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# Mouth Cancer for Clinicians Part 9: The Patient and Care Team

**Abstract:** A MEDLINE search early in 2015 revealed more than 250,000 papers on head and neck cancer; over 100,000 on oral cancer; and over 60,000 on mouth cancer. Not all publications contain robust evidence. We endeavour to encapsulate the most important of the latest information and advances now employed in practice, in a form comprehensible to healthcare workers, patients and their carers. This series offers the primary care dental team in particular, an overview of the aetiopathogenesis, prevention, diagnosis and multidisciplinary care of mouth cancer, the functional and psychosocial implications, and minimisation of the impact on the quality of life of patient and family.

**Clinical Relevance:** This article offers the dental team an overview of the multidisciplinary team (MDT) and its roles, and an overview of the implications of therapies that are discussed more fully in future articles in the series.

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Patient communication and information are crucial aspects in mouth cancer management. A multidisciplinary approach is required to optimize patient wellbeing, and the dental team also have a key role in patient care; therefore the dental team should be knowledgeable in the implications as to how cancer impacts on quality of life (QoL). They should understand that cancer survival rates have been, and are, improving, so that not only

are more patients living with cancer, but they and their loved ones are also having to cope with the adverse effects of cancer and its various treatments.

Early lesions in otherwise healthy patients, especially those in sites such as the lip, have such a good prognosis that they might be said to be 'curable'. The prognosis of later and intra-oral cancers, in contrast, is not so good, but little is gained by expressing this without extreme sensitivity to the patient or relative. People should always have hope for the best, even in the face of adversity ('Hope springs eternal').

## How does mouth cancer affect quality of life?

Coping with a diagnosis of cancer, both practically and emotionally, is taxing for all concerned. Patients are likely to feel very upset, frightened, confused and out of control. They become very dependent. It is important for them to get the right information about the type of cancer and how it is best treated, as being well informed about illness and treatment helps enable many people to

make decisions and cope. They need to work out how to manage practically, for example with family and money matters. It may take some time to deal with each issue. Support people are there to help: talking to someone who has had a similar experience, or to one of the mouth cancer organizations (Articles 8 and 13; Table 1) may help.

## How do the dental team communicate with patients and specialists?

If patients are to be referred for a diagnosis they should be offered a full explanation and discussion as to why the healthcare worker is suggesting a referral for a second and specialist opinion. Rather than too strongly suggest a serious diagnosis, it is more honest to explain that primary care clinicians are trained to be suspicious, but doubt that the lesion is anything to worry about, though they would be failing in their duty if they did not ask for a second or specialist opinion.

Cancers affecting the head and neck are uncommon, so patients with mouth cancer are usually treated in

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Organization	URL	Roles
Cancer Research UK (CRUK)	<a href="http://www.cancerresearchuk.org/?gclid=CJWE94GDr8MCFYKWtAodSicAug">http://www.cancerresearchuk.org/?gclid=CJWE94GDr8MCFYKWtAodSicAug</a>	Statistics, learning and development tools, and information on early diagnosis, treatment and prevention of cancer
<i>Changing Faces</i>	<a href="https://www.changingfaces.org.uk/Home">https://www.changingfaces.org.uk/Home</a>	An organization that helps people cope with facial changes
Facial Surgery Research Foundation	<a href="http://www.savingfaces.co.uk/about-us">http://www.savingfaces.co.uk/about-us</a> <a href="https://www.justgiving.com/savingfaces/">https://www.justgiving.com/savingfaces/</a>	Research into the treatment of facial diseases
<i>Let's Face It</i>	<a href="http://www.lets-face-it.org.uk/">http://www.lets-face-it.org.uk/</a>	To offer friendship on a one to one basis To link families, friends and professionals To assist people with facial disfigurement to share their experiences, struggles and hopes To help them build the courage to face life again To provide continuing education to medical, nursing, allied health professionals concerning the lifelong needs of people with facial disfigurement Linking people with facial disfigurement, their families, friends and professionals with resources for recovery
Macmillan Cancer Support	<a href="http://www.macmillan.org.uk/HowWeCanHelp/HowWeCanHelp.aspx?gclid=CP_TxvGCr8MCFdHMTAodfDAA3Q">http://www.macmillan.org.uk/HowWeCanHelp/HowWeCanHelp.aspx?gclid=CP_TxvGCr8MCFdHMTAodfDAA3Q</a>	Support, helping with all the things that people affected by cancer want and need
Marie Curie Cancer Care	<a href="https://www.mariecurie.org.uk/who/what-we-do">https://www.mariecurie.org.uk/who/what-we-do</a>	Care and support for terminally ill people and their families
<i>Mouth Cancer Foundation online support group</i>	<a href="http://www.mouthcancerfoundation.org/get-support/online-community-forum?gclid=CJaql56Dr8MCFefnwgodGogA2Q">http://www.mouthcancerfoundation.org/get-support/online-community-forum?gclid=CJaql56Dr8MCFefnwgodGogA2Q</a>	A forum for patients to help each other

