

Dental care professions

**Benchmark statement:
Health care programmes**

Phase 2

QAA 089 11/05

© Quality Assurance Agency for Higher Education 2005

ISBN 1 84482 428 4

All QAA's publications are available on our website
www.qaa.ac.uk

Printed copies are available from:

Linney Direct

Adamsway

Mansfield

NG18 4FN

Tel 01623 450788

Fax 01623 450629

Email qaa@linneydirect.com

Published by

The Quality Assurance Agency for Higher Education

Southgate House

Southgate Street

Gloucester

GL1 1UB

Tel 01452 557000

Fax 01452 557070

Email comms@qaa.ac.uk

www.qaa.ac.uk

Subject benchmark statements: Health care programmes

Subject benchmark statements provide a means of describing the nature and characteristics of programmes of study and training in health care. They also represent general expectations about standards for the award of qualifications at a given level and articulate the attributes and capabilities that those possessing such qualifications should be able to demonstrate.

Subject benchmark statements are used for a variety of purposes. Primarily, they are an important external source of reference when new programmes are being designed and developed. They provide general guidance for articulating the learning outcomes associated with the programme but are not a specification of a detailed curriculum. Subject benchmark statements provide for variety and flexibility in the design of programmes and encourage innovation within an agreed overall conceptual framework.

Subject benchmark statements also provide support in the pursuit of internal quality assurance. They enable the learning outcomes specified for a particular programme to be reviewed and evaluated against agreed general expectations about standards.

Finally, subject benchmark statements are one of a number of external sources of information that are drawn upon for the purposes of external review by various bodies and organisations and for making judgements about threshold standards being met. Reviewers do not use subject benchmark statements as a crude checklist for these purposes however. Rather, they are used in conjunction with the relevant programme specifications, the associated documentation of the relevant professional and statutory regulatory bodies, the institution's own self-evaluation documentation, together with primary data in order to enable reviewers to come to a rounded judgement based on a broad range of evidence.

The benchmarking of standards in health care subjects is undertaken by groups of appropriate specialists drawn from higher education institutions, service providers and the professional and statutory regulatory bodies. In due course, the statements will be revised to reflect developments in the subjects and the experiences of institutions, and others that are working with them.

Contents

Foreword	1
Introduction	2
Dental nursing	3
The nature and extent of programmes in dental nursing	3
Subject knowledge and understanding	4
Skills and attributes of the dental nurse on qualification	5
Teaching, learning and assessment	8
Standards	10
Orthodontic therapy	11
The nature and extent of programmes in orthodontic therapy	11
Subject knowledge and understanding	12
Skills and attributes of the orthodontic therapist on qualification	13
Teaching, learning and assessment	17
Standards	20
Dental hygiene	21
The nature and extent of programmes in dental hygiene	21
Subject knowledge and understanding	22
Skills and attributes of the dental hygienist on qualification	23
Teaching, learning and assessment	27
Standards	30
Dental therapy	31
The nature and extent of programmes in dental therapy	31
Subject knowledge and understanding	32
Skills and attributes of the dental therapist on qualification	33
Teaching, learning and assessment	38
Standards	40
Dental technology	41
The nature and extent of programmes in dental technology	41
Subject knowledge and understanding	42
Skills and attributes of the dental technician on qualification	43
Teaching, learning and assessment	46
Standards	48
Clinical dental technology	50
The nature and extent of programmes in clinical dental technology	50
Subject knowledge and understanding	51
Skills and attributes of the clinical dental technician on qualification	52
Teaching, learning and assessment	56
Standards	58
Appendix 1	60
Professions complementary to dentistry benchmark group membership	60

Foreword

The benchmark statements in this document describe the nature and standards of programmes of study in dental care professions, the practitioners of which are referred to collectively as dental care professionals.

The key feature in the statements is the explicit articulation of the academic and practitioner standards associated with the various awards for dental care professions. This duality reflects the significance of the academic award as the route to registration for professional practice and formal recognition by the professional and statutory regulatory bodies. The threshold standards set out the expectations of award holders entering their first post immediately on qualification.

The sections on teaching, learning and assessment draw attention to the central role of practice in the design of learning opportunities for students and the importance of ensuring that professional competence developed through practice is adequately assessed and rewarded. It also notes how essential it is that the integration of theory and practice is a planned process within the overall arrangements made for teaching and learning.

Introduction

The General Dental Council (GDC) regulates the practice of dentistry, which includes work carried out by dental care professionals as well as dentists, through Acts of Parliament. As a result, the GDC provides guidance to universities, dental authorities and other educational providers that award degrees, licences and other qualifications on the design and implementation of programmes of study for dentists and dental care professionals. Consequently, these benchmark statements recognise the primacy of the GDC requirements for registration of dental care professionals outlined in *Developing the Dental Team*.

The GDC is guided by the principle that upon successful completion of a dental care profession, the newly qualified dental care professional is entitled to apply for registration within the context of the ethical guidance issued by the GDC. It is a requirement to be registered with the GDC to practise dentistry within the United Kingdom (UK).

In addition to the Quality Assurance Agency for Higher Education/Qualifications and Curriculum Authority quality assurance requirements, all dental care professions and qualifications are subject to approval by the GDC. Initial programme approval and ongoing quality assurance by the GDC ensures that appropriate education and training is being provided. On-site visits to providers and awarding bodies may supplement documentation they are requested to submit in order to ensure that all individuals qualifying from programmes meet the requirements of the GDC. Beyond this minimum, dental care professions programme providers have in place a variety of systems for recognising and encouraging the pursuit of excellence. Education providers should be aware, however, that the GDC, from time to time, issues up-dated guidance on curricular and ethical matters; they should therefore ensure that the educational programmes for which they are responsible, or which they plan to introduce, conform to the GDC requirements that are then current.

The primary qualifications for dental care professionals represent the first stage in an educational continuum, which should last throughout their practising life. A dental care professional may choose to undertake a period of additional training but will also be required, subject to legislation, to undertake a minimum amount of continuing education as a condition of maintaining registration with the GDC. The education programmes described here should therefore prepare them to undertake lifelong learning. It is within this context that the initial phase of dental care professions education should be placed.

Dental nursing

The nature and extent of programmes in dental nursing

Dental nursing is a professional discipline concerned with assisting in the prevention, detection, management and treatment of oral and dental diseases and maintenance of oral and dental health, in individuals and in society. It is based on sound scientific and technical principles with knowledge and understanding of clinical dentistry underpinned by relevant biological and clinical medical and dental sciences.

It is essential that all dental nurses understand the need to act at all times reasonably, responsibly and within the public interest, putting the interests of patients before those of themselves. On qualification dental nurses are required to demonstrate a thorough understanding of the importance of ethical practice and professionalism, high levels of ability in communication skills and competence in providing support for the clinical and technical aspects of dentistry.

The educational environment should inspire the student dental nurse to maintain high professional and personal standards and to recognise the importance of lifelong learning in a caring profession. This requires newly qualified dental nurses to appreciate the importance of participation in further formal education and training.

The educational environment should allow the student dental nurse to develop an analytical approach to both the theory and practical support for clinical dentistry. This will be derived from their education both in the basic and clinical sciences. Required components of student-selected study and project work aim to stimulate critical thought, and allow students to acquire research methods and skills in collection, evaluation and presentation of evidence. This form of educational provision should allow students to develop an adaptable approach to the support of the practice of dentistry so that they can respond effectively to the individual needs of patients and of the communities that they will serve.

The relationship between dentists, dental nurses and their patients is based on trust. Students must be made aware of their responsibilities in relation to confidentiality of information obtained in a professional capacity.

It is essential that qualifying dental nurses understand the limitations of their current knowledge and abilities. They must understand how management regimes may need to take account of patients with special needs.

On qualification dental nurses must be aware of the necessity for provision of information to patients so that informed consent can be obtained.

On qualification dental nurses must appreciate the need for dental care to be delivered in a safe environment for both patients and staff in compliance with health and safety regulations. They must be familiar with the principles and practice of infection control and radiation protection, risk assessment, the control of substances hazardous to health and the need to maintain the safety of equipment.

The delivery of oral and dental care is very much based on a team approach. To assist in the development of a team approach to oral and dental care, it is helpful to provide joint teaching, where appropriate, to student dental nurses and other members of the dental team.

Subject benchmark statement: Health care programmes

It is expected that on qualification dental nurses will have had experience of a wide range of clinical tasks during their student programme. Flexibility exists within the programme of study to take account of the varying patterns of dental and oral health throughout the UK.

Subject knowledge and understanding

Students who successfully complete a programme in dental nursing in the UK should be able to integrate material from all parts of their curriculum to demonstrate knowledge and understanding of the following areas and topics, **insofar as they are relevant to the practice of dental nursing:**

- biomedical sciences which form the basis for understanding human growth, development and health
- integration of human body systems, normal homeostasis and mechanisms of responses to insults, including trauma and disease
- oral biology, to include detailed knowledge of the form and function of teeth and associated structures in health and disease
- modern developments in biomolecular sciences
- human diseases and pathogenic processes, including genetic disorders, and the manifestation of those diseases
- diseases and disorders of the oral cavity and associated structures, their causes and sequelae together with the principles of their prevention and management
- sources of infection and the means available for infection control
- medical emergencies that may occur in the dental surgery and their prevention and management, including basic life support and resuscitation
- communication between dentists, dental nurses and patients, their families, other health professionals and the public in general
- patients' responses to dental care and an understanding of how these may be affected by experience and psychological, social and cultural influences
- interpersonal skills appropriate for working within a multi-skilled team
- the medico-legal and ethical principles upon which the practice of dentistry is based
- the principles and importance of health promotion, health education and prevention in relation to dental disease, and how these principles are applied
- the safe and effective management of patients
- specific dental topics including behavioural sciences, biomaterials science, dental public health, oral and maxillo-facial surgery, oral medicine, oral microbiology, oral pathology, oral radiology, orthodontics, paediatric dentistry, pain and anxiety control, pharmacology and therapeutics, preventive dentistry and restorative dentistry
- the system for the delivery of health care in the UK with special reference to oral health care
- the oral health needs of different sections of the community, such as those with special needs
- the broad principles of scientific research and evaluation of evidence that are necessary for an evidence-based approach to dental nursing

- the importance of clinical audit, peer review and continuing professional education and development.

