mobility
<b>T2</b>	Mucosa of more than one adjacent subsite of supraglottis or glottis or adjacent region outside the supraglottis; without fixation
<b>T3</b>	Cord fixation or invades postcricoid area, pre-epiglottic tissues, paraglottic space, thyroid cartilage erosion
<b>T4a</b>	Through thyroid cartilage; trachea, soft tissues of neck: deep/extrinsic muscle of tongue, strap muscles, thyroid, oesophagus
<b>T4b</b>	Prevertebral space, mediastinal structures, carotid artery
<b>Glottis</b>	
<b>T1</b>	Limited to vocal cord(s), normal mobility
<b>T1a</b>	one cord
<b>T1b</b>	both cords
<b>T2</b>	Supraglottis, subglottis, impaired cord mobility
<b>T3</b>	Cord fixation, paraglottic space, thyroid cartilage erosion
<b>T4a</b>	Through thyroid cartilage; trachea, soft tissues of neck: deep/extrinsic muscle of tongue, strap muscles, thyroid, oesophagus
<b>T4b</b>	Prevertebral space, mediastinal structures, carotid artery
<b>Subglottis</b>	
<b>T1</b>	Limited to subglottis
<b>T2</b>	Extends to vocal cord(s) with normal/impaired mobility
<b>T3</b>	Cord fixation
<b>T4a</b>	Through cricoid or thyroid cartilage; trachea, soft tissues of neck: deep/extrinsic muscle of tongue, strap muscles, thyroid, oesophagus
<b>T4b</b>	Prevertebral space, mediastinal structures, carotid artery

## Annex 1 (continued)

N categories for oral cavity, oropharyngeal, hypopharyngeal and laryngeal and cancers from UICC:TNM Classification of Malignant Tumours<sup>4</sup>

<b>NX</b>	Regional lymph nodes cannot be assessed
<b>N0</b>	No regional lymph nodes metastasis
<b>N1</b>	Ipsilateral single $\leq 3$ cm
<b>N2</b>	a. Ipsilateral single $> 3$ to 6 cm b. Ipsilateral multiple $\leq 6$ cm c. Bilateral, contralateral $\leq 6$ cm
<b>N3</b>	$> 6$ cm

M categories for oral cavity, oropharyngeal, hypopharyngeal and laryngeal and cancers from UICC:TNM Classification of Malignant Tumours<sup>4</sup>

<b>MX</b>	Distant metastasis cannot be assessed
<b>M0</b>	No distant metastasis
<b>M1</b>	Distant metastasis

