



Oral Health Assessment and Review

Dental Clinical Guidance

Version 1.0 – May 2012

This document presents an update of the guidance information which was the basis for development of the short Guidance in Brief published in 2011. It is provided as a resource for those who require more detail on the background and various elements of oral health assessment and review.

This version may be subject to further amendment through an ongoing process of review and updating. Feedback is welcome and can be provided via the online OHAR Forum at www.scottishdental.org/index.aspx?o=2886. Comments received will be used to inform any future updating.

Available to download at www.scottishdental.org/cep:

Guidance in Brief
Quick Reference Guide
Example Recording Forms

Scottish Dental Clinical Effectiveness Programme

Dundee Dental Education Centre, Frankland Building,
Small's Wynd, Dundee DD1 4HN

Email scottishdental.cep@nes.scot.nhs.uk

Tel 01382 425751 / 425771

Website www.scottishdental.org/cep

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1 Introduction

1.1 Why this guidance has been developed

Following the earlier surgical (or extractive) era, there has been a restorative approach to the provision of dental care in primary practice, with a focus on the assessment of carious cavities in teeth and less emphasis on initial caries, the assessment of periodontal tissue and the overall oral health of the patient. A standard recall interval of 6 months has been advocated for all patients, regardless of the status of the patient's oral health. However, it is becoming increasingly apparent that there are wide variations between patients in their susceptibility to disease, the likelihood of early disease progressing and the speed of disease progression, if it occurs. A 'one-size' fits all approach is therefore not adequate to meet the needs of every patient.

In 2004, the National Institute of Health and Clinical Excellence (NICE)¹ issued guidance recommending that a patient's recall interval for routine care be determined by their overall risk of oral disease and thus be individualised to the needs of each patient. In addition, the Scottish Government has more recently set out a '*Better Health, Better Care*' Action Plan² that targets health inequalities and those at greatest risk and aims to improve health and the quality of healthcare by adopting a more preventive, proactive approach. This model is referred to as anticipatory care and aspects of it are already being implemented in dentistry within the Childsmile programme³. The intention is to extend this approach across the whole of primary dental care to move from the more traditional approach towards a more preventive, evidence-based and, where possible, minimally invasive approach to care. This approach is risk-based and long-term and aims to meet the specific needs of individual patients and encourage the involvement of patients in managing their own oral health.

The Scottish Dental Clinical Effectiveness Programme (SDCEP) convened a guidance development group to provide clinical guidance on best practice for the assessment of individual dental patients. The Guidance Development Group defined an oral health assessment (OHA) as assessment of the patient's histories and their oral health status, leading to diagnosis and risk assessment, followed by personalised care planning and review. Many aspects of the guidance will be familiar to dental teams. However, the 'newer' concepts introduced include: assessing modifying factors (including risk and protective factors, behaviours and clinical findings associated with the development of oral disease or conditions) and assigning a 'risk level' to each patient in order to facilitate the development of a personal care plan and the identification of a recall interval for review that is specific for each patient (see Sections 5 and 6). This guidance therefore promotes a systematic and comprehensive approach to assessing and managing the overall oral health of each patient. Further details about SDCEP and the development of this guidance are given in Appendix 1.

1.2 Why follow this guidance?

If a comprehensive assessment of the patient's overall oral health status, including assessment of teeth, periodontal tissue, oral mucosal tissues and head and neck, is carried out for all patients, signs of oral disease can be recognised early and appropriate care (both preventive and treatment-based) can be provided to improve the oral health, and in some cases general health, of the patient population in Scotland.

If accurate and comprehensive record keeping is carried out, this will facilitate the provision of high-quality patient care and improve patient safety, particularly in cases where patient care is shared among the dental team⁴. It also provides a permanent record, which can support the dental team if faced with complaints or litigation.

1.3 Scope of this Guidance

This guidance aims to facilitate individualised long-term preventive-orientated care (including recall) to improve and maintain the oral health and general health of each patient by providing advice on patient assessment (see Section 2.1). The guidance is based on existing guidance (NICE Clinical Guideline 19 on dental recall¹, FGDP Clinical Examination and Record Keeping guideline⁵), relevant systematic reviews⁶⁻⁸, research evidence and the opinion of experts and experienced practitioners.

This guidance is directed at the whole primary care dental team. The approach to patient assessment described in this guidance is applicable to all patients, including adults, children and those with special needs, who would normally receive regular care in the primary care sector but needs to be adapted to the particular needs of specific patient groups. With the exception of some differences for the assessment of child patients which are highlighted, details of such adaptations are beyond the scope of this version of the guidance.

For patients who attend only for urgent care (e.g. pain relief), this approach is not appropriate. Instead, a basic assessment that enables the management of the patient's immediate needs is sufficient. This should also always include taking a medical history and examination of oral mucosal tissue. Such irregular symptomatic attenders should be invited to attend for regular care, which would begin with a comprehensive OHA.

The guidance does not include detailed treatment planning or specific clinical procedures. Please refer to the SDCEP guidance '*The Prevention and Management of Dental Caries in Children*'⁹ for more detailed advice related to child patients.

This guidance describes:

- what Oral Health Assessment and Review involves and the important overarching principles of assessment (i.e. effective communication, comprehensive and accurate record keeping, practising within medico-legal constraints) (see Section 2);
- key elements that form the examination part of patient assessment (i.e. assessment of the patient histories, assessment of oral health status) (see Sections 3 and 4);
- how information from all elements of the examination is pulled together to form diagnoses and to identify the level of individual patient risk for the development and/or progression of oral disease (including other oral health problems), which in turn informs the personal care plan and review process (including the interval and type of review) (see Sections 5 and 6).
- A glossary is provided in Appendix 2.

1.3.1 Individualised Risk Assessment

Formal individualised risk assessment is one of the newer concepts introduced in this guidance. The guidance is therefore structured to facilitate this process. Assessment of the patient's risk of developing oral disease is an imperfect science, and requires clinical judgement and experience (often of the whole dental team) to assess and re-assess the level of risk for each individual patient (see Section 5). A range of factors need to be considered when assessing the level of risk. Within Sections 3 and 4, modifying factors, are listed in alphabetical order to facilitate risk assessment for each patient. Modifying factors include:

- Risk factors that may increase the likelihood of developing oral health problems
- Protective factors that can reduce the risk of developing oral disease (see Section 5). With only a few exceptions these are not listed because they are often the opposite of risk factors; for example, smoking is a risk factor whereas not smoking is a protective factor.
- Behaviours and clinical findings that might be identified during an assessment. These generally do not constitute a risk of developing oral disease but might

alter the possible treatment options and patient management, and will therefore affect the overall personal care plan (see Section 6).

Modifying factors need to be considered by the dental team when assessing the level of risk for the key elements of oral health for each patient and the period before the next review. For many of these factors, there is evidence to support their association with the development of oral disease^{1,10,11}. Inclusion of other factors and clinical findings are based on the consensus of the Guidance Development Group; these are indicated by the symbol §.

The risk factors and clinical findings, together with the clinician's knowledge of the patient's attitude to care and willingness and ability to cooperate, are used to determine the patient's overall level of risk (low, medium or high), to develop each patient's personal care plan and to identify a recall interval that is specific to the individual patient (see Sections 5 and 6 for more details of this process). A form to facilitate the recording of risk levels and to help communicate this with patients is provided in Appendix 9 (Patient Review and Personal Care Plan).

1.3.2 Supporting Tools

Example forms are provided in Appendix 9 to facilitate the recording of information from the various elements of the assessment. The Guidance Development Group considers it best practice to record all information contained in these forms when conducting a comprehensive Oral Health Assessment; however, the precise form or system used to collect this information is the choice of the individual practitioner. Forms for the assessment of occlusion and for assessment of other elements of the OHA that generally affect only a small proportion of patients (e.g. intra-oral bony areas, trauma) are not provided; however, it is important to record positive findings of these assessments in the patient's notes. Appendix 9 also includes a checklist to assist with recording which elements of assessment have been conducted at a particular visit and the outcomes of the assessment.

Other appendices provide additional information on, for example, the roles and responsibilities of members of the dental team, radiography and charting caries.

'Guidance in Brief', a summary version of this guidance, and a Quick Reference Guide that illustrates some of the key concepts are provided separately.

1.4 Statement of Intent

This guidance has resulted from a careful consideration of current legislation, professional regulations, the available evidence and the opinion of experts and experienced practitioners. It should be considered when conducting any examination and discussing care planning with the patient and/or carer. As guidance, the information presented here does not override the health professional's right and duty to make decisions appropriate to the individual patient. However, it is advised that significant departures from this guidance are fully documented in the patient's clinical record at the time the relevant decision is made. This approach to assessment incorporates improved monitoring to underpin the provision of high-quality patient care and reflects changes taking place internationally. It is appreciated that fully implementing this approach may represent a significant change to current practice for some dental teams and will take time. However, dental teams could implement the guidance incrementally and it is recommended that these changes are planned and documented.

2 General Principles of Oral Health Assessment and Review

2.1 What is Oral Health Assessment and Review?

Within routine primary dental care, Oral Health Assessment and Review (OHAR) involves a comprehensive assessment of a patient's social, dental and medical histories and oral health status that leads to diagnosis and risk assessment, followed by personalised care planning and ongoing review (see Figure 1).

A key aim of Oral Health Assessment and Review is to facilitate the move from the traditionally restorative approach to patient care to a more preventive and long-term approach that is risk-based and meets the specific needs of individual patients. It also aims to encourage the involvement of patients in managing their own oral health.

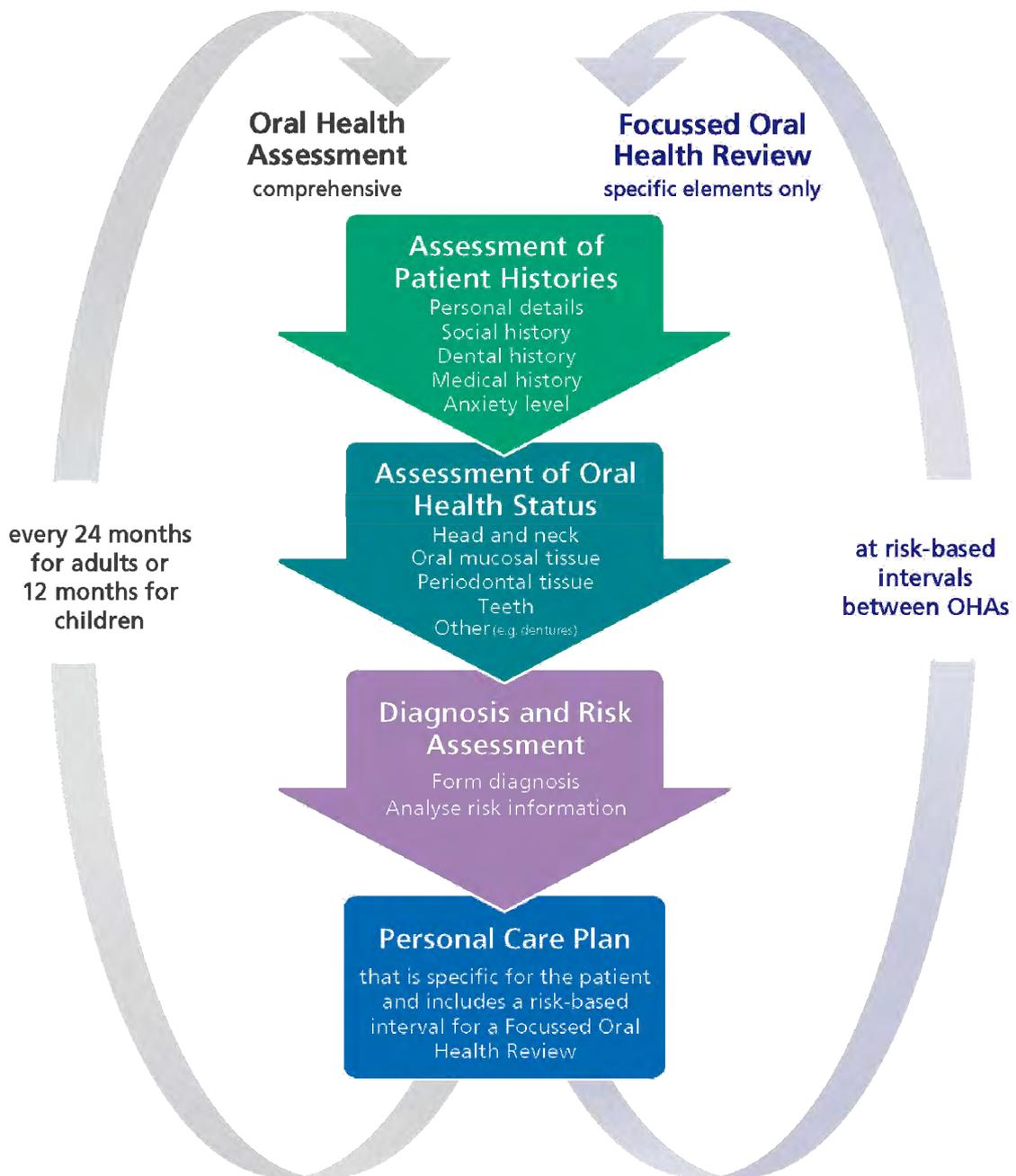
The personal care plan is a risk-based, long-term plan that is specific for the individual patient. Its aim is to address the patient's individual oral health improvement needs by including preventive options (e.g. patient advice, topical fluoride), operative interventions if required (e.g. restoration), the interval for review, referral for specialist advice and/or treatment if required and long-term maintenance (see Section 6 for more details).

For a personal care plan to meet the changing needs of a patient, it is important that on registering with a dental practice, each patient receives a baseline comprehensive Oral Health Assessment (OHA). For adults, this is repeated after 24 months up to the age of 18 years¹. For children, the first comprehensive assessment should be conducted as early as possible, and no later than three years of age, and be repeated at 12 month intervals. In addition, during these time periods Focussed Oral Health Reviews (FOHRs) can be carried out. Both the number of FOHRs and the intervals between them will vary depending on the patient's risk of future oral disease.

For patients who attend only for urgent care (e.g. pain relief), this approach is not appropriate. Instead, a basic assessment that enables the management of the patient's immediate needs is sufficient. This should also always include taking a medical history and examination of oral mucosal tissue. Such irregular symptomatic attenders should be invited to attend for regular care, which would begin with a comprehensive OHA.

This guidance describes the elements of Oral Health Assessment and Review. The process is illustrated in Figure 1, and described in detail in Sections 3–6. Actions for the dental team are shown as bulleted lists in coloured boxes and diagrams are included to illustrate general concepts. Additional resources to assist the dental team in following this guidance are highlighted throughout and included in the appendices.

Figure 1 Overview of Oral Health Assessment and Review



2.2 Overarching Principles of Oral Health Assessment and Review

The increased awareness that oral health is an important component of general health, combined with a desire to improve the general well-being of patients and patient safety, is an important driver for thoroughly assessing a patient's oral health. There are three overarching principles that facilitate the delivery of quality care and that are beneficial to both the patient and the dental team: effective communication (see Section 2.2.1); practising within medico-legal constraints (see Section 2.2.2); and comprehensive and accurate record keeping (see Section 2.2.3).

It is important that details of a comprehensive assessment of the patient histories (see Section 3) and their oral health status (see Section 4) are recorded clearly and accurately, retained within the patient record (see Section 2.2.3) and that the findings and modifying factors (see Section 5) are discussed with the patient to assist in the development of a mutually acceptable care plan (see Section 6). This should:

- facilitate shared care of patients;
- improve patient safety;
- improve the quality of patient care;
- encourage a realistic approach to patient care, providing an opportunity to manage patient expectations and aspirations from the earliest stages;
- enable any possible concerns that the patient or clinician might have about any aspect of the care plan to be recorded;
- encourage involvement of the patient in managing their own oral health;
- assist the clinician in achieving valid consent to treatment and assist in the provision of a robust defence against any complaints or potential litigation at a later stage.

2.2.1 Communication

Communicating effectively to help build a strong 'dental team–patient' relationship is an essential component of providing appropriately tailored, quality dental care¹²⁻¹⁴. For example, although identifying and managing the oral health risk of each patient is the responsibility of the dental team, the patient has a key role in providing accurate information (e.g. medical conditions, diet, smoking habits) (see Section 3) to help the practitioner make informed decisions.

The patient can also play an important role in reducing or mitigating some risk factors (e.g. improving oral hygiene, reducing alcohol consumption, reducing the frequency of sugar intake). Therefore, it is important to emphasize to the patient the need to answer the questions regarding social history, dental history and medical history honestly, and to discuss the concept of risk and the patient's role in managing this risk. Forms for recording information relating to elements of OHAR are provided in Appendix 9. These forms provide a starting point for discussion with the patient and, depending on the answers to the questions, further questions and communication might be required, and relevant results recorded in the patient's notes. A form to facilitate the recording of risk levels (see Section 5) and communicating this with patients is included in Appendix 9 (Patient Review and Personal Care Plan).

Effective communication with patients will also minimise misunderstandings and the possibility of future complaints or litigation (see Section 2.2.2)¹⁵.

Clear communication among the dental team is also essential to minimise misunderstandings and ensure the best possible care for patients⁴. It is important that each member of the dental team knows and keeps up to date with the responsibilities of each dental team member as these can change over time. Current roles of the members of the dental team are outlined in Appendix 3.

The communication skills of listening, questioning and explaining (as well as an understanding of verbal, non-verbal and written communication) are central to any 'dental team–patient' interaction. It is important to gauge the level of understanding of the patient and adjust your communication style and method to suit the patient.

Communication with child patients brings with it additional complexity and requires additional lines of communication with the child's parent or carer. When providing care for younger children, the dentist's relationship with respect to gathering information will primarily be with the parent or carer. However, this will change with the age and understanding of the child and it is important, even for the young child, to include them in any conversation and not 'talk over' them; this will ensure that the child is happy with the meaning of any information being shared with the parent/carer and help to build on the concept that child patients have a role in what is being decided about their care. The key to communicating with child patients is to remember that communication is not just about words: use age-specific language and ensure, where possible, that the environment is appropriate (e.g. use a children's area or children's books and toys)¹⁶. The SDCEP guidance '*The Prevention and Management of Dental Caries in Children*'⁹ provides further advice on providing care to children and involving child patients in the management of their care.

- Record information related to the assessment of the patient (see example forms in Appendix 9) and use the answers to initiate further communication with the patient.
- Ensure that all discussions with the patient are appropriate to their age and capacity and that child patients, including young children, are included in discussions about their care.
- Communicate with the patient the concept of risk and their role in minimising this risk (see Sections 5 and 6).
- For more information about communicating with patients in general (e.g. with respect to appointments, handling complaints, providing details about the dental practice), refer to the SDCEP '*Practice Support Manual*'¹⁷.

2.2.2 Medico-legal Issues Relevant to Oral Health Assessment and Review

OHAR involves several processes, each of which must be conducted within medico-legal constraints.

The principle legal concepts relevant to OHAR are:

- confidentiality;
- consent and capacity;
- record keeping (see Section 2.2.3);
- data protection (see Section 2.2.3).

It is important that practice staff are familiar with those aspects of medical law that impact directly on their area of practice and that this is reflected in staff training.

Confidentiality and Disclosure of Information

Dentists have a duty of confidentiality to their patients, and disclosure of personal health information without consent is governed by the ethical guidance of the General Dental Council (GDC)^{4,18,19} and the Data Protection Act 1998^{20,21}. Personal health information includes all notes, radiographs, photographs, details of treatment carried out, records of appointments, payments made and any personal information about the patient.

Information obtained in the course of OHAR must be treated in the strictest confidence. Members of staff might be asked to assist patients in completion of the 'History' sections of forms used as part of OHAR. All such staff must be aware of confidentiality issues and be suitably trained for the tasks they undertake²². The design and layout of surgery premises should also reflect the requirements of confidentiality.

- Have in place a practice confidentiality policy and ensure that staff are familiar with it.
- Train staff in confidentiality issues to ensure that the practice policies are followed and that all staff comply with the Data Protection Act 1998^{20,21} (see Section 2.2.3).
- Ensure staff are aware of the seriousness of a breach of confidentiality and are aware that, if a breach is made, disciplinary action, including dismissal, can be taken if appropriate.
- Ensure patients understand how their information will be used and with whom it might be shared. Examples of situations where information might be shared routinely include:
 - referral to another dentist;
 - discussions with medical practitioners;
 - information sent to laboratories;
 - information sent to Practitioner Services Division (PSD) (this is stated on the GP17 NHS form signed by the patient);
 - information sent to NHS Boards.
- Refer to the SDCEP *'Practice Support Manual'*¹⁷ or contact your defence organisation for additional information on confidentiality.

NB: Patients have the right, under the Data Protection Act 1998^{20,21}, to access information held about them. Patients and other members of the public have a general right, under the Freedom of Information Act (Scotland) 2002²³, to access recorded information held by a Scottish public authority. However, the Freedom of Information Act (Scotland) 2002 does not enable the confidentiality of an individual's dental records to be breached.