Skills and attributes of the dental nurse on qualification

Key skills

In addition to the subject-specific skills itemised in the following sections, the programme in dental nursing encourages the development of key transferable skills which underpin the lifelong educational and training process.

Transferable skills

On qualification dental nurses should, therefore, have the ability to:

- exercise initiative and personal responsibility
- communicate effectively at all levels in both the scientific and professional contexts using verbal, non-verbal and written means
- work effectively as members of a team
- use health informatics and information technology as a means of communication, for data collection and analysis, for improving patient care and for self-directed learning
- analyse and resolve problems, and deal with uncertainty
- manage time, set priorities and work to prescribed time limits
- make decisions based on sound ethical, moral and scientific principles
- manage their learning in the context of establishing a philosophy of continuing professional development
- acquire, analyse, process and communicate information in a scientific, critical and effective manner to solve problems
- evaluate the validity of claims related to products or techniques.

Professionalism

Professional behaviour and clinical governance

On qualification dental nurses should be able to:

- understand the role and function of the GDC in regulating dental professionals, and be familiar with its issued guidelines
- understand the role, function and obligations of the National Health Service
- manage the ethical issues that may arise in dental practice
- apply jurisprudence to the practice of dentistry
- understand the implications of informed consent
- understand the ethical and legal basis of confidentiality, including the need to maintain accurate and complete patient records in a confidential manner and to store them securely
- provide empathetic care for all patients, including members of diverse and vulnerable populations, and respect the principle of patient autonomy
- provide and receive constructive criticism

Subject benchmark statement: Health care programmes

- recognise and take appropriate action to help incompetent, impaired or unethical colleagues and their patients.

Behavioural science and communication

On qualification dental nurses should base their care of patients on a sound knowledge and experience of the psychological aspects of human behaviour. They should be able to:

- display appropriate behaviour towards all members of the dental team
- understand the role of psychological development in the management of the child patient
- understand the principles of dental anxiety management (behavioural and pharmacological) as applied to the treatment of the anxious dental patient
- appreciate the importance of psychological and social factors in the delivery and acceptance of dental care by patients
- recognise the responsibility and demonstrate the ability to share information and professional knowledge verbally and in writing
- understand the principles of occupational stress and its management.

Becoming a reflective dental nurse

On qualification dental nurses should be dedicated to the principle of lifelong learning and continuing professional development. They should be able to:

- identify and use sources of continuing professional development and apply critical thought to a continually expanding knowledge base such that professional competence is maintained
- discharge the obligations incumbent upon every professional person including contributions to, and support for, the profession's collective initiatives in self-regulation, maintenance of standards, and the advancement of knowledge

and have expertise to

- assess personal progress, including the identification of strengths and weaknesses
- recognise and fulfil their responsibilities both as adult learners and as teachers
- use the principles of peer review and quality assurance in dental practice.

The patient and the oral environment

This section and the following sections cover the full range of subject-specific skills which relate to dental nursing.

Biomedical science

On qualification dental nurses should be able to apply their knowledge and understanding of biomedical sciences in the management of patients.

History, examination and diagnosis

On qualification dental nurses should be able to:

- record an accurate medical history
- record an accurate dental history

- make a general evaluation of a patient's appearance, including the identification of abnormalities in their physical, emotional or mental status
- establish and maintain accurate patient records.

Oral radiology

On qualification dental nurses should be able to support the taking and processing of intra-oral and dental panoramic radiographs.

Establishment and maintenance of a healthy oral environment

Pain and anxiety control

On qualification dental nurses should be able to:

- reassure the anxious patient
- provide chairside support during the administration of local and regional analgesia.

Dental emergencies

On qualification dental nurses should be able to provide support during the management of dental emergencies.

Chairside support

On qualification dental nurses should be able to:

- safeguard the patient's well-being during clinical procedures
- manage circumstances where the patient's wishes are considered by the dental team not to be in their best interests.

Preventive dentistry

On qualification dental nurses should be able to:

- demonstrate methods of maintaining oral hygiene
- demonstrate methods for caring for dentures and orthodontic appliances
- provide appropriate dietary advice.

Working environment

Health and safety/infection control

On qualification dental nurses should:

- adhere to health and safety legislation as it affects dental practice
- understand the legal basis of radiographic practice
- implement and perform satisfactory infection control and prevent physical, chemical or microbiological contamination in the practice of dentistry
- arrange and use the working practice environment in the most ergonomically effective and efficient manner for all staff and patients, undertaking formal risk assessments, where appropriate.

Subject benchmark statement: Health care programmes

Medical conditions and emergencies

On qualification dental nurses should be able to provide basic life support for medical emergencies.

Teaching, learning and assessment

Teaching and learning

Teaching and learning in programmes for student dental nurses use a variety of different approaches including:

- lectures
- tutorials/seminars/workshops
- practical and laboratory classes
- virtual learning environments
- group work and problem-oriented learning
- projects
- directed self-study
- the use of information and communications technology
- the acquisition and development of practical skills
- observation of the treatment of patients
- reflective practice and integration of learning.

The emphasis on different approaches is dependent upon the philosophy of each individual curriculum, but support for the clinical treatment of patients is central to all.

Traditional lectures provide a means for delivering core information and an introduction to issues, themes or relevant clinical aspects of subjects to be studied. Lectures are used to develop student skills in listening, note taking, understanding and reflection. Such 'formal' presentations can be increased in value by the incorporation of varied presentation techniques, such as encouragement of student participation and planned activity within lectures.

Tutorials, seminars and workshops are often related to clinical issues or problems and are designed to provide an interactive focus for learning. They are concerned with the development of skills such as communication, teamwork, reasoning and critical appraisal.

Practical and laboratory classes are an important means of reinforcing deeper understanding of topics as well as developing skills and in methods of observation relevant to providing support for the treatment of patients. Virtual learning environments represent a modern approach that can enhance learning in these contexts.

Student engagement in group work or specific educational approaches such as problem-based learning fosters skills such as the location, sifting and organisation of information, time management, task allocation, team working and preparation of reports.

Dental nursing students need to acquire the facility for directing their own learning. This is an essential attribute of the practising dental nurse. Directed self-study and the process of undertaking projects independently encourage the development of study skills, self-reliance, independence of thought and the ability to manage time effectively.

Dental nursing students should acquire transferable skills, including the use of information and communications technology for word-processing; sending email and accessing information by the internet; working with others in teams; making verbal and written presentations using appropriate audio-visual aids; and communicating with colleagues and the public. Computer aided learning programs can be part of the learning process and a means of delivering and reinforcing information technology skills.

Opportunities must be provided for the identification and acquisition of practical skills. The most common method adopted is for students to spend time in an appropriately equipped clinical area.

The clinical environment can provide an ideal focus for active learning, as each patient presents a unique combination of parameters. The development of students' oral communication skills and listening skills is of utmost importance in this, as is the acquisition of professional, attitudinal and ethical attributes appropriate to practice as a dental nurse.

An attitude of reflection needs to be fostered so that dental nursing students become increasingly motivated in their search for accuracy of self-assessment. The creation of progress files or reflective logbooks, in which students build a personal portfolio of learning, self-assessment and how they learn, may help. In this respect, integration of knowledge, understanding and skills, acquired from different sources and at different times, will be improved, fostering the first stages of lifelong learning.

Assessment

Assessment is recognised as an important factor in the way in which students learn and manage their time. There should be both formative and summative assessments. Summative assessments can be used formatively. The processes of assessment should be transparent: explicit criteria facilitate effective learning and allow for the provision of effective and meaningful feedback. In the development of knowledge, skills and attitudes appropriate to the practice of dental nursing, the importance of student progression during the programme must be acknowledged. While, in a global sense, competence is seen to be achieved at the threshold level of qualification, students and teachers must see the value of 'staging posts' along the way.

The attainment of these outcomes should be demonstrated by clear links with methods of both teaching and learning, with methods of assessment and with the specific tasks of assessment.

Methods of assessment adopted should:

- be relevant to the purposes of dental nurse education
- reflect student progression through the programme
- encourage integration of knowledge, understanding, skills and attitudes
- enable students to demonstrate their understanding, level of attainment and an appropriate range of practical abilities
- provide accurate, constructive feedback to students on their performance
- indicate whether a student has reached an appropriate standard
- examine students' communication skills

Subject benchmark statement: Health care programmes

- allow records of student performance to be collated
- allow the participation of external examiners
- engage in mechanisms of quality assurance
- provide information for course and programme organisers on the quality of provision
- reflect the intended learning outcomes of a course.