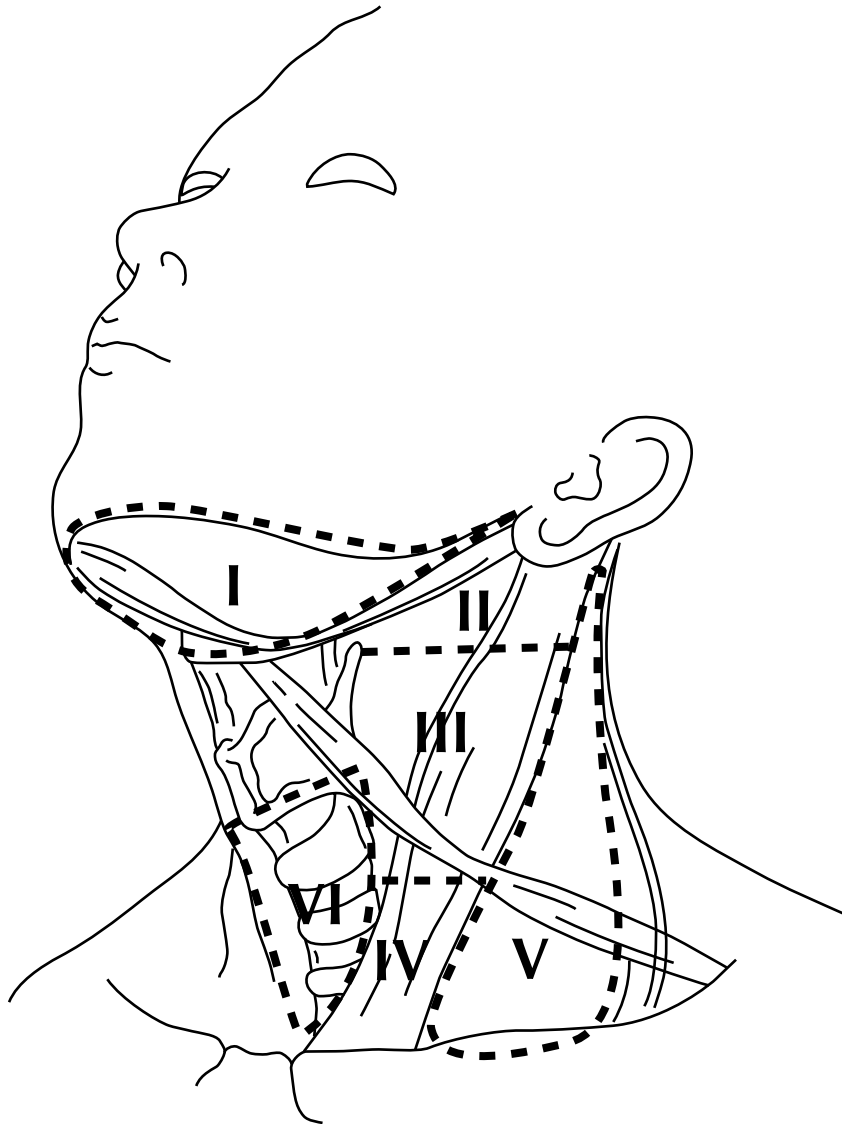
Stage grouping for oral cavity, oropharyngeal, hypopharyngeal and laryngeal and cancers from UICC:TNM Classification of Malignant Tumours<sup>4</sup>

<b>Stage 0</b>	Tis	N0	M0
<b>Stage I</b>	T1	N0	M0
<b>Stage II</b>	T2	N0	M0
<b>Stage III</b>	T1, T2	N1	M0
	T3	N0, N1	M0
<b>Stage IVA</b>	T1, T2, T3	N2	M0
	T4a	N0, N1, N2	M0
<b>Stage IVB</b>	T4b	Any N	M0
	Any T	N3	M0
<b>Stage IVC</b>	Any T	Any N	M1