Consent and Capacity

It is a general legal and ethical principle that you must obtain valid consent before starting treatment or physical investigation, or providing personal care for a patient²⁴. OHAR involves examination of the head, neck and oral tissues. In addition, diagnostic tests such as radiographs might be undertaken. It is important that patients are aware of what is planned in the course of OHAR and that they consent to what is proposed. It is also important to note that a patient might be unable to consent on their own behalf, and patients with capacity and over 16 years of age have the right to refuse care and withdraw consent at any time and that this must be respected.

There are four general principles to obtaining consent before beginning clinical treatment or investigation: the capacity to consent, providing adequate information, the freedom to choose and that consent is an ongoing process.

The following groups of patients can consent to medical or dental treatment, investigation or personal care:

- a patient over the age of 16 who is competent to consent;
- a patient of less than 16 years of age who is accessing care in Scotland, if the practitioner believes that the child is capable of understanding the nature and possible consequences of the procedure or treatment; it is advisable, however, that irreversible treatment such as an extraction is not undertaken until parental consent is available, and for patients under 12 years it would be unwise to proceed on the consent of the child alone;
- a parent (or carer) with parental rights over a child;
- proxy consenters (in Scotland the proxy does not have the right to refuse treatment);
- the Court in the case of a child.

Note that the law governing consent varies across the United Kingdom, and therefore practitioners must familiarise themselves with the law relating to the country in which they intend to practise.

General points to note

- Ensure the patient has the capacity to make their own decisions (i.e. is able to understand and remember what is being proposed, to weigh up the relevant information, including its benefits, hazards and options, and to use this to reach a decision) when obtaining consent.
- Provide adequate information to the patient that is specific to the patient, is in a manner that can be understood by the patient and includes the benefits, risks and implications of any relevant options (including the option of not having the intervention). Give the patient time to consider the information and answer any questions they have. It is often helpful to provide printed information about the treatment.
- Ensure that the patient makes their decision voluntarily and knows that they can change their mind at any time.
- If you are in doubt as to whether a patient wishes to continue with the full care package being provided, check with the patient before proceeding. Note that consent to an examination might not include permission to take radiographs or additional diagnostic tests.
- Keep up to date with legislation covering the issue of obtaining consent and, if you are unsure, ask for up-to-date legal advice from your dental defence organisation.
- If in doubt about any aspect of obtaining consent, seek advice from your defence organisation prior to commencing examination and treatment.
- Refer to the SDCEP *'Practice Support Manual'*¹⁷ for additional information on consent.

Recording of consent process

- Record and retain details of the consent process within the patient's notes.
 - Written consent is not a legal requirement for treatment under local anaesthesia. However, it is good practice to record the consent process within the patient's record.
- Where general anaesthesia or sedation is contemplated, written, signed consent is required; therefore, obtain appropriate consent and retain this within the patient record.

Refusal or incapacity to consent

- Do not continue with the care of a patient if the patient refuses to provide consent (when they have the capacity to do so). Continuing with care without consent can lead to criminal charges, civil actions and allegations of professional misconduct.
- In circumstances where a patient does not have the capacity to consent, refer to the relevant legislation covering consent for children and for those who lack the capacity to make decisions regarding their healthcare (see SDCEP *'Practice Support Manual'*¹⁷ for details).
- In the case of children, if the carer of a child or the child refuses to give consent or to cooperate, attempt to obtain consent for examination or treatment at a subsequent appointment. If consent is not forthcoming, inform the named/designated contact person in local guidelines immediately if the child requires urgent attention or there is a risk of harm. If in doubt, contact your defence organisation (see SDCEP *'Practice Support Manual'*¹⁷ for details).

NB: The Children (Scotland) Act 1995²⁵ allows a person who has care or control of the child (e.g. during the day) but no parental responsibilities to the child to give consent for the child to undergo an examination or treatment if the person believes the parent would provide consent. This can include step-parents, a relative or a child-minder²⁴.

2.2.3 Record Keeping

Good record keeping underpins the provision of quality patient care⁵. Increasingly, the care of patients is shared among dental team members and between other professionals. Therefore, it is important to practise good record keeping to ensure that all relevant information is available to facilitate the provision of effective, long-term shared care of patients. If carried out consistently for each patient, it will also save time in the long run for the dental team and will provide a permanent record of the care of patients, which is essential for medico-legal reasons (see Section 2.2.2).

An increasing number of dental practices use software with automated data collecting and charting. It is anticipated that the increasing use and development of IT across all of dental primary care will greatly facilitate data collection, use and re-use of risk information, histories and examinations.

In the meantime, example forms to facilitate recording of information are provided in Appendix 9. It is important to note that the information gathered represents a starting point for discussion with the patient and, depending on the answers to the questions, further questions, investigations or actions might be required and the relevant results of these investigations recorded in the patient's notes.

General Principles

- Ensure all records are:
 - accurate;
 - dated;
 - confidential;
 - secure;
 - contemporaneous (update at each appointment);
 - comprehensive (note which elements of assessment have been completed at a given appointment, include positive results and any concerns of the patient or clinician);
 - legible and written in language that can be read and understood by others to enable effective shared care (using computerised systems avoids problems with legibility).
- Do not remove any entries from records.
- Ensure patient data are recorded and processed in accordance with the eight data protection principles detailed under the Data Protection Act 1998^{20,26-29}, and note that patients have a right under the Data Protection Act 1998 to access their dental records.
- Refer to the SDCEP *'Practice Support Manual'*¹⁷ for additional information on record keeping (e.g. systems and storage of record keeping) and the Data Protection Act 1998.

Recording Information for Individual Patients

- For each patient, record details of the assessment of the patient's histories (see Section 3 and Forms 1–4 in Appendix 9):
 - Personal details;
 - Social history;
 - Dental history, including previous dental experience;
 - Medical history;
 - Dental anxiety level (if required).
- Check that the patient understands the questions being asked of them in the forms.

- Follow up on patient answers to the standard questions, as appropriate, with further questions, investigations or actions and record the relevant results of these in the patient's notes (e.g. if the patient smokes, ask how long they have been smoking for; contact the patient's general medical practitioner if clarification is required for any question on the medical history form).
- For child patients, record³⁰:
 - who accompanied the child and, if not the parent, their relationship to the child;
 - observations of behaviour, not only physical signs;
 - a summary of any discussions with the child and parent/carer.
- At each review appointment, ensure that all details of patient histories are up to date.
- For each patient, record which elements of assessment have been completed and record positive findings of the assessment of oral health status (see Section 4 and Forms 5–8 in Appendix 9) and, where necessary, in the patient's notes for:
 - head and neck;
 - oral mucosal tissue;
 - periodontal tissue;
 - teeth;
 - dentures (if present).
- For child patients, if non-accidental injury is suspected during any element of OHAR:
 - record observations and reasons given for seemingly trivial injuries, which might, over a period of time, show a repeating pattern of injury;
 - record observations in a way that will be understandable to colleagues so that, even if no single team member gets to know the child, a written record builds up over time;
 - clearly state any differences between the facts and your opinion;
 - refer to the SDCEP *'Practice Support Manual'*¹⁷ and Department of Health guidance³⁰.
- Ensure all staff are clear about which notation system is used for numbering teeth. To avoid patient safety issues, the International Dental Federation (FDI) system is preferred (see Appendix 4).
- If the FDI system is not used, for child patients in which there is mixed dentition, clearly record whether the teeth being assessed are primary or permanent dentition (see Appendix 4).
- Keep any radiographs taken as part of the patient's record. Note that recording and documentation of radiographs are covered by the Ionising Radiation regulations 1999³¹ and Ionising Radiation (Medical Exposure) Regulations 2000 (IR(ME)R)³² (see Appendix 5, the SDCEP *'Practice Support Manual'*¹⁷ and the National Radiological Protection Board Guidance Notes³³ for details of radiation protection, and see Appendix 9 for an example radiographic assessment form).
- Document any concerns of the patient and/or the dental team within the patient's notes.
- Document the identified risk level and diagnoses made for each patient (see Section 5) and record details of the personal care plan (see Section 6) for each patient, including details of any referrals.
- Document discussion of the options, risks and benefits of treatment, including the 'do nothing' option, in the patient's notes.

3 Assessment of Patient Histories

Formally, the first stage of OHAR is the assessment of patient histories. However, the assessment of the patient actually begins as soon as the s/he enters the practice or surgery. The patient's gait, posture and mood can provide information on the general well-being of the patient, which can have an impact on their oral health. Engaging the patient in conversation as they enter the surgery also enables the dental team to develop their initial assessment while establishing whether the patient is able to fully understand the information they are given verbally. This can help to identify those patients who might require extra support in understanding the dental care they are to receive, including their role in the management of their oral health and any future treatment plans.

Children and patients with special needs will require varying levels of support in order to attend for care. It is important to engage children in conversation to encourage their involvement in their dental care. The BDA case mix tool^{34,35} provides a means of weighting key areas such as the ability to communicate and the ability to cooperate, in addition to weighting access to care, medical status, oral health risk and relevant legal and ethical issues.

The information collected for assessment of patient histories comprises five key elements: personal details; social history; dental history; medical history; and anxiety level. A key purpose of collecting this general information is to help build up a picture of the individual's overall risk profile.

- **Personal details:** Collecting key contact information (e.g. name, address), demographic information [community health index (CHI) number, postcode, ethnicity] and additional requirements (e.g. mental health difficulties) for each patient is important. For example, the CHI number is a national unique identifier for each patient (see Appendix 2 Glossary) in Scotland (NHS numbers are used in England and Wales), and the patient's postcode can be used to identify whether the patient lives in a deprived [low SIMD (Scottish Index of Multiple Deprivation); see Appendix 2 Glossary]^{36,37} area and is therefore generally considered to be at higher risk of developing oral disease. Recording the ethnic group is necessary because a risk of potentially developing periodontal disease and oral cancer has been linked to ethnicity. It also enables cultural differences to be taken into account in the provision of patient care and enables the dental practice to show that it is a fair provider of services.
- **Social history:** Collecting information about the patient's family (e.g. caries rates in mother and siblings of child patients) and social history (e.g. smoking, alcohol consumption, sugar intake) can help build a rapport with the patient and provide information on health beliefs and potential risk factors for the development of oral disease. For example, there is a link between smoking and alcohol consumption and oral lesions and so it is important that details of these are recorded and reviewed.
- **Dental history:** Gathering information about the patient's previous dental history and behaviours (e.g. dental visiting behaviour, previous decay experience, toothbrushing and flossing habits and fluoride use) enables assessment of the patient's (or parent/ carer) dental awareness and the possibility of raising their awareness. Gathering information about the patient's previous dental experience (e.g. whether local anaesthetic was attempted previously and tolerated or refused) also helps to inform their future care.
- **Medical history:** Medical emergencies can occur at any time during a dental visit. In addition, oral health is linked to general health. Therefore, to ensure patient safety and minimise the development of dental or medical complications, it is important that an up-to-date medical and drug history is available to identify patients at particular risk. This includes recording:
 - allergies to any medication or other substance (e.g. penicillin, latex);

- medications currently being taken [this will help avoid adverse drug interactions and minimise other complications (e.g. osteonecrosis of the jaw associated with bisphosphonate treatment³⁸)];
 - conditions where dental disease could put the patient's general health at increased risk (e.g. cardiovascular disease, bleeding disorders, immunosuppression);
 - conditions that increase a patient's risk of developing dental disease (e.g. diabetes, xerostomia);
 - conditions that might complicate dental treatment or the patient's ability to maintain their oral health (e.g. special needs, or anxious, nervous, phobic conditions). Knowledge of any additional requirements will enable the dental team to adapt how they provide care to meet the patient's needs.
- **Anxiety level:** Discussing with the patient whether they are anxious and the reasons why they are anxious (e.g. previous experience with local anaesthesia, fear of the sound of 'the drill', fear of needles, generally anxious temperament) when visiting the dentist can alleviate the patient's anxiety to an extent³⁹ and can help the planning of the patient's treatment.

Most patients will be able to provide this information by completing a form. Some might require assistance with some or all of the questions. For children or patients requiring additional support, it might be necessary to collect some of the above information from parents or carers. Modifying factors identified in this initial assessment of patient histories can help inform other elements of OHAR [e.g. low socioeconomic status is associated with high caries levels³⁶, smoking is associated with poor periodontal status⁴⁰, adverse effects of medications on oral soft tissues and systemic disease (e.g. diabetes or cardiovascular conditions) might impact on treatment provision]. The most common risk factors are highlighted at the end of this section to aid identification of the level of risk for this element of OHAR (see Section 5). These risks, together with risks identified in other elements of OHAR, inform the development of a personal care plan (see Section 6).

- Assess each patient's general well-being.
- Establish the level of each patient's (and parent/carer where appropriate) understanding and communication, and provide additional support, where required.
- Assess the patient's attitude to care and the ability of each patient (and/or parent/carer where appropriate) to cooperate with and support any care that might be recommended.
- Assess any potential difficulties with attending the surgery (e.g. wheelchair access, transport required)^{17,41,42}.
- Record the personal details, social history, dental history and medical history for each patient on registration with the practice and ensure they are up to date each time the patient attends a review appointment (see Appendix 9 for example forms).
- Assess whether the patient is anxious and, if so, ask them to complete a dental anxiety questionnaire⁴³, which can help to alleviate their anxiety (see Appendix 9); discuss with the patient and consider the need for anxiety-management options.
- When assessing the patient's smoking habits:
 - follow the 'ask' and 'assess' elements of the 5 'A' protocol^{44,45};
 - then either refer the patient to a smoking cessation service or carry out the remaining 'advise', 'assist' and 'arrange follow-up' elements of the 5 'A' protocol.
- When assessing the patient's alcohol consumption:
 - ask each patient about their weekly alcohol consumption in units and the largest number of units consumed in the past week (the recommended limit for men is 21 units of alcohol per week, with no more than 4 units in any one day; the recommended limit for women is 14 units of alcohol per week, with no more than 3 units in any one day) (see Appendix 6 for definitions of a unit of alcohol);

- consider using a validated alcohol screening tool to gain an objective measure of alcohol consumption (see Appendix 6);
 - if a patient is drinking excessively and is happy to discuss this with you, advise them about possible harmful effects of excessive alcohol consumption and to see their general medical practitioner and/or to visit the Alcohol Focus Scotland website⁴⁶ if they have concerns.
- 📌 Look through the forms completed by each patient, ensure that the information provided is up to date and accurate and follow up appropriately with further questions or actions. For example, if a patient smokes, ask how long they have smoked for; if a patient eats sugary snacks between meals, try to assess whether the patient has one snack a day or 'grazes' throughout the day.
- 📌 From the patient histories, identify and record any modifying factors that might affect future dental treatment (see Box 1 below) and care or the risk of developing oral health problems.

Box 1 Assessment of Patient Histories – Modifying Factors

Risk Factors Associated with the Development of Oral Disease

Medical

- Conditions that increase a patient's risk of developing dental disease (e.g. diabetes, xerostomia as a result of, for example, Sjogrens syndrome, certain drugs or head and neck radiation therapy, bleeding disorders, immunosuppression; conditions that warrant bisphosphonate treatment (e.g. malignancies, osteoporosis, Paget's disease)¹
- Conditions that might complicate dental treatment or the patient's ability to maintain their oral health (e.g. special needs or anxious, nervous, phobic conditions)¹
- Conditions where dental disease could put the patient's general health at increased risk (e.g. patients on warfarin)¹

Social and dental

- Excessive alcohol use (>21 units of alcohol per week for men; >14 units of alcohol per week for women)¹
- Family history of chronic or aggressive (early onset/juvenile) periodontitis¹
- Ghukta, Paan (betel quid with tobacco), Areca nut use^{47,48}
- High and/or frequent dietary acid intake¹
- High and/or frequent sugar intake¹
- High caries rates in mother and siblings¹ (applies to children only)
- Poor level of oral hygiene¹
- Residence in a deprived (low SIMD) area¹
- Tobacco use¹

Protective Factors Associated with the Development of Oral Disease

- Use of fluoride toothpaste¹
- Use of other sources of fluoride or resident in a water-fluoridated area¹

4 Assessment of Oral Health Status

4.1 Assessment of the Head and Neck

Assessment of the head and neck involves an initial visual assessment of the head and neck and then palpation of the lymph nodes and temporomandibular joints (TMJ) for all patients. It is conducted after the patient histories (see Section 3) have been taken and any significant findings noted but before the intra-oral examination and any treatments are carried out (see Figure 1). This enables knowledge of the patient's histories to inform the assessment of the head and neck and increases the likelihood that potentially serious conditions (e.g. facial fractures or basal cell carcinomas/rodent ulcers of the face) are diagnosed and that care planning is specific for the individual patient. The most common clinical findings are highlighted at the end of the section to help inform the development of the personal care plan (see Section 6).

- ◆ Carry out assessment of the head and neck of each patient.
 - Visually assess the skin for signs of swellings, lesions or abnormal colour. Palpate lesions for texture and consistency, and to assess whether or not they are fixed to, or are arising from, surrounding tissues.
 - Visually assess the facial bones with respect to the skeletal pattern⁴⁹, facial asymmetry^{50,51}, facial profile^{52,53} and swelling^{50,54,55}.
 - Palpate the lymph nodes for signs of swelling.
 - If there is any significant history or visual findings, record any observed problems and consider further investigation or referral to a specialist.
 - Palpate the TMJ and ask the patient to open and close their mouth to observe any crepitus^{50, 51}. Record the presence of any crepitus. If there is crepitus or pain on mandibular movement, consider the need for further investigation or further examination by a specialist.
 - While the patient's mouth is open, look for any mandibular displacement⁴⁹ and the range of mouth opening⁵⁵⁻⁵⁸. Record any findings as this might have an impact on future treatments. If there is limited opening (trismus) or deviant opening, consider the need for further investigation or further examination by a specialist. In addition, record noticeably loose dentures.
- ◆ Record that the assessment has been completed and any clinically relevant findings (see Appendix 9 for an example form).
- ◆ Take into account significant clinical findings (see Box 2) of the assessment when planning any treatment and developing the personal care plan for each patient. Note that some findings might have an impact on future treatments [e.g. limited opening will affect operating access to posterior areas of the mouth (molar root canal treatments)], and some findings might indicate conditions that require referral.

Box 2 Assessment of the Head and Neck – Modifying Factors

Clinical Findings

- Craniofacial Abnormalities[§]
- Limited mouth opening[§]
- Neck (lymph node) swelling[§]
- Suspicious skin lesions (basal or squamous cell carcinomas, melanomas)[§]
- TMJ problems[§]

[§]Expert opinion of the Guidance Development Group.

4.2 Assessment of the Oral Mucosal Tissue

Thorough examination of the oral soft tissues is an important part of any dental examination and should be carried out whether the patient is dentate or edentulous. Changes in the oral mucosa might highlight underlying conditions (e.g. infections and diseases of the blood, gastrointestinal tract and skin) and so a thorough examination carried out by dentists might lead to an earlier diagnosis of such conditions. The patient's medical history might identify medications or systemic diseases that could impact on oral soft tissues and the patient's social history might highlight certain lifestyle factors that could be injurious to oral health, such as smoking, excessive alcohol consumption and poor diet; therefore, it is important that patient histories (see Section 3) are taken prior to assessing the oral mucosal tissue.

There are also some conditions that affect the lining of the mouth, such as white, red or speckled patches, which might be painless and thus easily missed without careful examination. This is particularly true in relation to oral cancer, which is often painless in the early but treatable stages.

During the period 1990–1999, the incidence of oral cancer in Scotland increased by 34% in both males and females⁵⁹ and in 2007 there were 673 new cases of oral cancer diagnosed in Scotland, an incidence that is substantially higher than that of England and Wales⁶⁰. Important 'lifestyle' behaviour factors such as smoking and alcohol consumption (which together have a synergistic effect) and a diet low in fresh fruit and vegetables relate to the incidence of oral cancer. The aetiology of oral cancer is complex but most patients with oral cancer smoke and/or drink alcohol to excess. An 11-fold increased risk of oral cancer with cigarette smoking has been shown^{60,62}, and Rothman⁶³ states that almost 80% of all cases of oral cancer can be attributed to tobacco. There is also a clear association between oral cancer and social deprivation (low SIMD; see Appendix 2 Glossary).

Because of the link between smoking and oral lesions it is important that the patient's smoking status is established and checked at every review appointment, and the patient is given advice on the value of stopping smoking. It is also important that the patient's alcohol consumption is recorded and advice is given on the safe levels of consumption (see Section 3).

- Conduct an examination of each patient's oral mucosal tissue in a systematic manner to ensure that all sites in and around the mouth are examined.
 - Examine the lips and all mucosal surfaces inside the mouth in order and record the presence, site and description of any mucosal lesion detected on a custom-designed form.
 - Assess the salivary flow during examination of the lips and mucosal surfaces.
- Refer to clinical photographs of lesions on the University of Glasgow Dental School website (www.gla.ac.uk/schools/dental/oralcancer/clinicalphotographs/) for further information.
- Record all positive findings, including the size, site, shape, colour and texture of each lesion (see Appendix 9 for an example form).
- Record the urgency of referral in relation to any mucosal lesion detected.
- Take into account modifying factors (see Box 3) identified during the assessment to determine the level of risk (see Section 5) and to inform development of the personal care plan.