Standards

Upon successful completion of the programme of study dental nurses are eligible to apply for registration with the GDC and then to practise according to the contemporary statutory framework. On qualification dental nurses therefore will have the professional qualities, attitudes and attributes necessary for this role. As a minimum they will have demonstrated a systematic understanding of the knowledge outlined in the previous parts of this statement. They will be able to apply the key and professional skills gained during the programme, being aware of their limited experience, and able to develop new skills.

Professionalism

On qualification dental nurses must practise dental nursing and conduct their personal lives with professional integrity such as to command the respect and trust of both colleagues and patients, and justify the confidence placed in them through the demonstration of good practice. They should be able to tackle and solve problems and plan and implement tasks at a professional level. They should be dedicated to the principle of lifelong learning and continuing professional development.

Knowledge

On qualification dental nurses will demonstrate a:

- systematic understanding of the subject knowledge
- comprehensive understanding of the basis of professional practice
- practical understanding of the evidence base of their practice and the ability to evaluate new information.

Skills

On qualification dental nurses will demonstrate:

- key transferable skills including information appraisal and technology
- initiative and personal responsibility, making decisions based on sound ethical, moral and scientific principles, and applying an independent learning ability
- the ability to evaluate critically the health care system in which they will work, and to support the provision of oral health promotion for individual patients and social groups
- competence in, and comprehensive understanding of, the skills outlined in this statement.

Orthodontic therapy

The nature and extent of programmes in orthodontic therapy

Orthodontic therapy is a professional clinical discipline concerned with aspects of the provision of orthodontic treatment and care of the orthodontic patient. It is based on sound scientific and technical principles with the clinical aspects of orthodontic therapy underpinned by knowledge and understanding of the relevant biological and clinical medical and dental sciences.

It is essential that all orthodontic therapists understand the need to act at all times reasonably, responsibly and within the public interest, putting the interests of their patients before those of themselves. On qualification orthodontic therapists are required to demonstrate a thorough understanding of the importance of ethical practice and professionalism, high levels of ability in communication skills and competence in the clinical and technical aspects of orthodontic therapy.

The educational environment should inspire the orthodontic therapy student to maintain high professional and personal standards and to recognise the importance of lifelong learning in a caring profession. This requires the newly qualified orthodontic therapist to appreciate the importance of participation in further formal education and training.

The educational environment should allow the orthodontic therapy student to develop an analytical approach to both the theory and practice of orthodontic therapy. This will be derived from their education both in the basic and clinical sciences. Required components of student-selected study and project work aim to stimulate critical thought, and allow students to acquire research methods and skills in collection, evaluation and presentation of evidence. This form of educational provision should allow students to develop an adaptable approach to the practice of orthodontic therapy so that they can respond effectively to the individual needs of patients and of the communities that they will serve.

The relationship between orthodontic therapists and their patients is based on trust. Students must be made aware of their responsibilities in relation to confidentiality of information obtained in a professional capacity.

It is essential that on qualification orthodontic therapists understand the limitations of their current knowledge and clinical abilities. They should be aware of the range of orthodontic treatments available and be able to refer back for an opinion on treatment and management to the orthodontist responsible for the overall care of the patient. They must understand how management regimes may need to take account of patients with special needs.

On qualification orthodontic therapists must be aware of the necessity for provision of information to patients so that informed consent can be obtained.

On qualification orthodontic therapists must appreciate the need to deliver orthodontic care in a safe environment for both patients and staff in compliance with health and safety regulations. They must be familiar with the principles and practice of infection control, risk assessment, the control of substances hazardous to health and the need to maintain the safety of equipment.

Subject benchmark statement: Health care programmes

The delivery of orthodontic care is very much based on a team approach. To assist in the development of a team approach to oral and dental care, it is helpful to provide joint teaching, where appropriate, to orthodontic therapy students and other members of the dental team.

It is expected that on qualification orthodontic therapists will have had experience of a wide range of orthodontic tasks during their student programme. They will not be highly skilled in all clinical procedures. Flexibility exists within the programme of study to take account of the varying patterns of orthodontic treatment needs throughout the UK.

Subject knowledge and understanding

Students who successfully complete a programme in orthodontic therapy in the UK should be able to integrate material from all parts of their curriculum to demonstrate knowledge and understanding of the following areas and topics, **insofar as they are relevant to the practice of orthodontic therapy:**

- biomedical sciences which form the basis for understanding human growth, development and health
- integration of human body systems, normal homeostasis and mechanisms of responses to insults, including trauma and disease
- oral biology, to include detailed knowledge of the form and function of teeth and associated structures in health and disease
- modern developments in biomolecular sciences
- human diseases and pathogenic processes, including genetic disorders, and the manifestation of those diseases
- diseases and disorders of the oral cavity and associated structures, their causes and sequelae together with the principles of their prevention and management
- sources of infection and the means available for infection control
- medical emergencies that may occur in the dental surgery and their prevention and management, including basic life support and resuscitation
- communication between dentists, orthodontists, orthodontic therapists and patients, their families, other health professionals and the public in general
- patients' responses to dental care and an understanding of how these may be affected by experience and psychological, social and cultural influences
- interpersonal skills appropriate for working within a multi-skilled team
- the medico-legal and ethical principles upon which the practice of dentistry is based, especially those relating to treatment of patients and involvement of patients in research
- the principles and importance of prevention in relation to dental disease, and how these principles are applied
- the safe and effective management of patients
- specific dental topics including behavioural sciences, biomaterials science, dental public health, oral and maxillo-facial surgery, oral medicine, oral microbiology, oral pathology, oral radiology, orthodontics, paediatric dentistry, pain and anxiety control, preventive dentistry and restorative dentistry

- when, how, and to whom a patient should be referred for specialist advice or treatment
- the system for the delivery of health care in the UK with special reference to oral health care
- the oral health needs of different sections of the community, such as those with special needs
- the broad principles of scientific research and evaluation of evidence that are necessary for an evidence-based approach to orthodontic therapy
- the importance of clinical audit, peer review and continuing professional education and development.

Skills and attributes of the orthodontic therapist on qualification

Key skills

In addition to the subject-specific skills itemised in the following sections, the programme in orthodontic therapy encourages the development of key transferable skills, which underpin the lifelong educational and training process.

Transferable skills

On qualification orthodontic therapists should, therefore, have the ability to:

- exercise initiative and personal responsibility
- communicate effectively at all levels in both the scientific and professional contexts using verbal, non-verbal and written means
- work effectively as members of a team
- use health informatics and information technology as a means of communication, for data collection and analysis, for improving patient care and for self-directed learning
- analyse and resolve problems, and deal with uncertainty
- manage time, set priorities and work to prescribed time limits
- make decisions based on sound ethical, moral and scientific principles
- manage their learning in the context of establishing a philosophy of continuing professional development
- acquire, analyse, process and communicate information in a scientific manner to solve problems and to guide clinical decision-making
- evaluate the evidence published in refereed scientific journals and other publications for sound experimental design and statistical analysis
- evaluate the validity of claims related to products or techniques.

Professionalism

Professional behaviour and clinical governance

On qualification orthodontic therapists should be able to:

- understand the role and function of the GDC in regulating dental professionals, and be familiar with its issued guidelines
- understand the role, function and obligations of the National Health Service

Subject benchmark statement: Health care programmes

- manage the ethical issues that may arise in dental practice
- apply jurisprudence to the practice of dentistry
- understand the implications of and obtain informed consent
- understand the ethical and legal basis of confidentiality, including the need to maintain accurate and complete patient records in a confidential manner and to store them securely
- provide empathetic care for all patients, including members of diverse and vulnerable populations, and respect the principle of patient autonomy
- provide and receive constructive criticism
- recognise and take appropriate action to help incompetent, impaired or unethical colleagues and their patients.

Behavioural science and communication

On qualification orthodontic therapists should base their care of patients on a sound knowledge and experience of the psychological aspects of human behaviour. They should be able to:

- discuss orthodontic treatment plans with patients of all ages and, where necessary, through the intermediate consent of a parent, guardian or carer
- display appropriate behaviour towards all members of the dental team
- understand the role of psychological development in the management and treatment of the child patient
- understand the principles of dental anxiety management (behavioural and pharmacological) as applied to the treatment of the anxious orthodontic patient
- appreciate the importance of psychological and social factors in the delivery and acceptance of orthodontic care by patients
- recognise the responsibility and demonstrate the ability to share information and professional knowledge verbally and in writing
- understand the principles of occupational stress and its management.

Becoming a reflective orthodontic therapist

On qualification orthodontic therapists should be dedicated to the principle of lifelong learning and continuing professional development. They should be able to:

- identify and use sources of continuing professional development and apply critical thought to a continually expanding knowledge base such that professional competence is maintained
- discharge the obligations incumbent upon every professional person including contributions to, and support for, the profession's collective initiatives in self-regulation, maintenance of standards, and the advancement of knowledge and expertise
- assess personal progress, including the identification of strengths and weaknesses
- evaluate all treatment outcomes, including the unexpected, and undertake remedial action where appropriate
- recognise and fulfil their responsibilities both as adult learners and as teachers
- use the principles of peer review and quality assurance in dental practice.

Dental health and society

On qualification orthodontic therapists should understand the health care system in which they will work.

Dental public health

On qualification orthodontic therapists should be able to:

- recognise their role in and responsibility for improving the general and oral health of the community through treatment strategy, education and service
- understand the prevalence of oral disease in the UK adult and child populations.

