



Occasional paper

EARLY DETECTION AND PREVENTION OF ORAL CANCER:

a management strategy for dental practice

PUBLISHED BY THE BRITISH DENTAL ASSOCIATION

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EARLY DETECTION AND PREVENTION OF ORAL CANCER: a management strategy for dental practice

Early detection of oral cancer needs more than just understanding of the signs and symptoms of disease. The process must be managed effectively and handled sensitively. Every member of the dental team has a part to play and protocols should be developed for effective delivery of:

1. regular examination of the oral cavity of patients attending the practice
2. management of detected mucosal lesions with appropriate referral
3. management of patients with lifestyles that contribute to an increased risk of oral cancer.

The aim of this Occasional Paper is to develop a clinical guideline and offer realistic advice for dentists in primary care who now seek to adopt best practice in oral cavity examination and case detection.

Oral cancer deaths will be reduced only if the disease is recognised earlier, avoiding delays in diagnosis, and treated sooner.¹ Greater public awareness, Continuing Professional Education and improvements to the health (referral) systems, we believe, will help us to achieve this objective.

This care pathway is a revised version of BDA Occasional Paper issue number 6, released in April 2000, and includes advances in knowledge made since the previous publication.

BDA Occasional Papers are published under the editorial control of the BDA. The present paper was edited and updated for the BDA by **Professor Paul Speight** (University of Sheffield), **Professor Saman Warnakulasuriya** (King's College London & WHO Collaborating Centre for Oral Cancer, UK) and **Professor Graham Ogden** (University of Dundee).

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ISBN 978-1-907923-00-5

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Early detection of oral cancer obligations and opportunities

Oral cancer remains a highly lethal disease and is one of the most debilitating and disfiguring of all malignancies. It presents the whole dental team with important obligations, challenges and a real opportunity to save a life. Some patients are now taking legal action against their dentist, alleging failure to diagnose their oral cancer.

This section introduces the key issues, which are discussed more fully in later sections.

- The incidence of oral cancer in the UK has been increasing since the mid 1970s; incidence has increased by over 34 per cent in the last decade.

- The incidence of this cancer is increasing in particular among young males.
- Oral cancer deaths are not falling in Britain even though many are preventable.
- Patients need to know that certain lifestyles put them at risk of oral cancer.
- The dental team has a key role in the prevention of oral cancer deaths by earlier detection of any suspect conditions.
- The dental team should understand NICE guidelines for referral of suspect lesions.
- Practices should review their approach to case finding and appropriate referral.

Finally, on page 26, the paper looks at the practical implementation of an oral cancer detection strategy.

How common is oral cancer?

Oral cancer includes cancers of the lip, tongue and rest of the oral cavity, but not cancers of the major salivary glands. Those of the tonsil and oropharynx are included as oropharyngeal cancers. By this definition, there are currently over 5000 new oral cancer cases per year in the UK, and about 1850 deaths. Incidence is higher in men than in women, in older compared with younger age groups and varies from region to region, with Scotland, Wales and Northern Ireland having a higher incidence of oral cancer than England.²

The problem is not simply that the number of new oral cancer cases is rising, as people continue to put themselves at risk through smoking and excessive drinking, but also that these cancers are being detected at an advanced stage. No other cancers have shown such significant increases in their

incidence. Furthermore, treatment of many cancers is showing impressive improvement in survival, but oral cancer continues to have high death rates.

The oral cancer challenge is put into perspective in Table 1, which draws comparison with four other much-publicised cancers. Oral cancer has a worse ratio of deaths to cases compared with other cancers shown in the table. The five-year survival rate for oral cancer is low, with only 48-55 per cent surviving five years - compared with 71 per cent survival following prostate cancer, 62 per cent following cervical cancer, 80 per cent following breast cancer and 78-91 per cent following malignant melanoma.

Oral cancer is more common than cervical cancer in the United Kingdom.

Table 1. Registrations (R) and deaths (D) for various cancers - England, Scotland & Wales. (Data abstracted from Cancer Research UK.³)

Site	WHO International Classification of Diseases: Codes ICD-10	Registrations 2006	Deaths 2007	D:R Ratio
Oral: lip, mouth tongue, pharynx	Excluding major salivary glands & nasopharynx	5325	1851	0.35
Skin (melanoma)	172	10410	2042	0.20
Cervix	180	2873	941	0.32
Breast	174	45822	12082	0.26
Prostate	185	35515	10239	0.28

What can dentists do? And what should they do?

In the face of the oral cancer challenge, dental professionals have a unique opportunity. Every year about 25 million adults in the UK see a dentist for an oral examination. This is where risky lifestyles can be identified, where smoking cessation counselling, advice on moderate alcohol consumption, nutritional guidance (consuming five to six portions of fresh fruits or vegetables per day) and other advice can be given, and when a careful examination of the oral mucosa can detect the early signs of cancer or precancer.

With new government-led smoking control initiatives (including a ban on smoking in enclosed public places) and a rising media profile for oral cancer - for example the activities of the British Dental Health Foundation's Mouth Cancer Action Month - this is the right time for dentists to review practice procedures for:

- medical history taking
- lifestyle counselling
- undertaking a thorough oral soft tissue clinical examination
- recording examination findings
- making specialist referrals.

The evolving medico-legal position is also relevant. There is a parallel with periodontal monitoring in the 1970s, when patient complaints and threats of litigation finally established that it was not enough simply to examine for dental caries. Periodontal monitoring is now accepted as part of the routine dental examination.

Oral soft tissue examination is following the same course, with case law already establishing that a dentist's duty of care includes an obligation to examine the whole mouth, including oral soft tissues. A typical complaint might allege failure to recognise the possibility of a malignancy having noted swollen gums and loose teeth, for example, with a lack of evidence of adequate medical and social history taking and a delay in making a specialist referral. Dentists need to be sure that they can, if necessary, answer questions such as:

- Did you know that a particular patient fell into an oral cancer high risk group, and what did you do in the light of that knowledge?
- Were the medical, social and dental histories taken appropriately?
- Did you investigate the health of soft tissues thoroughly enough?
- Are you familiar with NICE Guidelines and criteria for urgent referrals?
- Was a decision not to refer appropriate in the circumstances?

This paper gives dental practices a framework for improving oral mucosal examination of patients. Each section of the guideline covers ideas that need to be considered in setting a practice strategy - but the actual strategy adopted will be your decision. What matters is that a thorough soft tissue examination is planned for, is undertaken systematically and therefore is integrated into practice working methods.

Primary prevention aims to change behaviours (lifestyle) known to be associated with oral cancer. Many health professionals and health agencies contribute to health promotion, and the dental team may not always have seen lifestyle counselling as part of its role. Certainly, it needs skill and sensitivity if it is to be effective. But dental practices provide a great opportunity to initiate discussions and advice about smoking cessation, reduced alcohol consumption and the benefits of good nutrition. Patients expect to talk about health with their dentist, so all that the dentist needs to do is broaden the conversation a little. Dental practices with staff trained to advise proactively

against tobacco, alcohol and other substance abuse could make a real impact on future oral cancer incidence.

Table 2 lists the key health messages for oral cancer prevention, as a checklist for briefing the dental team. It is important to understand the major risk factors so the majority of mouth cancers can be prevented, and to disregard factors for which there is limited or inconsistent evidence.⁴ Several factors are particularly relevant to the care of ethnic minority groups. Dental professionals need to be aware of, and sensitive to, the cultural habits and oral health beliefs and practices of different communities.

The first priority - primary prevention

Table 2. Key messages for oral cancer prevention.

Key Message for Oral Cancer prevention	
<ul style="list-style-type: none"> • Quit smoking or the use of any form of tobacco 	<ul style="list-style-type: none"> • Discourage children and young adults from experimenting with harmful life styles and habit initiation
<ul style="list-style-type: none"> • Keep within recommended guidelines for alcohol consumption 	<ul style="list-style-type: none"> • Eat plenty of fresh fruits and green-yellow vegetables (five to six portions per day)
<ul style="list-style-type: none"> • Quit betel quid/areca/gutkha/chewing tobacco use 	Adapted from Warnakulasuriya (2009) ⁴

Key Points

- Incidence of oral cancer is increasing.
- Mortality is high: five year survival is around 50 per cent.
- Dentists have a key role in early detection of suspect lesions.
- Dentists should identify those patients with a risk factor for oral cancer.
- The dental team has a key role in health education.
- All patients attending for routine care should receive an opportunistic oral soft tissue examination.

Secondary prevention - catching cancers early

While oral cancer will be finally defeated only through primary prevention, changing habits and lifestyles is difficult and slow. This is what makes the early detection of malignant or potentially malignant lesions (precancer) through case detection (secondary prevention) so important. The earlier the lesions are found, the greater the chance of a cure and of a good quality of life and function. A major problem is that more than half of all oral cancer cases have already metastasised to regional or distant structures at the time of detection, which decreases the five year survival rate to less than 50 per cent³ for tongue and floor of mouth cancers.

Screening vs. case detection

Screening is defined as the application of a test or tests (including a clinical examination) to identify individuals who probably have a disease, in order to separate them from those who probably do not. A screening examination is not a diagnostic examination, but aims to identify abnormalities that should be referred for further investigation, diagnosis and management. Some people who screen positive might, on further investigation, be found not to have the disease (false positives) while others might have a negative screen, but go on to develop the disease (false negatives). The aim is to keep false negatives and positives as low as possible - that is, to develop a test with high sensitivity and specificity. An oral mucosal examination looks for pre-symptomatic cancers or precancerous lesions which can be treated early to prevent progression of the disease.

Most screening programmes are organised proactively, by inviting individuals to attend for an examination at times when they do not have another reason for seeing a health professional. Cervical screening programmes amongst women of specified ages are an example. Oral cancer does not satisfy many of

the criteria that are required to qualify for screening. With the exception of an Indian study,⁵ no controlled trials have been undertaken to demonstrate the beneficial effects of screening on mortality or down staging of oral cancers. There are few data on sensitivity and specificity of oral cancer screening in primary care or of tests that detect precancers that have the greatest risk of developing to cancer. For these reasons, the UK National Screening Committee does not support population screening for oral cancer.