Box 3 Assessment of the Oral Mucosal Tissue – Modifying Factors

Risk Factors Associated with the Development of Oral Disease

- Betel quid chewing^{1,47,64}
- Diets low in fruit and vegetables^{1,65}
- Excessive alcohol use (>21 units of alcohol per week for men; >14 units of

alcohol per week for women) ¹ <ul style="list-style-type: none"> • Low saliva flow rate (dry mouth)¹ • Outdoor workers¹ • Tobacco use¹
Clinical Findings <p>Mucosal lesion present with particular concerns for:</p> <ul style="list-style-type: none"> • Oral swellings of unknown cause that persist for more than three weeks^{66,67} • Red or red and white patches of the oral mucosa persisting for more than three weeks (likely to be oral cancer)^{66,67} • Ulceration of oral mucosa persisting for more than three weeks^{66,67}

4.2.1 Assessment of the Intra-oral Bony Areas

It is important that the intra-oral bony areas (tooth-bearing alveolar bone, the hard palate) are examined visually and palpated to assess any abnormalities that might affect the patient's treatment (e.g. if there is extensive destruction of the alveolar bone by periodontitis, advanced restorative care might not be advisable; if there are poor ridges, it might be difficult to create dentures that have good retention).

- Carry out an assessment of the intra-oral bony areas by examining:
 - the presence of bony swellings⁶⁸ (e.g. tori) or defects;
 - the form of edentulous areas (the Cawood and Howell classification⁶⁹ is a useful method)⁷⁰:

Cawood and Howell classification of denture-bearing bone

Class I	Dentate
Class II	Immediately post extraction
Class III	Well-rounded ridge form, adequate in height and width
Class IV	Knife-edge ridge form, adequate in height and inadequate in width
Class V	Flat ridge form, inadequate in height and width
Class VI	Depressed ridge form

- the span⁷¹ of edentulous areas.
- If an abnormal finding is identified (see Box 4) following a visual assessment and this is coupled with a significant finding (risk factor) within the patient's history (e.g. previous cyst or swelling) (see Section 3), conduct a more in-depth assessment, which might include palpation and a radiographic examination (e.g. possible cyst).
- Record all abnormal findings and details of any follow-up in the patient's notes.
- Take into account clinical findings (see Box 4) identified during the assessment in planning care for the patient (e.g. avoid extractions where possible in patients with tori as making a well-fitting denture will be difficult).

Box 4 Assessment of the Intra-oral Bony Areas – Modifying Factors

Clinical Findings

- Edentulous ridge abnormalities affecting a patient's overall care plan[§]
- Torus or other abnormalities affecting a patient's overall care plan[§]

[§]Expert opinion of the Guidance Development Group.

4.3 Assessment of the Periodontal Tissue

Careful recording of a patient's medical and social history is important to assess the patient's risk of periodontal disease because poor oral hygiene habits⁷², smoking⁴⁰ and diabetes⁷³ are all known to be risk factors for periodontal disease. Recent studies have also highlighted associations between periodontal disease and several systemic conditions⁷⁴⁻⁷⁸, although no causal links have been demonstrated. The British Society of Periodontology recommends the use of the basic periodontal examination (BPE), with appropriate radiographs, as a simple means of screening of the periodontal tissue within primary dental care⁷⁹ to indicate the level of examination needed and to inform the care plan for each patient.

The BPE is performed on all dentate patients aged 12 and over. For patients aged 12-17 recording should only be taken on the following index teeth within each sextant⁸⁰:

16	11		26
46		31	36

NB: The International Dental Federation (FDI) tooth notation system has been used above (see Appendix 4).

The BPE requires the periodontal tissue to be examined with a standardised periodontal probe using light pressure (20–25 g) to examine the tissue for bleeding, plaque-retentive factors and pocket depth (see Table 1)⁷⁹.

Table 1 Basic periodontal examination codes

BPE Code	Visible signs
0	No pockets >3.5 mm, no calculus/overhangs, no bleeding after probing
1	No pockets >3.5 mm, no calculus/overhangs, but bleeding after probing
2	No pockets >3.5 mm, but supra- or subgingival calculus/overhangs
3	Probing depth 3.5-5.5 mm (black band partially visible, indicating pocket of 4-5 mm)
4	Probing depth >5.5 mm (black band entirely within the pocket, indicating pocket of 6 mm or more)
*	Furcation involvement

Both the number and the * is recorded if a furcation is detected.

The British Society of Periodontology outlines three levels of treatment complexity, which informs who is appropriate to treat the patient (see Table 2)⁸¹. Separate guidance for the management of children and adolescents is also provided⁸⁰.

Table 2 Levels of treatment complexity detailed by the British Society of Periodontology⁸¹.

Complexity 1	BPE Code 1–3 in any sextant
Complexity 2	BPE Code 4 in any sextant Surgery involving the periodontal tissues
Complexity 3	BPE Code 4 in any sextant and one or more of the following factors: <ul style="list-style-type: none"> a concurrent medical factor that is affecting the periodontal tissues (e.g. diabetes, medication);

	<ul style="list-style-type: none"> • complicated root morphologies /anatomical factors; • non-response to previous optimally carried out treatment <p>Diagnosis of aggressive periodontitis as assessed either by severity of disease for age or based on rapid rate of periodontal breakdown;</p> <p>Patients requiring surgical procedures involving tissue augmentation or regeneration, including surgical management of mucogingival problems;</p> <p>Patients requiring surgery involving bone removal (e.g. crown lengthening);</p> <p>Patients requiring surgery associated with osseointegrated implants.</p>
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Note the presence of one or more relevant modifying factors increases the complexity by one increment.

In general, Complexity 1 cases are treated in general practice, Complexity 2 cases may either be treated in general practice or be referred to a specialist, Complexity 3 cases are mostly referred for specialist treatment.

4.3.1 Conducting a Periodontal Examination

- Conduct a BPE on a sextant basis for each patient, and record the relevant BPE codes, as detailed above (see Appendix 9 for an example form).
- If a patient has a BPE code of 3, 4 or * and therefore significant disease is present, record details of:
 - plaque;
 - gingivitis;
 - pocket depth;
 - bleeding on probing;
 - mobility;
 - furcation involvement and recession⁸².

NB: Problems are encountered with false pocketing in patients under the age of 16 and with recession and furcation involvement in older patients. In patients under the age of 16 the gingival margin might be situated coronal to the cement enamel junction by several millimetres so this needs to be taken into account when proposing treatment for sextants assigned codes of 3 and 4.

- Consider recording plaque scores for child and adult patients with significant plaque levels.
- Take into account significant findings (see Box 5) of the assessment and identify the patient's level of risk (see Section 5 and Form 9 in Appendix 9) before planning care for the patient.
 - If a patient has unexplained tooth mobility that is not associated with periodontal disease, refer for specialist advice.
- When formulating a care plan, consider:
 - the patient's willingness to comply with effective plaque control and oral hygiene measures;
 - the extent and rate of disease progression;
 - whether you can treat the disease or whether it requires referral to a specialist;
 - the patient's age and general health (medical history);
 - the patient's desire to see a specialist and the availability of specialist advice.

Diagnostic Aids for Assessing Periodontal Status

Radiography

Radiography (see Appendix 5) can be used to assess periodontal disease. However, routine 'screening' radiography (e.g. panoramic radiographs) must not be carried out for assessing periodontal status, unless supported by the periodontal findings⁸³.

Although a complete radiographic assessment might be required for patients with complex periodontal disease, the British Society of Periodontology and Faculty of General Dental Practice suggests that intra-oral radiographs are taken at the time of the BPE assessment in sextants scoring Code 3 or higher^{81, 84}.

A range of other potential diagnostic indicators for periodontal disease have been investigated but their validity and use in general dental practice requires considerable development.

- Use radiography only as a secondary tool to clinical examination for the diagnosis of periodontal disease.
- Use existing radiographs if possible (e.g. bitewings taken for caries diagnosis).
- Use the most appropriate radiograph and film speed, with positioning and aiming devices and rectangular collimation, for treatment planning. For example:
 - take vertical bitewing radiographs for sextants scoring Code 3 or higher;
 - take individual periapical radiographs in sextants scoring Code 4 or *.
- Consider using smaller films for child patients.

Box 5 Assessment of the Periodontal Tissue – Modifying Factors

Risk Factors Associated with the Development of Oral Disease

- Concurrent medical factor that is directly affecting the periodontal tissues (e.g. diabetes, stress, certain medication)⁸¹
- Medical history that significantly affects clinical management (e.g. immunocompromised or immunosuppressed, potential drug interaction)⁸¹
- Evidence of gingivitis¹
- Poor level of oral hygiene¹
- Presence of plaque-retaining factors¹
- Regular tobacco smoking⁸¹

Clinical Findings

- Complicated root morphologies / anatomical factors⁸¹
- Concurrent muco-gingival disease (e.g. erosive lichen planus)⁸¹

Note: several previously listed modifying factors were based on a British Society of Periodontology (BSP) Policy Statement. In 2011 the BSP published new documents that supersede their earlier policy and list factors that are relevant to treatment or affect clinical management^{79, 81}. Consequently the above list of modifying factors to consider when assessing risk of developing disease and planning care has been amended.

4.4 Assessment of Teeth

The need to accurately assess the dentition and record a baseline or initial charting is fundamental to risk management in general dental practice⁸⁵. Accurate assessment of the dentition and maintenance of good quality up-to-date records are important for:

- monitoring disease and health status;
- quality assurance;
- defence of claims or complaints;
- forensic odontology.

A comprehensive assessment of teeth includes assessment and recording of:

- dental decay of varying severity, and restorations;
- tooth surface loss;
- tooth abnormalities;
- fluorosis;
- dental trauma;
- occlusion;
- orthodontics.

4.4.1 Assessment of Dental Caries and Condition of Restorations

Dental caries remains a significant problem in Scotland and recording the presence of carious lesions and restorations is a key element of assessing the condition of the teeth and oral health.

Dental caries is a process of tissue damage that occurs on a continuous scale from subclinical surface changes to the presence of large pulp-exposing cavities. Early lesions can progress forwards on this scale (towards increasing damage) or backwards (towards tissue repair), depending on the balance of the demineralisation–remineralisation process.

Recording the location and extent of each lesion is important for the planning and monitoring of an individual care plan that comprises preventive and maintenance elements together with operative (intervention) elements, where required. The presence of restorations and the material used for each restoration should also be recorded.

The shift in philosophy of care from a traditional surgical-only model to a preventive, minimally invasive approach using fluorides and fissure sealants has been advocated by the FDI⁸⁶ and many other agencies for many years. This shift, together with the wide-scale implementation of community-based and practice-based caries prevention programmes across Scotland (e.g. Childsmile)³, increases the need for a more detailed approach to recording and monitoring the caries process.

Currently, dentists use a variety of charting systems, although a baseline standardised charting system with International Dental Federation (FDI) tooth numbering is recommended to highlight the patient's clinical caries status before treatment. In 2004 a review⁸⁷ identified 29 different criteria based systems for identifying caries, 13 from the UK alone. Seven of these systems measured non-cavitated as well as cavitated active caries lesions. The review concluded that there was a need to define one system that has content validity based upon current scientific evidence and the consensus of experts in the fields of cariology and restorative sciences. The International Caries Detection and Assessment System (ICDAS) (www.icdas.org) has been developed by expert consensus based on international best evidence⁸⁸⁻⁹⁰ in response to these findings. It has been designed for use in dental clinical practice, as well as in education, clinical research and epidemiology.

ICDAS is a clinical visual scoring system^{91,92} that provides a simple way of grading or 'staging' the severity of carious lesions on a scale of 1–6, based on the clinical visual appearance of

the lesions (see Appendix 7). This scale has been shown to correlate well with the histological extent of dental caries within the tooth, and enables the collation of high-quality information on caries status to help inform decisions about appropriate diagnosis, prognosis and clinical management at the individual patient level. Caries activity status can also be recorded with the system, frequently with a + denoting active lesions and a – denoting inactive lesions.

ICDAS facilitates the type of long-term, prevention-orientated, caries control that is now advocated by many dental organisations and authorities, including the FDI^{86,93}, and that is often referred to as ‘minimally invasive (MI) dentistry’. The use of ICDAS in this context is supported by the British Dental Association’s Health and Science Committee and the European Global Oral Health Indicators Development Programme (EGOHID)⁹⁴.

While ICDAS has undergone extensive testing in the research and epidemiology arenas, its testing in the general practice environment has been more recent^{95,96}. Further developments are in train to enhance the practicalities of its application in general practice as the International Caries Classification and Management System - ICCMS™^{97,98}. ICDAS is considered by many as the most promising system for the thorough recording of caries and restorations. Integration of ICDAS codes with practice management systems is also currently in development.

Further details of ICDAS can be found in Appendix 7. A free e-Learning Programme explaining the ICDAS method is available at: www.icdas.org/elearning-programmes.

Whatever method is employed to record caries status, severity and activity, current best practice suggests the following.

- Examine clean, dry teeth for the presence of caries, including both early and advanced lesions, and the presence and type of restorations and sealants.
- Accurately record the location and extent of pre-cavitation and established carious lesions and the presence and type of restorations and sealants.

It should be appreciated, however, that caries detection aids, such as radiographs, are still required when planning care for patients. This is because clinical visual detection of caries is always inherently limited in terms of the ‘sensitivity’ of finding caries, particularly in approximal surfaces.

Diagnostic Aids for Dental Caries

Radiography

Bitewing radiography (see Appendix 5) has traditionally been used in combination with visual inspection for comprehensive caries diagnosis at the individual patient level. Indeed, several reviews show that radiographs are more sensitive than visual inspection for detecting both approximal and occlusal lesions⁹⁹⁻¹⁰¹. These diagnostic benefits have to be balanced against the known, low but real, risks associated with ionising radiation. The dose of radiation must be kept as low as reasonably achievable (ALARA) for each patient⁸⁴.

Current digital radiograph systems have been reported to be as accurate as traditional films for caries detection⁶ and offer other benefits in that they can be more easily shared with colleagues. They also offer the prospect of enhancements such as subtraction radiography, although these techniques are not yet available for general practitioners.

- Use the most appropriate radiograph and film speed, with positioning and aiming devices and rectangular collimation, for diagnosis and treatment planning.
- Take bitewing radiographs at the following frequencies, as recommended by the Faculty of General Dental Practice⁸⁴:

Patient Group	Frequency of Radiographs
High-risk children and adults	Every 6 months until no new or active lesions are apparent
Moderate-risk children and adults	Every 12 months until no new or active lesions are apparent
Low-risk children with primary and mixed dentition	Every 12–18 months
Low-risk adults and children with permanent dentition	Every 2 years; consider extending the interval if continuing evidence of low caries activity

Consider using smaller films for child patients.

Other diagnostic aids exist for the detection of caries. Details of each are given below. However, it is the clinician's responsibility to decide on the best option for each patient. Note that although there might be advantages in increased sensitivity, the DIAGNOdent, electronic caries monitor and cariometer methods can also give rise to false positive readings.

Tooth separation

The use of temporary tooth separation for a period of 3–7 days enables better visual access to the approximal surfaces of teeth and can improve caries diagnosis^{102,103}.

Where there is some doubt that cavitation has taken place on an approximal surface, consider temporary separation to assist diagnosis prior to personal care planning.

Optical caries detection

The two best known optical caries detection systems are FOTI (fibre optic transillumination¹⁰⁴ and DIAGNOdent¹⁰⁵). Both systems have been used widely in clinical trials and have been shown to have the potential to increase diagnostic yield. However, they have not been used widely in general practice and are prone to inter-operator variability.

Electronic caries monitors

Detection of caries using the electrical resistance measurements [electronic caries monitor (ECM)¹⁰⁶ and cariometer (CRM)] has also been tested with some success. As with the current optical systems, the initial systems have suffered from inter-operator variability; they have not been widely available until recently.

Salivary tests

In some countries salivary tests have been used for many years to identify high-risk individuals on the basis of microbiological assessment. These methods tend to reflect data on only a limited proportion of the potentially cariogenic and complex biofilm, and, at the individual patient level, offer disappointing diagnostic performance. Although they might be an aid to patient motivation and education, at present they do not appear to offer significant benefit over and above detailed clinical oral health assessment.

Box 6 Assessment of Dental Caries and Restorations – Modifying Factors

Risk Factors Associated with the Development of Oral Disease

- Anterior caries or restorations¹
- Healthcare worker's opinion (esp. children)¹¹
- Heavily restored dentition¹
- High and/or frequent sugar intake¹
- High caries rates in mother and siblings¹ (applies to children only)
- Low saliva flow rate (dry mouth)¹
- New lesions since last check-up¹
- Past root caries or large number of exposed roots¹
- Poor dietary behaviours¹
- Poor level of oral hygiene¹
- Premature extractions because of caries¹
- Previous carious experience¹⁰
- Resident in an area of deprivation^{1,10}

Protective Factors Associated with the Development of Oral Disease

- Use of fluoride toothpaste¹
- Use of other sources of fluoride or resident in a water-fluoridated area¹

4.4.2 Assessment of Tooth Surface Loss

Tooth surface loss (tooth wear) is tooth substance loss that is not caused by trauma or caries. The loss of tissue is a surface phenomenon of clean tooth surfaces, unlike caries where much of the loss is initially from the subsurface enamel covered by biofilm (plaque). Tooth surface loss can be divided into three categories (see Appendix 2 Glossary for definitions):

- erosion;
- abrasion;
- attrition.

It is important that any type of tooth wear is recorded as part of a patient's baseline examination. In cases where tooth wear is detected, it is important to establish the main type of dental wear present (the three wear types can exist simultaneously), and also the underlying reason for the condition, which will aid the tailoring of preventive plans and advise possible referral to, for example, a general medical practitioner. It is important that the dental team monitors tooth wear cases to establish possible lesion progression. Baseline study casts can assist in monitoring progressions but there are no validated monitoring systems available at present. The related theoretical process of abfraction is defined in the Glossary.

- Assess the presence of tooth surface loss in each patient at the initial assessment and subsequent review appointments.
- In patients who exhibit tooth surface loss, record findings, including the type of tooth surface loss (see Appendix 2 Glossary), in the patient's notes, and monitor the condition.
- Establish the cause of tooth surface loss (see Box 7), assess the options for preventive treatments and agree a care plan with the patient.

Diagnostic Aids for Tooth Surface Loss

The key diagnostic aids for the monitoring of tooth surface loss are study models or clinical photographs. Either of these will enable a backward comparison to assess both the rate and

the extent of any surface loss. Clinical assessments are important and several indices are under development for use in general dental practice; although these have yet to be validated in this setting, they might prove useful in the future.

- Take baseline study models or clinical photographs following initial assessment to improve the quality of monitoring at future review appointments.

Box 7 Assessment of Tooth Surface Loss – Modifying Factors

Risk Factors Associated with the Development of Oral Conditions

- Bruxism
- High and/or frequent dietary acid intake (e.g. high consumption of acidic drinks such as carbonated drinks^{70, 107-109}, citrus fruit and fruit juices^{1,110})
- Predisposing medical and drug factors: for example, impaired salivary production or buffering ability¹¹¹⁻¹¹³; gastric reflux (often associated with Hiatus hernia)¹¹⁴⁻¹¹⁶; eating disorders such as anorexia nervosa¹¹⁷, bulimia¹¹⁸ and pica; and the frequent use of some medicines and supplements such as steroid-containing asthma inhalers^{119, 120}, vitamin C tablets¹²¹ and effervescent preparations¹²²
- Rapid progression of tooth wear
- Stress and/or anxiety¹²³

Clinical Findings

- Clinical evidence of tooth wear¹

4.4.3 Assessment of Tooth Abnormalities

Tooth abnormalities can be divided into the following categories.

- Abnormalities in:
 - tooth number (e.g. supernumerary teeth, which can be the underlying factor in delayed eruption or deciduous tooth loss, or missing teeth);
 - tooth size [e.g. microdontia, macrodontia, taurodontism (see Appendix 2 Glossary)];
 - tooth shape [e.g. germination, fusion, dilaceration, concrescence (see Appendix 2 Glossary), dens invaginatus];
 - tooth colour [e.g. intrinsic or extrinsic enamel discolouration, fluorosis (see Section 4.4.4)].
- Reactive tooth disturbances
 - for example, hypoplasia, resorption, hypercementosis.
- Inherited tooth disturbances
 - for example, amelogenesis imperfecta, dentinogenesis imperfecta.
- Malpositioned, submerged, unerupted or impacted teeth.

- Assess and record the presence of any tooth abnormalities (as described above) and refer appropriately.

Diagnostic Aids for Tooth Abnormalities

Radiography

Intra-oral radiographs (see Appendix 5) of the affected tooth or teeth are used to assess tooth abnormalities. In cases where multiple teeth are affected or missing, panoramic films are used.

- Use the most appropriate radiograph and film speed, with positioning and aiming devices and rectangular collimation, for treatment planning.
- Consider using smaller films for child patients.

Photographs

Clinical photographs are also a useful aid, particularly for assessing aesthetic impact.