Oral health promotion

On qualification orthodontic therapists should be able to:

- recognise predisposing and aetiological factors that require intervention to promote oral health
- understand the pattern of oral disease in society and be able to contribute to health promotion
- assess the need for, and provide, preventive procedures, dietary advice and instruction in oral health methods that incorporate sound biological principles in order to preserve oral hard and soft tissues, and to prevent disease
- use and provide appropriate treatment modalities.

Assessment of the patient and oral environment

This section and the following sections cover a range of subject-specific skills which relate to orthodontics.

Biomedical science

On qualification orthodontic therapists should be able to:

- apply their knowledge and understanding of biomedical sciences, oral biology and biomolecular sciences to the management of their patients
- recognise the changes that occur with normal growth and ageing and apply their knowledge in the management of the oral environment
- apply their knowledge of the aetiology and processes of oral diseases in prevention and treatment.

History and examination

On qualification orthodontic therapists should be able to:

- check and evaluate a relevant medical history and recognise the possible effects of oral disease on medical well-being and the medical conditions that affect oral health or orthodontic treatment
- recognise the significance and effect of drugs and other medicaments taken by the orthodontic therapy patient
- make a general evaluation of a patient's appearance, including the identification of abnormalities in their physical, emotional or mental status

Subject benchmark statement: Health care programmes

- recognise signs of physical, emotional and substance abuse and seek advice from appropriate authorities
- perform an examination of the oral hard and soft tissues, recognise vital signs, and recognise disease states and abnormalities including detrimental oral habits
- take intra-oral and extra-oral photographs of orthodontic patients
- take dental impressions and cast, base and trim orthodontic models
- establish and maintain accurate patient records.

Oral radiology

On qualification orthodontic therapists should be able to analyse cephalometric radiographs.

Patient care

On qualification orthodontic therapists should be able to:

- identify patient expectations and goals for orthodontic care
- interpret, present and discuss prioritised individual treatment options for patients of all ages, and recognise the need for referral to the dentist who has overall responsibility for the orthodontic care of the patient
- explain and discuss the patient's responsibilities and time requirements
- use their knowledge of the properties of modern dental materials to select and use appropriate materials for treatment
- manage circumstances where the patient's wishes are considered by the dental team not to be in his/her best interests.

Establishment and maintenance of a healthy oral environment

Pain and anxiety control

On qualification orthodontic therapists should be able to:

- recognise the common signs and symptoms of anxiety and apprehension
- assess the level of anxiety in adult and child patients and have experience of using recognised psychological inventories
- manage fear and anxiety with behavioural techniques.

Dental caries and tooth surface loss

On qualification orthodontic therapists should be able to assess patient risk for dental caries and non-bacterial tooth surface loss and be able to provide dietary counselling and nutritional education for the patient relevant to oral health and disease, based upon knowledge of disease patterns and aetiology.

Occlusion

On qualification orthodontic therapists should be able to apply their knowledge of functional occlusion in health and disease to recognise the aetiological factors associated with the disordered occlusion.

Orthodontics

On qualification orthodontic therapists should be able to:

- recognise abnormalities of facial growth and development in orthodontic patients and understand the principles of their management
- undertake the placement, removal and maintenance of orthodontic appliances, involving parents, guardians and carers as required
- undertake the cleaning and polishing of teeth associated with orthodontic treatment
- identify and manage orthodontic emergencies arising during the course of treatment by an orthodontic therapist.

Special needs

On qualification orthodontic therapists should be able to:

- recognise their duty of care regarding the oral health of the patient with special needs (including the additional considerations for the dental team) and involve the patient's carer, where appropriate
- take account of the dental health care needs of those who may be considered to be socially excluded.

Working environment

Health and safety/infection control

On qualification orthodontic therapists should:

- adhere to health and safety legislation as it affects orthodontic practice
- implement and perform satisfactory infection control and prevent physical, chemical or microbiological contamination in the practice of orthodontics
- arrange and use the working practice environment in the most safe and efficient manner for all staff and patients, undertaking formal risk assessments where appropriate.

Medical conditions and emergencies

On qualification orthodontic therapists should:

- recognise when patients are fit to undergo routine dental care, and identify those patients who are beyond the scope of their management
- provide basic life support for medical emergencies.

Teaching, learning and assessment

Teaching and learning

Teaching and learning in orthodontic therapy programmes use a variety of different approaches including:

- lectures
- tutorials/seminars/workshops
- practical and laboratory classes
- virtual learning environments

Subject benchmark statement: Health care programmes

- group work and problem-oriented learning
- projects
- directed self-study
- the use of information and communications technology
- the acquisition and development of practical clinical skills
- observation and treatment of patients
- reflective practice and integration of learning.

The emphasis on different approaches is dependent upon the philosophy of each individual curriculum, but direct clinical treatment of patients is central to all.

Traditional lectures provide a means for delivering core information and an introduction to issues, themes or relevant clinical aspects of subjects to be studied. Lectures are used to develop student skills in listening, note taking, understanding and reflection. Such 'formal' presentations can be increased in value by the incorporation of varied presentation techniques, such as encouragement of student participation and planned activity within lectures.

Tutorials, seminars and workshops are often related to clinical issues or problems and are designed to provide an interactive focus for learning. They are concerned with the development of skills such as communication, teamwork, reasoning and critical appraisal.

Practical and laboratory classes are an important means of reinforcing deeper understanding of topics as well as developing skills in scientific methodology and in methods of observation relevant to the treatment of patients. Virtual learning environments represent a modern approach that can enhance learning in these contexts.

Student engagement in group work or specific educational approaches such as problem-based learning fosters skills such as the location, sifting and organisation of information, time management, task allocation, team working and preparation of reports.

Orthodontic therapy students need to acquire the facility for directing their own learning. This is an essential attribute of the practising orthodontic therapist. Directed self-study and the process of undertaking projects independently encourage the development of study skills, self-reliance, independence of thought and the ability to manage time effectively.

Orthodontic therapy students should acquire transferable skills, including the use of information and communications technology for word-processing; sending email and accessing information by the internet; working with others in teams; making verbal and written presentations using appropriate audio-visual aids; and communicating with colleagues and the public. Computer aided learning programs can be part of the learning process and a means of delivering and reinforcing information technology skills.

Opportunities must be provided for the identification and acquisition of practical clinical skills. The most common methods adopted are for students to spend time in a clinical skills laboratory or an appropriately equipped clinical area where they rehearse the procedures they will be required to perform on patients. This is another activity where the employment of virtual learning environments can be beneficial.

Great emphasis is placed on the quality of student management of patients in a variety of healthcare settings. The clinical environment can provide an ideal focus for active

learning, as each patient presents a unique combination of parameters that affect proposed management. The development of students' oral communication skills and listening skills is of utmost importance in this. The transfer and continued development to clinical reality of practical clinical skills is fundamental to the successful progression of the orthodontic therapy student, as is the acquisition of professional, attitudinal and ethical attributes appropriate to practice as an orthodontic therapist.

An attitude of reflection needs to be fostered so that orthodontic therapy students become increasingly motivated in their search for accuracy of self-assessment. The creation of progress files or reflective logbooks, in which students build a personal portfolio of learning, self-assessment and how they learn, may help. In this respect, integration of knowledge, understanding and skills, acquired from different sources and at different times, will be improved, fostering the first stages of lifelong learning.

Assessment

Assessment is recognised as an important factor in the way in which students learn and manage their time. There should be both formative and summative assessments. Summative assessments can be used formatively. The processes of assessment should be transparent: explicit criteria facilitate effective learning and allow for the provision of effective and meaningful feedback. In the development of knowledge, skills and attitudes appropriate to the clinical practice of orthodontic therapy, the importance of student progression during the programme must be acknowledged. While, in a global sense, competence is seen to be achieved at the threshold level of qualification, students and teachers must see the value of 'staging posts' along the way. The attainment of learning outcomes should be demonstrated by clear links with methods of both teaching and learning, with methods of assessment and with the specific tasks of assessment.

Methods of assessment adopted should:

- be relevant to the purposes of orthodontic therapy education
- reflect student progression through the programme
- encourage integration of knowledge, understanding, skills and attitudes
- enable students to demonstrate their understanding, level of attainment and an appropriate range of clinical and other abilities
- provide accurate, constructive feedback to students on their performance
- indicate whether a student has reached an appropriate standard
- examine students' communication skills
- allow records of student academic and clinical performance to be collated
- allow the participation of external examiners
- engage in mechanisms of quality assurance
- provide information for course and programme organisers on the quality of provision
- reflect the intended learning outcomes of a course.

Standards

Upon successful completion of the programme of study orthodontic therapists are eligible to apply for registration with the GDC and then to practise according to the contemporary statutory framework. On qualification orthodontic therapists therefore will have the professional qualities, attitudes and attributes necessary for this role. As a minimum they will have demonstrated a systematic understanding of the knowledge outlined in the previous parts of this statement. They will be able to apply the key and professional skills gained during the programme, being aware of their limited experience, and able to develop new skills.

Professionalism

On qualification orthodontic therapists must practise and conduct their personal lives with professional integrity such as to command the respect and trust of both colleagues and patients, and justify the confidence placed in them through the demonstration of good clinical practice. They should be able to tackle and solve problems and plan and implement tasks at a professional level. They should be dedicated to the principle of lifelong learning and continuing professional development.

Knowledge

On qualification orthodontic therapists will demonstrate:

- systematic understanding of the subject knowledge
- comprehensive understanding of the basis of professional practice
- practical understanding of the evidence base of clinical practice and the ability to evaluate new information.