The UK Working Group on Screening for Oral Cancer and Precancer recommended "opportunistic screening" as the most suitable model for the UK population, based on the availability of dental manpower and the fact that most people return to a dentist annually for a mouth examination.⁶ A recent study using simulation modelling has shown that it could be cost-effective.⁷ This approach was tested in primary care and reported to be effective in case finding.⁸

For oral cancer, where large numbers of patients are already seeing a dentist, an opportunistic approach for case finding is generally advocated. Case finding is less systematic but very much more cost-effective than population screening. If a case finding strategy is to be successful, all dentists should carry out the necessary soft tissue examination alongside hard tissue examinations. Earlier detection of oral cancer and precancer then becomes part of the routine examination. Moreover, neck examination to check for cervical lymphadenopathy should be undertaken during an oral cancer examination.

Studies have shown that an annual oral examination carried out by a primary care dentist can detect mucosal abnormalities that are unknown to the patient.⁹

See page 21 for a review of how a head and neck examination is carried out and page 22 for illustrations of suspect clinical signs.

Tertiary prevention - stopping recurrence and spread

At any one time, nearly 13,000 people in the UK are living with oral cancer after treatment. Dentists in primary care have a role in tertiary prevention - working as part of an oral cancer management team to prevent recurrence and further primary cancers in patients already treated for oral cancer. Appendix 1 illustrates how multi-disciplinary this can be, and how great is the need for good communication with people outside the practice.¹⁰ Communication channels might need to be clarified as a practice works out its oral cancer strategy. Introduction of interprofessional education would help to clarify who is responsible for surveillance and providing support for surviving patients.

Treated patients will still have dental needs, which dentists will monitor to maintain quality of life. There may be special needs as well:

- prevention of root caries by topical fluoride application

- dietary advice
- help with managing a dry mouth
- reducing risk of osteoradionecrosis
- prosthetic rehabilitation following surgery and radiation therapy.

It can be a great convenience for patients to have an easily accessible source of dental advice and help, to reduce the need for visits to a possibly remote specialist centre - but if patients are to be helped in this way, there must first be good working relationships with the specialists concerned.

For people who survive following treatment for oral cancer, up to 15 per cent might develop a second primary tumour,¹¹ and continuing care in dental practices by regular mouth examinations beyond the first five years is important for this group of survivors.

More than a quarter of a million people develop cancer each year in the UK. Complications often occur in the mouth, either as a direct result of the malignancy or as an unwanted effect of treatment. Your practice will probably have some child patients who have, or have had cancer, as well as elderly patients. Your medical history taking will identify them.

Oral complications occur in almost all patients having radiotherapy for head and neck cancers, in 75 per cent of bone marrow transplant recipients and in nearly 40 per cent of patients receiving chemotherapy. These complications can be so debilitating that patients might tolerate only lower and less effective doses of treatment, or even postpone or discontinue treatment entirely. Dental advice at the right time can greatly improve quality of life.

Some patients take bisphosphonates for prevention of other cancers, and they have particular needs during dental treatment. Evidence-based guidelines are available.¹²

Oral complications associated with chemotherapy and radiotherapy include:

- mucositis/stomatitis - can increase risk of pain, oral and systemic infection and nutritional compromise
- infection - viral, bacterial and fungal
- xerostomia/salivary gland dysfunction - dryness of mouth due to thickened, reduced or absent salivary flow; increases risk of infection and compromises speaking, chewing and swallowing; increases risk of dental caries

- gross dental caries and demineralisation - as a result of changes in both quality and quantity of saliva following cancer therapy
- functional disabilities - impaired ability to speak and swallow due to dry mouth, mucositis, trismus and infection
- taste alterations
- abnormal dental development - altered tooth development and/or craniofacial growth in children under nine years, secondary to radiotherapy and/or high doses of chemotherapy.

Additionally, with chemotherapy:

- neurotoxicity
- bleeding from gingival and other body sites.

With radiation therapy:

- radiation caries
- trismus/tissue fibrosis
- osteoradionecrosis.

With bone marrow transplants:

- graft vs. host disease.

Further information is available in a clinical guideline giving steps to prevent or minimise oral complications for oncology patients requiring radiotherapy, chemotherapy, or bone marrow transplantation.¹³

Caring for patients with other forms of cancer

Frequency of examinations

Since the objective is opportunistic case finding rather than invitational screening, there is no precise answer to a question about the desirable interval between mouth examinations. These take place when the opportunity arises. In practice, this will normally be at the beginning of each new course of treatment and when a dental examination is conducted at least once a year. In fact, there is evidence that annual examination of the oral cavity helps to detect new oral cancers.⁹ Every patient needs tailored advice, however, and your practice routine should follow the NICE guidance on recall intervals. This takes into account all aspects of oral health, including age and risk factors.

Many children would probably be advised to see a dentist more frequently than once a year, based on an assessment of caries risk. Assessment of soft tissue risk can be made in the same way, for adult patients, in the light of lifestyle information, with patients advised to see a dentist again in less than a year if the dentist feels this is appropriate.

The patient might still ignore the advice - for example, to have another soft tissue examination after nine months. In that event, the dentist has done all that could be done. A dentist clearly cannot be considered negligent for failing to do something because the patient does not cooperate, provided that advice was given and documented.

Key Points

- While the National Screening Committee (NSC-UK) does not recommend population screening for oral cancer, opportunistic case detection in routine practice is recommended by professional organisations.
- There is an important role for the dental team in treating sequelae in the mouth in post-treatment patients.
- There is a key role for the dental team in preventing recurrence of oral cancer.

Examination techniques

A thorough visual and digital examination must be the basis of oral cancer/precancer detection. An oral examination has been shown to be an effective way of detecting relevant lesions in the oral cavity, and a good understanding of clinical presentation of high risk lesions is required to avoid over-diagnosis. Over-diagnosis causes more harm than good.

There is also the option, now, of using several chairside adjuncts^{14,15} to assist in oral mucosal screening, but the clinical decision (to refer or to monitor) should not be entirely based on these tools for the following reasons:¹⁶

1. They are not sufficiently tested in primary care, so the evidence for their effectiveness in primary care is lacking.

2. Though the sensitivity is high (they can detect most lesions), the specificity remains low (they can also detect many benign lesions), leading to high false positive rates and unnecessary referrals.

For most patients, a soft tissue examination without any use of adjuncts will be completely adequate. And you might, very occasionally, see a lesion that so obviously needs to be referred to a specialist that any additional investigation in practice would not be needed. But for high risk patients without obvious lesions, the accuracy of an examination can be increased and there is also a possible benefit in the way the use of an adjunct raises patient awareness of a risk.

Chairside tests

The chairside adjuncts that have been developed for oral cancer/precancer detection

include methods that utilise vital stains and a number of light-based detection systems.^{14,15}

Toluidine blue

Vital staining of the oral mucosa with toluidine blue (as a one per cent rinse or application) has been suggested as a means of surveillance in patients at risk of developing oral cancer, and for those who have had a confirmed neoplasm in other parts of the aerodigestive tract. The results and accuracy of these studies have been variable, with

differing false positive and false negative rates.¹⁵ This could be partly due to confusion over inclusion of equivocal (pale) staining areas as positive or negative findings. Toluidine blue is most useful in secondary care for delineating the extent of lesions and for surveillance of patients at risk of recurrent disease.

The phenomenon of autofluorescence is based on the interaction of various fluorescent tissue compounds (fluorophores) that occur naturally in the body. When excited by an appropriate light stimulus, these compounds emit visible fluorescent light in the violet to green region of the spectrum. VELscope® is a portable device comprising a light source and a viewing handpiece. The technology is based

on the direct visualisation of tissue fluorescence. Both keratinised and non-keratinised squamous epithelium with a normal submucosa show a typical homogeneous, pale green fluorescence. Sharply circumscribed areas of decreased autofluorescence might indicate areas of mucosal abnormalities that should definitely be monitored or investigated by tissue biopsy.

Autofluorescence (VELscope®)

Examination of the oral cavity with the aid of chemiluminescent blue/white light has been suggested in several studies to improve the identification of mucosal abnormalities in comparison with normal incandescent light. Following a rinse with one per cent acetic acid

for one minute under the chemiluminescence light, the normal mucosa appears blue, whereas abnormal mucosal areas reflect the light and appear more “acetowhite” with brighter, sharper margins.

Chemiluminescence

ViziLite Plus® consists of a handheld device that emits chemiluminescent blue/white light, increasing the sharpness and brightness of mucosal abnormalities, combined with a

toluidine blue dye application device that further assists with the evaluation and monitoring of ViziLite®-identified oral mucosal abnormalities.

ViziLite Plus®

In setting a practice strategy, the use or non-use of chairside adjuncts must be discussed. Will they be used, and in what circumstances? While dentists in a particular practice might want to approach this individually, it will make more sense to patients if there is a common approach throughout the practice. There could be patient confusion if one dentist in a practice offers toluidine blue tests to certain patient groups while a practice colleague says that it is unnecessary.

A critical review on the validity of these tests was published recently,¹⁶ and it is recommended that dentists wishing to incorporate these tests should refer to this document to understand the sensitivity and specificity of these tests. Instructions on how to use the adjunctive test procedures mentioned above are given in the information packs and in the promotional literature from the manufacturers or suppliers.

Practice protocol

-
- Any diagnostic test for identifying a malignancy should not be used as a substitute for a thorough clinical examination.
 - Adjunctive tests can improve visibility and detection, but must not be used as a sole method for detecting lesions.

- Patients should receive a clear explanation of any test to be employed, the risks and benefits and any likelihood of a false negative or false positive result.

Key Points

Risk factors

Oral squamous cell carcinoma, (cancer arising from the lining of the oral cavity - the commonest form of malignancy in the oral cavity) is clearly attributable to certain lifestyles. This means that it can be regarded as preventable, even though it will sometimes occur in people who have never smoked or misused alcohol. To manage the primary

prevention of oral cancer effectively, all members of the dental team need to:

- understand what usually causes it
- identify patients at increased risk as a result of unhealthy lifestyle
- target advice and counselling to patients in the main risk groups.

What causes oral cancer?