## Annex 2

### Diagram of the lymph node levels in the neck

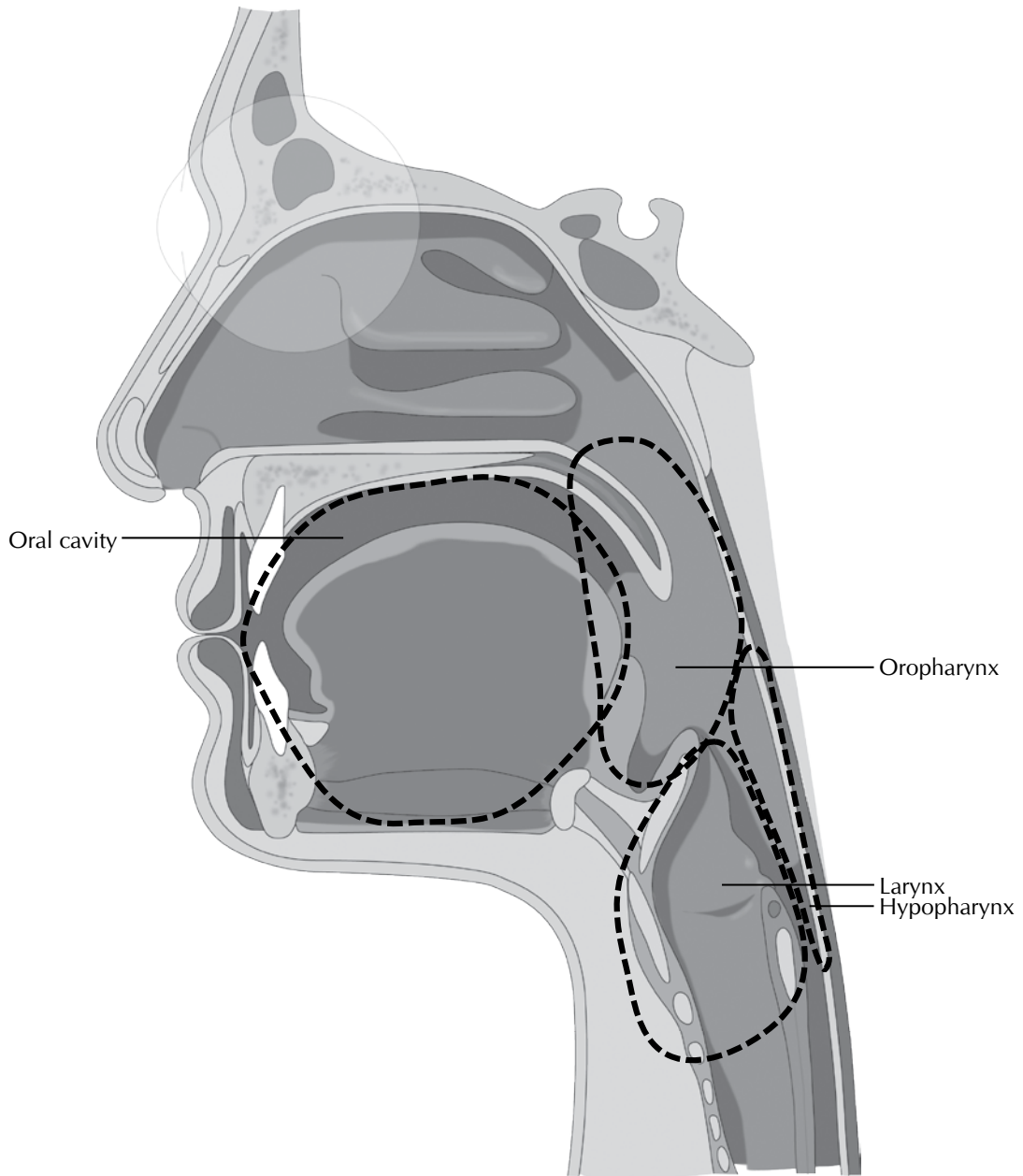
Schematic diagram indicating the location of the lymph node levels (I-VI) in the neck. Adapted from Head and Neck Cancer: A Multidisciplinary Approach. <sup>511</sup>



## Annex 3

### Diagrams of the head and neck

Diagram of the head and neck, which may be helpful in illustrating where a patient's cancer is situated.



## Annex 3 (continued)

Diagram of the mouth and throat, which may be helpful in illustrating where a patient's cancer is situated.

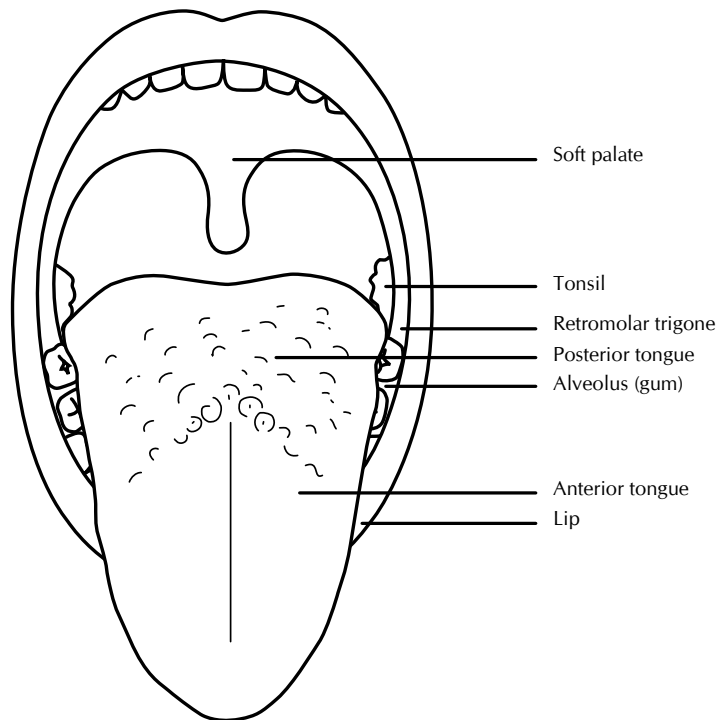
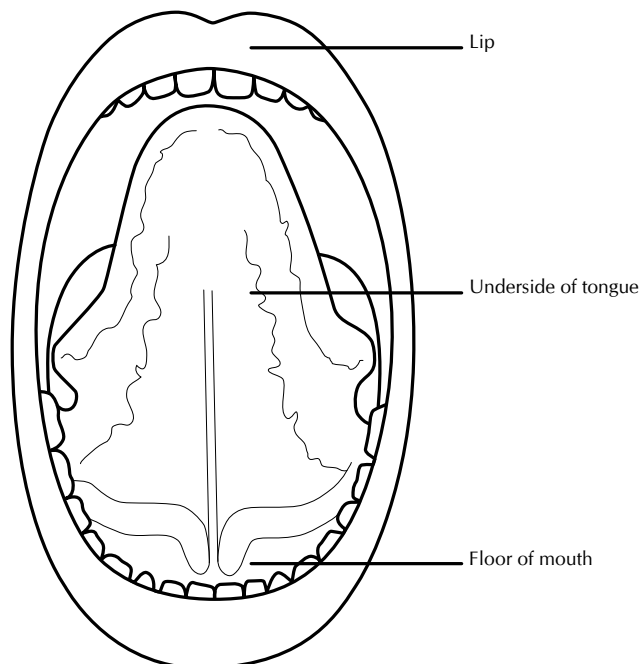