**Table 1.** UK mouth cancer support organizations.

specialist hospitals. The multidisciplinary team (MDT), or regional cancer centre (tertiary healthcare) is a team of health professionals who work together to decide on the best treatment and care to advise and discuss with each patient. NHS guidelines state that patients who have head and neck cancer should be under the care of a MDT, ~~a team who work together to decide on the best treatment and care for each individual patient.~~ The dental team should leave any more detailed discussion on diagnosis, investigations, prognosis, and treatment to the specialists in the MDT as only the MDT are in a position to give accurate facts to the patient concerned.

Management of the cancer

depends on site, extent, histology, medical history and patient choice.

### How does the specialist communicate with the patient and family?

Cancer is to most people a term that forebodes disaster, not unreasonably, since most have had relatives or friends who have died of the disease, so one of the most difficult clinical situations in which clinicians find themselves is with the patient in whom cancer is diagnosed. Mouth cancer and its management are usually associated with more physical, emotional and psychosocial disruption than is the case with some other tumours, often severely affecting patients'

'quality of life' (QoL).

Good communication, especially breaking bad news such as about cancer in an acceptable way, can help all involved, and reduce the inevitable distress experienced. Hope is all-important and management must include especial attention to psychological reactions.

Denial by patients is common. Patients may or may not know, or may not want to know, that they have cancer and, even if they are aware of it, may not appreciate, or be willing to accept, the prognosis. Extremely important, but often overlooked, is the need for psychosocial counselling; patients must be counselled carefully to ensure that they can adjust,

at least partially, to any complications of cancer therapy.

Communication with partners, family and friends can be essential and, provided the patient consents, all close to the patient should then be kept aware by the MDT of:

- The intended outcomes;
- Prognosis;
- How much the patient understands about his/her disease;
- Psychological reactions of the patient to cancer;
- Potential adverse effects of treatment.

### What are the multidisciplinary team (MDT) roles?

An MDT is a team of health professionals who work together to decide on the best treatment and care for each patient. Even if the patient sees only one specialist, the team will still have got together with the test results and case notes to discuss the best treatment options to offer. The MDT may include (alphabetically):

- **Anaesthetists:**
- **Clinical nurse specialists:** nurses with specialist knowledge of these cancers and who help organize the care between doctors and the other health professionals, and ensure that patients and family have the information needed;
- **Cytologists:** specialist doctors who help to differentiate malignant from benign lymph nodes;
- **Dental hygienists:** dental health professionals who advise on oral health and disease prevention;
- **Dieticians:** advise on eating well;
- **Head and neck surgeons:** specialist doctors who are head and neck surgeons, or ear, nose and throat surgeons (otolaryngologists; ENT), or oral and maxillofacial surgeons (trained both as a doctor and a dentist and specializes in treating conditions affecting the mouth, jaw, face and neck) and/or a plastic and reconstructive surgeon, skilled in rebuilding tissue in the head and neck;
- **Oncologists:** specialist doctors who specialize in cancer treatments such as radiotherapy, chemotherapy and targeted (biological) therapies;
- **Pathologists:** specialist doctors or

dentists who advise on the type and extent of the cancer;