Box 8 Assessment of Tooth Abnormalities – Modifying Factors
Risk Factors Associated with the Development of Oral Conditions
<ul style="list-style-type: none"> • Family history[§]
Clinical Findings
<ul style="list-style-type: none"> • Inherited tooth disturbances[§] • Reactive tooth disturbances[§] • Tooth abnormalities (tooth number, size, shape, colour)[§]
[§] Expert opinion of the Guidance Development Group.

4.4.4 Assessment of Fluorosis

With the widespread introduction of fluoride toothbrushing programmes in Scotland and the introduction of topical fluoride applications within the Childsmile programme³ it is important to be aware of the levels of fluorosis (see Appendix 2 Glossary) in the population.

Mild fluorosis causes the teeth to have a white, spotted or lacy appearance whereas severe fluorosis results in the enamel being markedly hypo-mineralized; such enamel can be brown and prone to breaks and excessive wear. Recent research suggests that teeth with mild fluorosis can be considered aesthetically preferable to non-affected teeth¹²⁴⁻¹²⁶.

Fluorotic lesions are usually bilaterally symmetrical and tend to show a horizontal striated pattern across the tooth. The defects might consist of fine white lines or patches, usually near the incisal edges or cusp tips. They are paper-white or frosted in appearance like a snow-capped mountain and tend to fade into the surrounding enamel.

- Note the distribution pattern of any defects in the appearance of the teeth using the Modified Developmental Defects of Enamel (DDE) Index^{127,128}, which detects fluorosis and any other defects or disturbances in the formation of the enamel of teeth (e.g. molar incisor hypomineralisation), and decide if they are typical of fluorosis.
 - normal enamel – Code 0
 - demarcated opacities – Code 1;
 - diffuse opacities – Code 2;
 - enamel hypoplasia – Code 3;
 - all other defects – Code 4.
- If fluorosis is suspected, use a recognised system to assess the degree of fluorosis (e.g. the Dean's Index or the Thylstrup and Fejerskof Index¹²⁹) and record these findings in the patient's notes.
- Consider referral of the patient.

Diagnostic Aids for Fluorosis

Good clinical photographs will provide a useful clinical record, assist diagnosis and allow pre- and post-operative comparisons for those cases where restorative treatment is carried out.

Box 9 Assessment of Fluorosis – Modifying Factors
<p>Risk Factors Associated with the Development of Oral Conditions</p> <ul style="list-style-type: none"> • Eating/licking toothpaste habit¹³⁰ • Exposure to fluoridated water in conjunction with other factors, up to 3 years of age¹³⁰ • Unsupervised toothbrushing (under 6 years)
<p>Clinical Findings</p> <ul style="list-style-type: none"> • Fluorosis[§]
<p>[§]Expert opinion of the Guidance Development Group.</p>

4.4.5 Assessment of Dental Trauma

Traumatic dental injuries are common, with the most common injuries to permanent teeth occurring secondary to falls, followed by traffic accidents, violence and sports. Indeed, ~15% of 15-year-old boys and 10% of 15-year-old girls show evidence of dental trauma to their anterior teeth. Many sporting activities have an associated risk of orofacial injuries as a result of falls, collisions and contact with hard surfaces, and people who participate in certain sports would benefit from using a properly fitted mouthguard^{131,132}. Trauma also occurs frequently in the primary dentition of 2–3-year-old children when motor coordination is developing¹³³ (see Box 10).

Although patients are largely concerned with the aesthetic consequences of dental trauma, it is the effect of trauma on the health of the dental pulp and periodontal ligament that is most likely to affect the long-term prognosis for the teeth involved. Prompt and appropriate initial management of trauma (e.g. ensuring all exposed dentine is protected as soon as possible with a restoration), together with accurate assessment of pulpal health over the long term, can favourably affect the outcome¹³⁴⁻¹³⁸. This section covers the assessment of patients attending for routine dental care who give a history of dental trauma to the permanent anterior dentition. The management of patients presenting as an emergency with dental trauma is discussed in the SDCEP guidance '*Emergency Dental Care*'¹³⁹.

- Assess the mouth and teeth for signs of dental trauma.
- Record, as part of the patient's social history, whether the patient participates in any sporting activities that have the potential to damage the patient's teeth (see Form 2 in Appendix 9).
- If trauma is present, record in the patient's notes details of the history, circumstances of any injury and pattern of trauma.
- If there is trauma to the teeth, or you suspect pulpal necrosis, record the following details and compare with at least two control teeth:
 - type of injury (e.g. avulsed tooth, subluxed tooth, tooth fractures);
 - presence of sinus, swelling, erythema or tenderness;
 - colour of teeth, including colour on transillumination;
 - tenderness to percussion;
 - mobility;
 - results of ethyl chloride and electric pulp test;

- results of radiographic examination.

NB: See below for details of these tests and Appendix 8 for further points to note when interpreting the results of these tests.

- Record the results of the above tests in the patient's notes (see Appendix 8 for an example table).
- Record details of any associated oral or facial soft tissue damage.
- For any age of patient, where appropriate, record in the patient's notes the behaviour of the patient and/or carer to help distinguish non-abusive injuries from abuse.
- If having carried out the above tests, there are at least two clear signs of pulpal necrosis, and in your judgement pulpal revascularisation is unlikely (expanding periapical area, inflammatory root resorption, pain, swelling, arrested root development, etc.) then consider pulpectomy.
- If unsure, consider reviewing in one month, having recorded the results of the vitality assessment in the patient's notes.
- If in doubt about pulpal vitality, consider referral for a specialist opinion.

Diagnostic Aids for Dental Trauma

It can be difficult to reliably assess the health of the dental pulp because all the available tests are inevitably indirect, with the pulp being enclosed within the tooth. The following tests might be useful when the dental pulp of anterior permanent teeth is perfused. However, the results of the tests must be interpreted carefully. Many of the tests are more reliable when applied to several of the anterior teeth, and the results compared.

History of symptoms

A reported sensitivity to cold (e.g. ice cream) indicates a tooth might be vital, whereas a history of swelling and tenderness on biting would suggest dental abscess subsequent to pulpal necrosis.

Colour

Grey coronal discolouration indicates haemoglobin breakdown products secondary to pulpal necrosis, whereas an orange/yellowish tinge might indicate pulp canal obliteration, and so a vital pulp.

Transillumination

- Place a dental mirror behind the teeth and, viewing the palatal aspect of the teeth, compare the colour of the crowns as the light from the overhead lamp shines through them. Grey discoloration usually indicates pulpal necrosis.

Tenderness to percussion

- Gently percuss each tooth in turn, in an axial direction, with a mirror handle, and assess tenderness.

If tender, this might indicate pulpal necrosis but might also be a result of occlusal interference, or increased cellular activity associated with revascularisation. Ankylosed teeth might give off a cracked-plate sound but this does not imply the presence of a necrotic dental pulp.

Mobility

- Using something hard, such as the mirror handle, gently move each anterior tooth in a palato-buccal direction, observing closely for any tooth showing non-physiological

movement, which might be associated with pulpal necrosis, occlusal interference or just recent trauma.

Ethyl Chloride and Electric Pulp Test

The results of these tests can be unreliable in vital teeth with immature root development and in vital teeth, post-trauma. It is very important to compare the response from several teeth, and usually worthwhile including a non-traumatised lower incisor to assess a positive response. For a more reliable response, place the electric pulp tester probes on the incisal edge.

Radiographs

Radiographs (see Appendix 5) are useful to assess dental trauma. Radiographs of any traumatised teeth and their supporting structures must be taken as close to the time of injury as possible. The type of injury might influence the type of radiograph that can be taken.

- Use the most appropriate radiograph and film speed, with positioning and aiming devices and rectangular collimation, for treatment planning.
- Take radiographs as close to the time of injury as possible.
- Record findings clearly in the patient's notes.

Photographs

Clinical photographs of the affected teeth and soft tissues can provide useful information for the clinical record.

Box 10 Assessment of Dental Trauma – Modifying Factors

Risk Factors Associated with the Development of Oral Conditions

- An overjet of 3 mm¹⁴⁰
- Contact sports[§]
- Development of motor coordination (2–3-year-old children)¹³³

[§]Expert opinion of the Guidance Development Group.

4.4.6 Occlusal Assessment

There is a great deal of debate about the importance of occlusion in dentistry but as there are few dental treatments that do not involve the occlusal surfaces of the teeth, assessment of the occlusion is advised.

Centric occlusion (CO) is the most easily recorded occlusion and is the state of maximum intercuspation between upper and lower teeth. It is also called the intercuspal position, bite of convenience or habitual bite as it is the occlusion to which the patient is accustomed. Centric relationship (CR) is not an occlusion but is a jaw relationship; therefore, it does not need the presence of teeth to be determined. It can be defined anatomically, conceptually and geometrically.

Davies¹⁴¹ recommends recording the following elements of occlusion:

- Skeletal angles
- Static occlusion:
 - Does CO occur in CR?
 - If CO does not occur in CR is there any premature contact in CR?
 - Direction of slide from CR to CO

- Freedom in centric occlusion
- Dynamic occlusion
 - Non-working side interferences
 - Working side interferences
 - Crossover position
 - Canine guidance
 - Group function

🔍 Assess the patient's occlusion as recommended by Davies, and record any abnormal findings (see Box 11) in the patient's notes.

Box 11 Assessment of Occlusion – Modifying Factors

Clinical Findings

- Pain in temporomandibular joints[§]
- Tender or painful mandibular muscles[§]

[§]Expert opinion of Guidance Development Group.

4.4.7 Orthodontic Assessment

An orthodontic assessment is routinely conducted after the permanent incisors have erupted and until the permanent dentition is established. The British Orthodontic Society⁴⁹ recommends that a simple orthodontic examination should be undertaken by the primary care team to detect malocclusions. This includes assessment of the:

- skeletal discrepancy;
- soft tissue pattern;
- presence of habits;
- teeth present clinically;
- alignment of the teeth;
- occlusion in intercuspal position;
- occlusion in retruded contact position.

For those patients diagnosed as having malocclusion present, it is important to be aware of when orthodontic treatment is indicated. The Index of Orthodontic Treatment Need (IOTN)¹⁴² is widely used to assess the need for orthodontic treatment.

IOTN consists of two components: a dental health component (DHC) with five grades (see Table 3) and an aesthetic component (AC), which consists of a scale of 10 colour photographs showing different levels of dental attractiveness¹⁴³. Increasingly, only those patients with malocclusions with a DHC of 5 or 4, or DHC 3 with a high AC score (6 or greater) are considered for NHS treatment.

Table 3 Simplified summary of the Dental Health Component of IOTN (British Orthodontic Society)

Grade 1	Almost perfection
Grade 2	Minor irregularities such as: <ul style="list-style-type: none"> • slightly protruding upper front teeth; • slightly irregular teeth; • minor reversals of the normal relationship of upper and lower teeth that do not interfere with normal function.

Grade 3	<p>Greater irregularities that normally do not need treatment for health reasons:</p> <ul style="list-style-type: none"> • upper front teeth that protrude <4 mm more than normal (overjet <6 mm); • reversals of the normal relationship of upper teeth that only interfere with normal function to a minor degree (by <2 mm); • irregular teeth that are <4 mm out of line; • open bites of <4 mm; • deep bites with no functional problems.
Grade 4	<p>More-severe degrees of irregularity; these do require treatment for health reasons:</p> <ul style="list-style-type: none"> • upper front teeth that protrude >6 mm; • reversals of the normal relationship of upper teeth that interfere with normal function >2 mm; • lower front teeth that protrude in front of the upper by >3.5 mm; • irregular teeth that are >4 mm out of line; • less than the normal number of teeth (missing teeth) where gaps need to be closed, or opened before prosthetic tooth placement; • open bites of >4 mm; • deep bites with functional problems more than the normal number of teeth (supernumerary teeth).
Grade 5	<p>Severe dental health problems:</p> <ul style="list-style-type: none"> • when teeth cannot come into the mouth normally because of obstruction by crowding, additional teeth or any other cause; • a large number of missing teeth; • upper front teeth that protrude >9 mm; • lower front teeth that protrude in front of the upper >3.5 mm and where there are also functional difficulties; • cranio–facial anomalies such as cleft lip and palate.

- Conduct an orthodontic assessment as recommended by the British Orthodontic Society.
 - To identify the presence of severe Class II or III skeletal discrepancies, visually assess the patient while seated in the upright position with the head in the natural posture. To detect smaller discrepancies, place the forefinger and middle finger into the deepest points on the maxillary and mandibular profiles.
 - Assess the soft tissue pattern by examining the patient's lips at rest (they can be described as competent or incompetent).
 - Note the presence of any habits (e.g. thumb sucking).
 - Count the teeth and note any ectopic, unerupted or missing teeth (do not include teeth unerupted as part of the normal developmental stage).
 - Assess occlusion in the intercuspal position by measuring the overjet and noting whether the overbite is normal, increased or decreased. Note any centreline shifts and note any crowding or irregularity, spacing and the presence of any crossbites.
 - Assess occlusion in the retruded contact position by recording any premature contacts and displacements.
 - Keep the eruption sequence in mind; monitor any deviations for only a few months and then investigate.
 - Investigate failure of a tooth to erupt >6 months after the contralateral tooth.
- Record significant findings (see Box 12) and any follow-up in the patient's notes.

Ectopic or Displaced Canines

The upper permanent canine is second only to the mandibular third molar with respect to the frequency of impaction and is slightly more common in females. The canine should be palpable buccally by 8–10 years and if not palpable by 10 years of age requires investigation and treatment.

- In patients of 8–10 years of age, palpate for upper canines in the buccal sulcus.
- If there is no evidence of the canines by age 10 or a definite hollow is present, or there is asymmetry in the position of the two upper canines, this might suggest that a canine is positioned palatally or buccally impacted. Therefore, take appropriate radiographs with parallax views to confirm the position and check for pathology (e.g. cyst formation).
 - If the canine is palatally placed, do not extract deciduous canines and refer the patient.
 - If the canine is buccally impacted, do not extract deciduous canines and refer the patient.
 - If the canine is in the line of the arch and failing to erupt and the patient is 10–13 years of age, extract the deciduous canine.
 - If in doubt refer.

Balancing/compensation

When carrying out extractions it is sometimes necessary to consider balancing extractions (extraction of the contralateral tooth) or compensating extractions (extraction of the same tooth in the opposing arch).

Deciduous dentition

- When extracting primary molars only consider carrying out either balancing extractions or compensating extractions if there is a poor prognosis for these teeth.
- When extracting primary canines always balance, and extract the contralateral deciduous canine to prevent loss of the centreline. Do not compensate the extraction of primary canines.

First Permanent Molars

When extracting any first permanent molar (FPM), the optimum occlusal result will be obtained when the bifurcation of the lower second molar is seen to be forming on the OPG, usually around the age of 8½–10 years.

- When extracting one or two lower FPMs consider a compensating extraction to prevent the overeruption of the upper FPM from interfering with occlusal development.
- When extracting one or two upper FPMs do not compensate by extracting the lower FPM(s), unless they are of poor prognosis.
- When extracting three FPMs for poor prognosis then extract all four FPMs.
- If necessary, consider temporising FPMs of poor prognosis in young children to keep them free from symptoms until the optimal age for extractions is reached.
- If there is significant skeletal discrepancy or missing teeth (hypodontia) or if in doubt refer for a specialist opinion before undertaking extractions.

Diagnostic Aids for Orthodontics

Radiographs

Radiographs (see Appendix 5) can be useful in the diagnosis of delayed eruption to identify problems or missing teeth. The decision to expose a radiograph must be based on sound clinical indications and radiography must not be part of routine screening.

- To reduce the possibility of duplicate radiographs, take into account whether referral to a specialist practitioner is planned when deciding whether to take a radiograph for orthodontic reasons.
- If digital radiographs are taken, provide copies of relevant radiographs to the specialist if the patient is referred.
- Use the most appropriate radiograph and film speed, with positioning and aiming devices and rectangular collimation, for treatment planning.
- Consider using smaller films for child patients.

Study Models

Study models can provide a permanent record of the dentition at a point in time and so provide a useful tool for monitoring a developing (mal) occlusion.

Photographs

As with other areas, clinical photographs can be useful to assess or monitor a condition.

Box 12 Assessment of Orthodontic Status – Modifying Factors

Risk Factors Associated with the Development of Oral Conditions

- IOTN of 3 with an aesthetic component of >6 ⁴⁹
- IOTN of 4 or 5⁴⁹
- Patients requiring orthodontics as part of a multidisciplinary treatment plan⁴⁹

Clinical Findings

- Canine in the line of the arch but failing to erupt, 10–13 years of age[§]
- Failure of teeth to erupt at the expected time[§]
- First permanent molars of poor prognosis when hypodontia or skeletal discrepancy present[§]
- Palatally ectopic or buccally impacted canines[§]

[§]Expert opinion of the Guidance Development Group.

4.5 Assessment of Dentures

Patients can wear dentures for many years. Therefore, it is important to assess dentures at each review appointment to identify whether any adjustments or replacements are required. An example form to assist recording details of a full assessment is provided in Appendix 9.

- Ask the patient for their opinion on:
 - the appearance and comfort of their dentures;
 - whether there is any movement of the dentures;
 - whether the patient can speak, chew and bite adequately.
- Record the patient's answers.
- Assess the oral mucosal tissue, periodontal tissue and teeth as detailed in Sections 4.2–4.4 and:

- take note of whether any problems are associated with the patient's dentures;
 - check the stability, appearance and wear of the dentures.
- If problems associated with the patient's dentures are identified, conduct a full denture assessment to examine comfort, stability, aesthetics and functionality, as detailed in Form 10 in Appendix 9.
- If any elements of the assessment are unsatisfactory, record alterations to be made and adjust existing dentures or make new dentures, as required.

Box 13 Assessment of Dentures – Modifying Factors**Risk Factors Associated with the Development of Oral Conditions**

- Poor denture and oral hygiene[§]

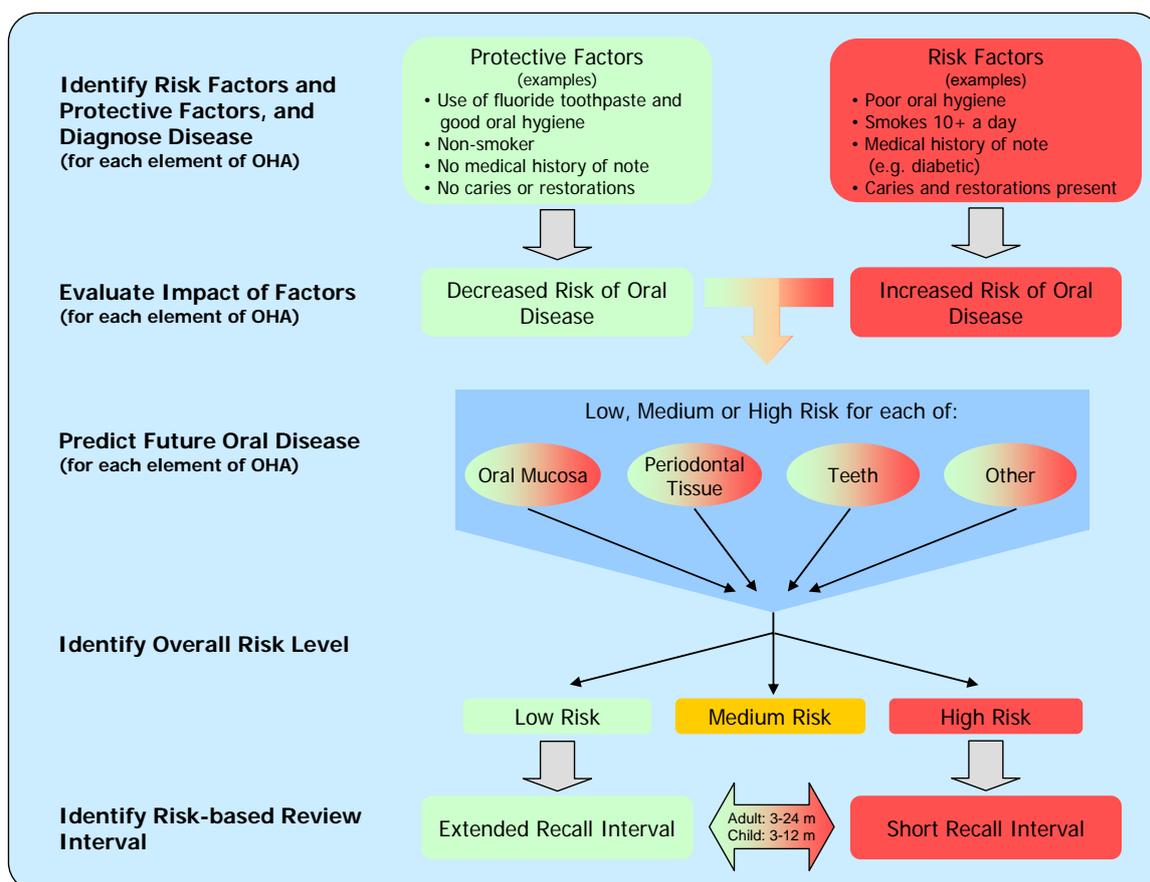
[§]Expert opinion of Guidance Development Group.