Diagram of the mouth and underside of the tongue, which may be helpful in illustrating where a patient's cancer is situated.



## Annex 4

### Example of information and contact details for patients with head and neck cancer

This example of information and contact details for patients with head and neck cancer is not evidence based.

<b>INFORMATION AND CONTACT DETAILS</b>		
<p>You have recently been diagnosed with head and neck cancer and it is important to emphasise that each person's pathway will be individual and different. You may find that the information given to you and the decisions that you have to make overwhelming. Your clinician and the team are the experts and will discuss fully with you your treatment plan. They will also give you, at the appropriate stage, information which is accurate and tailored to your needs. Appropriate support, dependent on your treatment, will be given at all stages.</p>		
<p>When attending an appointment at a clinic you may find it useful to:</p> <ul style="list-style-type: none"> <li>▪ write down all of the questions that you would like answered and bring them to the clinic</li> <li>▪ bring a family member or close friend for support</li> <li>▪ write down the answers to your questions to discuss with family and friends after the visit</li> <li>▪ ask for written information at any stage of your treatment</li> <li>▪ bring any medication that you are currently taking.</li> </ul>		
	<b>Name</b>	<b>Telephone number</b>
<b>First point of contact</b>		
<b>Hospital(s)</b>		
<b>Hospital reference</b>		
<b>Department</b>		
<b>Clinic</b>		
<b>Ward/outpatients</b>		
<b>Consultant(s)</b>		
<b>Clinical Nurse Specialist</b>		
<b>Speech therapist</b>		
<b>Dietitian</b>		
<b>Specialist counsellor</b>		



## Annex 4 (continued)

<b>Diagnosis</b>
<b>Medications</b>
<b>Questions</b>

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## TREATMENT OF OROPHARYNGEAL CANCER

### ▶ Early oropharyngeal cancer

**D** Patients with early oropharyngeal cancer may be treated by:

- primary resection, with reconstruction as appropriate, and neck dissection (*selective neck dissection encompassing nodal levels II-IV, or II-V if base of tongue*)
- external beam radiotherapy encompassing the primary tumour and neck nodes (*levels II-IV, or levels II-V if base of tongue*).

**D**

- Patients with small accessible tumours may be treated by a combination of external beam radiotherapy and brachytherapy in centres with appropriate expertise.
- In patients with well-lateralised tumours prophylactic treatment of the ipsilateral neck only is required.
- Bilateral treatment of the neck is recommended when the incidence of occult disease in the contralateral neck is high (*tumour is encroaching on base of tongue or soft palate*).

**D**

- Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.

**A**

- Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.

### ▶ Locally advanced oropharyngeal cancer

**D** Patients with advanced oropharyngeal cancer may be treated by primary surgery (*if a clear surgical margin can be obtained*).

**D**

- Patients who have a clinically node positive neck should have a modified radical neck dissection.

**D**

- Postoperative chemoradiotherapy to the primary site and neck should be considered for patients who show high risk pathological features.