Skills

On qualification orthodontic therapists will demonstrate:

- key transferable skills including information appraisal and technology
- initiative and personal responsibility, making decisions based on sound ethical, moral and scientific principles, and applying an independent learning ability
- the ability to evaluate critically the health care system in which they will work, and to assume responsibility for oral health promotion of individual patients and social groups
- competence in, and comprehensive understanding of, the skills outlined in this statement.

Dental hygiene

The nature and extent of programmes in dental hygiene

Dental hygiene is a professional clinical discipline concerned with prevention, management and treatment of oral and dental diseases and maintenance of oral and dental health, in individuals and in society. It is based on sound scientific and technical principles with the clinical aspects of dental hygiene underpinned by knowledge and understanding of the relevant biological and clinical medical and dental sciences.

It is essential that all dental hygienists understand the need to act at all times reasonably, responsibly and within the public interest, putting the interests of their patients before those of themselves. On qualification dental hygiene students are required to demonstrate a thorough understanding of the importance of ethical practice and professionalism, high levels of ability in communication skills and competence in the clinical and technical aspects of dental hygiene.

The educational environment should inspire the dental hygiene student to maintain high professional and personal standards and to recognise the importance of lifelong learning in a caring profession. This requires the newly qualified dental hygienist to appreciate the importance of participation in further formal education and training.

The educational environment should allow the dental hygiene student to develop an analytical approach to both the theory and practice of dental hygiene. This will be derived from their education both in the basic and clinical sciences. Required components of student-selected study and project work aim to stimulate critical thought, and allow students to acquire research methods and skills in collection, evaluation and presentation of evidence. This form of educational provision should allow students to develop an adaptable approach to the practice of dental hygiene so that they can respond effectively to the individual needs of patients and of the communities that they will serve.

The relationship between dental hygienists and their patients is based on trust. Students must be made aware of their responsibilities in relation to confidentiality of information obtained in a professional capacity.

It is essential that on qualification dental hygienists understand the limitations of their current knowledge and clinical abilities. They should be aware of the range of treatments available, and of the current evidence to support their choices, but not be expected to be able to provide them all. In such circumstances they must be able to refer back for an opinion on treatment and management to the dentist responsible for the overall care of the patient. They must understand how management regimes may need to take account of patients with special needs.

On qualification dental hygienists must be aware of the necessity for provision of information to patients so that informed consent can be obtained.

On qualification dental hygienists must appreciate the need to deliver dental hygiene care in a safe environment for both patients and staff in compliance with health and safety regulations. They must be familiar with the principles and practice of infection control and radiation protection, risk assessment, the control of substances hazardous to health and the need to maintain the safety of equipment.

Subject benchmark statement: Health care programmes

The delivery of oral and dental care is very much based on a team approach. To assist in the development of a team approach to oral and dental care, it is helpful to provide joint teaching, where appropriate, to dental hygiene students and other members of the dental team.

On qualification it is expected that dental hygienists will have had experience of a range of clinical tasks during their student programme. They will not be highly skilled in all clinical procedures. Flexibility exists within the programme of study to take account of the varying patterns of dental and oral health throughout the UK.

Subject knowledge and understanding

Students who successfully complete a programme in dental hygiene in the UK should be able to integrate material from all parts of their curriculum to demonstrate knowledge and understanding of the following areas and topics, **insofar as they are relevant to the practice of dental hygiene:**

- biomedical sciences which form the basis for understanding human growth, development and health
- integration of human body systems, normal homeostasis and mechanisms of responses to insults, including trauma and disease
- oral biology, to include detailed knowledge of the form and function of teeth and associated structures in health and disease
- modern developments in biomolecular sciences
- human diseases and pathogenic processes, including genetic disorders, and the manifestation of those diseases
- diseases and disorders of the oral cavity and associated structures, their causes and sequelae together with the principles of their prevention and management
- sources of infection and the means available for infection control
- medical emergencies that may occur in the dental surgery and their prevention and management, including basic life support and resuscitation
- communication between dentists, dental hygienists and patients, their families, other health professionals and the public in general
- patients' responses to dental care and an understanding of how these may be affected by experience and psychological, social and cultural influences
- interpersonal skills appropriate for working within a multi-skilled team
- the medico-legal and ethical principles upon which the practice of dentistry is based, especially those relating to treatment of patients and involvement of patients in research
- the principles and importance of health promotion, health education and prevention in relation to dental disease, and how these principles are applied
- the safe and effective management of patients
- specific dental topics including behavioural sciences, biomaterials science, dental public health, oral and maxillo-facial surgery, oral medicine, oral microbiology, oral pathology, oral radiology, orthodontics, paediatric dentistry, pain and anxiety control, pharmacology and therapeutics, preventive dentistry and restorative dentistry
- when, how and to whom a patient should be referred for advice or treatment

- the system for the delivery of health care in the UK with special reference to oral health care
- the oral health needs of different sections of the community, such as those with special needs
- the broad principles of scientific research and evaluation of evidence that are necessary for an evidence-based approach to dental hygiene
- the importance of clinical audit, peer review and continuing professional education and development.

Skills and attributes of the dental hygienist on qualification

Key skills

In addition to the subject-specific skills itemised in the following sections, the programme in dental hygiene encourages the development of key transferable skills, which underpin the lifelong educational and training process.

Transferable skills

On qualification dental hygienists should, therefore, have the ability to:

- exercise initiative and personal responsibility
- communicate effectively at all levels in both the scientific and professional contexts using verbal, non-verbal and written means
- work effectively as members of a team
- use health informatics and information technology as a means of communication, for data collection and analysis, for improving patient care and for self-directed learning
- analyse and resolve problems, and deal with uncertainty
- manage time, set priorities and work to prescribed time limits
- make decisions based on sound ethical, moral and scientific principles
- manage their learning in the context of establishing a philosophy of continuing professional development
- acquire, analyse, process and communicate information in a scientific manner to solve problems and to guide clinical decision-making
- evaluate the evidence published in refereed scientific journals and other publications for sound experimental design and statistical analysis
- evaluate the validity of claims related to products or techniques.

Professionalism

Professional behaviour and clinical governance

On qualification dental hygienists should be able to:

- understand the role and function of the GDC in regulating dental professionals, and be familiar with its issued guidelines
- understand the role, function and obligations of the National Health Service
- manage the ethical issues that may arise in dental practice

Subject benchmark statement: Health care programmes

- apply jurisprudence to the practice of dentistry
- understand the implications of and obtain informed consent
- understand the ethical and legal basis of confidentiality, including the need to maintain accurate and complete patient records in a confidential manner and to store them securely
- provide empathetic care for all patients, including members of diverse and vulnerable populations, and respect the principle of patient autonomy
- provide and receive constructive criticism
- recognise and take appropriate action to help incompetent, impaired or unethical colleagues and their patients.

Behavioural science and communication

On qualification dental hygienists should base their care of patients on a sound knowledge and experience of the psychological aspects of human behaviour. They should be able to:

- discuss dental treatment plans with patients of all ages and, where necessary, through the intermediate consent of a parent, guardian or carer
- display appropriate behaviour towards all members of the dental team
- understand the role of psychological development in the management and treatment of the child patient
- understand the principles of dental anxiety management (behavioural and pharmacological) as applied to the treatment of the anxious dental patient
- appreciate the importance of psychological and social factors in the delivery and acceptance of dental care by patients
- recognise the responsibility and demonstrate the ability to share information and professional knowledge verbally and in writing
- understand the principles of occupational stress and its management.

Becoming a reflective dental hygienist

On qualification dental hygienists should be dedicated to the principle of lifelong learning and continuing professional development. They should be able to:

- identify and use sources of continuing professional development and apply critical thought to a continually expanding knowledge base such that professional competence is maintained
- discharge the obligations incumbent upon every professional person including contributions to, and support for, the profession's collective initiatives in self-regulation, maintenance of standards, and the advancement of knowledge and expertise
- assess personal progress, including the identification of strengths and weaknesses
- evaluate all treatment outcomes, including the unexpected, and undertake remedial action where appropriate
- recognise and fulfil their responsibilities both as adult learners and as teachers

- use the principles of peer review and quality assurance in dental practice.

Dental health and society

Dental public health

On qualification dental hygienists should understand the health care system in which they will work, and should be able to:

- evaluate social and economic trends and their impact on oral health care
- recognise their role in and responsibility for improving the general and oral health of the community through treatment strategy, education and service
- describe and understand the prevalence of oral disease in the UK adult and child populations.

Oral health promotion

Dental hygienists should be able to:

- recognise predisposing and aetiological factors that require intervention to promote oral health
- understand the pattern of oral disease in society and be able to contribute to health promotion
- assess the need for, and provide, preventive procedures, dietary advice and instruction in oral health methods that incorporate sound biological principles in order to preserve oral hard and soft tissues, and to prevent disease
- use and provide appropriate therapeutic agents and treatment modalities.

Assessment of the patient and oral environment

This section and the following sections cover the full range of subject-specific skills which relate to the clinical practice of the dental hygienist.

Biomedical science

On qualification dental hygienists should be able to:

- apply their knowledge and understanding of biomedical sciences, oral biology and biomolecular sciences to the management of their patients
- recognise the changes that occur with normal growth and ageing and apply their knowledge in the management of the oral environment
- apply their knowledge of the aetiology and processes of oral diseases in prevention, diagnosis and treatment.