Table 3 lists two groups of risk factors - those that are well-established as causes of oral cancer and a second group of possibly relevant contributory factors. These are discussed in detail in an opinion paper published in the *British Dental Journal*.⁴

factor. Also, oral cancer is not always a disease of old age. Clinicians treating oral cancer are concerned that its incidence appears to be increasing in younger age groups. Currently nearly six per cent of oral cancer cases in Southern England, for example, occur in people under the age of 45.¹⁷

Age is included as an established risk factor because exposure to the risks listed increases with age, but age on its own is not a risk

Table 3: Risk factors for oral cancer and precancer.

Established risk factors	Smoking tobacco - cigarettes, cigars, pipes, bidis*
	Smokeless tobacco - chewing tobacco, oral snuff/snus and other unburnt products
	Chewing betel quid/pan/gutkha**/pan masala containing areca nut
	High alcohol consumption (synergistic with tobacco)
	The presence of potentially malignant oral disorders
	Prior history of oral cavity or other aerodigestive tract cancer
	Excessive exposure to sunlight or radiation (for lip cancer)
Other possible risk factors	Age, in conjunction with other risks listed
	Diet lacking in fresh fruits and vegetables
	Viral infections, e.g. certain types of human papillomaviruses (HPVs) particularly for oropharyngeal cancers
	Immune deficiency disease or immune suppression
	Mate drinking*** (particularly as a hot beverage)
Chronic sepsis in the mouth (especially in those with major risk factors)	

* Bidis are cheap South Asian cigarettes now being imported into the West.

**Gutkha is a form of chewing tobacco to which areca (betel) nut and sugar has been added.

***Mate is a beverage that is particularly drunk hot, mostly by South American or Middle Eastern people.

Key Points

- Dentists and their teams should be aware of risk factors.
- Practice systems should identify patients at risk.
- Practice teams should target advice and counselling to patients in the main at-risk groups.

The odds of developing oral cancer increase with frequency and duration of tobacco or alcohol use, and with combined use of the two.¹⁸ With tobacco and alcohol so well established as oral cancer risks - they together contribute to approximately 75 per cent of oral cancers - it is clearly essential during medical history taking to ask about these risk factors. The BDA's model medical history sheet first included questions about tobacco and alcohol use in 1998. It asks:

- How many units of alcohol do you drink each week? (A unit of alcohol is half a pint of lager or beer, a single measure of spirits or a single glass of wine/aperitif.)
- Do you smoke any tobacco products, or did you in the past? How many per day?
- Do you chew tobacco, betel quid (pan), use gutkha or areca nut (supari) now, or did you in the past? How many times per day?

For both alcohol and tobacco use, some patients might not tell the truth, of course. And in the case of alcohol, even patients prepared to answer truthfully might find it difficult to gauge intake accurately because of variations in type of alcohol, quantity and measure size. Current recommendations are that men should not drink more than 21 units per week and women should not drink more than 14 units.

Methods of quantifying the risks associated with exceeding recommended drinking limits vary. The Office for National Statistics General Household Survey (2007) inquired about the number of drinks consumed on the heaviest

drinking day in a week prior to the survey. The proportion of men exceeding the recommended daily benchmark of four units on their heaviest drinking day was 40 per cent in 2006 and 41 per cent in 2007. The proportions of women exceeding three units were 33 per cent in 2006 and 34 per cent in 2007.¹⁹ The average age at which drinking starts has fallen since the early 1970s from around 17 to around 11, for both boys and girls.²⁰ It is estimated that alcohol misuse has an economic cost to Scotland of over £2 billion pounds per year and costs the UK health service £1.7 billion pounds per year.

Binge drinking also adds to the increased risk of oral cancer. For the NHS, binge drinking is defined as consuming over double the quantity of recommended daily units in one session. For men, this is over eight units and for women, over six (www.drinkaware.co.uk).

Adolescent drinking is strongly associated with parental behaviour and attitudes, the influence of peer groups, life events, family conflict and being socially active.

Alcohol is largely to blame for an alarming rise in the rate of oral cancers among men and women in their forties.²¹ We should aim to help our patients stay within safe consumption limits and advise against binge drinking. It is recommended that there be at least one day per week on which no alcohol is consumed, particularly after a heavy session.²²

See page 19 for more advice on medical history taking.

Other risk factors might be harder for the dental team to address proactively. Ultraviolet light can induce cancer of the lip as well as of the skin generally, so health messages about avoiding too much exposure to sunlight are relevant to the prevention of oral cancer. Dentists and the dental team can also advise on diet and nutrition - not only to reduce the frequency of use of fermentable carbohydrates to protect the teeth, but also to maximise the efficiency of the body's immune and repair mechanisms and to help prevent diseases like cancers, heart disease and strokes by incorporating a diet rich in antioxidants.²³ Patient information sheets can be a useful back up.

Most dental practices will probably decide to concentrate on advice about tobacco and alcohol and use information about other risk factors in answering patient questions. In this context:

- The antioxidant vitamins A, C and E and carotenoids (betacarotene) scavenge

potentially mutagenic free radicals from damaged cells. A good natural source is to be found in red, yellow and green fruits and vegetables. Current advice is to eat five servings of such foods a day.

- Prevention of anaemia and supplementing with micronutrients should be considered where indicated.
- Chronic Infections of the oral mucosa might also be important. White and red patches associated with yeast or hyphae of the fungus *Candida* may increase the grade of dysplasia and carry an increased risk of progressing to malignancy.
- Human papillomaviruses (HPVs), known to cause cervical cancer, might also play a role. There is emerging evidence that HPVs are implicated in oral cancer, particularly oropharyngeal cancer. This has raised the possibility that some oral cancers might be sexually transmitted. Vaccination prior to exposure may offer protection.
- There is a potential role for oral bacterial biofilms that metabolise alcohol to acetaldehyde (a known carcinogen).

Other risk factors

Special risks in minority ethnic communities in the UK

In certain minority ethnic and religious groups, alcohol use is prohibited and smoking tobacco is not accepted. However, chewing tobacco might have greater social approval, so tobacco use remains a problem.

It is known that the UK's South Asian community shows a higher incidence of oral cancer than the general population. Oral cancer in the Indian subcontinent is much more common than in Western Europe, and betel quid chewing, widespread in the Indian sub-continent,²⁴ remains a habit in the UK's South Asian community. Betel quid and areca nut are carcinogenic to humans.²⁵

The Indian tobacco industry has introduced gutkha (sweetened areca nut and chewing tobacco) and bidis (handmade cigarettes) to the market in the subcontinent and to countries with significant South Asian populations in the West. Gutkha is being sold as a mouth freshener and as a positive

product for health. It is also being targeted to young people, as confectionery, and can be bought at most Asian corner shops, very cheaply - a cynical way of introducing children to tobacco use. Habitual chewing of areca nut/pan masala/guthka (gutka) is associated with earlier presentation of oral submucous fibrosis than betel quid use.

People from Somalia, Ethiopia and Yemen chew leaves from a different plant, khat (*Catha edulis*), and the habit of chewing khat is common among migrants and refugees from these countries. Khat/qat is a stimulant, producing a feeling of euphoria. There appears to be no convincing unusual incidence of oral cancer among khat chewers.²⁶

See page 16 for advice about discussing tobacco use with patients from minority ethnic communities.

Key Points

- Practices should be aware of the higher oral cancer risk in minority ethnic groups.
- Betel quid, pan masala, gutkha and chewing tobacco are generally linked with this higher risk.
- Groups supporting minority ethnic communities may be able to help raise oral cancer awareness.
- Minority ethnic groups tend to under-use preventive healthcare services generally.
- Consider staff training in trans-cultural oral health counselling, in areas of high minority ethnic density.

Talking to patients about oral cancer examinations

There is clearly a need to raise public awareness about oral cancer and the risk factors for developing the disease. One study has shown that only 50 per cent of Britons know that cancer can arise in the oral cavity.²⁷ But telling patients what they need to know, so that they understand without being alarmed, is one of the greatest challenges in opportunistic oral cavity examinations. This section helps practices think through what needs to be said and why, and the different ways of saying it.

- Although there is no legal requirement for you to give patients detailed information about mucosal examination and cancer risks, it will probably increase patient awareness and satisfaction if you do.
- Written information can supplement verbal information very usefully, and several patient information leaflets are available for practice use (e.g. BDA patient leaflet on mouth cancer).

A patient must give informed consent before any procedure is undertaken in the mouth, but there is no legal reason why the carrying out of a visual and digital soft tissue examination should be mentioned specifically. If a soft tissue examination is part of every check up examination, the patient consents when giving general consent to the examination.

A chairside adjunctive test does need specific written and informed consent. The patient should receive a clear explanation of the test and could reasonably expect to be told that:

- Any test is an additional check, to be sure that your visual check did not miss anything.
- You offer the test only to patients whose tobacco or alcohol habits increase the oral

cancer risk, though you might offer it to other patients if you spot something that is unusual but not unusual enough to refer to a specialist right away.

- While the tests are very good at detecting cancers and precancers, there is also a risk that they could pick up trivial inflammations or irritations, so it is important not to be alarmed by a positive first test.

Say that you will always refer to a specialist following the detection of anything suggestive of cancer or precancer, but patients should understand that early cancers cannot be diagnosed without further tests - principally biopsy. All you are doing is checking for suspect lesions that might need further specialist investigation.

Information for consent

Although a detailed explanation of oral cancer examinations is not necessary to gain the patient's consent, the BDA advises that patients should normally be told that an oral cancer check is being carried out. There is plenty of evidence to show that patient satisfaction with clinicians is increased if patients are given information and advice and if they understand what they are told. Also, a patient is less likely to complain that something was not done if told about it at the time.

There are many ways of introducing the subject of oral cancer examinations to patients - by a poster in the waiting room, one to one in the surgery, or via a letter or other general announcement. The pros and cons of each method are a little like the pros and cons of telling patients individually or as a group about a practice's proposed change of relationship with the National Health Service. A general written communication has the advantage of openness and clarity.

Writing to at-risk patients about oral cancer examinations, and perhaps about additional tests, is a possibility to consider. A letter needs

careful wording but it gives patients time and space to absorb the information. Remember that most patients have very limited understanding of oral cancer, and research has shown that written explanations must be kept very simple.

If you write a letter, some patients might telephone for more information while others will delay questions until their next visit. Either way, you will need to make sure that all practice members are able to answer follow-up questions at an appropriate level, using simple language and knowing when to refer to the dentist on if getting out of their depth.