**A**

- Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered in patients with extracapsular spread and/or positive surgical margins.

**D** Patients with advanced oropharyngeal cancer may be treated by an organ preservation approach.

**A**

- Radiotherapy should be administered with concurrent cisplatin chemotherapy.

**D**

- The primary tumour and neck node levels (*II-V*) should be treated bilaterally.

**A**

- In patients medically unsuitable for chemotherapy, concurrent administration of cetuximab with radiotherapy should be considered.

**A**

- Where radiotherapy is being used as a single modality without concurrent chemotherapy or cetuximab, a modified fractionation schedule should be considered.

**D**

- Patients with N1 disease should be treated with chemoradiotherapy followed by neck dissection where there is clinical evidence of residual disease following completion of therapy.

**D**

- Patients with N2 and N3 nodal disease should be treated with chemoradiotherapy followed by planned neck dissection.

**D**

- In patients with a small primary tumour, locally advanced nodal disease may be resected prior to treating the primary with definitive chemoradiotherapy and the neck with adjuvant chemoradiotherapy.

## TREATMENT OF ORAL CAVITY CANCER

### ▶ Early oral cavity cancer

**D** Patients with oral cavity cancer may be treated by:

- surgical resection, where rim rather than segmental resection should be performed, where possible, in situations where removal of bone is required to achieve clear histological margins
- brachytherapy in accessible well demarcated lesions.

**D** Re-resection should be performed to achieve clear histological margins if the initial resection has positive surgical margins.

**D**

- The clinically N0 neck (*levels I-III*) should be treated prophylactically either by external beam radiotherapy or selective neck dissection.
- Postoperative radiotherapy should be considered for patients who have positive nodes after pathological assessment.

**D**

- Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.

**A**

- Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.

### ▶ Advanced oral cavity cancer

**D** Patients with resectable disease who are fit for surgery should have surgical resection with reconstruction.

**D**

- Patients with node positive disease should be treated by modified radical neck dissection.
- Elective dissection of the contralateral neck should be considered if the primary tumour is locally advanced, arises from the midline or there are multiple ipsilateral nodes involved.

**A** Radical external beam radiotherapy with concurrent cisplatin chemotherapy should be considered when:

- the tumour cannot be adequately resected
- the patient's general condition precludes surgery
- the patient does not wish to undergo surgical resection.

**D**

- Nodal levels I-IV should be irradiated bilaterally.

**D**

- Patients with N1 disease who are receiving radiotherapy to the primary tumour should be treated with chemoradiotherapy where there is clinical evidence of residual disease following completion of therapy.
- Patients with N2 and N3 nodal disease who are receiving radiotherapy to the primary tumour should be treated with chemoradiotherapy followed by planned neck dissection.

**A**

- In patients medically unsuitable for chemotherapy, concurrent administration of cetuximab with radiotherapy should be considered.
- Where radiotherapy is being used as a single modality without concurrent chemotherapy or cetuximab, a modified fractionation schedule should be considered.

**D**

- Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.

**A**

- Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.

## TREATMENT OF LARYNGEAL CANCER

### ▶ Early glottic cancer

- D** Patients with early glottic cancer may be treated either by external beam radiotherapy or conservation surgery:
- B**
- external beam radiotherapy in short fractionation regimens with fraction size > 2Gy (eg 53-55Gy in 20 fractions over 28 days or 50-52Gy in 16 fractions over 22 days) and without concurrent chemotherapy
- D**
- either endoscopic laser excision or partial laryngectomy.

**D** Prophylactic treatment of the neck nodes is not required.

### ▶ Early supraglottic cancer

- D** Patients with early supraglottic cancer may be treated by either external beam radiotherapy or conservation surgery:
- radiotherapy should include prophylactic bilateral treatment of level II- III lymph nodes in the neck
  - endoscopic laser excision or supraglottic laryngectomy with selective neck dissection to include level II-III nodes should be considered
  - neck dissection should be bilateral if the tumour is not well lateralised.

### ▶ Locally advanced laryngeal cancer

- A** Patients with locally advanced resectable laryngeal cancer should be treated by:
- total laryngectomy with or without postoperative radiotherapy
  - an initial organ preservation strategy reserving surgery for salvage.

