CURRICULUM FOR SPECIALIST TRAINING
PROGRAMMES IN DENTAL AND MAXILLOFACIAL RADIOLOGY

1 INTRODUCTION

1.1 The specialty of Dental and Maxillofacial Radiology involves all aspects of medical imaging which provide information about anatomy, function and diseased states, and those aspects of interventional radiology or minimally invasive therapy which fall under the remit of departments of dental radiology.

1.2 A dental radiologist requires a good clinical background in order to work in close collaboration with clinical colleagues in other disciplines, and should be demonstrably conversant with the basic sciences of clinical imaging; the pathological and functional aspects of disease; current clinical practice as related to dental radiology; the full range of clinical radiology as indicated in this document; the administration, management and medico-legal aspects of radiology practice; and the basic elements of research in dental and maxillofacial radiology.

1.2 DISTINCTIVE FEATURES OF DENTAL AND MAXILLOFACIAL RADIOLOGY

1.2.1 Dental and Maxillofacial Radiology is a dental specialty. Formal recognition of the status of specialist Dental and Maxillofacial Radiologists is the responsibility of the General Dental Council (GDC) and this allows inclusion of individuals on the Dental and Maxillofacial Radiology Specialist List. The GDC delegates responsibility for specialist training to the Joint Committee for Specialist Training in Dentistry (JCSTD). This responsibility is exercised through Specialty Advisory Committees (SACs) for the individual dental specialties and these report to the JCSTD. The SAC for the Additional Dental Specialties* is constituted to take responsibility for the four Additional Dental Specialties; these being Oral Medicine, Oral Pathology, Dental and Maxillofacial Radiology, and Oral Microbiology.

1.2.2 The responsibility for educational approval of Dental and Maxillofacial Radiology training programmes and posts is exercised jointly by the Royal College of Radiologists and the SAC for the Additional Dental Specialties. The major contribution to this joint approval will come from the Royal College of Radiologists in order to ensure that approved programmes meet the full requirements for specialist training, including preparation to sit the examinations for the Diploma in Dental Radiology. The appointment of the Educational Supervisor for the individual trainee will be the joint responsibility of the Royal College of Radiologists and the SAC for the Additional Dental Specialties, taking advice as necessary from the relevant Postgraduate Dental Dean.

1.2.3 The recognised higher specialist qualification in Dental and Maxillofacial Radiology is the Diploma in Dental Radiology of the Royal College of Radiologists, obtained by examination.

** It is anticipated that the present Joint Advisory Committee for the Additional Dental Specialties will be re-constituted to become the Specialty Advisory Committee (SAC)*

1.3 ENROLMENT

1.3.1 All candidates for recognised specialist training in Dental and Maxillofacial Radiology in the UK and Ireland* must hold a registrable dental qualification and hold current registration with the GDC or registration with the Irish Dental Council, as appropriate. Candidates must have completed a minimum of two years general professional training in dentistry and have obtained the FDS, MFDS or equivalent.

1.3.2 Enrolment for specialist training in Dental and Maxillofacial Radiology requires:

- approval of a training programme by the Royal College of Radiologists and the SAC for the Additional Dental Specialties.

- approval of the post and allocation of a Training Number (NTN/FTN/VTN) by the Lead Dean for the Additional Dental Specialties in England and Wales, the Dental Director of the Scottish Council for Postgraduate Medical and Dental Education or the Postgraduate Dental Dean in Northern Ireland as appropriate.

1.4 OBJECTIVES

1.4.1 On completion of training the trainee must be capable of:

- providing an independent diagnostic Dental and Maxillofacial Radiology service at the level required for the award of a CCST in the specialty. This includes providing specialist advice to clinicians with direct responsibility for the treatment of patients.

- running a Dental and Maxillofacial Radiology department, with appropriate knowledge of the spectrum of staffing issues, radiological techniques and safety issues.

1.5 OUTLINE OF TRAINING PROGRAMMES IN DENTAL AND MAXILLOFACIAL RADIOLOGY

1.5.1 Trainees in Dental and Maxillofacial Radiology undertake a programme of structured training over a minimum period of four years in order to achieve a level of competence in all aspects of radiology which enables them to practise as a specialist.

Basic sciences relevant to dental radiology are taught in the first year. In addition the trainee is introduced to interpretative reporting, practical procedures and communication skills.