Questions will also be asked when an examination takes place. It will help to verbalise observations for the attending nurse to record. Over a series of visits, patients will become familiar with:

- the systematic visual examination
- palpation of the head, neck and soft tissues
- if adopted in the practice, the possible use of adjunctive chairside tests.

Information to improve patient understanding

Handling difficult questions

Patients will want not only factual information and advice, but also emotional support to help them deal with even the remote possibility that they have oral cancer. All team members must be prepared to answer patient questions such as:

- “Do I really need oral cancer examinations?”
- “Why haven’t I had this before?”
- “What would you do in my situation?”
- “Should I be worried?”
- “What do you think it is?”
- “Do you think I’ve got cancer?”
- “What will happen to me?”

Whether the subject of oral cancer was raised by letter or in chairside conversation there is also a risk that patients will ask, “Why was oral cancer examination not offered before?” Answers might be:

- “We have always checked the soft tissues as part of your routine check-up.”
- “We are now working to increase your own awareness of the importance of oral cancer examination.”
- “Evidence suggests that the incidence of oral cancer is increasing, and we believe we should be taking a more active role in increasing your awareness of the importance of complete oral health and oral cancer examination.”
- “We need to keep more detailed records, including information about your lifestyle, so that we can offer you a more comprehensive oral health care service.”
- “We are extending the range of healthcare provided at this practice.”

Difficult questions can be explored usefully with role-play and other training techniques. See page 27 for further discussion.

Using written information

Talking to patients is important, and verbal information and advice are convenient to give - but often fail because messages are not understood or are forgotten. Written information can then be a very useful supplement. Presentation of written information needs to be careful, however, and the language must be clear.

Even if the text is understandable, you still need to be confident that the content is accurate and appropriate. It will help to let more than one clinician examine a draft for clarity. Piloting on a small group of patients is then helpful, to test whether anything is confusing or ambiguous.

Producing written information for patients will require real time and effort.

Consider the following possibilities:

- Practice information leaflets and newsletters can raise the profile of oral cancer examination, with reminders about unhealthy lifestyles.
- Official smoking cessation literature could be made available in practice waiting rooms for patients to take home.
- If a dentist has had some training in oral cancer examination, displaying a certificate indicating attendance at CPD could also help as a starting point to discuss issues.

Key Points

- Tell patients you are checking for oral cancer or disorders that could become oral cancer.
- Supporting literature for patients could be available in the waiting room.
- All staff should be trained to answer patients’ questions.
- All patients’ questions should be answered fully, truthfully and in simple language.

Using simple language

Here is an example of simple language: this text is adapted from a leaflet produced at Liverpool Dental Hospital and carefully tested

before use to maximise comprehensibility.²⁸ Note especially the use of the term “mouth cancer”.

What is cancer of the mouth?

It is a malignant growth which can occur in any part of the mouth.

What are the signs of mouth cancer?

Most cancers appear as a painless mouth ulcer that does not heal normally. Less often, however, a white or red patch in the mouth may develop into a cancer.

Am I at risk from mouth cancer?

Anyone can be affected by mouth cancer, whether they have their own teeth or not. Smoking greatly increases your risk of mouth cancer. Heavy drinking is also a risk. If you do both, your chances of getting mouth cancer are much greater. This cancer is more likely to occur in people over 40 years old. Also, it is more common in men than women.*

How many people get mouth cancer?

In the UK alone about 5000 people get cancer of the mouth each year.

Do people die from cancer of the mouth?

Yes, about 1800 people in the UK die from mouth cancer every year. On average 50 per cent die with or of this cancer within five years of diagnosis. Many of these deaths could be prevented by early detection.

How can cancer of the mouth be detected early?

Mouth cancer can often be spotted during its early stages by your dentist. If mouth cancer is recognised early then the chances of a cure are good. Many people with mouth cancer go to their dentist or doctor too late. On average a delay of about three months has been reported between the first symptom and being seen by a specialist.

What is involved in a check up of the mouth?

The dentist examines the inside of your mouth with the help of a small mirror. Remember, your dentist is able to see parts of your mouth that you cannot see easily yourself. The dentist may also use some commercially available chairside tests that help to identify any malignant growth.

Prevention of mouth cancer

Most cancers of the mouth can be prevented by not smoking or chewing tobacco/areca nut and by reducing the amount of alcohol you drink. A good diet with five portions of fresh vegetables and fruits per day may also help prevent cancer.

*Strictly adhering to the above risk factor model could present some difficulties with atypical cases; younger patients in whom the disease is not traditionally expected, and those who do not fit into the usual risk factor categories in whom the disease is simply not looked for. Based on data from studies on young people, we know that around 25 per cent of younger cases (under 45 years) cannot be explained by the traditional risk factors of alcohol and tobacco. Therefore, it is important to make health professionals aware that there are potential patients that may present with oral cancer symptoms without having those major risk factors. Indeed, it may be argued that being a young person, healthy, non-smoking, non-drinking, can be in itself a risk factor hindering early detection.

This also requires care and sensitivity from team members directly involved in giving advice, and also from people present in a supporting/encouraging role. Advice about smoking cessation or reducing alcohol consumption is best done one to one, in a way that leaves the patient feeling in control and able to stop the conversation if it gets too uncomfortable. A stopped conversation is not necessarily a failure - advice rejected on one occasion might be accepted next time, after the issues have been better digested. Keep a note on the patient record of what happened and try again.

Lifestyle counselling can be made more acceptable by helping patients to assess their own levels of risk and identify ways to reduce it. Research suggests that repeated reminders

and encouragement to stop smoking have significant success, even if it feels like a thankless task at the time. This paper is not intended as a guide to smoking cessation techniques so you will probably want to refer, for example, to the Health Development Agency/BDA 2004 publication, *Helping Smokers Stop - A Guide to the Dental Team*.²⁹ More information is available in a recent Oral Health Report distributed with the *BDJ*,³⁰ a recent issue of the *International Dental Journal*³¹ and a care pathway for smokers is illustrated in the attached Appendix 2.³² Brief interventions using motivational interviewing are increasingly recognised as having a valuable role to play in reducing hazardous or risky alcohol intake.³³

Lifestyle counselling

Talking to patients from different cultures

Oral cancer is one of the commonest cancers in the Indian subcontinent, so first generation immigrants from these countries might have greater awareness than other patients, and also greater fear. In addition, areca nut is used by certain minority (Asian) ethnic groups and regular use is known to be linked with oral cancer in the same way as tobacco smoking, and the risk increases when chewed with tobacco.

Team members need to be sensitive to cultural differences of this sort. Practice meetings could be used for sharing experiences and understandings.

As dentists' opportunistic oral cancer detection procedures become better known, other health workers dealing with minority ethnic communities will be able to give supporting advice. Generally, people from minority ethnic groups have distinct health problems - more disease and poorer access to services. Problems can be especially acute for women. Health authorities use "link workers" and patients' advocates in some areas to help people access health care.

Key Points

- Use simple language in conversation and letters: "mouth cancer" instead of "oral cancer", for example.
- Lifestyle counselling of patients should be on a one to one basis.
- Counselling should be recorded on patient records.
- Obtain literature from health education organisations and make it freely available.

Talking about referrals

Given the low incidence of oral cancer and potentially malignant disorders, referrals for specialist advice will not be frequent: on average there might be two to three cases per year for a dentist with a reasonably busy adult practice. But when a referral happens it can be stressful - for the patient, for you and for your nurse - so it will help to have a procedure worked out in advance.

Ideally, if you suspect cancer, arrange a specialist appointment by phone, before the patient goes home. If that is not possible, tell the patient that you will contact the specialist as quickly as possible afterwards and report back, again by phone. You do not want to dramatise, but a patient will worry about any sort of specialist referral and you want to keep uncertainties and delays to a minimum.

You will also need to write to the consultant about what you have found. You should follow the NICE guidelines for urgent referrals, and your local hospital will have procedures in place for seeing patients within two weeks. It is helpful to have consulted your local hospital about these procedures so that the whole dental team will know what to do.

A referral letter should be addressed to a named consultant or specialist and give:

- patient personal details (age, sex, personal details, occupation)

- relevant medical history details (or a copy of the medical history record)
- relevant lifestyle factors
- brief details of counselling provided and perceived level of patient understanding of the situation
- brief dental history (attendance patterns, oral hygiene and periodontal condition)
- details of the suspect area/lesion (colour, texture, size, position, mobility)
- whether any regional nodes are palpable
- copy of completed mouth map*
- copy of previous mouth map if lesion has been under review
- intra-oral photographs of visible lesion or stained area (if available)
- if applicable, mention results from chairside tests
- thanks for agreeing to see the patient and a request for an opinion and test results.

*Available from the BDA.

You will probably choose to give the letter to the patient to take, rather than post it. If you are seriously concerned that cancer might be present, most hospitals advise that you should telephone or fax the consultant. Most will then fast track the patient to an earlier consultation. If you mark the letter "urgent" and say "malignancy suspected", the patient should be seen within two weeks of referral.

The NICE guidelines for suspected cancer³⁴ recommend urgent referral for patients meeting the following criteria:

- 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 that persists for more than three weeks
- oral swellings that 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, which does not resolve with antibiotics
- dysphagia that persists for more than three weeks
- hoarseness that persists for more than three weeks
- stridor (requires same day referral)

- unresolved head or neck mass that persists for more than three weeks
- unilateral serosanguineous nasal discharge that 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

Dentists should note that patients are likely to report to a dental practice with the symptoms at the top of the list (first four symptoms), or these conditions may be encountered during an oral examination. The remaining symptoms may be more often dealt by GPs by referral to ENT colleagues.

White plaques or patches without any associated redness are not listed as a criterion for suspecting malignancy and should be in the category of prompt referral.

- If an urgent referral is necessary, it should be made over the phone before the patient leaves the practice.
- Write comprehensive referral letters.
- Follow NICE guidelines* for urgent referral.
- To enable the hospital consultant to prioritise appointments, all details of the

clinical findings should be given and the dentist should indicate whether the patient should be seen urgently, promptly or as routine.

* For dentists in Scotland, SIGN guidelines are available separately (www.sign.ac.uk).