5 Diagnosis and Risk Assessment

There is now evidence to suggest that the 'risk' (probability) of developing oral disease can be affected by modifying factors that include risk and protective factors, behaviours and clinical findings that are associated with the development of oral disease¹. However, patients have wide variations between their susceptibility to disease, the likelihood of early disease progressing and the speed of disease progression, if it occurs¹⁴⁴. Therefore, it is important to collect patient-specific information to help the practitioner assess each patient's individual risk of developing both common and less common oral diseases and conditions, and develop a personal care plan that includes appropriate preventive advice and treatment options to reduce the patient's risk level (see Section 6).

In the past, it has been standard practice to use a recall interval of 6 months for all patients regardless of the oral health needs of the patient. However, following a review of the evidence and a review of clinical opinion regarding what is best practice, the National Institute of Health and Clinical Excellence (NICE)¹ has recommended that the recall interval is based on the individual's risk of oral disease. Consequently, patients identified as having an increased risk of developing oral disease might benefit from a short recall interval, whereas patients identified as having a low risk might need to be recalled less frequently (i.e. have a longer recall interval) (see Figure 2).

Figure 2 Using risk assessment to identify a review interval.



The Faculty of General Dental Practice⁵ and NICE¹ identified three key areas where they felt assessment of risk factors is important to determine the dental recall interval:

- dental caries;
- periodontal disease;
- oral cancer.

These areas were identified on the basis of both the prevalence and the population burden of disease. They are discussed in more detail in Section 4 together with other relevant conditions that affect overall care and management.

5.1 Risk Assessment Process

Although the term 'risk assessment' might be new to some in this context, clinical risk assessment is not a new concept and has been carried out intuitively by practitioners over many years. It can be thought of as comprising the following stages:

- Identifying modifying factors and diagnosing disease
- Evaluating the impact of modifying factors
- Predicting future disease
- Identifying the overall risk level
- Identifying a risk-based review interval

This brings a structured systematic approach to the process. Furthermore, using review intervals that are risk-based facilitates the provision of individualised patient care.

5.1.1 Identifying Modifying Factors, and Diagnosing Disease

The first stage in assessing the patient's risk of developing oral disease is to identify modifying factors from each element of OHAR that could either protect the patient, or increase their risk.

Modifying factors are identified from information given to the dental team (e.g. social history, dental history, medical history) and from information the dentist gains from examining the patient (e.g. presence and severity of caries, dry mouth, presence of plaque). Numerous potential modifying factors are highlighted in boxes at the end of each sub-section within Sections 3 and 4 and summarised in Appendix 10.

Note that protective factors are often the opposite of risk factors; for example, a protective factor is good oral hygiene (i.e. twice daily brushing with fluoride toothpaste, daily flossing) and a risk factor is poor oral hygiene (e.g. irregular use of toothpaste, poor brushing technique, no flossing). Some risk factors are oral disease itself (e.g. existing caries is a risk factor for future caries), and therefore the clinician needs to diagnose current disease to identify not only what problems need to be addressed but also to inform the risk of future disease.

5.1.2 Evaluating the Impact of Modifying Factors

After modifying factors have been identified, the dentist needs to use balanced, reasoned clinical judgement to weigh up and evaluate the impact of these factors in relation to each patient's past and current disease experience.

Although many factors are necessary for disease to develop, they themselves are not always sufficient on their own to cause disease in every patient. Both periodontal disease and dental caries are multifactorial diseases and a combination of factors affect whether they develop and progress in a given patient.

The past and current disease of each patient is the result of the effects of the risk factors and protective factors that the patient has been exposed to in their lifetime, and therefore can give an indication of the influence of the combination of these factors (if known) on the development of oral disease in a given patient. Indeed, past caries experience is the most reliable predictor of future caries experience¹⁰.

However, it is also important to be aware of possible inaccurate self-reporting by patients (e.g. alcohol consumption, dietary habits), which might limit the usefulness of some factors in assessing the patient's risk. Furthermore, the modifying factors for each patient can change over time. It is therefore essential that at each review appointment the modifying factors and their impact are reviewed for each patient.

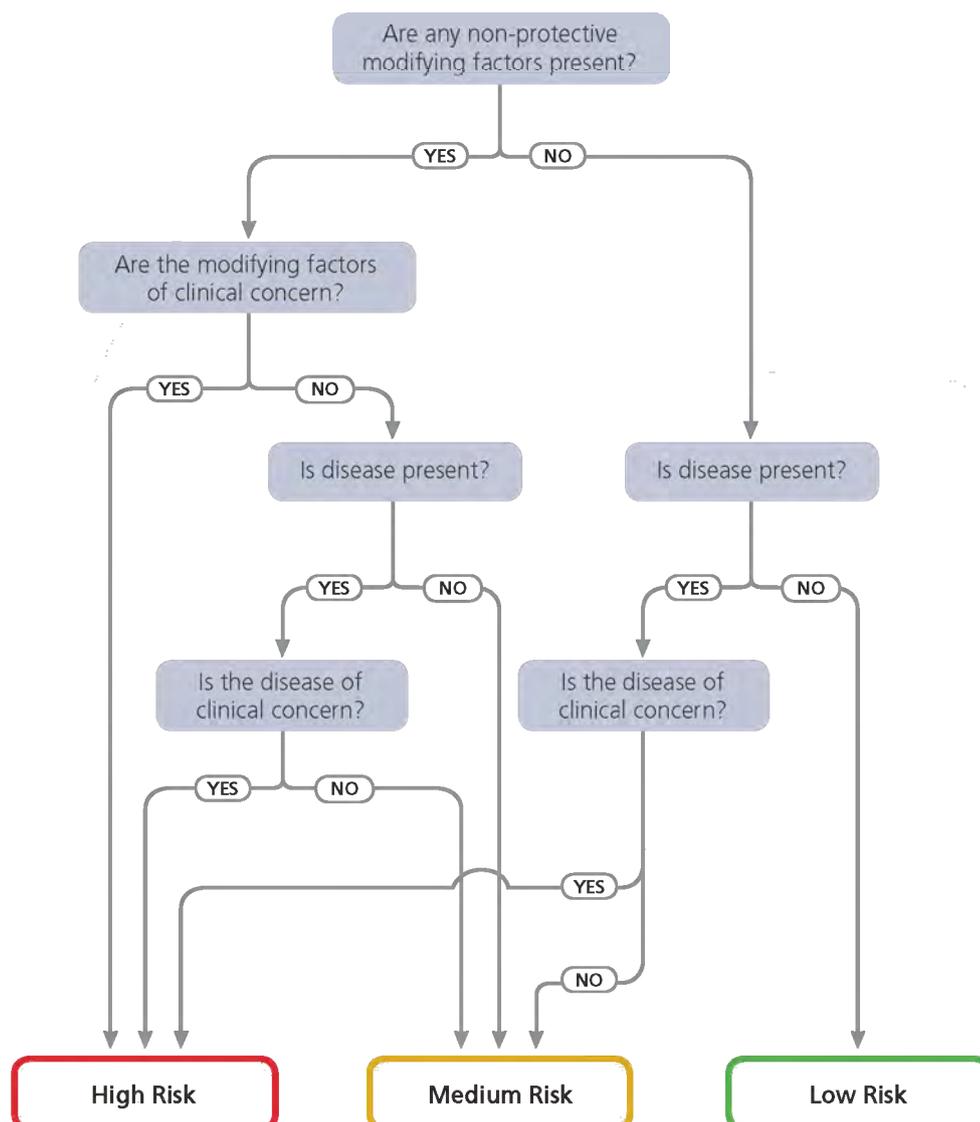
5.1.3 Predicting Future Disease

After evaluating the impact of risk factors and protective factors on past and current disease, the dentist can then use their clinical judgement to predict the patient's future risk of developing oral disease. It is recommended that a risk level of 'low', 'medium' or 'high' is assigned for each key element of OHA:

- assessment of oral mucosal tissue
- assessment of periodontal tissue;
- assessment of teeth (caries);
- assessment of any other relevant areas (e.g. trauma, orthodontics).

Figure 3 shows a simplified illustration of the assignment of a risk level for any element of OHA.

Figure 3 Assigning a risk level for the development of oral disease



Although there is evidence to support an association between certain factors and oral disease¹, there is insufficient evidence to 'weight' the different factors. Indeed, there have been several attempts to summarise the risk assessment as a single number but there is limited evidence to support this type of approach. Some software packages attempt automatic risk classification but it must be appreciated that the validity of these estimates is not yet known.

Therefore, when assigning a risk level, the clinician's knowledge of the patient (including their attitude to care and ability to cooperate) and knowledge of the patient's past rate of disease progression, together with the clinician's assessment of the impact of risk factors and protective factors in each individual patient is the best available approach.

5.1.4 Identifying the Overall Risk Level

The risk level for each of element of the OHA can differ and so it is recommended that the dentist assigns an overall level of risk for each patient taking account of the risk levels identified for each key element of the OHA. In many cases, the overall risk level may be judged to be the same as that of the OHA element with the highest risk level.

The overall risk level will then help inform the review interval.

5.1.5 Identifying a Risk-based Review Interval

Based on the identified overall risk level for each patient, and the clinician's knowledge of the patient, a review interval that is specific to the needs of the patient can be assigned as recommended by the National Institute for Health and Clinical Excellence (NICE)¹.

NICE recommends the following shortest and longest intervals between one assessment and the next assessment:

- The shortest interval for all patients is 3 months.
- The longest interval for patients younger than 18 years is 12 months.
- The longest interval for patients aged 18 years and older is 24 months.

To operationalise this approach, it is recommended that after the first Oral Health Assessment, if it is considered necessary, the patient receives Focussed Oral Health Reviews (FOHRs) at variable risk-based intervals. At a FOHR, primarily those elements previously rated as high or medium risk are reassessed (see Section 6 for further details). Subsequently, it is recommended that patients receive a full Oral Health Assessment every 24 months after their last full OHA for adults and 12 months after their last full OHA for children. This ensures that each patient has a regular comprehensive assessment and reflects the maximum intervals recommended by NICE.

As shown in Figure 2, a patient who has an imbalance of modifying factors in favour of risk factors will have an increased risk of oral disease and therefore is likely to benefit from a short review interval. This will enable effective monitoring to help prevent the initiation and/or further development of oral disease. By contrast, a patient who has an imbalance of modifying factors in favour of protective factors will have a decreased risk of oral disease and thus a more extended review interval is suitable. Some example scenarios for assigning review intervals are available in Appendix G of the NICE Recall guidance¹.

It is suggested that at the first OHA an initial review interval period is identified based on the individual needs of the patient. For new patients, the practitioner is unlikely to be able to predict accurately how oral disease might progress as they will have little knowledge of the patient. It is therefore advisable initially to assign a review interval that is conservative (i.e. shorter review interval). At the next and following review appointments, if no new problems are encountered the review interval may be extended incrementally up to the maximum interval recommended by NICE¹ (see above).

A checklist is provided in Appendix 9 to assist with recording which elements of assessment have been conducted as a particular visit and the outcomes of the assessment, including risk

levels assigned for individual elements, the overall risk level and the review interval. A form which can be used to help communicate this information to the patient is also provided (Patient Review and Personal Care Plan).

Diagnosis and risk assessment as described above in sub-sections 5.1.2-5 can be summarised as follows.

- Review the modifying factors identified in the patient's histories and during each element of the clinical examination, and evaluate the impact of these factors in relation to the patient's past disease experience and newly diagnosed disease.
- Predict the risk of future disease, and assign an individual risk level (high, medium, low) for caries, periodontal disease, oral mucosal disease for each patient, bearing in mind:
 - possible inaccurate self-reporting by patients;
 - risk factors and protective factors can change over time;
 - past disease experience might not always be a reliable predictor of future disease;
 - the patient's attitude to care, and ability and willingness to cooperate.
- Carry out a risk assessment in a similar way for any other aspects of the patient's oral health (e.g. trauma, tooth surface loss, occlusion, orthodontics) that might influence their future care.
- Assign an overall risk level for each patient (high, medium or low).
- Assign an interval for a Focussed Oral Health Review (FOHR) for each patient that is based on the patient's overall risk level and specific to the needs of the patient within the following ranges:
 - Adults: 3–24 months
 - Children (<18 years): 3–12 months

NB: For a new patient, it is advised that a conservative review interval is assigned, and then at subsequent review appointments the interval can be extended incrementally if no new problems are encountered.
- Discuss and agree with the patient their risk of developing disease and discuss and explain the reasoning for the review interval and the fact that this might change over time.
- Confirm the interval until the next OHA (24 months for adults; 12 months for children).

6 Personal Care Plan and Ongoing Review

The personal care plan is a risk-based long-term plan that is designed to address the patient's individual oral health improvement and maintenance needs.

For a personal care plan to meet the changing needs of a patient, it is important that on registering with a dental practice, each patient receives a baseline comprehensive Oral Health Assessment (OHA). For adults, this is repeated after 24 months. For children, the first comprehensive assessment should be conducted as early as possible, and no later than three years of age, and repeated at 12 month intervals. In addition, during these time periods Focussed Oral Health Reviews (FOHRs) can be carried out (see Section 6.2 for details). Both the number of FOHRs and the intervals between them will vary depending on the patient's risk of future oral disease.

After the dentist has made their assessment of the individual patient's risk and has diagnosed current disease, to develop a personal care plan the dentist needs to:

- assess the care options that are most appropriate for the patient to reduce the risks and maintain and improve the oral health of the patient;
- plan in a logical sequence any periodontal, operative or prosthetic care that might be indicated;
- assign a review interval that is specific to the patient's future needs.

As described in Section 5, for low risk patients who are not new to the practice, the next assessment will be an OHA (after 12 months for children or 24 months for adults). For patients assessed as at medium or high risk, the next assessment will be a FOHR carried out at an agreed risk-based interval.

The FOHR is used to identify whether any clinical elements or modifying factors identified previously have changed, to reassess elements previously identified as at high or medium risk and to ensure that the patient's personal care plan (including risk level and review interval) is still appropriate to meet the needs of the patient. A comprehensive OHA is conducted periodically for all patients to re-assess the overall oral health status of the patient, and amend the patient's personal care plan appropriately.

A personal care plan can include:

- patient advice (e.g. with respect to oral hygiene, diet, visiting a smoking cessation centre);
- preventive treatments (e.g. fluoride varnish, fissure sealants, oral hygiene instruction);
- operative treatments (e.g. restorations);
- endodontic treatments;
- maintenance and monitoring (e.g. appointment with hygienist for scale and polish or advice on flossing, etc.);
- referral to a specialist;
- individualised review interval.

A personal care plan need not include all of the above but will always include patient advice (even it is advice for the patient to carry on with their current oral hygiene routine) and an individualised review interval. In some cases, the personal care plan might be more elaborate and complex, but it is increasingly advised that more extensive care plans are best carried out after stabilisation of disease is achieved and after the dental team has had the opportunity to assess a patient's response to preventive advice and care.

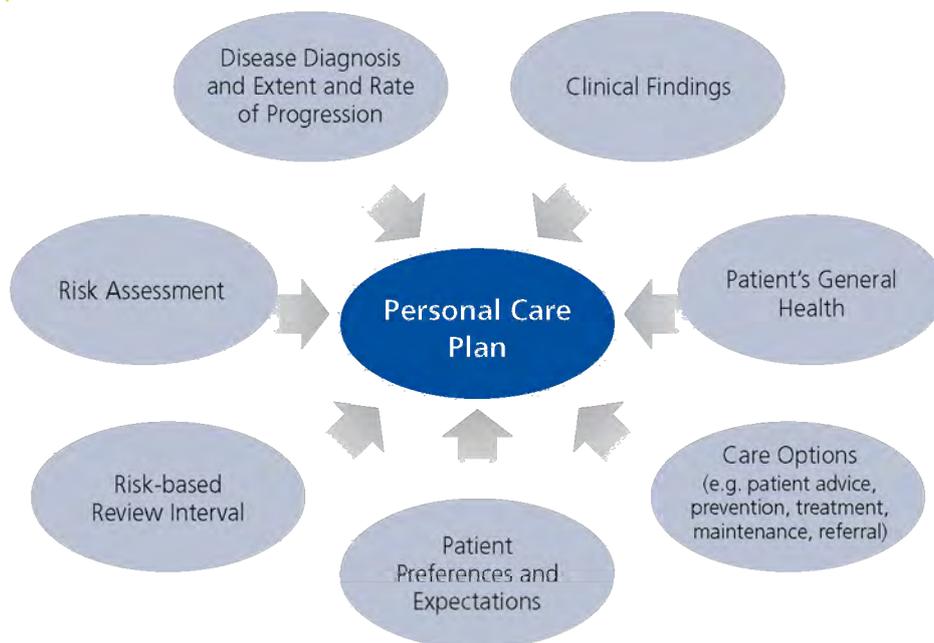
6.1 Developing a Personal Care Plan

As illustrated in Figure 4, several factors need to be considered when developing a personal care plan. The treatment and management of patients can be influenced by any modifying factors including risk and protective factors and clinical findings observed during assessment (whether from an assessment of the head and neck, the supporting structures or the teeth themselves). These clinical findings, relating most commonly to dental caries, periodontal health and the oral mucosa, which might or might not be directly associated with the development of oral disease, will impact upon the choice of the most suitable treatment options for the management of a particular patient at a given time. It is therefore important to take note of all relevant findings when planning care for a patient as this will aid the planning process itself, aid communication with the patient and is useful from a medico-legal standpoint to be able to show how care plans were arrived at (see Figure 4).

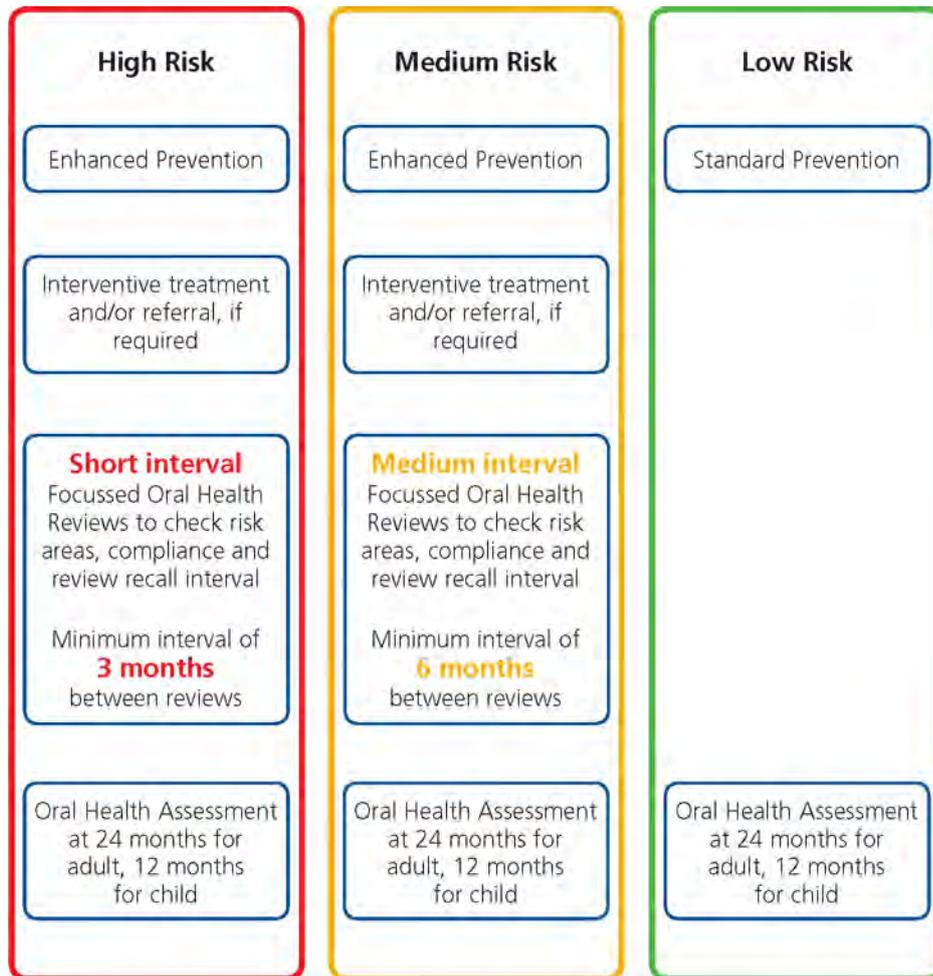
Other clinical conditions (e.g. white lesions in the oral mucosa, mucosal ulceration) might represent risk factors for the development of more serious oral mucosal disease. Some lesions might require referral to a specialist, which will be included in the personal care plan, whereas others might simply require periodic review in primary care.

The personal care plan also needs to take note of the patient's preferences and their willingness and ability to comply with any proposed plan. Therefore, it is important that the personal care plan is discussed with each patient and the patient is provided with a written personal care plan that details all proposed elements. In some cases, particularly with child patients, it might be necessary to complete any required treatment in stages, only moving on to more invasive procedures when the patient is able to cope (see the SDCEP guidance '*The Prevention and Management of Dental Caries in Children*⁹').