In the second and third years interpretative and procedural skills are developed. In the fourth year a greater element of specifically specialty training will occur.

Trainees are examined in all aspects of Dental and Maxillofacial Radiology in the DDR Part II Examination which they normally have the opportunity to complete three years after entering the specialty.

** The responsibilities of the Royal College of Radiologists are restricted to UK training programmes*

1.5.2 The current examination schedule is as follows:

- Trainees normally sit the DDR Part I Examination following a minimum of nine months of recognised training.

- Provided they have passed the DDR Part I Examination, trainees are eligible to sit Part II after a further two years of full time approved dental radiology training.

1.5.3 Training takes place in departments recognised by the Royal College of Radiologists and the SAC for the Additional Dental Specialties. Training schemes are centred on Dental Hospitals and Schools with appropriate rotations to Teaching Hospitals, District General Hospitals and Specialist Hospitals. All training schemes are visited, for the purposes of recognition, on a four year cycle.

1.5.4 Trainers are expected to:

- have substantial expertise in their sub-specialty
- be accredited by the Royal College of Radiologists for continuing professional development (CPD, including Continuing Medical Education, CME)
- have demonstrated an interest in training
- have appropriate equipment available
- have a sufficiently large throughput of cases
- have appropriate teaching resources

1.5.6 A period of research is encouraged. Six months full-time research in any aspect of diagnostic dental imaging is allowed as part of the four years of accredited training. At the discretion of the Warden of the Royal College of Radiologists and the SAC for the Additional Dental Specialties, up to 12 months of the four years of accredited training may be spent in research which is clinically based.

1.6 This document should be read in conjunction with the following documents issued by the Royal College of Radiologists (RCR)

(a) *Guidelines to Assist with RCR Visits to Training Schemes.*
RCR. September 1999

(b) *Regulations for the Examinations for the Diploma in Dental Radiology.*
November 1999

(c) *Objectives and Syllabus for DDR Examinations*

(d) *Diploma in Dental Radiology Part II Guidance Notes for Candidates.*
RCR. April 1998

(e) *Regulations for Training in Dental and Maxillofacial Radiology.*
November 1999

2 BASIC PRINCIPLES

2.1 The aim of this curriculum is to produce specialist dental and maxillofacial radiologists capable of being appointed consultants.

2.2 A major component of training in dental and maxillofacial radiology is achieved by the apprenticeship system with the trainee undertaking an increasing number of radiological tasks. Each component of the training scheme should have a clearly defined structure with supervision of the trainee by senior colleagues (trainers). A named consultant will assume overall responsibility for each part of the training.

2.3 Years of training activity are not synonymous with years of achievement.

2.4 The trainee should at all times be aware of his/her responsibility to the patient including the necessity for informed consent.

2.5 The trainee will be required to develop those basic skills in research methodology which are necessary to structure and perform research under appropriate guidance. These skills will include the ability to review published articles critically and to perform effective literature searches on a given topic. An appreciation of the effective application of research findings in every day practice will also be required.

2.6 Standardised log books should be used for documenting the degree of experience and skill attained. Log books are mandatory for all interventional procedures. Log books are also to be of use in documenting the "general professional development" of trainees – see 4.3 and 4.4.

2.7 Each trainer will ensure that there is a system of appraisal of trainees in place. Appraisal will take place at least six monthly and not coincide with the annual assessment. The exact nature of the appraisal process is left to individual training schemes but should be non-confrontational, simple, flexible and on-going and identify plans for future training and development (Reference Review Article – *Clinical Radiology* (1999) 54. 140-143). Trainees should feel that they 'co-own' the appraisal process.

It is desirable that the named trainer for the secondments to departments of clinical radiology should also appraise trainees at the beginning and during those attachments.

2.8 Individual progress will be monitored using the annual Record of In-Training Assessment (RITA). It is the responsibility of the Regional Postgraduate Dental Dean to oversee these arrangements which are carried out by a panel, normally the local Specialist Training Committee for Clinical Radiology, under the aegis of the Regional Specialty Training Committee for the Additional Dental Specialties. This panel will take advice from the Royal College of Radiologists Head of Training, the Royal College of Radiologists Regional Advisor and the local College Tutor. The Royal College of Radiologists also encourages the inclusion of an external assessor (such as a consultant clinical or dental radiologist who is a Member of the Diploma in Dental Radiology Examining Board) in the annual assessment of trainees.