Key Points

Administration

Opportunistic oral mucosal examination is less of a burden the better the supporting administrative systems. Medical history sheets that include lifestyle questions and soft tissue charts (map of the mouth) can save a lot of

time for dentists and nurses. Mouth maps will help with soft tissue monitoring. It will also be helpful to flag up patients who are “at risk” on their records.

It will help if a practice adopts a common approach to medical history taking - a common form so that a dentist seeing a colleague's patient in an emergency knows what to find in a record envelope, and a common way of explaining the form to patients. The BDA's model does not have to be followed exactly but the BDA's advice is that all history forms should now include lifestyle questions in some form (see page 15).

Patients can be asked to fill the form in on their own because the answers will always be seen by the dentist, who can clarify and ask follow-up questions if necessary. Nurses should not assess whether any of the medical

history needs to be drawn to the dentist's attention but they can check for omissions and ask for information on tobacco and alcohol use if this is not volunteered.

A practice procedure will also be needed for updating the medical history sheet - showing previous answers to the patient and asking them whether the information is still correct. People who have given up smoking since the last visit can be encouraged and congratulated. People who have taken up the habit can be advised to think again and offered further assistance and counselling to quit.

Medical history taking

A soft tissue examination takes about three minutes to carry out, if the oral mucosa is healthy. In that event, all that is needed is a note on the patient record of negative findings. This can be brief provided there is a practice protocol for ensuring that all practice members know what any notes or abbreviations mean, and a practice protocol for carrying out the examination. For example, the dentist might list to the nurse the parts of the mouth being examined, in turn and in a particular order. If they are healthy nothing more than a general note need be recorded but it would be clear - and witnessed - that a full examination had taken place. The sequence might be:

- mucosa - labial/commisures/buccal mucosae
- gingival or alveolar mucosae including edentulous areas
- tongue - dorsal/ventral/lateral
- floor of mouth
- palate (soft and hard)
- pharynx - tonsils/pillars of the fauces
- neck - lymph nodes
- salivary glands - parotid/sublingual/submandibular.

Patient records should also note responses to any lifestyle advice and any commitment - or refusal - to reduce risks. Consider putting identifying “flags” onto the records of patients found to have suspect soft tissue lesions.

For some patients, you will notice things that are a little worrying - not enough to refer, but something you would like to check up on when the patient next visits. Mouth maps are then helpful. There are two types - either a simplified three-dimensional drawing of an open mouth or a more stylised flat drawing of the oral mucosa around the teeth. The second type of map can also be shown against half centimetre grid markings so that the location of lesions can be shown quite precisely. Mouth mapping, especially using the map in Appendix 3, is the simplest way to monitor a soft tissue condition - where it is and how big - so that you can check for any change at the next visit. Also note colour, texture, and mobility.

Data protection laws give patients access to mouth maps, as to any other health records.

Clinical records

Record keeping for adjunctive tests

Any chairside test result should always be recorded. But again, if there is a clear practice protocol for case selection and for carrying out the test, and if the protocol is audited periodically, then the entry on a particular patient's record can be very brief.

The protocol would need to cover:

- confirmation that the patient understands and consents to the test
- dates and comments on patient acceptance or refusal of the test

- test results
- description of any positive findings and relation to clinical findings: extent, margins and borders
- completed mouth map
- action taken.

Many practices are now using photographic records - digital or otherwise. If available, a photograph of the oral mucosal lesion is an excellent record.

Following up on patients at risk

Once a practice has a system for targeting patients with smoking cessation or other advice, the advice will need to be reinforced at follow-up visits. This means knowing who the patients are, through an alerting system of some sort. This might be an identifying mark on a paper record card - a "mucosal alert" sticker similar to a "medical alert" for patients with a particular health problem. Or an automatic alert might be possible with a computerised record system - think about lifestyle records and an alerting function when choosing a practice computer system. The

more dentists discuss this sort of need with the producers of dental software, the more companies will be encouraged to expand their systems to meet it.

The system could also be used to indicate which patients might be offered additional testing. All patients should be visually examined, routinely, but the practice may decide to offer additional testing to a group with a specified lifestyle. The smoking and drinking or other risk factor thresholds would be for you to decide.

Key Points

- Dentists should identify those patients with a risk factor for oral cancer.
- Use medical history sheets that include lifestyle questions.
- Staff should be trained to ensure that patients complete medical history sheets fully.
- Practice policy on oral cancer examinations should be formulated and understood by all staff.
- Accurate and comprehensive medical history and dental treatment records must be kept.
- Develop procedures to review and update medical history records at each new course of treatment.
- Use a mouth map where appropriate.
- Negative examination results must be entered in dental treatment records as well as positive.

Examining the head, neck and oral cavity

To ensure completeness, a soft tissue examination needs to follow a systematic pattern. Work out a logical sequence and then stick to it. Since your first step will be a general appraisal of the patient's well-being on entering the surgery, it could make sense to start with soft tissues, before moving on to examination of the teeth and gums. But this is a personal

choice - carry out the examination in an order that you and your nurse find comfortable and that you find easy to explain to the patient. Use gloved fingers or, preferably, two mouth mirrors to retract the tissues. The visual inspection should be supplemented by palpation of any suspect area and the submandibular and cervical lymph nodes.

Extra-oral examination

Observe the face for asymmetry, swellings, skin blemishes, moles and pigmentation. Examine the vermillion border of the lips and corners of the mouth, note any changes in colour or texture (Fig. 1).

Palpate with the fingertips for any enlargement of the lymph nodes of the neck.

The precise group of nodes likely to be affected depends on the location of the primary cancer, but submandibular, then upper, middle and lower deep cervical nodes are most commonly involved with intra-oral lesions: these are often referred to as levels I - IV, level V being the posterior triangle of the neck (Fig. 2).



Fig. 1



Fig. 2

If the patient is wearing dentures, ask for them to be removed.

Examine the labial mucosa and sulcus with the mouth half open (Fig. 3).

With the mouth open wide, retract the cheek on one side and examine the colour and texture of the buccal mucosa. Then with the mouth half open, observe the maxillary and mandibular sulci. Repeat this sequence for the other side of the mouth (Fig. 4). Inspect the tongue at rest and protruded, note any aberrations in colour, texture, distribution of papillae, symmetry or mobility (Fig. 5).

To facilitate inspection of the lateral borders, hold the tip of the tongue with a gauze square and move it to one side, whilst also retracting

the cheek. Repeat for the other side of the mouth (Fig. 6).

Examine the floor of the mouth and ventral surface of the tongue with the tip of the tongue raised to the palate (Fig. 7).

Depress the tongue and inspect the hard and soft palate, then request the patient to say "Ah" and examine the pillars of the fauces, tonsils, uvula and oropharynx (Fig. 8).

Patients who have been treated for head and neck cancer will be followed up at regular intervals by their specialist hospital department for at least five years. Beyond this, dental practitioners should examine such patients at six monthly intervals.

Intra-oral examination



Fig . 3

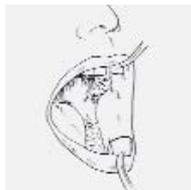


Fig . 4



Fig . 5



Fig . 6



Fig . 7

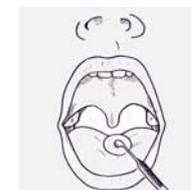


Fig . 8

Key Points

- Head and neck and oral soft tissue examination should be carried out on all patients as part of every routine check up exam and at the start of each new course of treatment.
- Future check-ups should take account of soft tissue findings, with patients in at-risk groups being seen more frequently.

Signs and symptoms of oral cancer

Cancer may present in the mouth in many ways, but the following clinical signs should be regarded with great suspicion.

Any **ULCER** of the mucosa that fails to heal within two weeks, with appropriate therapy, and for which no other diagnosis (e.g. major aphthous ulcer) can be established.



Fig. 9: Squamous cell carcinoma presenting as an ulcer on the lateral margin of the tongue. Note the rolled margins

RED OR WHITE PATCHES of the mucosa are commonly considered as potentially malignant disorders, but also they can be the clinical presentation of an early malignancy.

FUNGATION/GROWTH of the tissues to produce an elevated, cauliflower surface or lump.



Fig. 10: Squamous cell carcinoma presenting as a fungating growth in the posterior region of the oral cavity

FIXATION of the mucosa to underlying tissues, with loss of normal mobility.

FAILURE TO HEAL of a tooth socket, or any other wound.

TOOTH MOBILITY with no apparent cause.

PAIN/PARAESTHESIA with no apparent cause.

DYSPHAGIA for which no other diagnosis can be made.

INDURATION (firm or hard area) of any mucosal lesion.

Potentially malignant disorders

Disorders that may later progress to cancer but are not yet frankly malignant can present in a number of ways. Their clinical signs are likely to be less obvious than those of an established carcinoma. Precancerous lesions are usually well demarcated. If in the biopsy epithelial dysplasia is noted, this indicates an increased risk of malignant change at that site, but it does not mean that the lesion is committed to malignant transformation. Therefore diagnosis, referral, management and follow-up of patients with potentially malignant lesions could be life saving.²⁴

LEUKOPLAKIA may be defined as a white patch that cannot be rubbed off and cannot be characterised clinically or histologically as any other disease.

Oral leukoplakia may be idiopathic but is more commonly associated with carcinogens such as tobacco or areca nut.

It is not clear what proportion of lesions undergoes malignant change but there is a clear association with the severity of dysplasia as determined histologically. Leukoplakia is thus regarded as a precancerous disorder and must be managed accordingly. There are several clinical types of leukoplakia (based on surface characteristics) as described below:

HOMOGENOUS LEUKOPLAKIA appears as a uniformly white patch of raised mucosa, anywhere in the mouth.



Fig. 11: Two plaques of homogeneous leukoplakia on the soft palate of a heavy smoker

The surface may be smooth or cracked; most reveal hyperkeratosis without dysplasia on biopsy. However, an exception to this general finding concerns homogenous leukoplakias involving the floor of mouth and ventral surface of tongue, which are considered high risk lesions.

VERRUCOUS LEUKOPLAKIA is a white lesion with a warty, hyperplastic surface.



Fig. 12: Verrucous leukoplakia presenting with a hyperplastic/warty surface

NODULAR LEUKOPLAKIA is a white lesion with a granular surface, which may often be associated with *Candida albicans* infection.



Fig. 13: Nodular leukoplakia of the lateral margin of tongue

SPECKLED LEUKOPLAKIA has combined red and white elements in the plaque and has an irregular surface texture.