History and examination

On qualification dental hygienists should be able to:

- check and evaluate a relevant medical history and recognise the possible effects of oral disease on medical well-being and the medical conditions that affect oral health or dental treatment
- recognise the significance and effect of drugs and other medicaments, taken by the patient, on dental management

Subject benchmark statement: Health care programmes

- obtain a detailed dental history to include chief complaint and history of present illness
- make a general evaluation of a patient's appearance, including the identification of abnormalities in their physical, emotional or mental status
- recognise signs of physical, emotional and substance abuse and seek advice from appropriate authorities
- perform an examination of the oral hard and soft tissues, recognise vital signs, and recognise disease states and abnormalities including detrimental oral habits
- establish and maintain accurate patient records.

Oral radiology

On qualification dental hygienists should be able to:

- take and process appropriate intra-oral and dental panoramic radiographs
- interpret findings from the history, clinical and radiographic examinations.

Patient care

On qualification dental hygienists should be able to:

- identify patient expectations and goals for oral care
- interpret, present and discuss prioritised individual treatment options for patients of all ages, and recognise the need for referral to the dentist who has overall responsibility for the care of the patient
- explain and discuss the patient's responsibilities and time requirements
- use their knowledge of the properties of modern dental materials to select and use appropriate materials for treatment
- manage circumstances where the patient's wishes are considered by the dental team not to be in their best interests.

Establishment and maintenance of a healthy oral environment

Pain and anxiety control

On qualification dental hygienists should be able to:

- recognise the common signs and symptoms of oro-facial pain, anxiety and apprehension
- assess the level of anxiety in adult and child patients and have experience of using recognised psychological inventories
- use local analgesia for pain management and recognise and manage potential complications relating to its use
- manage fear and anxiety with behavioural techniques.

Dental emergencies

On qualification dental hygienists should be able to identify and manage dental emergencies arising during the course of treatment by a dental hygienist.

Dental caries and tooth surface loss

On qualification dental hygienists should be able to assess patient risk for dental caries and non-bacterial tooth surface loss and be able to provide dietary counselling and

nutritional education for the patient relevant to oral health and disease, based upon knowledge of disease patterns and aetiology.

Paediatric dentistry

On qualification dental hygienists should be able to provide preventive oral health care for children and adolescents in a manner that incorporates consideration for their expected growth and development, involving parents or guardians as required.

Periodontics

On qualification dental hygienists should be able to undertake non-surgical procedures involved in the improvement and maintenance of the health and care of the supporting structures of the teeth.

Special needs

On qualification dental hygienists should be able to:

- recognise their duty of care regarding the oral health of the patient with special needs (including the additional considerations for the dental team) and involve the patient's carer where appropriate
- take account of the dental health care needs of those who may be considered to be socially excluded.

Working environment

Health and safety/infection control

On qualification dental hygienists should:

- adhere to health and safety legislation as it affects dental practice
- practise according to the legal basis of radiographic practice
- implement and perform satisfactory infection control and prevent physical, chemical or microbiological contamination in the course of hygiene treatment
- arrange and use the working practice environment in the most safe and efficient manner for all staff and patients, undertaking formal risk assessments, where appropriate.

Medical conditions and emergencies

On qualification dental hygienists should be able to:

- recognise whether patients are fit to undergo routine dental care and recognise those patients who are beyond the scope of their management
- provide basic life support for medical emergencies.

Teaching, learning and assessment

Teaching and learning

Teaching and learning in dental hygiene programmes use a variety of different approaches including:

- lectures
- tutorials/seminars/workshops

Subject benchmark statement: Health care programmes

- practical and laboratory classes
- virtual learning environments
- group work and problem-oriented learning
- projects
- directed self-study
- the use of information and communications technology
- the acquisition and development of practical clinical skills
- observation and treatment of patients
- reflective practice and integration of learning.

The emphasis on different approaches is dependent upon the philosophy of each individual curriculum, but direct clinical treatment of patients is central to all.

Traditional lectures provide a means for delivering core information and an introduction to issues, themes or relevant clinical aspects of subjects to be studied. Lectures are used to develop student skills in listening, note taking, understanding and reflection. Such 'formal' presentations can be increased in value by the incorporation of varied presentation techniques, such as encouragement of student participation and planned activity within lectures.

Tutorials, seminars and workshops are often related to clinical issues or problems and are designed to provide an interactive focus for learning. They are concerned with the development of skills such as communication, teamwork, reasoning and critical appraisal.

Practical and laboratory classes are an important means of reinforcing deeper understanding of topics as well as developing skills in scientific methodology and in methods of observation relevant to the treatment of patients. Virtual learning environments represent a modern approach that can enhance learning in these contexts.

Student engagement in group work or specific educational approaches such as problem-based learning fosters skills such as the location, sifting and organisation of information, time management, task allocation, team working and preparation of reports.

Dental hygiene students need to acquire the facility for directing their own learning. This is an essential attribute of the practising dental hygienist. Directed self-study and the process of undertaking projects independently encourage the development of study skills, self-reliance, independence of thought and the ability to manage time effectively.

Dental hygiene students should acquire transferable skills, including the use of information and communications technology for word-processing; sending email and accessing information by the internet; working with others in teams; making verbal and written presentations using appropriate audio-visual aids; and communicating with colleagues and the public. Computer aided learning programs can be part of the learning process and a means of delivering and reinforcing information technology skills.

Opportunities must be provided for the identification and acquisition of practical clinical skills. The most common methods adopted are for students to spend time in a clinical skills laboratory or an appropriately equipped clinical area where they rehearse the procedures they will be required to perform on patients. This is another activity where the employment of virtual learning environments can be beneficial.

Great emphasis is placed on the quality of student management of patients in a variety of healthcare settings. The clinical environment can provide an ideal focus for active learning, as each patient presents a unique combination of parameters that affect proposed management. The development of students' oral communication skills and listening skills is of utmost importance in this. The transfer and continued development to clinical reality of practical clinical skills is fundamental to the successful progression of the dental hygiene student, as is the acquisition of professional, attitudinal and ethical attributes appropriate to practice as a dental hygienist.

An attitude of reflection needs to be fostered so that dental hygiene students become increasingly motivated in their search for accuracy of self-assessment. The creation of progress files or reflective logbooks, in which students build a personal portfolio of learning, self-assessment and how they learn, may help. In this respect, integration of knowledge, understanding and skills, acquired from different sources and at different times, will be improved, fostering the first stages of lifelong learning.

Assessment

Assessment is recognised as an important factor in the way in which students learn and manage their time. There should be both formative and summative assessments. Summative assessments can be used formatively. The processes of assessment should be transparent: explicit criteria facilitate effective learning and allow for the provision of effective and meaningful feedback. In the development of knowledge, skills and attitudes appropriate to clinical dental hygiene practice, the importance of student progression during the programme must be acknowledged. While, in a global sense, competence is seen to be achieved at the threshold level of qualification, students and teachers must see the value of 'staging posts' along the way. The attainment of learning outcomes should be demonstrated by clear links with methods of both teaching and learning, with methods of assessment and with the specific tasks of assessment.

Methods of assessment adopted should:

- be relevant to the purposes of dental hygiene education
- reflect student progression through the programme
- encourage integration of knowledge, understanding, skills and attitudes
- enable students to demonstrate their understanding, level of attainment and an appropriate range of clinical and other abilities
- provide accurate, constructive feedback to students on their performance
- indicate whether a student has reached an appropriate standard
- examine students' communication skills
- allow records of student academic and clinical performance to be collated
- allow the participation of external examiners
- engage in mechanisms of quality assurance
- provide information for course and programme organisers on the quality of provision
- reflect the intended learning outcomes of a course.

Standards

Upon successful completion of the programme of study dental hygienists are eligible to apply for registration with the GDC and then to practise according to the contemporary statutory framework. On qualification, dental hygienists, therefore, will have the professional qualities, attitudes and attributes necessary for this role. As a minimum they will have demonstrated a systematic understanding of the knowledge outlined in the previous parts of this statement. They will be able to apply the key and professional skills gained during the programme, being aware of their limited experience, and able to develop new skills.

Professionalism

On qualification dental hygienists must practise and conduct their personal lives with professional integrity such as to command the respect and trust of both colleagues and patients, and justify the confidence placed in them through the demonstration of good clinical practice. They should be able to tackle and solve problems and plan and implement tasks at a professional level. They should be dedicated to the principle of lifelong learning and continuing professional development.

Knowledge

On qualification dental hygienists will demonstrate:

- systematic understanding of the subject knowledge
- comprehensive understanding of the basis of professional practice
- practical understanding of the evidence base of clinical practice and the ability to evaluate new information.

Skills

On qualification dental hygienists will demonstrate:

- key transferable skills including information appraisal and technology
- initiative and personal responsibility, making decisions based on sound ethical, moral and scientific principles, and applying an independent learning ability
- the ability to evaluate critically the health care system in which they will work, and to assume responsibility for oral health promotion of individual patients and social groups
- competence in, and comprehensive understanding of, the skills outlined in this statement.

Dental therapy

The nature and extent of programmes in dental therapy

Dental therapy is a professional clinical discipline concerned with prevention, management and treatment of oral and dental diseases and maintenance of oral and dental health, in individuals and in society. It is based on sound scientific and technical principles with the clinical aspects of dental therapy underpinned by knowledge and understanding of the relevant biological and clinical medical and dental sciences.