- **Physiotherapists:** advise on management of trismus;
- **Psychiatrists:** specialist doctors who advise on mental health issues;
- **Psychologists:** advise on emotional issues;
- **Radiologists:** specialist doctors who help analyse scans and radiographs;
- **Restorative dentists:** dental specialists in replacing lost tissues and teeth. They are also called prosthodontists. The dentist will help to plan with the surgeon, so that appearance and function (speech, eating, swallowing) return to as normal as possible after the major surgery;
- **Social workers:** advise on benefits and grants;
- **Special care dentists:** specialists who help cope with adverse treatment effects and other aspects, much as do the restorative dentists;
- **Speech and language therapists (SLTs):** help with communication and/or swallowing problems.

If a cancer diagnosis has been established, the MDT will discuss with the patient, his/her partner and relatives that:

- Tumours differ in their degree of malignancy;
- Their tumour has been detected at an early stage (hopefully);
- Treatment is continually improving;
- They are in a specialist centre for treatment.

The *British Association of Otorhinolaryngology Head and Neck Surgery. Head and Neck Cancer: Multidisciplinary Management Guidelines* (2011) are in common usage. The MDT plans the cancer treatment and will provide fuller details of treatment options, including avoidance or minimization of post-operative complications. This includes planned oral and dental care such as discussions regarding restorative and surgical interventions required before cancer treatment, including osseointegrated implants and jaw reconstruction (Article 13). Oral care is especially important when radiotherapy is to be given or bisphosphonates are used, since there is a liability to complications, and a risk of osteonecrosis, the initiating factor for which is often trauma, such as tooth extraction,

or ulceration from an appliance, or oral infection. As much as possible of dental treatment should be completed before starting cancer treatment. A restorative dentist (~~prosthodontist~~) will help to plan recovery with the surgeon. A prosthesis will also help to restore the appearance to as normal as possible after major surgery.

### What will the specialist and nurse specialist discuss before cancer treatment?

The aims of cancer treatment is ideally to remove or destroy the tumour entirely, but the outcome is a balance between this and adverse effects (of treatment and psychological sequelae). Patients with mouth cancer may be aware that they almost certainly will, at least initially post-treatment, have to face pain and at least some swelling and difficulties in eating, chewing, drinking, breathing, speaking, as well as possible changes in appearance, and a common concern is fear of the cancer recurring. Health Related QoL (HRQoL) is thus significantly affected (Article 13). The main factors influencing HRQoL adversely are radiotherapy, advanced clinical stage, socioeconomic status, patient age and access to oral healthcare. Psychosocial dysfunction is virtually invariably to be anticipated, and interventions may be needed.

Initial concerns typically focus on investigations and treatment.

### Investigations

Patients may need to have a range of investigations such as (alphabetically):

- Biopsy;
- Chest radiography;
- Computerized Tomography (CT) scan(s);
- Fine needle aspiration (FNA);
- Magnetic Resonance Imaging (MRI scan) (Figure 1);
- Nasoendoscopy (NE);
- Orthopantomogram (OPG or OPT) (Figure 2);
- Panendoscopy;
- Positron Emission Tomography (PET-CT scan);
- Ultrasound scan(s) (US).

### Test results

Test results always take a little time, even if only a few days, and this is an anxious time for most patients and those closest to them. The cancer specialist nurse may be available for information, if needed.

The specialist will ask the patient to return to discuss them and they will then decide together on the appropriate course of treatment.