The mechanism for reporting outcomes of RITA reviews (favourable or unfavourable) is via the Regional Specialty Training Committee for the Additional Dental Specialties through the Regional Education Committee for Dental Specialties or its regional equivalent and lastly to the Regional Postgraduate Medical and Dental Education Committee or its regional equivalent. This hierarchy would also provide appropriate levels for any possible appeal by the trainee.

3 The First Year

3.1 Overview

At the end of the first year the trainee should:

- feel confident in his/her choice of dental radiology as a career
- have mastered the basic sciences of dental radiology (physics, radiological anatomy and radiological techniques) to the level of the DDR Part I Examination - see 3.2
- be familiar with the concepts and terminology of diagnostic and interventional radiology
- understand the role and usefulness of the various diagnostic and interventional techniques in all age groups
- understand the responsibilities of a radiologist to the patient and the need for informed consent
- be familiar with the various contrast media and drugs (including intravenous sedation) and monitoring used by dental radiologists in day to day practice, and be aware of indications, contra-indications, doses (adult and paediatric) and the management of reactions and complications
- be fully competent in cardio-pulmonary resuscitation
- understand the principles of radiation protection and be familiar with the legal framework for protection against ionising radiation. The trainee should also demonstrate that he/she is capable of safe radiological practice
- be familiar with safety requirements for imaging with non-ionising radiation (eg ultrasound and magnetic resonance)
- have learnt and performed basic radiological and radiographic procedures - see 3.3
- have developed, under supervision, basic reporting skills - see 3.4
- understand and practice clinical audit

3.2 Basic Sciences

An introductory course on basic sciences relevant to dental radiology is held during the first year. The core knowledge required to pass this examination has been defined by the Royal College of Radiologists (Diploma in Dental Radiology Part I). Ref 1.7(c)

3.2.1 Physics

The Royal College of Radiologists recommends 40 hours of formal tuition in physics prior to attempting the DDR Part I. This teaching should be given primarily by medical physicists supplemented by clinical radiologists.
Candidates for the DDR Part I will be expected to supplement this tuition by a substantial amount of self directed learning.

In addition the candidate is expected to be familiar with basic practical aspects of radiological physics and radiation safety, typically acquired through practical demonstrations held in conjunction with the Department of Medical Physics.

3.2.2 Radiological Anatomy

The Royal College of Radiologists requires formal tuition in radiological anatomy prior to attempting the DDR Part I. This teaching should be given by consultant radiologists.

Candidates for the DDR Part I will be expected to supplement this tuition by a substantial amount of self directed learning.

Knowledge of anatomy is enhanced by supervised reporting of radiographs in conjunction with consultant trainers. It is expected that each trainee will devote at least 3 hours (1 session equivalent) to this aspect each week.

3.2.3 Radiological Techniques

The Royal College of Radiologists requires formal tuition in radiological and radiographic techniques prior to attempting the DDR Part I. This teaching should be given by clinical radiologists and radiographers.

Candidates for the DDR Part I will be expected to supplement this tuition by a substantial amount of self directed learning.

In addition the candidate is expected to be familiar with the practical aspects of radiological and radiographic procedures, typically acquired through a formal training programme supervised by recognised instructors.

3.3 Clinical Skills – Radiological and Radiographic Techniques and Procedures

In the first year of training the trainee must begin to acquire some of the practical skills that will eventually be required of a Consultant Dental Radiologist.

There must be a period of secondment, equivalent to a minimum of six weeks of full-time, to a General Radiology Department. It is recommended that the initial three weeks of this period should be spent as a block allocation.

In the subsequent section the diagnostic examinations and interventional techniques are listed. In the case of plain radiography, trainees should become familiar with the technique even if they do not perform the procedure personally.

The trainee should observe as many of the listed procedures as possible depending upon the facilities available locally. It would be advantageous if trainees could visit other centres to widen their experience.

Wherever possible, eg for sialography, trainees should perform the procedures under the supervision of a recognised instructor.