It is essential that all dental therapists understand the need to act at all times reasonably, responsibly and within the public interest, putting the interests of their patients before those of themselves. On qualification dental therapy students are required to demonstrate a thorough understanding of the importance of ethical practice and professionalism, high levels of ability in communication skills and competence in the clinical and technical aspects of dental therapy.

The educational environment should inspire the dental therapy student to maintain high professional and personal standards and to recognise the importance of lifelong learning in a caring profession. This requires the newly qualified dental therapist to appreciate the importance of participation in further formal education and training.

The educational environment should allow the dental therapy student to develop an analytical approach to both the theory and practice of dental therapy. This will be derived from their education both in the basic and clinical sciences. Required components of student-selected study and project work aim to stimulate critical thought, and allow students to acquire research methods and skills in collection, evaluation and presentation of evidence. This form of educational provision should allow students to develop an adaptable approach to the practice of dental therapy so that they can respond effectively to the individual needs of patients and of the communities that they will serve.

The relationship between dental therapists and their patients is based on trust. Students must be made aware of their responsibilities in relation to confidentiality of information obtained in a professional capacity.

It is essential that on qualification dental therapists understand the limitations of their current knowledge and clinical abilities. They should be aware of the range of treatments available, and of the current evidence to support their choices, but not be expected to be able to provide them all. In such circumstances they must be able to refer back for an opinion on treatment and management to the dentist responsible for the overall care of the patient. They must understand how management regimes may need to take account of patients with special needs.

On qualification dental therapists must be aware of the necessity for provision of information to patients so that informed consent can be obtained.

On qualification dental therapists must appreciate the need to deliver dental therapy care in a safe environment for both patients and staff in compliance with health and safety regulations. They must be familiar with the principles and practice of infection control and radiation protection, risk assessment, the control of substances hazardous to health and the need to maintain the safety of equipment.

Subject benchmark statement: Health care programmes

The delivery of oral and dental care is very much based on a team approach. To assist in the development of a team approach to oral and dental care, it is helpful to provide joint teaching, where appropriate, to dental therapy students and other members of the dental team.

On qualification dental therapists will have had experience of a range of clinical tasks during their student programme. They will not be highly skilled in all clinical procedures. Flexibility exists within the programme of study to take account of the varying patterns of dental and oral health throughout the UK.

Subject knowledge and understanding

Students who successfully complete a programme in dental therapy in the UK should be able to integrate material from all parts of their curriculum to demonstrate knowledge and understanding of the following areas and topics, **insofar as they are relevant to the practice of dental therapy:**

- biomedical sciences which form the basis for understanding human growth, development and health
- integration of human body systems, normal homeostasis and mechanisms of responses to insults, including trauma and disease
- oral biology, to include detailed knowledge of the form and function of teeth and associated structures in health and disease
- modern developments in biomolecular sciences
- human diseases and pathogenic processes, including genetic disorders, and the manifestation of those diseases
- diseases and disorders of the oral cavity and associated structures, their causes and sequelae together with the principles of their prevention and management
- sources of infection and the means available for infection control
- medical emergencies that may occur in the dental surgery and their prevention and management, including basic life support and resuscitation
- communication between dentists, dental therapists and patients, their families, other health professionals and the public in general
- patients' responses to dental care and an understanding of how these may be affected by experience and psychological, social and cultural influences
- interpersonal skills appropriate for working within a multi-skilled team
- the medico-legal and ethical principles upon which the practice of dentistry is based, especially those relating to treatment of patients and involvement of patients in research
- the principles and importance of health promotion, health education and prevention in relation to dental disease, and how these principles are applied
- the safe and effective management of patients
- specific dental topics including behavioural sciences, biomaterials science, dental public health, oral and maxillo-facial surgery, oral medicine, oral microbiology, oral pathology, oral radiology, orthodontics, paediatric dentistry, pain and anxiety control, pharmacology and therapeutics, preventive dentistry and restorative dentistry
- when, how and to whom a patient should be referred for advice or treatment

- the system for the delivery of health care in the UK with special reference to oral health care
- the oral health needs of different sections of the community, such as those with special needs
- the broad principles of scientific research and evaluation of evidence that are necessary for an evidence-based approach to dental therapy
- the importance of clinical audit, peer review and continuing professional education and development.

Skills and attributes of the dental therapist on qualification

Key skills

In addition to the subject-specific skills itemised in the following sections, the programme in dental therapy encourages the development of key transferable skills, which underpin the lifelong educational and training process.

Transferable skills

On qualification dental therapists should, therefore, have the ability to:

- exercise initiative and personal responsibility
- communicate effectively at all levels in both the scientific and professional contexts using verbal, non-verbal and written means
- work effectively as members of a team
- use health informatics and information technology as a means of communication, for data collection and analysis, for improving patient care and for self-directed learning
- analyse and resolve problems, and deal with uncertainty
- manage time, set priorities and work to prescribed time limits
- make decisions based on sound ethical, moral and scientific principles
- manage their learning in the context of establishing a philosophy of continuing professional development
- acquire, analyse, process and communicate information in a scientific manner to solve problems and to guide clinical decision-making
- evaluate the evidence published in refereed scientific journals and other publications for sound experimental design and statistical analysis
- evaluate the validity of claims related to products or techniques.

Professionalism

Professional behaviour and clinical governance

On qualification dental therapists should be able to:

- understand the role and function of the GDC in regulating dental professionals, and be familiar with its issued guidelines
- understand the role, function and obligations of the National Health Service
- manage the ethical issues that may arise in dental practice

Subject benchmark statement: Health care programmes

- apply jurisprudence to the practice of dentistry
- understand the implications of and obtain informed consent
- understand the ethical and legal basis of confidentiality, including the need to maintain accurate and complete patient records in a confidential manner and to store them securely
- provide empathetic care for all patients, including members of diverse and vulnerable populations, and respect the principle of patient autonomy
- provide and receive constructive criticism
- recognise and take appropriate action to help incompetent, impaired or unethical colleagues and their patients.

Behavioural science and communication

On qualification dental therapists should base their care of patients on a sound knowledge and experience of the psychological aspects of human behaviour. They should be able to:

- discuss dental treatment plans with patients of all ages and, where necessary, through the intermediate consent of a parent, guardian or carer
- display appropriate behaviour towards all members of the dental team
- understand the role of psychological development in the management and treatment of the child patient
- understand the principles of dental anxiety management (behavioural and pharmacological) as applied to the treatment of the anxious dental patient
- appreciate the importance of psychological and social factors in the delivery and acceptance of dental care by patients
- recognise the responsibility and demonstrate the ability to share information and professional knowledge verbally and in writing
- understand the principles of occupational stress and its management.

Becoming a reflective dental therapist

On qualification dental therapists should be dedicated to the principle of lifelong learning and continuing professional development. They should be able to:

- identify and use sources of continuing professional development and apply critical thought to a continually expanding knowledge base, such that professional competence is maintained
- discharge the obligations incumbent upon every professional person including contributions to, and support for, the profession's collective initiatives in self-regulation, maintenance of standards, and the advancement of knowledge and expertise
- assess personal progress, including the identification of strengths and weaknesses
- evaluate all treatment outcomes, including the unexpected, and undertake remedial action where appropriate
- recognise and fulfil their responsibilities both as adult learners and as teachers
- use the principles of peer review and quality assurance in dental practice.

Dental health and society

Dental public health

On qualification dental therapists should understand the health care system in which they will work, and should be able to:

- evaluate social and economic trends and their impact on oral health care
- recognise their role in and responsibility for improving the general and oral health of the community through treatment strategy, education and service
- describe and understand the prevalence of oral disease in the UK adult and child populations.

Oral health promotion

On qualification dental therapists should be able to:

- recognise predisposing and aetiological factors that require intervention to promote oral health
- understand the pattern of oral disease in society and be able to contribute to health promotion
- assess the need for, and provide, preventive procedures, dietary advice and instruction in oral health methods that incorporate sound biological principles in order to preserve oral hard and soft tissues, and to prevent disease
- use and provide appropriate therapeutic agents and treatment modalities.

Assessment of the patient and oral environment

This section and the following sections cover the full range of subject-specific skills which relate to the clinical practice of the dental therapist.

Biomedical science

On qualification dental therapists should be able to:

- apply their knowledge and understanding of biomedical sciences, oral biology and biomolecular sciences to the management of their patients
- recognise the changes that occur with normal growth and ageing and apply their knowledge in the management of the oral environment
- apply their knowledge of the aetiology and processes of oral diseases in prevention, diagnosis and treatment.

History and examination

On qualification dental therapists should be able to:

- check and evaluate a relevant medical history and recognise the possible effects of oral disease on medical well-being and the medical conditions that affect oral health or dental treatment
- recognise the significance and effect of drugs and other medicaments, taken by the patient, on dental management
- obtain a detailed dental history to include chief complaint and history of present illness
- make a general evaluation of a patient's appearance, including the identification of abnormalities in their physical, emotional or mental status

Subject benchmark statement: Health care programmes

- recognise signs of physical, emotional and substance abuse and seek advice from appropriate authorities
- perform an examination of the oral hard and soft tissues, recognise vital signs, and recognise disease states and abnormalities including detrimental oral habits
- establish and maintain accurate patient records.

Oral radiology

On qualification dental therapists should be able to:

- take and process appropriate intra-oral and dental panoramic radiographs
- interpret findings from the history, clinical and radiographic examinations.