### How is the optimum cancer treatment decided?

The MDT usually has an agreed treatment policy which offers the best outcomes. Cancer treatment planning is based on:

- Tumour type, stage (size, nodal status and metastases) and grade;
- Balance of benefit of a particular treatment and its potential adverse impact, particularly upon appearance, speech, eating and swallowing;
- Co-existent medical conditions, general health and fitness;
- Social circumstances;
- Most importantly, the wishes of the patient.

The specialist usually advises the best treatment suggested by the MDT and there may be choices between treatment modalities.

Surgery may be the preferred treatment for small cancers which can often be removed with only small changes to speech, chewing or swallowing that can be adapted to quite quickly.

Radiotherapy may be the

preferred treatment for cancers in areas that are difficult to reach, or where removing tissue surgically can cause major changes in speaking or swallowing.

Most patients with oral squamous cell carcinomas (OSCC) are older adults, many have been exposed to tobacco, betel, alcohol or a combination, and they are often also of resource-poor groupings, sometimes malnourished. Co-morbidities are therefore common, such as cardiovascular (eg hypertension and ischaemic heart disease), respiratory (eg obstructive airways disease) and hepatic (eg cirrhosis). The MDT will take account of these aspects since they may adversely affect:

- Disease specific survival, due to advanced stage at presentation and likelihood of patients undergoing less aggressive treatment;
- Incidence of and severity of complications;
- Mortality after treatment, especially in the first years;
- Quality of life;
- Treatment costs.

The patient may desire a second opinion which may give more information and perhaps a different view but, in any event, often helps patients to feel more confident about the treatment plan. A

second opinion does not mean that the second doctor will necessarily change or take over the care.

### What oral prevention and treatment planning are needed before cancer therapy?

Prevention and careful treatment planning are essential to minimize oral disease and the need for, and possible adverse consequences of, operative intervention. Adults with malignant head and neck disease unfortunately often have poor oral hygiene and care and are poorly compliant with oral healthcare. Prevention and treatment of oral complications whenever possible are important and should be performed by an oncologic team, including at least a dental practitioner and an oral hygienist (Article 13). Most (97%) cancer patients need oral healthcare before radiotherapy or chemotherapy for cancer.

Many patients undergoing cancer surgery, particularly when the neck is invaded, can have life-threatening post-operative complications. These can often be predicted by pre-operative assessment using a specific activity scale questionnaire, an assessment of alcohol abuse, liver function tests and a white cell and platelet count.

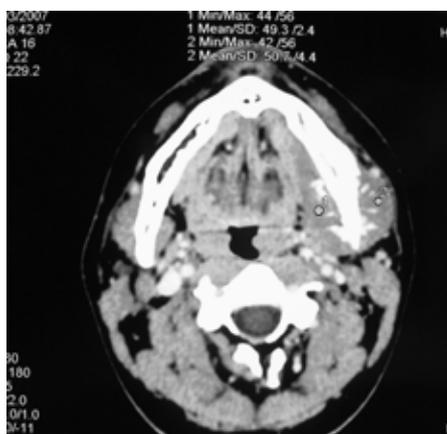


Figure 1. MRI showing tumour.



Figure 2. OPT showing tumour invasion of mandible.

## What might patients wish to know?

Some questions that concern patients and their family include:

- Appearance
  - Post-operatively?
  - What can be done to hide any scars?
- Function
  - Speech and swallowing
    - Will speech be affected?
    - Will communication be affected?
    - Will swallowing be affected?
  - Eating
    - Will a special diet be needed?
    - Should they see a dietician?
  - Work
    - Will they be able to return to work?
    - What practical help and help with claiming benefits and grants is available?
- How else will treatment affect them?
  - Will they ever return completely to normal?
  - Are there long-term effects?
- Psychological
  - Where can they find help?
  - Is counselling available?
  - Costs for counselling?
  - Effects on intimate relationships?