3.3.1 Dental/Head and Neck Procedures/Examinations

Diagnostic Examinations

Imaging Techniques

Plain Film Reporting

Sialography
TMJ arthrography
Ultrasound
CT scanning
MRI
Fluoroscopy
Angiography
Nuclear Medicine
Miscellaneous

Interventional Techniques

Intravenous injections
Interventional procedures eg biopsy, drainage, stone removal

Others

Procedures which merit inclusion but not provided for in the above lists

3.4 Clinical Skills – Interpretative/Communication and Report Writing

In the first year of training the trainee must begin to acquire some of the interpretative, reporting and communication skills that will eventually be required of a consultant dental radiologist.

The College recommends a minimum requirement of two sessions/week to be devoted to reporting.

The trainee should interpret and formally report under the supervision of a recognised trainer.

- outpatient intra and extra oral radiographs and orthopantomographs
- sialograms performed by themselves
- any other procedures eg ultrasound scans performed by themselves

3.5 Assessments

The first year of dental and maxillofacial radiology is often a difficult year of transition for trainees. Heads of Training and College Tutors are encouraged to offer advice, a mentor system and a counselling service during this year. The following milestones should be acknowledged**.**

3.5.1 The trainee must meet with the College Tutor and/or Head of Training after 3 months in post to identify any difficulties and suggest solutions.

3.5.2 Entry for the DDR Part I Examination requires the candidate to obtain the approval of both the Head of Training and the medical physicist responsible for the physics course.

3.5.3 Candidates failing the DDR Part I in June should be counselled by the Head of Training and/or the College Tutor/Trainer.

3.5.4 All trainees should be assessed at the end of the first year as detailed in 2.8. The possible outcomes of this assessment will be as follows

- Progress into the second year of training

- **Conditional Pass** into the second year of training. A specific action plan will be formulated with the trainee at the assessment to redress deficiencies in performance of the trainee. Progress will be re-assessed as appropriate within the second year of training.
- Failure, if the trainee is so far short of the objectives of the first year training programme such as to prevent the trainee continuing through the training programme. The Royal College of Radiologists recommends that repetition of the first year should only be recommended for well founded reasons.

4 The Second, Third and Fourth Years

4.0.1 During the second, third and fourth years of training, trainees should receive structured training in all the various aspects of Dental and Maxillofacial Radiology.

4.0.2 In the full-time second year of training after passing DDR Part I there must be a period of secondment, equivalent to a minimum of eight weeks full-time, to a General Radiology Department in order to gain experience in cross sectional imaging techniques.

4.0.3 At the end of the third year a trainee will usually have had the opportunity to have passed the DDR Part II, an examination that provides evidence of competence as a result of broad basic training in Dental Radiology prior to further specialty training.

4.0.4 During each of the third and fourth years of training there should also be secondments to Departments of General Radiology equivalent to a minimum of eight weeks full-time. There must be a defined programme for these secondments to ensure that experience is gained in as many areas of diagnostic imaging as possible.

4.0.5 The experience gained in these years should encompass all forms of radiological practice which are normally encountered in a Dental Hospital/School.

The trainee should:

- encounter patients of all age groups
- gain experience in oncology and trauma

4.0.6 The College recognises the complexities of rotations/secondments and the inherent differences between various training schemes. The College leaves it to individual training centres to determine the timing and duration of secondments providing that the minimum requirements are met.

4.1 Clinical Skills

4.1.1 Each component of the training programme will have a clearly defined structure for the supervision of the trainee by senior colleagues, and there will be a named consultant who will assume overall responsibility for the training given during that period, including the techniques performed and reports issued by the trainee.

4.1.2 **General Dental Radiology**

Trainees should:

- have a secure knowledge of the current legislation regarding radiation protection
- participate in reporting plain radiographs which are taken during the general throughput of the normal working day of a Dental radiology Department
- perform any routine radiological procedures that might be booked during a normal working day in a Dental Radiology Department
- consolidate their knowledge of dental/head and neck anatomy and clinical practice where relevant to dental radiological practice
- obtain experience in the application of nuclear medicine studies, CT, ultrasound and MR imaging in the diagnosis of disorders of the maxillofacial region
- be familiar with the indications, contra-indications, pre-procedure preparation (including informed consent), patient monitoring during procedures and post-procedure patient care
- be familiar with procedure and post-procedure complications and their management