Figure 4 Points to consider in the development of a personal care plan



The components of a personal care plan, including the frequency of assessments, will vary between patients and depend on whether the patient's overall risk level has been assigned as high, medium or low. This is illustrated in Figure 5.

Figure 5 Variation in personal care plans for the three risk levels

Note that for a new patient assessed as low risk, a conservative interval for Focussed Oral Health Reviews is advised initially which can be extended incrementally if no new problems are encountered.

Not all elements of the personal care plan necessarily need be delivered by the dentist; some can be delivered by other members of the dental team. Details of the roles and responsibilities of the various members of the dental team are outlined in Appendix 3. It is important to highlight to the patient which elements of care will be provided by different members of the dental team. It is also important to detail whether there are any elements that will not be provided or if the dentist and patient have differing views.

- After conducting a risk assessment of the patient and diagnosing current disease (see Section 5), assess the most suitable management options available and discuss them with the patient.
- When developing the personal care plan, consider:
 - the extent and rate of disease progression;
 - the patient's age and general health (medical history);
 - the care options that are most appropriate for the patient to maintain and improve their oral health;
 - the patient's preferences, expectations and willingness to comply with the plan;

- whether you can treat all aspects of the case or whether the patient requires referral to a specialist;
 - whether any treatments need to be carried out in stages to:
 - aid and assess the compliance of the patient with preventive care
 - to optimise the successful completion of complex treatments;
 - any clinical findings that might compromise or affect treatment procedures or outcomes (e.g. limited mouth opening, TMJ problems, xerostomia).
- Include in the personal care plan
- patient advice (e.g. with respect to oral hygiene, diet, visiting a smoking cessation centre);
 - an individualised risk-based interval for a Focussed Oral Health Review (FOHR) (if required);
 - interval before the next OHA;
- and, if appropriate:
- preventive treatments (e.g. fluoride varnish, fissure sealants, oral hygiene instruction);
 - operative treatments (e.g. restorations);
 - endodontic treatments;
 - maintenance and monitoring (e.g. appointment with hygienist for scale and polish or advice on flossing, etc.);
 - referral to a specialist.
- Discuss and agree the personal care plan with the patient, explaining:
- the concept and advantages of a personal care plan (e.g. it is specific to the individual needs of the patient);
 - the concept of a more preventive, long-term care plan (e.g. it is less invasive and leaves options for the future);
 - the review interval that is specific to their oral needs (see Section 5);
 - the role of the patient and the role of the dental team in maintaining and improving the patient's oral health (Patient Review and Personal Care Plan form in Appendix 9).
- Ensure that all discussions with the patient are appropriate to their age and capacity and that child patients, including very young children, are included in the discussion of their personal care plan.
- Record the agreed personal care plan and give the patient a copy (e.g. use the example Patient Review and Personal Care Plan form).

6.2 Ongoing Review

As previously described, the ongoing review of a patient's oral health includes:

- Focussed Oral Health Reviews (FOHRs) conducted at risk-based intervals (minimum 3 months) to reassess elements previously identified as at high or medium risk, and
- Oral Health Assessments (OHAs) completed every 24 months for adults and 12 months for children.

The frequency of FOHRs will vary between patients and depend on whether the patient's overall risk level has been assigned as high, medium or low.

- At the Focussed Oral Health Review appointment:
 - ensure patient histories are up to date;
 - check patient compliance with preventive advice given;
 - check the effectiveness of any treatment provided previously (both preventive and operative) and of the advice given to the patient;
 - reassess in full any clinical elements that were previously assigned high or medium risk, and any other elements as appropriate for the patient;
 - review the risk level for the patient, taking into account any changes in risk factors and protective factors and new clinical findings;
 - review the patient's personal care plan and amend if necessary;
 - confirm the interval before the next FOHR or OHA.

7 Clinical Governance, CPD and Training

It is a requirement of clinical governance and fundamental good clinical practice that all health professionals work to monitor and constantly strive to improve the quality of care they provide. One important aspect of assessing patients is the requirement of dental professionals to produce and maintain adequate patient records.

It is recommended that:

- all those involved in dealing with patients records undertake appropriate training and continuing professional development (e.g. with respect to confidentiality, consent and the Data Protection Act 1998²⁰);
- record keeping, data storage, security of records and back-up systems are reviewed at regular intervals;
- members of the dental team who are involved in conducting OHAR carry out significant event analyses (SEAs) as appropriate; further information is available via NHS Education for Scotland (www.nes.scot.nhs.uk/education-and-training/by-discipline/dentistry/dentists/clinical-audit.aspx).

7.1 Recommendations for Audit

Topics for audit and review should be chosen carefully to provide information that will improve the quality of each OHA and ensure patient safety. Examples include:

- the existence of a record of an assessment of oral disease and disease risk for each patient;
- the accuracy and completeness of records (i.e. is the patient's medical history regularly updated, is the patient's post code correct, is the patient's CHI number included?);
- the proportion of patients that have a detailed personal care plan and risk-based review interval.

7.2 Recommendations for Research

Topics for research investigation in the field of OHAR are those areas that are clinically important and for which there are current gaps in the evidence base. Examples include:

- the reliability of assessing risk factors for dental caries, periodontal disease and mucosal disease in a dental primary care setting;
- the level of compliance of patients with recommended review intervals.

Appendix 1 Guidance Development

The Scottish Dental Clinical Effectiveness Programme

The Scottish Dental Clinical Effectiveness Programme (SDCEP) is an initiative of the National Dental Advisory Committee (NDAC) in partnership with NHS Education for Scotland.

The NDAC comprises representatives of all branches of the dental profession and acts in an advisory capacity to the Chief Dental Officer. It considers issues that are of national importance in Scottish dentistry and also provides feedback to other bodies within the Scottish Government on related, relevant healthcare matters.

SDCEP was established in 2004 under the direction of the NDAC to give a structured approach to providing clinical guidance for the dental profession. The programme's primary aim is to develop guidance that supports dental teams to provide quality patient care. SDCEP brings together the best available information that is relevant to priority areas in dentistry, and presents guidance on best practice in a form that can be interpreted easily and implemented. The guidance recommendations may be based on a variety of sources of information, including research evidence, guidelines, legislation, policies and expert opinion as appropriate to the subject. SDCEP guidance takes a variety of forms to suit the diverse topics being addressed.

Recognising that publication of guidance alone is likely to have a limited influence on practice, SDCEP also contributes to the research and development of interventions to enhance the translation of guidance recommendations into practice through its participation in the TRiADS (Translation Research in a Dental Setting) collaboration (follow the TRiADS link at www.sdpbrn.org.uk).

SDCEP is funded by the Scottish Government Health Directorates and through its collaboration with NHS Education for Scotland contributes to the implementation of the Scottish Government's Dental Action Plan, which aims to both modernise dental services and improve oral health in Scotland.

The Guidance Development Group

A Guidance Development Group, comprising individuals from a range of branches of the dental profession, was convened to develop and write the guidance.

Nigel Pitts (Chair)	Professor of Dental Health and Director, Dental Health Services Research Unit, University of Dundee
Jenny Hally*	Clinical Research Fellow, Dental Health Services Research Unit, University of Dundee
Phil Higginson	General Dental Practitioner, Dundee
Nicola Innes**	Senior Clinical Lecturer in Paediatric Dentistry, Dundee Dental Hospital and School, University of Dundee
Lorna Macpherson	Professor of Dental Public Health, University of Glasgow
Mary McCann	General Dental Practitioner, Glasgow; Dental Adviser, Scottish Prison Service; Dental Adviser, MDDUS
Charles Ormond	General Dental Practitioner, Falkirk
Derek Richards	Specialist Advisor to the Programme Development Team; Consultant in Dental Public Health, Forth Valley; Director of the Centre for Evidence-Based Dentistry, Oxford
Margaret Ross	Senior Lecturer for DCPs, Edinburgh Dental Institute
Petrina Sweeney	Senior Lecturer/Honorary Consultant in Special Care Dentistry, University of Glasgow Dental School

* until January 2009 ** from January 2009

The Guidance Development Group would also like to thank Dr Dafydd Evans (Dundee Dental Hospital) and Prof. Ian Needleman (UCL Eastman Dental Institute) for their valuable contribution to the development of this guidance.

Guidance in Brief Advisory Group

In response to feedback received at consultation, a less detailed 'Guidance in Brief' version of the guidance was developed in collaboration with a small advisory group of representatives of dental primary care and input from NP and DR (Guidance Development Group) and JC and DS (Programme Development Team).

Richard Borland	General Dental Practitioner, Broughty Ferry
Gerard Boyle	General Dental Practitioner, Glasgow
Kay Cullen	Dental Hygienist, Prestwick
Eleanor Ferguson	General Dental Practitioner, Kirriemuir
Judith Mackie	General Dental Practitioner, Forfar
David McColl	General Dental Practitioner, Glasgow
Fiona MacKinnon	Senior Dental Nurse, Blairgowrie

The Programme Development Team

The Guidance Development Group works closely with the Programme Development Team, which provides project management and administrative support and is responsible for the methodology of guidance development. The team facilitates all aspects of guidance development by searching and appraising information and evidence, conducting research, liaising with external organisations, editing the guidance, and managing the publication and dissemination of guidance materials.

Jan Clarkson	Programme Director
Douglas Stirling*	Programme Manager – Guidance and Programme Development
Linda Young*	Research and Development Manager – Evaluation of Implementation
Samantha Rutherford	Research and Development Manager – Guidance Development
Joseph Liu	Senior Researcher
Jill Farnham*	Administrator
Trish Graham	Administrator
Elizabeth Payne	Administrator

* Directly involved in the development of this guidance

The Programme Development Team is particularly grateful to the late Dr Gillian MacKenzie for her invaluable contribution to the development of this guidance.

Guidance Development Methodology

SDCEP endeavours to use a methodology for guidance development that mirrors that used to develop high-quality guidelines. It aims to be transparent, systematic and to adhere as far as possible to international standards set out by the Appraisal of Guidelines for Research and Evaluation (AGREE) Collaboration (www.agreertrust.org/).

The guiding principle for developing guidance within SDCEP is to first source existing guidelines, policy documents, legislation or other recommendations. Similarly, relevant systematic reviews are also initially identified. These documents are appraised for their quality of development, evidence base and applicability to the remit of the guidance under development. In the absence of these documents or when supplementary information is required, published literature is searched and unpublished work is sought.

This guidance is based largely on NICE Clinical Guideline 19 on dental recall¹, the FGDP guidance on clinical examination and record keeping⁵, relevant systematic reviews and other published literature listed in the reference section, research evidence and the opinion of experts and experienced practitioners.

A consultation draft of this guidance entitled '*Guidance on Comprehensive Oral Health Assessment*' was sent to individuals and bodies related to primary care dental practice and those involved in the organisation of dental services or dental education in Scotland. To obtain feedback from the end-users of the guidance, all dentists in Scotland were notified that the consultation draft was available on the SDCEP website or on request, and invited to comment. Following completion of the consultation period in 2009, all comments were reviewed and considered to inform further development of the guidance. In response to feedback received, a less detailed 'Guidance in Brief' version was created. A workshop attended by representatives of primary care dentistry informed the development of the Guidance in Brief version resulting in the inclusion of several important amendments.

This document presents an update of the guidance information from which the Guidance in Brief was developed and is provided as a reference resource for those who require more detail. Based on the draft guidance that was available for the consultation in 2009, it has been updated to incorporate important amendments included in the Guidance in Brief in response to consultation feedback. This version includes explanation of the background and general principles of Oral Health Assessment and Review, each element of the assessment and the guidance development process. Please note that this version of the guidance may be subject to further amendment through an ongoing process of review and updating. Feedback to inform future updating is welcomed.

Further information about the development of SDCEP guidance is available on our website: www.scottishdental.org/cep.

Declarations of interest are made by all contributors to SDCEP. Details are available on request.

Steering Group

A Steering Group oversees all the activities of SDCEP and includes representatives of each Guidance Development Group and the dental institutions in Scotland.

Jeremy Bagg (Chairman)	Chairman of the National Dental Advisory Committee; Head of Glasgow Dental School and Professor of Clinical Microbiology, University of Glasgow
Jan Clarkson	Professor of Clinical Effectiveness, University of Dundee; Director, Scottish Dental Clinical Effectiveness Programme
Tony Anderson	Acting Clinical Director, Edinburgh Postgraduate Dental Institute
Graham Ball	Consultant in Dental Public Health, South East Scotland and Tayside
Dafydd Evans	Senior Lecturer and Consultant in Paediatric Dentistry, Dundee Dental Hospital and School, University of Dundee
Mark Hector	Dean for Dentistry and Professor of Oral Health of Children, University of Dundee
Jim Newton	Director of Aberdeen Dental School; Professor, University of Aberdeen
Nigel Pitts	Professor of Dental Health and Director, Dental Health Services Research Unit, University of Dundee
Derek Richards	Consultant in Dental Public Health, South East Scotland and Tayside; Director of the Centre for Evidence-Based Dentistry, Oxford; Specialist Advisor to the SDCEP Programme Development Team
Nigel Robb	Reader and Honorary Consultant in Restorative Dentistry, School of Oral and Dental Sciences, University of Bristol
Alice Miller	General Dental Practitioner, Duns, Borders; VT Adviser, NHS Education for Scotland
Alan Whittet	General Dental Practitioner, Longniddry, Lothian; Dental Practice Adviser, NHS Lothian
David Wray	Professor of Oral Medicine, University of Glasgow Dental School

Appendix 2 Glossary of Terms

Abfraction: a theoretical process whereby occlusal forces create stresses in enamel and dentine along the cervical area and predispose it to erosion and abrasion; as yet, there is insufficient evidence to confirm that abfraction truly exists¹⁴⁵.

Abrasion: the frictional wearing away of tooth surfaces that can often be caused by brushing the teeth too vigorously (although it has also been seen in pipe smokers); it produces a V-shaped lesion often seen at the gingival margin; there are several factors that can contribute to dental abrasion and these should be considered when weighing up a patient's potential risk status.

Anticipatory care: a preventive, proactive approach that targets those at greatest risk, offering support through self care².

Attrition: the tooth-to-tooth mechanical wearing down of incisal and occlusal tooth surfaces; it produces a dentition where the front teeth become shorter and the back teeth become flatter; although attrition is part of the normal aging process, it can be accelerated by involuntary teeth grinding and clenching (i.e. bruxism); the causes of bruxism are often considered to be increased stress, anxiety and/or malocclusion.

BPE (basic periodontal examination): a means, recommended by the British Society of Periodontology⁵⁸ of simple screening of the periodontal tissue within primary dental care to form a diagnosis and inform a care plan for each patient.

CHI (Community Health Index): a unique patient identifier for patients in NHSScotland; the CHI number is a ten-digit number created from a patient's date of birth and four other numbers; increasingly, care is provided across geographical boundaries, and as such it is important that patients can be identified accurately wherever they receive care.

Concrescence: an uncommon developmental anomaly in which juxtaposed teeth are united in the cementum but not in the dentine.

Dental caries: the localised destruction of susceptible dental hard tissues by acidic by-products from bacterial fermentation of dietary carbohydrates¹⁴⁶.

Erosion: the wearing away of the tooth substance by a chemical process that does not involve bacterial acid^{147, 148}; erosion can involve any surface of the tooth and presents as a 'dished-out' lesion that has a hard, smooth base¹¹⁴; erosion often coexists with attrition and or abrasion, making individual diagnosis difficult.

Fluorosis: a detrimental change in tooth development and maturation that is caused by excessive fluoride ingestion.

ICDAS (International Caries Detection and Assessment System): a numerical system for recording the stage of the carious process and the status of any restoration or sealant by tooth surface (mesial, distal, buccal, lingual and occlusal); this recently developed system provides a two-digit code for each tooth surface enabling the dentist to readily monitor the progress of each surface over time.

IOTN (Index of Orthodontic Treatment Need): a widely used method of assessing the need and eligibility for orthodontic treatment.

Occlusion: the contact between the upper and lower teeth; it forms part of the articulatory system with the temporomandibular joints and muscles; they in turn make up part of the masticatory system with the periodontium and teeth¹⁴⁹.

Oral health review: a review of all aspects of each patient's oral health that is conducted at an individualised risk-based recall interval; this includes updating details of the assessment of the individual, carrying out each element of the assessment of oral health status, reviewing the patient's risk level and the effectiveness of any treatment or advice provided previously and updating the patient's personal care plan, where appropriate; the next recall interval is assigned depending on the outcome of this oral health review.

Personal care plan: a care plan that is specific to each individual patient's oral health needs, and includes preventive treatment options, operative treatment options, long-term maintenance and recall.

Risk assessment: a systematic process of assessing the risk of each individual patient to the development of oral disease, taking into account all factors that affect the oral health status of the patient.

SIMD (Scottish Index of Multiple Deprivation): an index that was introduced in 2004 and revised in 2006 to identify small area concentrations of multiple deprivation across Scotland by assessing the population in each 'small area' against 37 indicators across seven domains³⁶; the resulting SIMD ranks can be used to compare data zones by providing a relative ranking from most deprived (rank 1) to least deprived (rank 6505), and can be used to identify the most deprived areas, commonly by applying a cut off such as 10%, 15% or 20%; the SIMD is important to dentistry because it has been shown that deprivation (low SIMD) is related to a higher risk of dental caries and other oral disease; recording the postcode of each patient (which can be used to identify the SIMD of the area) is one way of ascertaining whether a patient is at higher risk of oral disease because of socio-economic factors^{36, 37}.

Taurodontism: a condition where the body of the tooth and pulp chamber is enlarged.

Appendix 3 Roles and Responsibilities of Dental Care Professionals

Dental Team Member	Roles and Responsibilities
Dental nurse	<p>Clinical support (e.g. recording patient details, including intra-oral findings)</p> <ul style="list-style-type: none"> • Patient care • Infection control <p>Might hold specialist qualifications and have further clinical involvement in, for example:</p> <ul style="list-style-type: none"> • Oral health education • Special care dentistry • Sedation • Orthodontic nursing • Radiography • Fluoride varnish application
Dental hygienist	<p>Able to work in all sectors of dentistry</p> <ul style="list-style-type: none"> • Non-surgical periodontal therapy • Infiltration and block analgesia • Screening and monitoring of oral disease • Dental radiographs • Fissure sealants • Fluoride therapy • Tooth whitening • Dental impressions • Oral health advice • Dietary counselling • Health promotion and education • Smoking cessation advice • Emergency replacement of crowns and bridges • Make appropriate referrals to other healthcare professionals <p>Might own referral practices and employ other members of the dental team, including dentists</p> <p>Can undertake all of the above clinical work without a dentist on the premises</p>
Dental hygienist-therapist	<p>Able to work in all sectors of dentistry, undertake all the activities of a dental hygienist and in addition:</p> <ul style="list-style-type: none"> • Multi-surface permanent and primary tooth restorations using a variety of restorative materials • Preventive resin restorations • Preformed metal crowns • Pulpotomies in primary teeth

	<ul style="list-style-type: none"> • Extraction of primary teeth <p>Might own referral practices and employ other members of the dental team, including dentists</p> <p>Can undertake all of the above clinical work without a dentist on the premises</p>
Dental technicians	<p>Undertake work prescribed by a dentist, usually under one of three dental technology specialities:</p> <ul style="list-style-type: none"> • Prosthodontics • Restorative dentistry • Orthodontics <p>May hold specialist qualifications</p>
Clinical dental technicians	<p>Qualified dental technicians who are registered. Following additional training and education, can:</p> <ul style="list-style-type: none"> • Undertake clinical examinations • Provide full dentures to a patient without a referral from a dentist • Recognise oral abnormalities • Provide appropriate advice to patients • Make appropriate referrals to other healthcare professionals <p>Under the prescription of a dentist, can:</p> <ul style="list-style-type: none"> • Provide and fit removable appliances e.g. partial dentures, mouthguards and anti-snoring devices • Take radiographs <p>May own dental clinic</p>
Orthodontic therapists	<p>Qualified and registered Dental Care Professional working in hospital or specialist orthodontic practice. Undertake routine clinical orthodontic treatment under the prescription of a specialist orthodontist including:</p> <ul style="list-style-type: none"> • Insertion of removable appliances • Removal of fixed appliances • Taking impressions • Pouring, casting and trimming study models • Placement bracket and bands • Preparation, insertion, adjustment and removal of archwires • Fitting tooth separators • Fitting bonded retainers

All Dental Care Professionals must either be qualified or in training, and be registered with the General Dental Council.

Appendix 4 Tooth Notation Systems

It is recommended, from a patient safety perspective, that the International Dental Federation (FDI) tooth notation system is used in primary care dental practice.