## What supportive care is available?

- The clinical nurse specialist gives support, practical advice and information about any aspect of cancer or treatment.
- The dietician and/or the speech and language therapist before surgery or radiotherapy can help with any swallowing, speech or dietary issues and advise on the likely effects that treatment may have and what can be done to help. The dietician advises on how to make sure the patient gets all the nutrients needed. Sometimes cancer treatment can lead to severe difficulty in swallowing, particularly if radiotherapy is combined with chemotherapy (chemoradiation). Usually this is temporary and settles within a few weeks.
- If the surgeon or oncologist believes that there may be a risk of developing severe swallowing difficulties, they may well suggest a feeding tube through the nose, a NG (Naso-Gastric tube), or

the skin directly into the stomach, a PEG (Percutaneous Endoscopic Gastrostomy) or RIG (Radiologically Inserted Gastrostomy) tube. Once swallowing improves, the tube is removed.

## How important is consent?

No treatment can be given without valid consent and, before being asked to sign the form, patients must be given full and clear information about:

- Type and extent of the treatment;
- Advantages and disadvantages of the treatment;
- Significant risks or adverse effects of the treatment;
- Other treatments that may be available.

The doctor should inform the patient if the main aim of treatment is to try to cure the cancer, to control the cancer for a time, or to decrease symptoms and improve quality of life, as well as detail the possible adverse effects of each treatment and whether these are likely to be temporary or permanent.

Some cancer treatments are complex, so it is not unusual to need explanations repeated. It is sensible to have an advocate (a relative or friend) present when the treatment is explained, to help patients remember the discussion. Patients may also find it useful to write a list of questions before the appointment. The staff must be willing to make adequate time available for questions. Patient information in written form is invaluable. Macmillan Cancer Support, for example, provide such material: [http://www.macmillan.org.uk/Home.aspx?gclid=CNnluoPC\\_8MCFUzKtAod32QAXw](http://www.macmillan.org.uk/Home.aspx?gclid=CNnluoPC_8MCFUzKtAod32QAXw)

Patients are also free at any point to change their decisions or to choose not to have the treatment: then the staff must explain what may happen, and record the decision in the medical notes. Patients need not have to give a reason for their decisions, but it can help to let the staff know about any concerns so that they can offer the best advice.

## What are advantages and disadvantages of the cancer treatments available?

Mouth cancer currently is treated largely by surgery and/or irradiation, although few unequivocal controlled trials

of any treatment modalities have been conducted. Treatments for OSCC may, however, include the following and are discussed fully in Articles 10, 11 and 12:

- Beneficial
  - Surgery
  - Radiotherapy
- Likely to be beneficial
  - Chemotherapy
  - Robotic surgery
  - Conformal radiotherapy
- Emergent treatments
  - Targeted therapies
- Supportive treatments
  - Speech therapy
  - Dietetics
  - Dental
  - Psycho-oncology.

Mouth and oropharyngeal cancers can thus be treated with surgery, radiotherapy, chemotherapy, biological (targeted) therapy, or combinations of these. Surgery alone cures some tumours, but others respond better to radiotherapy, or radiotherapy with chemotherapy or biological therapy. In some situations there may be a choice between types of treatment if, for example, in controlling the cancer, radiotherapy can work as well as surgery. If cancer has already spread to another part of the body, using surgery just to remove the tumour in the mouth or oropharynx will not cure it but may still help to control symptoms and disease. The MDT may usually suggest the following treatments:

- Surgery combined with radiotherapy or chemo-radiotherapy (depending on the disease staging);
  - Chemotherapy alone or with radiotherapy or biological
- A Cochrane review in 2010 found that adding chemotherapy to surgery or radiotherapy for oropharyngeal cancer works better than just one of these treatments on their own. If the cancer has spread a palliative care team will arrange treatment aimed at improving symptoms and making life easier by helping to:
- Control pain, sickness or breathing problems;
  - Support with diet and physical care;
  - Rehabilitate to get strength back before returning home from hospital.