4.2 The trainee will also attain an appropriate level of knowledge in:

- applied pathology and physiology where it contributes to a better understanding of radiological signs and methods of investigation
- those aspects of clinical medicine and pathology which are essential to the safe and effective conduct of interventional procedures
- current trends and recent advances in clinical radiology
- statistics and research methods

4.3 The trainee will develop skills, as part of his/her general professional development, in:

- teaching
- research
- clinical audit
- management (see Section 4.3.1 below)
- clinical standards
- quality standards
- communication with patients and colleagues
- information technology and computer literacy
- medical ethics
- time management
- self-awareness
- handling uncertainty
- teamwork

These aspects of training will require attendance at in-house and/or external meetings and courses at appropriate periods during training.

4.3.1 The necessary management skills fall under the following headings:

- contextual awareness - understanding the bigger picture and developing an ability to operate effectively at all appropriate levels in the NHS
- strategic thinking
- functional and operational skills, and knowledge of the day to day operation of radiology and other health care units

4.4 There will be annual assessments of all trainees as outlined in Section 2.8. These will aim to:

- verify experience gained during the preceding year
- ensure that set targets have been met
- review clinical, technical and general professional development skills (listed in Section 3 and 4.3). The use of standardised log books (Section 2.6) will facilitate this review
- identify any deficiencies in expected knowledge/experience so that these may be remedied during the ensuing year
- set targets for the forthcoming year
- offer career guidance/counselling as appropriate

The assessment should be completed in accordance with the specifications in Chapter 12 of *A Guide to Specialist Registrar Training*, February 1998 (the Orange Guide).

4.5 At the end of the third year the trainee should:

- have substantial experience of interpreting and reporting plain radiographs of the teeth and maxillofacial region
- have acquired experience of performing and reporting some of the procedures which may be required in the investigation of maxillofacial disorders eg sialography
- be able to advise clinicians on appropriate imaging algorithms for the investigation of standard clinical situations, eg a swelling on the side of the face
- be in a position to attempt the DDR Part II

4.6 The possible outcome of the assessments at the end of the second and third years will be:

- **Pass** into the next year of training
- **Conditional Pass** into the next year of training. A specific action plan will be formulated with the trainee at the assessment to redress deficiencies in performance of the trainee. Progress will be reassessed as appropriate within the next year of training
- **Failure,** if the trainee is so far short of achieving the objectives of the previous year's training programme. This will only happen in exceptional circumstances, and only after consultation between the Head of Training, College Tutor, RCR Regional Postgraduate Education Adviser and Regional Postgraduate Dental Dean. The precise course of action will be formulated by this group and will depend on the individual situation, but will range from the trainee repeating his/her training in the areas judged to be severely deficient, to the recommendation that the trainee's contract is not renewed.

4.7 During the fourth year of training suitably completed log books will continue to be essential in documenting the progress of the trainee towards completion of his/her training.

4.7.1 Trainees are advised to discuss future career choices with suitable mentors.

4.7.2 In the final year of training trainees should

- continue development of clinical knowledge relevant to their chosen specialty. This could take the form of attending clinics/ward rounds.
- pursue research projects within their chosen specialty and strive to see this work through to publication. Trainees should be assiduous in attending and presenting such work at appropriate meetings.
- apply clinical audit to their chosen specialty.
- develop management skills appropriate to their seniority.

4.8 At the end of the fourth year of training the possible outcome of the assessment will be

- The training requirements of the Royal College of Radiologists and the SAC for the Additional Dental Specialties have been met and there should be a recommendation for the award of a CCST.

- The training requirements of the Royal College of Radiologists and the SAC for the Additional Dental Specialties have not been met and there should be a delayed recommendation for the award of a CCST. A specific action plan will be formulated with the trainee at the assessment to redress deficiencies in performance of the trainee. Progress will be reassessed as appropriate within the next year of training.

4.9 It is the responsibility of the SAC for the Additional Dental Specialties to confirm with the Deanery that all training is completed and to receive a copy of RITA Form G.

5 Award of CCST

The SAC for the Additional Dental Specialties will notify the JCSTD of the successful completion of training of candidates in Dental and Maxillofacial Radiology and will recommend to the JCSTD that the GDC be invited to award a CCST in Dental and Maxillofacial Radiology.