FDI Tooth Notation System

Permanent Teeth																
Upper	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
Lower	48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
Primary Teeth																
Upper				55	54	53	52	51	61	62	63	64	65			
Lower				85	84	83	82	81	71	72	73	74	75			

Other Tooth Notation Systems/

Other Tooth Notation Systems

Permanent Teeth

Palmer	8]	7]	6]	5]	4]	3]	2]	1]	1̄]	2̄]	3̄]	4̄]	5̄]	6̄]	7̄]	8̄]
BDJ	UR8	UR7	UR6	UR5	UR4	UR3	UR2	UR1	UL1	UL2	UL3	UL4	UL5	UL6	UL7	UL8
Anatomical	Right upper third molar	Right upper second molar	Right upper first molar	Right upper second premolar	Right upper first premolar	Right upper canine	Right upper lateral incisor	Right upper central incisor	Left upper central incisor	Left upper lateral incisor	Left upper canine	Left upper first premolar	Left upper second premolar	Left upper first molar	Left upper second molar	Left upper third molar
Anatomical	Right upper third molar	Right lower second molar	Right lower first molar	Right lower second premolar	Right lower first premolar	Right lower canine	Right lower lateral incisor	Right lower central incisor	Left lower central incisor	Left lower lateral incisor	Left lower canine	Left lower first premolar	Left lower second premolar	Left lower first molar	Left lower second molar	Left lower third molar
BDJ	LR8	LR7	LR6	LR5	LR4	LR3	LR2	LR1	LL1	LL2	LL3	LL4	LL5	LL6	LL7	LL8
Palmer	8̄]	7̄]	6̄]	5̄]	4̄]	3̄]	2̄]	1̄]	1̄]	2̄]	3̄]	4̄]	5̄]	6̄]	7̄]	8̄]

Primary Teeth

Palmer	E]	D]	C]	B]	A]	Ā]	B̄]	C̄]	D̄]	Ē]
BDJ	URE	URD	URC	URB	URA	ULA	ULB	ULC	ULD	ULE
Anatomical	Right upper deciduous second molar	Right upper deciduous first molar	Right upper deciduous canine	Right upper deciduous lateral incisor	Right upper deciduous central incisor	Left upper deciduous central incisor	Left upper deciduous lateral incisor	Left upper deciduous canine	Left upper deciduous first molar	Left upper deciduous second molar
Anatomical	Right lower deciduous second molar	Right lower deciduous first molar	Right lower deciduous canine	Right lower deciduous lateral incisor	Right lower deciduous central incisor	Left lower deciduous central incisor	Left lower deciduous lateral incisor	Left lower deciduous canine	Left lower deciduous first molar	Left lower deciduous second molar
BDJ	LRE	LRD	LRC	LRB	LRA	LLA	LLB	LLC	LLD	LLE
Palmer	Ē]	D̄]	C̄]	B̄]	Ā]	Ā]	B̄]	C̄]	D̄]	Ē]

Appendix 5 Using Radiographs as a Diagnostic Aid

Radiography can be used to help assess dental caries, periodontal disease, tooth abnormalities, dental trauma and orthodontics. The use of radiation in dental practice is covered by the Ionising Radiations Regulations 1999³¹ and Ionising Radiation (Medical Exposure) Regulations 2000³², and dentists have a duty of care and legal obligation to protect the public, their staff and their patients from potential harm associated with radiation and keep doses as low as is reasonably practicable (ALARA). Therefore, routine 'screening' radiography (e.g. panoramic radiographs) must not be carried out and new radiographs must not be undertaken without first examining existing films or without clear justification. If radiographs are justified for a specific reason, it is important that a full radiographic report is carried out; this ensures that the radiograph is evaluated carefully and information that is relevant for other dental assessments is recorded where possible to minimise the need for further radiography. To ensure patient safety, it is important to follow the general points below when taking radiographs for any reason.

- Before using radiographic assessment, take a thorough patient history (see Section 3) and conduct a full clinical examination (see Section 4).
- Examine existing radiographs before taking new radiographs.
- Record the justification, including indication, for taking a radiograph in the patient's notes; include the dose used, who carried out the clinical examination, who authorized the radiograph and the date (see Appendix 9 for an example radiographic assessment form).
- Use the most appropriate radiograph and film speed, with positioning and aiming devices and rectangular collimation, for treatment planning.
- Consider using smaller films for child patients.
- Evaluate each radiograph and record enough information so that it can be subject to later audit. For example, this information might include:
 - charting of caries;
 - findings relevant to the patient's management and prognosis;
 - recording either 'root form simple' or 'nothing abnormal diagnosed' in the case of a pre-extraction radiograph.
- For additional information on the use of radiographs see the FGDP selection criteria for dental radiography⁸⁴.
- For more information on radiation protection in dental practice refer to the SDCEP 'Practice Support Manual'¹⁷ and National Radiological Protection Board guidance³³.

Appendix 6 Alcohol Units and Questionnaires

Units of Alcohol

Alcohol Beverage	Strength	Volume	Units
Normal strength beer, cider, lager	4%	1 pint	2.2
Medium strength beer, lager, cider	5%	1 pint	2.8
Alcopop	5%	275 ml	1.4
Wine	12.5%	175 ml	2.2
Fortified wine	17%	50 ml	0.9
Spirits	40%	25 ml	1

Various screening tools have been developed to gain an objective measure of alcohol consumption, for example AUDIT-PC (alcohol use disorders identification test – primary care) and FAST (Fast Alcohol Screening Test). Further details are available from the alcohol learning centre (www.alcohollearningcentre.org.uk)¹⁵⁰.

Appendix 7 Coding Caries and Restorations Using ICDAS

As carious lesions can arrest or progress depending on the balance of the demineralisation–remineralisation process it is important to record the location and extent of each lesion. This is important for the planning and monitoring of an individual care plan that comprises preventive and maintenance elements together with operative (intervention) elements, where required. It is also important to record the presence of restorations and the material used for each restoration.

While practitioners have used a variety of recording systems to record early carious lesions (often just marking small lesions to be “watched”) there are advantages to using more detailed, explicit and robust systems that are evidence-based.

The International Caries Detection and Assessment System (ICDAS)

ICDAS provides a numerical system for recording the stage of the carious process and the status of any restoration or sealant by tooth surface (mesial, distal, buccal, lingual and occlusal). This system provides a two digit code for each surface. One code for restorations or sealants and a separate code for caries (see table 4). Additional codes are available for exposed root surfaces (see table 5).

ICDAS assessments are made on clean, dry teeth; a dental probe is not needed, except for removing debris from fissures and checking for sealants, when a ball-ended CPITN probe is used. Each surface (mesial, occlusal, distal, lingual and buccal) of each erupted tooth is examined carefully and the relevant code recorded. An example is shown in Figure 6, as well as clinical images for each of the ICDAS codes.

A free online training programme is available at www.icdas.org/elearning-programmes.

Table 4 ICDAS codes for charting restorations and caries in coronal tooth surfaces and codes for missing teeth

Restoration and Sealant Codes		Caries Codes		Coronal	Missing Teeth	
Code	Description	Code	Description	Surface	Code	Description
0	Not sealed or restored	0	Sound tooth surface		97	Tooth extracted as a result of caries
1	Sealant, partial	1	First visual change in enamel		98	Tooth missing for other reasons
2	Sealant, full	2	Distinct visual change in enamel		99	Unerupted
3	Tooth coloured restoration	3	Enamel breakdown, no dentine visible		P	Implant
4	Amalgam restoration	4	Underlying dentinal shadow (not cavitated into dentine)			
5	Stainless steel crown	5	Distinct cavity with visible dentine			
6	Porcelain, gold, PFM crown or veneer	6	Extensive distinct cavity with visible dentine			
7	Lost or broken restoration					
8	Temporary restoration					

Table 5 ICDAS codes for the detection and classification of carious lesions on root surfaces

Code	Description
E	If the root surface cannot be visualized directly as a result of gingival recession or by gentle air-drying, then it is excluded, and not routinely coded.
0	The root surface does not exhibit any unusual discoloration that distinguishes it from the surrounding or adjacent root areas nor does it exhibit a surface defect either at the cemento–enamel junction or wholly on the root surface. The root surface has a natural anatomical contour, or the root surface might exhibit a definite loss of surface continuity or anatomical contour that is not consistent with the dental caries process. This loss of surface integrity usually is associated with dietary influences or habits such as abrasion or erosion.
1	There is a clearly demarcated area on the root surface or at the cemento–enamel junction that is discoloured (light/dark brown, black) but there is no cavitation (loss of anatomical contour <0.5 mm) present.
2	There is a clearly demarcated area on the root surface or at the cemento–enamel junction that is discoloured (light/dark brown, black) and there is cavitation (loss of anatomical contour ≥0.5 mm) present.

Figure 6 Example of ICDAS code allocation for coronal tooth surfaces⁹⁴

Type of Code	Description	ICDAS Code
Restoration/sealant (first digit)	Sealant, partial	1
Caries (second digit)	Underlying dentinal shadow (not cavitated into dentine)	4
Gives occlusal surface ICDAS Code 14		

Clinical Photographs for Charting Restorations and Caries

Restoration and Sealant Codes

<p>Restoration Code 0: Not sealed or restored</p>  <p>If you cannot see any restoration or sealant on a particular tooth surface, use Code 0 as the first digit.</p>	<p>Restoration Code 1: Sealant, partial</p>  <p>If a sealant is present but it does not cover the fissure/pit fully, use Code 1 as the first digit.</p>	<p>Restoration Code 2: Sealant, full</p>  <p>If the sealant covers the fissure/pit totally, use Code 2 as the first digit.</p>
<p>Restoration Code 3: Tooth coloured restoration</p>  <p>If a tooth-coloured restoration (e.g. composite or glass ionomer) is present on a surface, use Code 3 as the first digit.</p>	<p>Restoration Code 4: Amalgam restoration</p>  <p>If amalgam is present on a surface, use Code 4 as the first digit.</p>	<p>Restoration Code 5: Stainless steel crown</p>  <p>If a stainless steel crown covers a tooth surface, use Code 5 as the first digit.</p>
<p>Restoration Code 6: Porcelain, gold PFM crown or veneer</p>  <p>If any advance restoration in gold or porcelain is present, use Code 6 as the first digit.</p>	<p>Restoration Code 7: Lost or broken restoration</p>  <p>If you observe any missing or broken restorations of any type, use Code 7 as the first digit.</p>	<p>Restoration Code 8: Temporary restoration</p>  <p>If a known temporary restoration is present on any tooth surface, use Code 8 as the first digit.</p>

Caries Codes

Caries Code 0: Sound tooth surface



When there is no sign of caries on the tooth surface even after air drying for 5 seconds, record Code 0 as the second digit of the ICDAS code. Also record Code 0 for staining around a restoration margin that is not associated with caries and for non-carious marginal defects of less than 0.5 mm. NB: Several conditions might present in a similar way to caries [e.g. developmental defects (enamel hypoplasias), fluorosis, tooth wear and extrinsic and intrinsic stains]. Such conditions without signs of caries are coded 0.

Caries Code 1: First visual change in enamel



When the first visual change in enamel is seen only after air drying a tooth surface for 5 seconds, record Code 1 as the second digit of the ICDAS code. In the pits and fissures, however, darkly discoloured lesions might also be seen on a wet surface. NB: These darkly discoloured lesions can look similar to tea- or coffee-stained pits and fissures (Code 0). Such staining, however, tends to be seen in almost all pits and fissures symmetrically.

Caries Code 2: Distinct visual change in enamel



When a carious lesion looks to be more advanced than a Code 1 lesion and, as such, drying is not necessary to be able to detect them (they can be seen on wet or dry surfaces), record Code 2 as the second digit of the ICDAS code. A Code 2 lesion can be white or brown. NB: Use air drying on this lesion as this will help distinguish it from a Code 3 lesion, which exhibits enamel surface breakdown (seen more easily after air drying).

Caries Code 3: Enamel breakdown, no dentine visible

When localised enamel breakdown is visible as a result of caries, record Code 3 as the second digit of the ICDAS code. When viewed wet the lesion might appear white or discoloured but when viewed after drying, carious loss of tooth structure can be seen. In a restored tooth, record Code 3 when there is a gap between a restoration and the tooth of less than 0.5 mm that is associated with an opacity or discolouration consistent with demineralisation. NB: Despite the loss of enamel no dentine is visible. A blunt or ball-ended probe can be used gently across the surface to confirm discontinuity of the enamel.

Caries Code 4: Underlying dentinal shadow (not cavitated into dentine)

When the lesion appears as a shadow of discoloured dentine visible through apparently intact enamel that might or might not be broken down, record Code 4 as the second digit of the ICDAS code. The shadow is often more noticeable when the surface is wet and might appear as grey, blue or brown. In a tooth restored with amalgam be careful to distinguish the shine-through of the restoration from a carious shadow. To be considered a Code 4, there should be signs of demineralisation on the surface. NB: Code 4 is only to be used on surfaces where the caries originated (i.e. if the caries started on an adjacent surface, the surface being scored is Code 0). This can happen with large approximal cavities. In these instances the dentinal involvement of the cavity is seen as shadowing through the occlusal surface even though the caries did not originate in the fissures of that surface. This is shown in the picture on the far right. The occlusal surface would not be coded as 4 because the lesion obviously originated from the approximal surface.

Caries Code 5: Distinct cavity with visible dentine

When a cavitation is present as a result of caries in opaque or discoloured enamel exposing the dentine beneath, record Code 5 as the second digit of the ICDAS code. In a restored tooth, the gap between a restoration and tooth should be larger than 0.5 mm to be coded as a 5, and there will be dentine exposed in the gap. NB: Code 5 cavities involve less than half of the surface but are not so deep as to suggest pulpal involvement.

Caries Code 6: Extensive distinct cavity with visible dentine



When an extensive distinct cavity is present with visible dentine involving at least half of the tooth surface or the pulp, record Code 6 as the second digit of the ICDAS code. NB: Code 6 lesions might be deep and/or wide.

Missing Teeth Code 97: Tooth extracted as a result of caries



caries.

If a missing tooth was extracted as a result of caries, record code as 97 on all surfaces. For missing primary teeth, use this score only if the subject is at an age when normal exfoliation would not be a sufficient explanation of absence. In some age groups, it might be difficult to distinguish between unerupted teeth (Code 99) and missing teeth (Code 97 and 98). Basic knowledge of tooth eruption patterns, the appearance of the alveolar ridge in the area of the tooth space in question, and caries status of the other teeth might be helpful clues in making a differential diagnosis between unerupted and extracted teeth. Do not use Code 97 for teeth judged to be missing for any reason other than

Missing Teeth Code 98: Tooth missing for other reasons



If a tooth is missing for any other reason (e.g. as a result of trauma or congenitally missing), code as 98 on all surfaces.

Missing Teeth Code 99: Unerupted



If a tooth is unerupted, use Code 99 on all surfaces. Code partially erupted teeth as present and sound (Code 00) on all surfaces unless there are signs of caries.

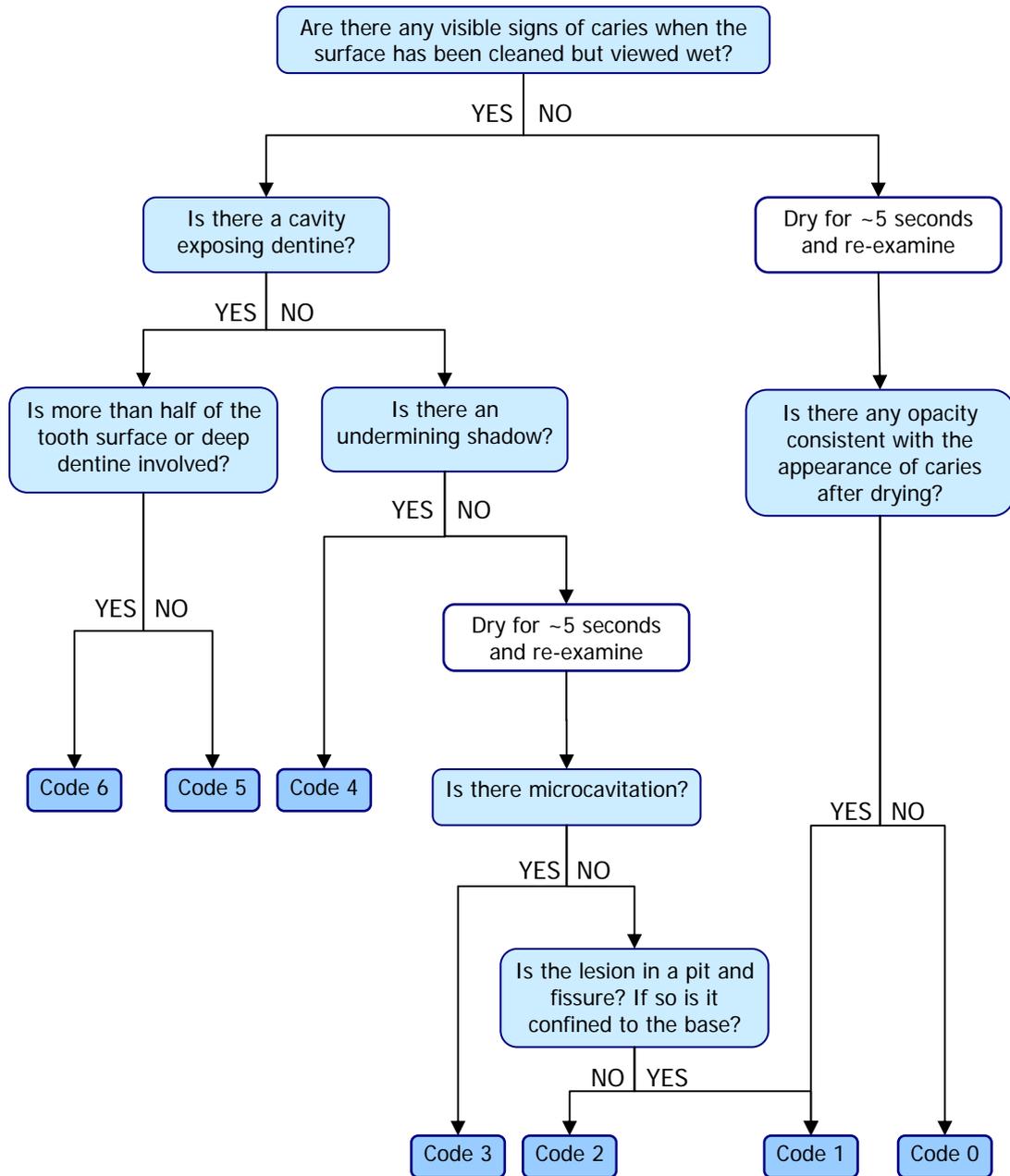
Missing Teeth CODE P: Implant



If the patient has a known or visible implant, record Code P. This is the only instance where a two-digit code is not used. Place the P in the middle of the surface coding box indicating that in this case a caries assessment is not applicable.

Photographs courtesy of the ICDAS Foundation⁸⁸

Flowchart For Coding Caries



The ICDAS Foundation⁸⁸

Further information on ICDAS is provided in references 91,92, 95-98.

Appendix 8 Assessing Trauma

The following table gives an example of how the results of each vitality test for assessing trauma can be recorded (see Section 4.4.5 for details).

	Results of Tests			
Tooth examined	12	11	21	22
Diagnosis	No trauma	Concussed	Displaced	No trauma
Colour	Normal	Normal	Dark	Normal
Transillumination	Normal	Normal	Dark	Normal
Tenderness to percussion	No	No	No	No
Mobility	Normal	Normal	Increased	Normal
Ethyl chloride	+ve	-ve	-ve	+ve
Radiograph	Nothing abnormal detected	Nothing abnormal detected	Nothing abnormal detected	Nothing abnormal detected

When assessing pulpal health, it is important to keep in mind the following points.

- Vital anterior teeth with immature root development might not respond to tests of pulpal sensory nerve supply [ethyl chloride, electronic pulp test (EPT)] until root formation is complete.
- Teeth where the dental pulp is non-vital as a consequence of the apical blood supply being severed as a result of tooth movement can, under some conditions, revascularise over time, so the fact that a dental pulp is necrotic does not necessarily mean it will remain so.
- Should a tooth revascularise:
 - the dentine will remain insensitive to stimuli, and so not respond to ethyl chloride and EPT or to a test cavity until the pulp is reached;
 - a small, transient periapical area might be visible radiographically in the months following trauma, as part of the revascularisation process;
 - revascularised teeth might go on to pulp canal obliteration; this is a sign the pulp is perfused, and is not an indication for endodontic therapy unless associated with symptoms and signs of pulpal necrosis;
 - grey coronal discolouration might improve, although might go on to become slightly orange/yellowish as a result of pulp canal obliteration following revascularisation.

Appendix 9 Example Patient Record Forms

Example forms to facilitate the recording of the information required to conduct an oral health assessment are available at www.sdcep.org.uk/index.aspx?o=3118 and are illustrated on the following pages. These are:

- Form 1 Patients Personal Details
- Form 2 Social and Dental History
- Form 3 Medical History
- Form 4 Dental Anxiety Questionnaire
- Form 5 Assessment of Head and Neck
- Form 6 Assessment of Oral Mucosal Tissue
- Form 7 Assessment of Teeth
- Form 8 Basic Periodontal Examination and Dentition Care Requirements
- Form 9 Radiographic Assessment
- Form 10 Assessment of Dentures
- Patient Review and Personal Care Plan
- Oral Health Assessment and Review Checklist

A Patient History Update form for recording changes to patient histories noted at subsequent appointments is also available.

It is recognised that an increasing number of dental practices use software with automated data collecting and charting. Therefore, it is not essential that these example forms are used. However, the Guidance Development Group considers it best practice that all the information contained in the example forms is collected using whichever system is most suitable for each dental team.