Palliative care also includes looking after people in the terminal stages of their illness.

The following summarizes aspects of the various treatments, which are expanded in Articles 10, 11 and 12.

## Surgical treatment

Surgery works very well for early cancers. The goal is to remove the primary tumour together with a margin of clinically normal tissue to ensure complete excision of malignant tissue and excision of any 'involved' lymph nodes (nodes containing metastases). For tissue reconstruction, tissue often must be brought into the region to close the defect using grafts or flaps. The patient normally recovers well within 10–14 days.

Modern reconstructive techniques can produce good orofacial aesthetics and function. However, any surgery involving the jaw, mouth, throat or tongue will post-operatively initially make eating and swallowing difficult. After such operations, patients are thus usually fed via a tube into the stomach for liquid feeds (Article 10).

## What is needed before surgical treatment?

### Oral health

Patients are usually advised to have a complete dental check-up and any dental work needed completed before surgery.

### Speech, swallowing and eating

The dietitian and/or the speech and language therapist should advise the patient before surgery or radiotherapy.

### Smoking

Stopping smoking will increase the chances of treatment being effective.

### Alcohol

Avoiding alcohol, particularly spirits, will also help make treatment more effective and reduce adverse effects.

## What can be anticipated after surgery?

Surgery usually involves a hospital stay for several days or for up to a few weeks, depending mainly on the extent of the surgery and reconstruction. Often,

immediately after the operation, some time in the intensive care unit (ITU) is indicated. This is where the patient will be closely checked and given intensive nursing care and may need a number of drips, drains and tubes.

### Drips, drains and dressings

Post-operative swelling may well make eating and drinking uncomfortable, so initially an intravenous infusion (drip) is used. Plastic drainage tubes are used to collect exudates from the wounds for 2–7 days.

### Feeding

Feeding is often by tubes, usually either:

- A gastrostomy tube (PEG or RIG tube);
- A nasogastric (NG) tube.

The dietician will prescribe a high-protein, high-calorie, liquid food. When the patient can eat and swallow safely, the feeding tube can be removed.

### Catheters

Patients may need a catheter to drain urine into a collecting bag.

### Tracheostomy

If the type of surgery is likely to embarrass the airway, the surgeon will create a tracheostomy or stoma for about 5–7 days until breathing is fine. Whilst with a tracheostomy, speaking with the tube in place is impossible.

## What post-operative sequelae can be anticipated?

### Pain

Pain or discomfort for a few days after the operation is inevitable.

### Changes in sensation (numbness)

Surgery may affect the sensation in mouth, face, neck or shoulders. Numbness in the skin around any wound/scar is common. It may take several months for normal sensation to return.

### Speech

Many operations can affect speech. For some people this is hardly noticeable, but for others speech may be

temporarily or permanently altered. A speech and language therapist will be able to help the patient adapt to any changes with speech.

### Swallowing

A speech and language therapist can advise about the safest and easiest types of food to have, and teach mouth and jaw exercises to improve swallowing.

### Trismus

Some operations can cause limited jaw opening; physiotherapy and exercises help prevent this from becoming permanent.

### Appearance

Surgery may alter the appearance but modern techniques and reconstructive surgery are very good. Surgeons can also often rebuild lost bones. Surgery to the lips is harder to hide but camouflage make-up can be used to hide the areas.

## Radiotherapy treatment (RT)

Radiotherapy alone is used to treat some types of mouth and oropharyngeal cancers. Even if surgery is the main treatment, the specialist may still recommend radiotherapy after to lower the risk of recurrences. Radiotherapy may be combined with chemotherapy for people whose cancer has spread into surrounding areas (locally advanced cancer).