Fig. 14: Speckled leukoplakia with both white and red areas on the buccal mucosa

ERYTHROPLAKIA appears as a well defined fiery red, velvety or granular lesion of the mucosa that is usually irregular in outline.



Fig. 15: Erythroplakia of the soft palate presenting unilaterally

Common sites for erythroplakia are the buccal mucosa and soft palate. Erythroplakia has a greater malignant potential than leukoplakia. Histologically, erythroplakia shows changes with higher grades of dysplasia to invasive squamous cell carcinoma.

ERYTHROLEUKOPLAKIA may contain elements of any of the above types and with a mixture of white and red plaques (also called speckled leukoplakia).

LICHEN PLANUS appears as symmetrical white papules, keratotic striae and the characteristic reticular form of lichen planus in association with atrophy, erosion, desquamation of gums or superficial ulceration of the oral mucosa.



Fig. 16: Lichen planus with reticular and erosive areas on the buccal mucosa

Erosive lesions cause pain and discomfort to the patient, especially upon contact with acidic or spicy foodstuffs. Erosive lichen planus must be treated and monitored regularly. A small proportion of lichen planus lesions, erosive or not, particularly those on the tongue, have been associated with malignant change.

ORAL SUBMUCOUS FIBROSIS is a condition affecting Asian patients who chew areca nut, alone or as part of betel quids. The condition presents as a loss of elasticity (leathery appearance) of the mucosa, pallor of mucosa and fibrous bands limiting opening of the mouth.



Fig. 17: Oral submucous fibrosis. Note the fibrous bands stretching vertically on the buccal mucosa

The tongue shows loss of papillae and a lack of mobility. A burning sensation in the mouth or throat can be an early symptom. There is high risk of malignant change.

LUPUS ERYTHEMATOSUS of the oral mucosa might or might not be associated with skin lesions elsewhere on the body. Oral lesions appear as an area of atrophy or erosion, surrounded by a white keratotic halo.



Fig. 18: Discoid lupus erythematosus of the buccal mucosa near the retromolar region

The buccal mucosa and lips are most likely to be involved in this condition.

TERTIARY SYPHILIS is now rare in the UK because syphilis is usually diagnosed and treated early. The keratotic plaque of tertiary syphilis appears on the dorsum of the tongue and can occasionally be associated with the development of oral cancer in the midline of the tongue.

ACTINIC KERATOSIS may be characterised by erosion and white or brown crusting of the vermillion border of the lower lip. It is caused by exposure to ultraviolet light, particularly from strong sunlight, mostly among people with outdoor occupations.



Fig. 19: Actinic keratosis of the lower lip

DYSKERATOSIS CONGENITA. Some hereditary cancer syndromes may increase cancer susceptibility. This is one such rare disorder in which wide spread mucosal keratosis, nail dystrophy and skin pigmentation are present.³⁵



Fig. 20: Dyskeratosis congenita (Reproduced with kind permission of Prof G. Ogden)

POOR NUTRITION

There is some evidence that poor nutrition and anaemia may be associated with an increased risk of oral cancer. The Patterson-Kelly (Plummer-Vinson) Syndrome is the combination of iron deficiency anaemia with dysphagia and glossitis.

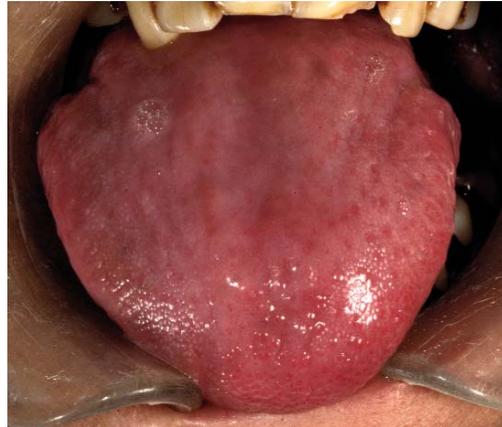


Fig. 21: Iron deficiency manifesting with a depapillated tongue

Mucosal atrophy is often a feature and may be associated with malignant change in the oral cavity and pharynx.

As well as vitamins and minerals, fruits and vegetables contain many complex components, particularly carotenoids, including flavonoids, glucosinolates and phyto-oestrogens. Many of these are antioxidants, destroying free radicals implicated in carcinogenesis. Therefore, diets rich in fresh fruits and vegetables may reduce risk.

In addition to the squamous cell cancers described above, other malignancies might be found in the oral cavity. They are relatively rare findings. These malignancies include salivary tumours presenting as persistent

swellings of salivary glands, purple coloured lesions that could be Kaposi's sarcomas, pigmented lesions representing melanomas and lymphomas and other tumours of the jaw.

Other malignancies

- Look for changes or abnormality in oral tissues.
- Be aware of differential diagnoses.
- Record observations and consider photographing suspect lesions.
- If in doubt, review or refer.

Key Points

Putting case detection into practice

Opportunistic examinations for oral cancer will produce results only if used consistently throughout a practice, in a visible and coherent way, so that patients receive a clear message and respond to what the dental team is saying and doing. This section suggests ways of setting a practice strategy that has full team support. The strategy will need to specify:

- roles and responsibilities
- initial and ongoing training support

- methods of introducing and explaining soft tissue examinations to patients
 - use of supporting leaflets to maintain patient awareness
 - the examination processes to be used, selection of chairside techniques and aids
 - record keeping and the use of mouth maps
 - referral procedures to specialists
 - liaison with specialists
 - liaison with other local health professionals
 - external communication about the practice and its oral cancer detection initiative.
-

Developing practice guidelines

Oral cancer examination can be approached in many ways. A practice meeting can be arranged to set some broad principles and then ask a smaller group or an individual to work out the detail, for discussion at a subsequent meeting. There are no right and wrong methods. There will be a need for leadership and a need for input from the dental team. Nurses, practice managers, receptionists and hygienists will all have good suggestions to make about how to explain oral cancer examinations to patients in a way that does not alarm them, about the efficient

management of at-risk registers, and about maintaining good communications with other health professionals. All that matters is that a practice ends up with an agreed approach to opportunistic oral examinations which gives everyone a clear understanding of their part in the process and produces a clear message for patients. A specialist may be invited to a practice meeting to help in calibration and this method has been adapted by a few practices prior to the British Dental Health Foundation's annual Mouth Cancer Awareness Week (now Mouth Cancer Action Month).

Agreeing the approach

This paper has suggested that effective oral cancer examination is clinically simple but organisationally and psychologically complex. The barriers are less to do with the ability of dentists to carry out a proper head and neck examination and more to do with lack of integration of the procedure into practice thinking and working methods. Nurses might not be sure when to expect a head and neck examination and where and when to record findings. Primary care dentists might not be confident enough of their right to be commenting on patient lifestyle beyond the familiar dietary messages. Issues such as these need to be talked through in the practice before a strategy is decided. For example:

- Does anyone in the practice smoke? Is this appropriate in a practice committed to oral cancer prevention? How can the practice help its colleague to give up? How could the colleague be rewarded for giving up?
- Is everyone familiar with nicotine replacement therapies to help smoking cessation - the different types available, the number of weeks of use probably needed? Think about sending a practice member to the local smoking cessation counsellor to check up on products for assisting smokers and methods of referral, and to report back.

- We all understand what smoking and drinking mean - but how familiar are practice members with tobacco chewing? Is there anyone in the practice who could explain how chewing tobacco products are used and what they look and taste like? Could you borrow a member of a nearby practice to explain to a practice meeting if your own practice does not have a member who can do this? Might the local postgraduate centre be persuaded to organise a briefing session for local practices if this is a general need?
- Try talking through the pros and cons of opportunistic oral cancer examinations and population screening programmes (such as are used for cervical screening, for example) with practice staff. Look at the pros and cons from the point of view of patients, including patient convenience and cooperation.
- Discuss examination techniques. Is there a simple routine that all the dentists can agree, and that nurses and other staff can then explain? How will findings be recorded? And will the routine include toluidine blue/light tests or will it rely on conventional methods of clinical examination?

- Do all practice staff understand what a dentist is doing when undertaking a head and neck examination? Try using the explanations and illustrations in this paper to brief nurses and other staff.
- Think about the practice's role in the care of patients who have been identified as having oral cancer or precancer. Are there currently any such patients in the practice? Which consultants is the practice working with and who else, outside the practice, is involved in their care? Are channels of communication good enough with other members of the oral cancer management team?
- Are staff members aware of chairside tests, what the practice is able to offer and how to set up the diagnostic tests for use when requested by the dentists?

Once you have decided what to do, you have to organise yourselves to do it - making maximum use of everyone's skills. A nurse might have very good communication skills, for example, and be made a first contact point for questions from patients who phone or are in a waiting area. However duties are organised, training will be necessary, but that can probably be organised within the practice through discussion and role play. Attendance at a CPD course on oral cancer detection by one or more members of the team may help to update your skills. Clearly, team members' confidence in their own awareness and understanding of oral cancer detection must be very good before the subject is introduced

to patients. You need to get the facts right if patients are not to be alarmed. There is nothing quite like being put in someone else's place to appreciate and empathise with their concerns and difficulties. Role-play can be a useful training method. Describe some two player scenarios on cards, divide into pairs, and then ask each pair to draw a card at random and act out the scenario with the rest of the practice team watching. Then discuss how it went, as a team, looking for good and not-so-good points and drawing lessons out of the role-play for everyone. See the box for some scenario ideas.

Making the most of your resources

- A woman patient phones to ask for more information about oral cancer; she is very worried (but has no known risk factors).
- A young couple with poor oral hygiene dismisses the importance of oral cancer examination when visiting the practice for their annual check up.
- A single parent, heavy smoker with a young child has white plaques on her tongue confirmed as oral leukoplakia She knows she should stop smoking but is finding it difficult to do so. Her own mother died of cancer.
- An obese middle-aged male patient, suspected alcoholic, loudly protests in the reception area that oral cancer examination is an invasion of privacy.
- A male patient, former smoker, is desperate to check he doesn't have cancer. He has read in a health column about some tests that are used for this purpose and inquires what is on offer.
- A professional female accepts examination and a chairside test; a positive detection is made on the lateral border of the tongue and she wishes to know what happens next.
- A patient who was detected with a benign condition requests an urgent referral to the hospital for a second opinion.
- A patient wearing full dentures sees no point in attending his dentist since he has no teeth.