- A**
- Treatment for organ preservation or non-resectable disease should be concurrent chemoradiation with single agent cisplatin.
  - In patients medically unsuitable for chemotherapy, concurrent administration of cetuximab with radiotherapy should be considered.
  - Radiotherapy should only be used as a single modality when comorbidity precludes the use of concurrent chemotherapy, concurrent cetuximab or surgery.
  - Where radiotherapy is being used as a single modality without concurrent chemotherapy or cetuximab, a modified fractionation schedule should be considered.

- D** In patients with clinically N0 disease, nodal levels II-IV should be treated prophylactically by:
- surgery (*selective neck dissection*)
  - external beam radiotherapy.
- If the tumour is not well lateralised both sides of the neck should be treated.

- D** Patients with a clinically node positive neck should be treated by:
- modified radical neck dissection, with postoperative chemoradiotherapy or radiotherapy when indicated
  - chemoradiotherapy followed by neck dissection when there is clinical evidence of residual disease following completion of therapy (*N1 disease*)
  - chemoradiotherapy followed by planned neck dissection (*N2 and N3 disease*).
- The target volume should include neck nodal levels II-IV.

- D**
- Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.
- A**
- Administration of cisplatin chemotherapy concurrently with postoperative radiotherapy should be considered, particularly in patients with extracapsular spread and/or positive surgical margins.

## TREATMENT OF HYPOPHARYNGEAL CANCER

### ▶ Early hypopharyngeal cancer

- D** Patients with early hypopharyngeal cancer may be treated by:
- radical external beam radiotherapy with concomitant cisplatin chemotherapy and prophylactic irradiation of neck nodes (*levels II-IV bilaterally*)
  - conservative surgery and bilateral selective neck dissection (*levels II-IV, where local expertise is available*)
  - radiotherapy (*patients unsuitable for concurrent chemoradiation or surgery*).

- D**
- Consider postoperative radiotherapy for patients with clinical and pathological features that indicate a high risk of recurrence.
- A**
- Consider administration of cisplatin chemotherapy concurrently with postoperative radiotherapy, particularly in patients with extracapsular spread and/or positive surgical margins.

### ▶ Locally advanced hypopharyngeal cancer

**A** Patients with resectable locally advanced hypopharyngeal cancer may be treated either by surgical resection or an organ preservation approach.

- A**
- For patients with resectable locally advanced hypopharyngeal cancer who wish to pursue an organ preservation strategy, consider external beam radiotherapy with concurrent cisplatin chemotherapy.
- A**
- Neoadjuvant cisplatin/5FU followed by radical radiotherapy alone may be used in patients who have a complete response to chemotherapy.
- D**
- Patients with resectable locally advanced disease should not be treated by radiotherapy alone unless comorbidity precludes both surgery and concurrent chemotherapy.

**A** Patients with unresectable disease should be treated by external beam radiotherapy with concurrent cisplatin chemotherapy.

- A**
- In patients medically unsuitable for chemotherapy, consider concurrent administration of cetuximab with radiotherapy.
  - Single modality radiotherapy without concurrent chemotherapy should follow a modified fractionation schedule.

**D** Patients with a clinically N0 neck should undergo prophylactic treatment of the neck, either by selective neck dissection or radiotherapy, including nodal levels II-IV bilaterally.

- D** Patients with a clinically node positive neck should be treated by:
- modified radical neck dissection, with postoperative chemoradiotherapy or radiotherapy when indicated
  - chemoradiotherapy followed by neck dissection when there is clinical evidence of residual disease following completion of therapy (*N1 disease*)
  - chemoradiotherapy followed by planned neck dissection (*N2 and N3 disease*).
- The target volume should include neck nodal levels II-IV.

**D** In patients with a small primary tumour, locally advanced nodal disease may be resected prior to treating the primary with definitive radiotherapy and the neck with adjuvant radiotherapy (*both with or without chemotherapy*).

- D**
- Postoperative radiotherapy should be considered for patients with clinical and pathological features that indicate a high risk of recurrence.
- A**
- Consider concurrent administration of cisplatin chemotherapy with postoperative radiotherapy, particularly in patients with extracapsular spread and/or positive surgical margins.