Radiotherapy has to be carefully planned to be aimed precisely at the cancer and cause the least possible damage to the surrounding tissues. Treatment planning is by the clinical oncologist and may take several visits. Treatment is given in the hospital radiotherapy department, often taking 3–7 weeks, depending on the type and size of the cancer. Radiotherapy advantages include the facts that the normal anatomy and function are maintained, but disadvantages mainly include the adverse effects. Oral mucositis may significantly impact the quality of life. Longer-term complications may include dry mouth, loss of taste,

osteoradionecrosis (ORN), trismus and other problems. Newer radiotherapy techniques may produce less adverse effects (Article 11).

### What is required before treatment?

Alcohol, especially spirits, will irritate the areas affected by treatment. Smoking should also be stopped; during radiotherapy it is likely to worsen adverse effects, and it reduces the effect of radiotherapy on the cancer.

Regular mouth care is crucial during and after radiotherapy. Mouthwashes and protective gels may help.

### What can be anticipated after radiotherapy?

#### Mucositis

Mucositis usually heals within 3 weeks after the end of treatment. Tobacco smoking delays resolution. The patient should adopt a soft, bland diet and avoid irritants such as smoking, spirits, or spicy foods. Topical analgesics may provide relief.

#### Hyposalivation

Salivary tissue is highly vulnerable to radiation damage. Hyposalivation leads to discomfort and loss of taste and appetite and predisposes to dental caries, candidosis and sialadenitis. It is important to protect teeth by following a mouth care routine and seeing an oral hygienist and dentist regularly. Patients must avoid foods with a high sucrose content, achieve a good level of oral hygiene and use topical fluoride therapy for life.

#### Taste disturbances

Patients receiving radiotherapy to the mouth invariably experience some disturbance or loss of taste sensation. Fortunately, taste perception usually recovers slowly within a few months after the end of radiotherapy.

#### Trismus

Up to 55% of patients develop trismus in the first 3–12 months after radiotherapy, with continuing loss of oral opening for 24–48 months. Preventing the development of trismus by stretching is

imperative for long-term functionality and QoL.

#### Osteoradionecrosis (ORN)

Radiotherapy damages bone cells with a consequent slowing of bone remodelling, which eventually may result in thinning and reduced bone strength. ORN is potentially the most serious oral complication of radiation therapy. Various factors predispose to ORN, but the risk is greatest when teeth are extracted after radiotherapy, and when alcohol and tobacco are used, together with poor nutritional status and oral hygiene. Teeth may need to be extracted before radiotherapy if they are not vital, or if they need root filling or elaborate restorative techniques, or are associated with active periodontal disease.

### What other post-radiotherapy sequelae can be anticipated?

#### Sore and sensitive skin

The skin over the face and neck will typically redden or darken and become sore (like sunburn) after about two weeks of radiotherapy and may last for 2–4 weeks after treatment has finished.

#### Hoarse voice

The voice often becomes hoarse but usually recovers after a few weeks.

#### Feeling sick (nausea)

Sickness is more likely to affect people who have combined chemotherapy and radiotherapy; anti-emetics can help.

#### Changes in hearing

Radiotherapy for *nasopharyngeal* cancer may cause hearing changes; these may be temporary and recover after treatment.

#### Thyroid hormone levels

Some 30 to 40% of patients develop hypothyroidism after radiotherapy to the neck.

### Chemotherapy treatment (CTX)

Chemotherapy is rarely used in mouth cancer, except in combination with radiotherapy, or for

palliation. Chemotherapy is usually given intravenously. Chemotherapy often causes nausea, fatigue, diarrhoea or constipation, sore mouth, bleeding, disturbed hearing, hair loss, as well as paraesthesia, mainly on the hands and feet, and can temporarily reduce the blood count increasing the liability to anaemia and to infections. Article 12 gives more detail.

### Newer targeted cancer therapies

Therapies being developed to target specific molecules and pathways in carcinogenesis generally aim to have less frequent and severe adverse effects than does conventional chemotherapy. Cetuximab is the most commonly used targeted therapy for mouth and head and neck cancer (Article 12).

### Further reading

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