It is anticipated that the use of IT will streamline the collection and use of risk information, histories and examinations as detailed in these example forms.

Personal Details, Social and Dental History, Medical History

The forms used to record the patient's personal details, social and dental history and medical history (Forms 1–3) can be given to the patient to complete themselves. However, it is important to ensure that the patient understands what is being asked of them and that all questions are answered fully. Note that the forms represent a starting point for discussion with the patient and it might be necessary to clarify some answers, or to ask further questions depending on the patient's answers to the questions. In addition, further investigations or actions might be required (e.g. referral to the patient's GP regarding alcohol consumption, referral to a smoking cessation service). The results of these investigations and actions, and any further discussions with the patient, must be recorded in the patient's notes.

Patient's Personal Details		Form 1	
Please write clearly		For office use: D D M M Y Y CHI Number <input type="text"/>	
Title (Please tick appropriate box) <input type="checkbox"/> Mr <input type="checkbox"/> Mrs <input type="checkbox"/> Ms <input type="checkbox"/> Miss <input type="checkbox"/> Other (Please state below)	Permanent Address		
Surname	Postcode:		
Forename	Email Address		
Sex <input type="checkbox"/> Male <input type="checkbox"/> Female	Contact Phone No.		
Date of Birth Day <input type="text"/> <input type="text"/> Month <input type="text"/> <input type="text"/> Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	Doctor's Name		
Family Name at Birth	Doctor's Address		
Occupation	Postcode:		
If retired, previous occupation	Doctor's Phone No.		
Ethnicity (Please tick appropriate box)			
White <input type="checkbox"/>			
Black, Black British, Black Scottish <input type="checkbox"/>			
Asian, Asian British, Asian Scottish <input type="checkbox"/>			
Mixed (Please state) <input type="checkbox"/>			
Other ethnic background (Please state) <input type="checkbox"/>			

FTD

Patient's Personal Details		Form 1 (cont.)	
If you are filling in this form on behalf of the patient, please also enter YOUR OWN details below.			
Surname	Forename		
Relationship to Patient <input type="checkbox"/> Parent/Guardian <input type="checkbox"/> Carer <input type="checkbox"/> Other family member <input type="checkbox"/> Other (Please state)	Address (If different from patient's permanent address)		
If you are a carer, please state how long you have attended the patient Months <input type="text"/> <input type="text"/> Years <input type="text"/> <input type="text"/>			Postcode:
			Phone No.
Additional Information			
After you have completed this form please return it to a member of the Dental Team.			
Signature of Patient, Parent or Carer		Date	

Anxiety Level

The form to assess the patient’s anxiety level (Form 4) is intended to be used for patients who the dentist or dental care professional believes are anxious about any aspect of visiting the dentist. Therefore, it is not necessary for all patients to be asked to complete this form, although it is recommended that each patient is asked (verbally) whether they are anxious about visiting the dentist. For patients who are thought to be anxious, the form can be given to the patient to complete or the dentist (or dental care professional) can go through the form with each patient. Whoever completes the form, it is important that the dentist (or dental care professional) discusses the answers to the questions with the patient to identify whether any anxiety-management options are required.

Dental Anxiety Questionnaire		Form 4
Please write clearly		For office use: D D M M Y Y CHI Number <input type="text"/>
Surname	Forename	
Please fill in part A (below) or part B (overleaf). Choose the side that suits you best.		
A Please tell us how anxious you get about your dental visit? (Please tick appropriate box)		
If you went to your dentist for treatment tomorrow , how would you feel?		
<input type="checkbox"/> Not Anxious	<input type="checkbox"/> Slightly Anxious	<input type="checkbox"/> Fairly Anxious
<input type="checkbox"/> Very Anxious	<input type="checkbox"/> Extremely Anxious	
If you were sitting in the waiting room (waiting for treatment), how would you feel?		
<input type="checkbox"/> Not Anxious	<input type="checkbox"/> Slightly Anxious	<input type="checkbox"/> Fairly Anxious
<input type="checkbox"/> Very Anxious	<input type="checkbox"/> Extremely Anxious	
If you were about to have a tooth drilled , how would you feel?		
<input type="checkbox"/> Not Anxious	<input type="checkbox"/> Slightly Anxious	<input type="checkbox"/> Fairly Anxious
<input type="checkbox"/> Very Anxious	<input type="checkbox"/> Extremely Anxious	
If you were about to have your teeth scaled and polished , how would you feel?		
<input type="checkbox"/> Not Anxious	<input type="checkbox"/> Slightly Anxious	<input type="checkbox"/> Fairly Anxious
<input type="checkbox"/> Very Anxious	<input type="checkbox"/> Extremely Anxious	
If you were about to have a local anaesthetic injection in your gum, above an upper back tooth, how would you feel?		
<input type="checkbox"/> Not Anxious	<input type="checkbox"/> Slightly Anxious	<input type="checkbox"/> Fairly Anxious
<input type="checkbox"/> Very Anxious	<input type="checkbox"/> Extremely Anxious	

Dental Anxiety Questionnaire		Form 4 (cont.)			
B For the next 6 questions I would like you to show me how relaxed or worried you get about the dentist and what happens at the dentist. To show me how relaxed or worried you feel, please use the simple scale below. The scale is just like a ruler going from 1, which would show that you are relaxed, to 5, which would show that you are very worried. (Please circle the appropriate number on the scale).					
1 would mean: relaxed/not worried	4 would mean: worried a lot				
2 would mean: very slightly worried	5 would mean: very worried				
3 would mean: fairly worried					
How do you feel about...					
...going to visit the dentist?	1	2	3	4	5
...having your teeth looked at?	1	2	3	4	5
...having your teeth cleaned and polished?	1	2	3	4	5
...having an injection in the gum?	1	2	3	4	5
...having a filling?	1	2	3	4	5
...having a tooth taken out?	1	2	3	4	5
Additional Information					
After you have completed this form please return it to a member of the Dental Team.					
Signature of Patient, Parent or Carer			Date		

Assessment of Teeth		Form 7
Surname _____		For office use: D D M M Y Y CHI Number <input type="text"/>
Forename _____		Examination Date Day <input type="text"/> Month <input type="text"/> Year <input type="text"/>
Age <input type="text"/> Sex <input type="checkbox"/>		
R		L
R		L
Type of examination completed: Basic <input type="checkbox"/> Full <input type="checkbox"/>		
Signature of Practitioner _____		Date _____

Basic Periodontal Examination and Dentition Care Requirements		Form 8						
Surname _____		For office use: D D M M Y Y CHI Number <input type="text"/>						
Forename _____		Examination Date Day <input type="text"/> Month <input type="text"/> Year <input type="text"/>						
Age <input type="text"/> Sex <input type="checkbox"/>								
Basic Periodontal Examination								
Code Visible Signs 0 No bleeding or pocketing detected 1 Bleeding on probing; no pocketing 2 Plaque-retentive factors present; no pocketing >3.5 mm	Code Visible Signs 3 Pockets >3.5 mm but <5.5 mm in depth 4 Pockets >5.5 mm in depth * Loss of attachment of 7 mm or presence of furcation involvement	<table border="1" style="width:100%; height: 40px;"> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </table>						
Dentition Care Requirements								
Prevention _____								
New Restoration _____								
Re-restoration _____								
Extraction _____								
Other _____								
Notes								
Signature of Practitioner _____		Date _____						

Radiographic Assessment		Form 9
Surname _____		For office use: D D M M Y Y CHI Number <input type="text"/>
Forename _____		Examination Date Day <input type="text"/> Month <input type="text"/> Year <input type="text"/>
Age <input type="text"/> Sex <input type="checkbox"/>		
Type of film(s) Bite/wings: Horizontal R L Periapical Vertical R L Occlusal: Upper Lower Extra-oral: OPG Lateral Cephal Other	Quality of films taken	Radiation Dose / Setting
Clinical Indication for taking film(s), and suspected diagnosis		Radiographic Report
Clinical examination undertaken by: _____ Date: _____		
Films authorised by: _____ Date: _____		
Films taken by: _____ Date: _____		
Signature of Practitioner _____		Date _____

Denture Assessment

The form used for recording details of the assessment of dentures (Form 10) is intended to be completed by the dentist or dental care professional. It includes questions that the dentist (or dental care professional) would ask all patients with dentures, and then details of a full assessment to be conducted if a problem is identified on initial examination (see Section 4.5).

Assessment of Dentures (if required)										Form 10	
Surname _____					For office use: D: <input type="checkbox"/> U: <input type="checkbox"/> M: <input type="checkbox"/> Y: <input type="checkbox"/>					CHI Number <input type="text"/>	
Forename _____					Examination Date					Day <input type="text"/> Month <input type="text"/> Year <input type="text"/>	
Age <input type="text"/>		Sex <input type="text"/>									
Patient's Assessment of Dentures				Yes		No		Unsure		Clinician's Assessment of Dentures	
Are you happy with the appearance of your dentures?				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Denture Base Material	
Do your dentures move?				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Acrylic <input type="checkbox"/> Cobalt Chrome <input type="checkbox"/>	
Are your dentures comfortable?				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Denture Hygiene	
Do your dentures affect your speech?				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Good <input type="checkbox"/>	
Are you able to chew adequately?				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Fair <input type="checkbox"/>	
Are you able to bite adequately?				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Poor <input type="checkbox"/>	
Upper Denture				Good		Poor		N/A		Alteration proposed / Notes	
Tissue adaption			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Alteration proposed / Notes		
Base extension			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Labial			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Buccal			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Posterior border			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Tuberosity			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Labial fullness			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Incisal level			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Incisal plane			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Position of posterior teeth			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Occlusal plane level			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Occlusal plane orientation			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Arch width			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Buccal-lingual width			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
<small>FTO</small>											
Assessment of Dentures (if required)										Form 10 (con.)	
Lower Denture				Good		Poor		N/A		Alteration proposed / Notes	
Tissue adaption			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		Alteration proposed / Notes		
Base extension			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Labial			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Buccal			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Posterior border			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Lingual			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Distolingual			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Labial fullness			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Position of posterior teeth			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Occlusal plane level			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Arch width			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Buccal-lingual width			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Cusp form			<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
Relationship of Dentures						Good		Poor		Alteration proposed / Notes	
Occlusal Position (Select one)						Articulation		<input type="checkbox"/>		Alteration proposed / Notes	
Retruded <input type="checkbox"/>						Occlusal vertical dimension		<input type="checkbox"/>			
Protruded <input type="checkbox"/>						Incisal overjet		<input type="checkbox"/>			
Intercuspal / Muscular <input type="checkbox"/>						Incisal overbite		<input type="checkbox"/>			
Aesthetics						Good		Poor		Alteration proposed / Notes	
Mould / Arrangement <input type="checkbox"/>						<input type="checkbox"/>		<input type="checkbox"/>		Alteration proposed / Notes	
Shade <input type="checkbox"/>						<input type="checkbox"/>		<input type="checkbox"/>			
Signature of Practitioner _____						Date _____					

Patient Review and Personal Care Plan

The 'Patient Review and Personal Care Plan' form is used to summarise the outcomes of the various assessments for the patient, and help communicate: (1) the level of risk for the individual patient; (2) the risk-based review interval; and (3) details of the personal care plan, including what the patient can do to help manage their own oral health and what the dental team will do to support this (e.g. operative treatment, preventive treatment). This form is completed by the dentist, and then the dentist (or dental care professional) discusses the details of the form with the patient to encourage their involvement in the management of their oral health. A hard copy of this form can be given to the patient.

Patient Review and Personal Care Plan			
A summary of the status of your oral health is summarised below with details of when your next review or assessment will be.			
Surname		Dentist's Details	
Forename			
Examination Date Day <input type="text"/> <input type="text"/> Month <input type="text"/> <input type="text"/> Year <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>			
		Phone No.	
Assessment of Oral Health Status			
	High Risk	Medium Risk	Low Risk
Soft tissue disease assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gum disease assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tooth decay assessment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other assessment (details below)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text"/>			
Overall risk of future dental problems <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
Your next review or assessment			
After your treatment is complete, your next check-up with your dentist / hygienist / nurse will be in:			
patient under 18 years		patient 18 years and over	
3 months <input type="checkbox"/>	6 months <input type="checkbox"/>	3 months <input type="checkbox"/>	6 months <input type="checkbox"/>
9 months <input type="checkbox"/>	12 months <input type="checkbox"/>	9 months <input type="checkbox"/>	15 months <input type="checkbox"/>
		18 months <input type="checkbox"/>	21 months <input type="checkbox"/>
		24 months <input type="checkbox"/>	
Type of assessment <input type="checkbox"/> Focused review <input type="checkbox"/> Full assessment			
If you have problems or concerns about your oral health before your next scheduled visit, contact your dental practice.			

PFO

Patient Review and Personal Care Plan (cont.)	
Things you can do to maintain or improve your oral health are shown below followed by what the dental team plans to do.	
Actions for the Patient	
<input type="text"/>	
Actions for the Dental Team	
Prevention	<input type="text"/>
Treatment	<input type="text"/>
Maintenance	<input type="text"/>
Referral	<input type="text"/>
Signature of Patient, Parent or Carer	Date
<input type="text"/>	<input type="text"/>
Signature of Practitioner	Date
<input type="text"/>	<input type="text"/>

Appendix 10 Summary of Modifying Factors

The following table lists in alphabetical order modifying risk factors that may be identified from patient histories and the assessment of oral health status. Modifying factors include risk factors protective factors, behaviours and clinical findings that are associated with the development of oral disease and conditions. These should be considered when determining the risk-based frequency of Focussed Oral Health Reviews.

Assessment of Patient Histories
<p>Risk Factors Associated with the Development of Oral Disease</p> <p>Medical</p> <ul style="list-style-type: none"> • Conditions that increase a patient's risk of developing dental disease (e.g. diabetes, xerostomia as a result of, for example, Sjogrens syndrome, certain drugs or head and neck radiation therapy, bleeding disorders, immunosuppression; conditions that warrant bisphosphonate treatment (e.g. malignancies, osteoporosis, Paget's disease)¹ • Conditions that might complicate dental treatment or the patient's ability to maintain their oral health (e.g. special needs or anxious, nervous, phobic conditions)¹ • Conditions where dental disease could put the patient's general health at increased risk (e.g. patients on warfarin)¹ <p>Social and dental</p> <ul style="list-style-type: none"> • Excessive alcohol use (>21 units of alcohol per week for men; >14 units of alcohol per week for women)¹ • Family history of chronic or aggressive (early onset/juvenile) periodontitis¹ • Ghukta, Paan (betel quid with tobacco), Areca nut use^{47,48} • High and/or frequent dietary acid intake¹ • High and/or frequent sugar intake¹ • High caries rates in mother and siblings¹ (applies to children only) • Poor level of oral hygiene¹ • Residence in a deprived (low SIMD) area¹ • Tobacco use¹
<p>Protective Factors Associated with the Development of Oral Disease</p> <ul style="list-style-type: none"> • Use of fluoride toothpaste¹ • Use of other sources of fluoride or resident in a water-fluoridated area¹
Assessment of the Head and Neck – Modifying Factors
<p>Clinical Findings</p> <ul style="list-style-type: none"> • Craniofacial Abnormalities[§] • Limited mouth opening[§] • Neck (lymph node) swelling[§] • Suspicious skin lesions (basal or squamous cell carcinomas, melanomas)[§] • TMJ problems[§]

Assessment of the Oral Mucosal Tissue – Modifying Factors
<p>Risk Factors Associated with the Development of Oral Disease</p> <ul style="list-style-type: none"> • Betel quid chewing^{1,47, 64} • Diets low in fruit and vegetables^{1,65} • Excessive alcohol use (>21 units of alcohol per week for men; >14 units of alcohol per week for women)¹ • Low saliva flow rate (dry mouth)¹ • Outdoor workers¹ • Tobacco use¹
<p>Clinical Findings</p> <p>Mucosal lesion present with particular concerns for:</p> <ul style="list-style-type: none"> • Oral swellings of unknown cause that persist for more than three weeks^{66,67} • Red or red and white patches of the oral mucosa persisting for more than three weeks (likely to be oral cancer)^{66,67} • Ulceration of oral mucosa persisting for more than three weeks^{66,67}
Assessment of the Intra-oral Bony Areas – Modifying Factors
<p>Clinical Findings</p> <ul style="list-style-type: none"> • Edentulous ridge abnormalities affecting a patient's overall care plan[§] • Torus or other abnormalities affecting a patient's overall care plan[§]
Assessment of the Periodontal Tissue – Modifying Factors
<p>Risk Factors Associated with the Development of Oral Disease</p> <ul style="list-style-type: none"> • Concurrent medical factor that is directly affecting the periodontal tissues (e.g. diabetes, stress, certain medication)⁸¹ • Medical history that significantly affects clinical management (e.g. immunocompromised or immunosuppressed, potential drug interaction)⁸¹ • Evidence of gingivitis¹ • Poor level of oral hygiene¹ • Presence of plaque-retaining factors¹ • Regular tobacco smoking⁸¹
<p>Clinical Findings</p> <ul style="list-style-type: none"> • Complicated root morphologies / anatomical factors⁸¹ • Concurrent muco-gingival disease (e.g. erosive lichen planus)⁸¹
Assessment of Dental Caries and Restorations – Modifying Factors
<p>Risk Factors Associated with the Development of Oral Disease</p> <ul style="list-style-type: none"> • Anterior caries or restorations¹ • Healthcare worker's opinion (esp. children)¹¹ • Heavily restored dentition¹ • High and/or frequent sugar intake¹ • High caries rates in mother and siblings¹ (applies to children only) • Low saliva flow rate (dry mouth)¹ • New lesions since last check-up¹

<ul style="list-style-type: none"> • Past root caries or large number of exposed roots¹ • Poor dietary behaviours¹ • Poor level of oral hygiene¹ • Premature extractions because of caries¹ • Previous carious experience¹⁰ • Resident in an area of deprivation^{1,10}
<p>Protective Factors Associated with the Development of Oral Disease</p> <ul style="list-style-type: none"> • Use of fluoride toothpaste¹ • Use of other sources of fluoride or resident in a water-fluoridated area¹

<p>Assessment of Tooth Surface Loss – Modifying Factors</p>
<p>Risk Factors Associated with the Development of Oral Conditions</p> <ul style="list-style-type: none"> • Bruxism • High and/or frequent dietary acid intake (e.g. high consumption of acidic drinks such as carbonated drinks¹⁰⁷⁻¹⁰⁹, citrus fruit and fruit juices^{1,110}) • Predisposing medical and drug factors: for example, impaired salivary production or buffering ability¹¹¹⁻¹¹³; gastric reflux (often associated with Hiatus hernia)¹¹⁴⁻¹¹⁶; eating disorders such as anorexia nervosa¹¹⁷, bulimia¹¹⁸ and pica; and the frequent use of some medicines and supplements such as steroid-containing asthma inhalers^{119, 120}, vitamin C tablets¹²¹ and effervescent preparations¹²² • Rapid progression of tooth wear • Stress and/or anxiety¹²³
<p>Clinical Findings</p> <ul style="list-style-type: none"> • Clinical evidence of tooth wear¹

<p>Assessment of Tooth Abnormalities – Modifying Factors</p>
<p>Risk Factors Associated with the Development of Oral Conditions</p> <ul style="list-style-type: none"> • Family history[§]
<p>Clinical Findings</p> <ul style="list-style-type: none"> • Inherited tooth disturbances[§] • Reactive tooth disturbances[§] • Tooth abnormalities (tooth number, size, shape, colour)[§]

<p>Assessment of Fluorosis – Modifying Factors</p>
<p>Risk Factors Associated with the Development of Oral Conditions</p> <ul style="list-style-type: none"> • Eating/licking toothpaste habit¹³⁰ • Exposure to fluoridated water in conjunction with other factors, up to 3 years of age¹³⁰ • Unsupervised toothbrushing (under 6 years)
<p>Clinical Findings</p> <ul style="list-style-type: none"> • Fluorosis[§]

Assessment of Dental Trauma – Modifying Factors

Risk Factors Associated with the Development of Oral Conditions

- An overjet of 3 mm¹⁴⁰
- Contact sports[§]
- Development of motor coordination (2–3-year-old children)¹³³

Assessment of Occlusion – Modifying Factors

Clinical Findings

- Pain in temporomandibular joints[§]
- Tender or painful mandibular muscles[§]

Assessment of Orthodontic Status – Modifying Factors

Risk Factors Associated with the Development of Oral Conditions

- IOTN of 3 with an aesthetic component of >6⁴⁹
- IOTN of 4 or 5⁴⁹
- Patients requiring orthodontics as part of a multidisciplinary treatment plan⁴⁹

Clinical Findings

- Canine in the line of the arch but failing to erupt, 10–13 years of age[§]
- Failure of teeth to erupt at the expected time[§]
- First permanent molars of poor prognosis when hypodontia or skeletal discrepancy present[§]
- Palatally ectopic or buccally impacted canines[§]

Assessment of Dentures – Modifying Factors

Risk Factors Associated with the Development of Oral Conditions

- Poor denture and oral hygiene[§]

[§] Expert opinion of the Guidance Development Group.

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