Ideas for role-play

- Develop understanding of the issues and commitment from the entire dental team.
- Team members' confidence in their own awareness and understanding of oral cancer examinations must be complete before the subject is introduced to patients.
- The dental team should be motivated on tobacco counselling.
- Ensure that a team training programme is initiated, undertaken and periodically reviewed.
- Appoint an adviser to liaise with patients with high risk lifestyles.

Key Points

Auditing your care pathway

Once a practice has agreed an approach to oral cancer examinations it will help to put it down on paper, to ensure that everyone follows it in the same way and to help the later training of new staff, who were not present when the approach was worked out. A clear statement of what is intended to happen also helps in the auditing of whether it does in fact happen. Think of some audit tests that will let the practice demonstrate to itself how performance is improving. For example:

- What proportions of patients have been given information about their alcohol consumption and tobacco use? How will better social history taking procedures

improve this and what might the target for improvement be, over the coming year?

- What recording conventions are followed now for soft tissue examinations? Are all dentists able to understand each other's recording methods? How can consistency of recording be improved?

Once there are agreed procedures for carrying out oral cancer examinations, they can become part of the practice's clinical governance system. Clinical governance is about ensuring that patients receive the care they need and that there are no accidental gaps. That's what this paper has been all about, too.

Working with other health professionals

The first priority will be to communicate with your local hospital and oral and maxillofacial surgeons, so they can understand what the practice is planning and what its policies on referral will be. Investigation of suspect lesions will be treated as urgent when the referrals arrive, but the specialists will want to be sure that the practice referral criteria are effective and that an oral cancer examination strategy is not going to result in unnecessary work. A phone call to discuss plans at an early stage would probably be helpful and welcomed by most specialists. If you will be using other adjuncts, tell them. Check up on the arrangements for making appointments, too, and make it someone's responsibility to keep telephone numbers up to date. Inviting a consultant to a practice meeting has been adopted by few enthusiastic principals in practice.

Once a practice has an administratively workable system in place, other local health professionals ought to know about it, too.

Think about telling medical and pharmacist colleagues because they will deal with patients asking about mouth ulcers and other soft tissue conditions. It could help them to reassure patients if they could fully understand and explain that regular mouth checks by dentists are looking for things like oral cancer and are not simply confined to the examination of teeth for decay or gum disease (see page 18).

Also, find out about smoking cessation or other relevant health promotion programmes being run locally. Your practice cannot do everything and some patients will need to be referred to other support systems. There is now plenty of evidence to show the effectiveness of smoking cessation programmes,³² and it is important to know where to send patients for counselling, when the practice feels that additional expertise is needed to help a particular patient. Be aware that there is a smoking cessation counsellor in your PCT who would accept referrals.

The key to success - everyone with a clear role

As for any task, each team member should have a clear role, which they understand and see as contributing to an effective and well-managed oral health service. Roles may be distinct but there should also be interchangeability, so that holiday and sickness

absences can be covered. Each practice needs to work out how roles and responsibilities fit around the staff available, but the following framework may be a useful starting point.

Team roles and responsibilities

Everyone in the practice should:

- understand the risk factors and problems of oral cancer, and the importance of oral cancer examinations
- understand the practice's oral cancer detection policy, and the procedure

- help to raise patient awareness and understanding of the need for, and importance of, oral cancer early detection
- be able to answer patient queries at an appropriate level
- be able to offer or support lifestyle counselling to reduce the oral cancer risk.

Each dentist is responsible for:

- adopting an approach to oral cancer detection that is consistent with current medico-legal advice from defence organisations and the BDA
- ensuring that the approach is followed consistently, and is consistently documented
- ensuring that team members are trained for and understand their contributions to oral cancer prevention, while still taking responsibility for team actions and advice
- establishing and confirming specialist referral arrangements and being familiar with NICE Guidelines
- deciding whether to use adjunctive tests and, if so, defining the groups to be offered the tests.

Dentists collectively in a practice should consider:

- adopting a common approach to oral cancer examinations so that patients receive a clear message and to aid flexibility and team support within the practice
- setting up a common audit system
- using common documentation
- having a common training policy for staff about oral cancer examination
- producing written information to explain the practice's detection approach to patients
- communicating the practice's approach to other health professionals in the area
- talking to other local practices to develop a common approach.

Hygienists and therapists should:

- monitor the oral mucosa for signs of change, referring back to the dentist if necessary
- investigate sources of trauma and refer all suspect lesions to the dentist
- record soft tissue conditions found and advice given, according to conventions agreed with the dentist
- take note of lifestyle information from the medical history sheet and advise, if necessary

- be aware of the specific oral care needs in general practice for patients already treated for an oral cavity or aerodigestive tract cancer.

Nurses should:

- understand the medical history sheet and be able to help patients experiencing difficulty in answering the questions
- make accurate notes of the dentist's observations during head, neck and soft tissue examination, using agreed conventions
- confirm in patients' records that a visual and palpatory examination has been carried out
- assist with tests, if used, and be able to answer patients' questions about the tests at an appropriate level
- support patients emotionally during oral cancer examination and if suspected of having some concern.

Reception staff should:

- answer patients' queries on the telephone and in the reception area
- know about leaflets available and be able to answer questions about the leaflets, if necessary.
- act appropriately on phonecalls and requests by walk-in patients concerned by a "cancer symptom" requiring a dentist's attention."

Practice managers should:

- help to develop practice training policies to support oral cancer examination, including refresher training
- arrange cover for holidays and sickness
- maintain stocks of any documentation
- know the locations of smoking counsellors and know who accepts referrals
- have a stock of posters and useful leaflets
- organise regular audits of systems for medical history taking, soft tissue examinations, record keeping and recording
- follow up initiatives during Mouth Cancer Action Month by liaising with the British Dental Health Foundation.

- Create an audit system to monitor the implementation of your oral cancer early detection or case finding programme.
- Develop contacts and expand working relationships with fellow healthcare professionals. Develop inter-professional leadership on issues related to oral cancer control.

- Ensure that each member of the team has a clear understanding of the issues and a defined role to play.

Key Points

For more help

Medical history sheets and mouth maps

BDA model medical history sheets and mouth maps are available.

Order from BDA Shop
Tel: 0207 563 4555
<http://www.bda.org/shop>.

Leaflets on alcohol and tobacco cessation for patients

NHS Clinical Knowledge Summaries

<http://www.cks.nhs.uk/home> (accessed December 2009)

Helplines

Several Government-funded helplines offer recorded message or one to one telephone advice:

NHS Go Smokefree:
Tel: 0800 169 0 169

Asian Quitline
Tel: 0800 00 22 88

Alcoholics Anonymous:
Tel: 01904 644026

Drinkline
Tel: 0800 917 8282
AL-ANON Family Groups:
Tel: 020 7403 0888

Quit:
63 St.Marys Axe
London EC3A 8AA
England Quitline: 0800 002200
Scotland Smokeline: 0800 84 84 84
Northern Ireland Quitline: 0800 84 84 84
Wales Helpline: 0800 169 0169

Counselling and support services

There is a large network of support agencies for cancer sufferers, which will also give advice to practices developing patient communication strategies about oral cancer:

British Association for Counselling and Psychotherapy:
BACP House
15 St John's Business Park
Lutterworth LE17 4HB
Tel: 01455 883300
Fax: 01455 550243

Let's Face It:
72 Victoria Avenue
Westgate On Sea
Kent CT8 8BH
Tel: 01843 833724

Macmillan Cancer Support:
Tel: 0808 808 00 00

Cancerlink:
17 Britannia Street
London WC1X 9JN
London:
Tel: 020 7833 2451 Fax: 020 7833 4963
Edinburgh:
Tel: 0131 228 5557

Changing Faces:
The Squire Centre
33-37 University Street
London WC1E 6JN
Tel: 0845 4500 275
Fax: 0845 4500 276

- Beaglehole RH, Watt RG. Helping smokers stop - a guide to the dental team. NHS Health Development Agency/BDA 2004.
- Second European workshop on tobacco prevention and cessation for oral health professionals. *Int Dent J* 2010; 60 No. 1 (Feb issue).
- Parker AJR, Mashall EJ, Ball DM. Diagnosis and management of alcohol use disorders. *BMJ* 2008; 336: 496-501.
- Alcohol units - a brief guide. Department of Health 2008.
<http://www.alcoholstakeholders.nhs.uk/pdf/DH%20Alcohol%20Units.pdf> (accessed December 2009).
- Department of Health alcohol advice
http://www.dh.gov.uk/en/PublicHealth/Healthimprovement/Alcoholmisuse/DH_085385 (accessed December 2009).
- Scottish Intercollegiate Guideline Network. Diagnosis and management of head and neck cancer No. 90. NHS 2006.
<http://www.sign.ac.uk/pdf/sign90.pdf> (accessed December 2009).
- Silver K, Bauld L, Grant L, Warnakulasuriya S, Day R. The experiences of younger oral cancer patients in Scotland: from self diagnosis to treatment. Project Report, .
www.benwaltontrust.org (accessed December 2009).
- Changing Scotland's relationship with alcohol: a discussion paper on our strategic approach. Scottish Government 2008.
- Carter L, Ogden GR. Oral cancer awareness of general medical and general dental practitioners. *Br Dent J* 2007; 203 (E10): 248-9.
- O'Dwyer M, Day A, Padgett M, Ogden GR, McLaren S, Goodman CR. Detection of mucosal abnormality in oral cancer patients using a photodynamic technique: A pilot study. *Br J Oral Maxillofac Surg* 2008; 46: 6-10.
- Shepherd S, Young L, Clarkson JE, Bonetti D, Ogden GR. General Dental practitioners views on providing alcohol related health advice; an exploratory study. *Br Dent J* 2010; 208: E13.
- Brocklehurst PR, Baker SR, Speight PM. Factors which determine the referral of potentially malignant disorders by primary care dentists. *J Dent* 2010; 38: 569-78.
- Brocklehurst PR, Baker SR, Speight PM. Primary care clinicians and the detection and referral of potentially malignant disorders in the mouth: a summary of the current evidence. *Prim Dent Care* 2010; 17: 65-71.

Websites (accessed December 2009):

Department of Health
www.doh.gov.uk

FDI World Dental Federation
www.fdiworldental.org

British Dental Association
www.bda.org

Cancer Research-UK
www.cancerresearchuk.org

National Cancer Institute - USA
www.cancer.gov

American Cancer Society
www.cancer.org

National Oral Cancer Foundation - USA
<http://oralcancerfoundation.org/>

National Oral Health Information Clearing House
www.php.com/node/9826

Oral Health Network on Tobacco Use Prevention and Cessation
www.tobacco-oralhealth.net/events/workshop2008/workshop2008.asp

WHO Collaborating Centre for Oral Cancer & precancer, UK
www.ocEdr.org

Ben Walton Trust (action against oral cancers in the young)
www.benwaltontrust.org

Drinkaware
www.drinkaware.co.uk

General information resources

Bibliography

1. Gomez I, Warnakulasuriya S, Varela-Centelles PI, Lopez-Jornet P, Suarez-Cunquero M, Diz-Dios P, Seoane J. Is early diagnosis of oral cancer a feasible objective? Who is to blame for diagnostic delay? *Oral Diseases* 2010; 16: 333-42.
2. Conway DI, Stockton DL, Warnakulasuriya KAAS, Ogden G, Macpherson LM. Incidence of oral and oropharyngeal cancer in United Kingdom (1990-1999) – recent trends and regional variation. *Oral Oncol* 2006; 42: 586-92.
3. Cancer Research-UK. UK oral cancer incidence and mortality statistics 2008. <http://info.cancerresearchuk.org/cancerstats/types/> (accessed December 2009).
4. Warnakulasuriya KAAS. Causes of oral cancer - an appraisal of controversies. *Br Dent J* 2009; 207: 471-5.
5. Sankaranarayanan R, Ramadas K, Thomas G, Muwonge R, Thara S, Mathew B, Rajan B, Trivandrum Oral Cancer Screening Study Group. Effect of screening on oral cancer mortality in Kerala, India: a cluster-randomised controlled trial. *Lancet* 2005; 365: 1927–33.
6. Speight PM, Downer MC, Zakrzewska J (Eds). Screening for oral cancer and precancer. A report of the UK Working Group on Screening for Oral Cancer and Precancer. *Community Dental Health* 1993; 10 (supplement 1): 1-89.
7. Speight PM, Palmer S, Moles DR, Downer MC, Smith DH, Henriksson M, Augustovski F. The cost-effectiveness of screening for oral cancer in primary care. *Health Technology Assessment* 2006; 10: 1-144.
8. Lim K, Moles DR, Downer MC, Speight PM. Opportunistic screening for oral cancer and precancer in general dental practice: results of a demonstration study. *Brit Dent J* 2003; 194: 497-502.
9. Nagao T, Warnakulasuriya KAAS. Annual screening for oral cancer detection. *Cancer Detection & Prev* 2003; 27: 333-7.
10. Provision and quality assurance for head and neck cancer care in the UK. A nationally co-ordinated multidisciplinary approach. British Association of Head and Neck Oncologists 1998.
11. Warnakulasuriya KAAS, Robinson D, Evans H. Multiple primary tumours following head and neck cancer in southern England during 1961-98. *J Oral Pathol Med* 2003; 32: 443-9.
12. ADA Council on Scientific Affairs. Dental management of patients receiving oral bisphosphonate therapy. *JADA* 2006; 137: 1144-50.
13. Shaw MJ. Clinical Guidelines: The oral management of oncology patients requiring radiotherapy, chemotherapy or bone marrow transplantation. *Br J Oral Maxillofacial Surgery*; accepted for publication.
14. Fedele S. Diagnostic aids in the screening of oral cancer. *Head and Neck Oncol* 2009; 1: 5.
15. Patton LL, Epstein JB, Kerr AR. Adjunctive techniques for oral cancer examination and lesion diagnosis: a systematic review of the literature. *J Am Dent Assoc* 2008; 139: 896-905.
16. Lingen MW, Kalmar JR, Karrison T, Speight PM. Critical evaluation of diagnostic aids for the detection of oral cancer. *Oral Oncol* 2008; 44: 10-22.
17. Llewellyn CD, Johnson NW, Warnakulasuriya KAAS. Risk factors for oral squamous cell carcinoma of the oral cavity in young people - a comprehensive literature review. *Oral Oncol* 2001; 37: 401-18.
18. Hashibe M, Preenan P, Chuang SC et al. Interaction between tobacco and alcohol use and the risk of head and neck cancer: pooled analysis in the International Head and Neck cancer Epidemiology Consortium. *Cancer Epidemiol Biomarkers Prev* 2009; 18: 541-50.
19. General Household Survey. Office for National Statistics 2007.
20. BBC Online. <http://news.bbc.co.uk/1/hi/health/8193639.stm> (accessed December 2009).
21. Hindle I, Downer MC, Moles DR, Speight PM. Is alcohol responsible for more intra-oral cancer? *Oral Oncol* 2000; 36: 328-33.
22. Department of Health: http://www.dh.gov.uk/en/PublicHealth/Healthimprovement/Alcoholmisuse/DH_085385 (accessed October 2010).
23. Warnakulasuriya KAAS. Food, nutrition and oral cancer. In: Food constituents and oral health. Wilson M (Ed). Woodhead Publishing Ltd Oxford CRC Press 2009.
24. Gupta PC, Warnakulasuriya KAAS. Global epidemiology of areca nut usage. *Addiction Biol* 2002; 7: 77-83.

25. World Health Organisation International Agency for Research on Cancer. Betel quid and areca-nut chewing and some areca-nut-derived nitrosamines. Lyon; IARC Monographs on the Evaluation of Carcinogenic Risks to Humans 2004.
26. El-Wajeh YA and Thornhill MH. Qat and its health effects. *Br Dent J* 2009; 206:17-21.
27. Warnakulasuriya KAAS, Harris CK, Scarrott DM, Watt R, Gelbier S, Peters TJ, Johnson NW. An alarming lack of public awareness towards oral cancer. *Br Dent J* 1999; 187: 319-22.
28. Humphris GM, Duncalf M, Holt D, Field EA. The experimental evaluation of an oral cancer information leaflet. *Oral Oncology* 1999; 35: 575-82.
29. Beaglehole RH, Watt RG. Helping smokers stop - a guide to the dental team. NHS Health Development Agency/BDA 2004.
30. Warnakulasuriya KAAS. Tobacco, oral health and disease. *Oral Health Report* 2008; 2; 3-7.
31. Warnakulasuriya S, Dietrich T, Bornstein MM et al. Oral health risks of tobacco use and effects of cessation. *Int Dent J* 2010; 60: 7-30.
32. Ramseier CA, Mattheos N, Needleman A, Watt R, Wickholm S. Consensus report: first European workshop on tobacco use prevention and cessation for oral health professionals. *Oral Health and Preventive Dentistry* 2006; 4: 7-10.
33. Babor TF, Higgins-Biddle JC. Brief Intervention: For hazardous and harmful drinking. A manual for use in primary care. World Health Organisation 2001; http://whqlibdoc.who.int/hq/2001/WHO_MSD_MSB_01.6b.pdf
34. National Institute for Clinical Excellence. Improving Outcomes in Head and Neck Cancers. http://www.nice.org.uk/nicemedia/pdf/csghn_themanual.pdf 2004 (accessed December 2009).
35. Handley T, McCaull JA, Ogden GR. Dyskeratosis congenita. *Oral Oncol* 2006; 42: 331-6.

Appendix 1. The head and neck cancer team

Primary healthcare professionals

- Dental practitioners
- Medical practitioners
- Community dental service
- Public health doctors
- Dental hygienists/therapists
- Pharmacists/community pharmacists
- Health visitors

Hospital specialists

- Oral and maxillofacial surgeons
- Oral medicine specialists
- Oral pathologists
- Ear, nose and throat surgeons
- Plastic surgeons
- Radiation oncologists
- Medical oncologists
- Maxillofacial technologists
- Physiotherapists
- Speech and swallowing therapists
- Dieticians
- Specialist nurses (including Macmillan nurses)
- Occupational therapists
- Palliation and terminal care specialists

Counsellors

- Counselling services
- Chaplaincy and other religious support services

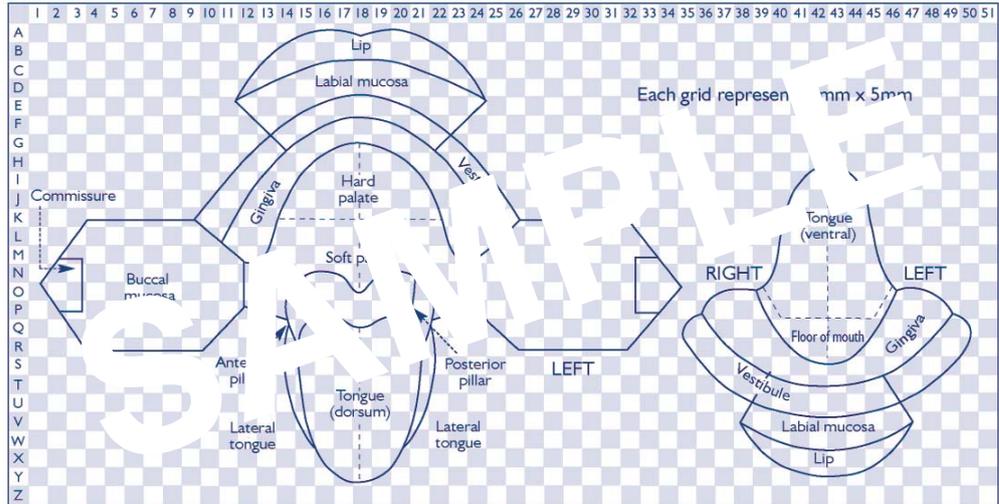
Others

- Epidemiologists
- Molecular biologists
- Biochemists
- Behavioural scientists

Adapted from The British Association of Head and Neck Oncologists 1998.11

Appendix 3. Mouth Map

Record the extent of any pathology on the mouth map and describe it below:



Description and date:

You can purchase the BDA mouthmap from BDA Shop.

Tel: 0207 563 4555

Online: www.bda.org/shop/records.aspx



Occasional paper

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