Patient care

On qualification dental therapists should be able to:

- identify patient expectations and goals for oral care
- interpret, present and discuss prioritised individual treatment options for patients of all ages, and recognise the need for referral to the dentist who has overall responsibility for the care of the patient
- explain and discuss the patient's responsibilities and time requirements
- use their knowledge of the properties of modern dental materials to select and use appropriate materials for treatment
- manage circumstances where the patient's wishes are considered by the dental team not to be in his/her best interests.

Establishment and maintenance of a healthy oral environment

Pain and anxiety control

On qualification dental therapists should be able to:

- recognise the common signs and symptoms of oro-facial pain, anxiety and apprehension
- assess the level of anxiety in adult and child patients and have experience of using recognised psychological inventories
- use local analgesia for pain management and recognise and manage potential complications relating to its use
- manage fear and anxiety with behavioural techniques.

Dental emergencies

On qualification dental therapists should be able to identify and manage dental emergencies arising during the course of treatment by a dental therapist.

Dental caries and tooth surface loss - the restoration of teeth

On qualification dental therapists should be able to:

- assess patient risk for dental caries and non-bacterial tooth surface loss and be able to provide dietary counselling and nutritional education for the patient relevant to oral health and disease, based upon knowledge of disease patterns and aetiology
- restore teeth to form, function and appearance with appropriate materials, using techniques that preserve the health of the pulp and avoid the unnecessary loss of tooth tissues.

Paediatric dentistry

On qualification dental therapists should be able to:

- provide preventive oral health care for children and adolescents in a manner that incorporates consideration for their expected growth and development, involving parents or guardians as required
- undertake simple restorative treatment, pulp therapy in primary teeth and the extraction of primary teeth.

Periodontics

On qualification dental therapists should be able to undertake non-surgical procedures involved in the improvement and maintenance of the health and care of the supporting structures of the teeth.

Special needs

On qualification dental therapists should be able to:

- recognise their duty of care regarding the oral health of the patient with special needs (including the additional considerations for the dental team) and involve the patient's carer where appropriate
- take account of the dental health care needs of those who may be considered to be socially excluded.

Working environment

Health and safety/infection control

On qualification dental therapists should:

- adhere to health and safety legislation as it affects dental practice
- practise according to the legal basis of radiographic practice
- implement and perform satisfactory infection control and prevent physical, chemical or microbiological contamination in the course of dental therapy treatment
- arrange and use the working practice environment in the most safe and efficient manner for all staff and patients, undertaking formal risk assessments where appropriate.

Medical conditions and emergencies

On qualification dental therapists should:

- recognise whether patients are fit to undergo routine dental care and recognise those patients who are beyond the scope of their management
- provide basic life support for medical emergencies.

Teaching, learning and assessment

Teaching and learning

Teaching and learning in dental therapy programmes use a variety of different approaches including:

- lectures
- tutorials/seminars/workshops
- practical and laboratory classes
- virtual learning environments
- group work and problem-oriented learning
- projects
- directed self-study
- the use of information and communications technology
- the acquisition and development of practical clinical skills
- observation and treatment of patients
- reflective practice and integration of learning.

The emphasis on different approaches is dependent upon the philosophy of each individual curriculum, but direct clinical treatment of patients is central to all.

Traditional lectures provide a means for delivering core information and an introduction to issues, themes or relevant clinical aspects of subjects to be studied. Lectures are used to develop student skills in listening, note taking, understanding and reflection. Such 'formal' presentations can be increased in value by the incorporation of varied presentation techniques, such as encouragement of student participation and planned activity within lectures.

Tutorials, seminars and workshops are often related to clinical issues or problems and are designed to provide an interactive focus for learning. They are concerned with the development of skills such as communication, teamwork, reasoning and critical appraisal.

Practical and laboratory classes are an important means of reinforcing deeper understanding of topics as well as developing skills in scientific methodology and in methods of observation relevant to the treatment of patients. Virtual learning environments represent a modern approach that can enhance learning in these contexts.

Student engagement in group work or specific educational approaches such as problem-based learning fosters skills such as the location, sifting and organisation of information, time management, task allocation, team working and preparation of reports.

Dental therapy students need to acquire the facility for directing their own learning. This is an essential attribute of the practising dental therapist. Directed self-study and the process of undertaking projects independently encourage the development of study skills, self-reliance, independence of thought and the ability to manage time effectively.

Dental therapy students should acquire transferable skills, including the use of information and communications technology for word-processing; sending email and accessing information by the internet; working with others in teams; making verbal and written presentations using appropriate audio-visual aids; and communicating with

colleagues and the public. Computer aided learning programs can be part of the learning process and a means of delivering and reinforcing information technology skills.

Opportunities must be provided for the identification and acquisition of practical clinical skills. The most common methods adopted are for students to spend time in a clinical skills laboratory or an appropriately equipped clinical area where they rehearse the procedures they will be required to perform on patients. This is another activity where the employment of virtual learning environments can be beneficial.

Great emphasis is placed on the quality of student management of patients in a variety of healthcare settings. The clinical environment can provide an ideal focus for active learning, as each patient presents a unique combination of parameters that affect proposed management. The development of students' oral communication skills and listening skills is of utmost importance in this. The transfer and continued development to clinical reality of practical clinical skills is fundamental to the successful progression of the dental therapy student, as is the acquisition of professional, attitudinal and ethical attributes appropriate to practice as a dental therapist.

An attitude of reflection needs to be fostered so that dental therapy students become increasingly motivated in their search for accuracy of self-assessment. The creation of progress files or reflective logbooks, in which students build a personal portfolio of learning, self-assessment and how they learn, may help. In this respect, integration of knowledge, understanding and skills, acquired from different sources and at different times, will be improved, fostering the first stages of lifelong learning.

Assessment

Assessment is recognised as an important factor in the way in which students learn and manage their time. There should be both formative and summative assessments. Summative assessments can be used formatively. The processes of assessment should be transparent: explicit criteria facilitate effective learning and allow for the provision of effective and meaningful feedback. In the development of knowledge, skills and attitudes appropriate to the clinical practice of dental therapy, the importance of student progression during the programme must be acknowledged. While, in a global sense, competence is seen to be achieved at the threshold level of qualification, students and teachers must see the value of 'staging posts' along the way. The attainment of learning outcomes should be demonstrated by clear links with methods of both teaching and learning, with methods of assessment and with the specific tasks of assessment.

Methods of assessment adopted should:

- be relevant to the purposes of dental therapy education
- reflect student progression through the programme
- enable students to demonstrate their understanding, level of attainment and an appropriate range of clinical and other abilities
- provide accurate, constructive feedback to students on their performance
- indicate whether a student has reached an appropriate standard
- examine students' communication skills
- allow records of student academic and clinical performance to be collated
- allow the participation of external examiners

Subject benchmark statement: Health care programmes

- engage in mechanisms of quality assurance
- provide information for course and programme organisers on the quality of provision
- reflect the intended learning outcomes of a course.

Standards

Upon successful completion of the programme of study dental therapists are eligible to apply for registration with the GDC and then to practise according to the contemporary statutory framework. On qualification, dental therapists therefore will have the professional qualities, attitudes and attributes necessary for this role. As a minimum they will have demonstrated a systematic understanding of the knowledge outlined in the previous parts of this statement. They will be able to apply the key and professional skills gained during the programme, being aware of their limited experience, and able to develop new skills.

Professionalism

On qualification dental therapists must practise and conduct their personal lives with professional integrity such as to command the respect and trust of both colleagues and patients, and justify the confidence placed in them through the demonstration of good clinical practice. They should be able to tackle and solve problems and plan and implement tasks at a professional level. They should be dedicated to the principle of lifelong learning and continuing professional development.

Knowledge

On qualification dental therapists will demonstrate:

- systematic understanding of the subject knowledge
- comprehensive understanding of the basis of professional practice
- practical understanding of the evidence base of clinical practice and the ability to evaluate new information.

Skills

On qualification dental therapists will demonstrate:

- key transferable skills including information appraisal and technology
- initiative and personal responsibility, making decisions based on sound ethical, moral and scientific principles, and applying an independent learning ability
- the ability to evaluate critically the health care system in which they will work, and to assume responsibility for oral health promotion of individual patients and social groups
- competence in, and comprehensive understanding of, the skills outlined in this statement.

Dental technology

The nature and extent of programmes in dental technology

Dental technology is a professional discipline concerned with the design and manufacture of dental appliances. It is based on sound scientific and technical principles underpinned by knowledge and understanding of the relevant biological, technological and clinical medical and dental sciences.

It is essential that all dental technicians understand the need to act at all times reasonably, responsibly and within the public interest, putting the interests of patients before those of themselves. On qualification dental technicians are required to demonstrate a thorough understanding of the importance of ethical practice and professionalism, high levels of ability in communication skills and competence in the technical aspects of the manufacture of custom-made dental devices.

The educational environment should inspire the student dental technician to maintain high professional and personal standards and to recognise the importance of lifelong learning. This requires the newly qualified dental technician to appreciate the importance of participation in further formal education and training.

The educational environment should allow the student dental technician to develop an analytical approach to both the theory and practice of dental technology. This will be derived from their education in the basic and technological sciences. Required components of student-selected study and project work aim to stimulate critical thought, and allow students to acquire research methods and skills in collection, evaluation and presentation of evidence. This form of educational provision should allow students to develop an adaptable approach to the practice of dental technology so that they can respond effectively to the individual needs of patients and of the communities that they will serve.

The relationship between dental technicians and other members of the dental team is based on trust. Students must be made aware of their responsibilities in relation to confidentiality of information obtained in a professional capacity.

It is essential that on qualification dental technicians understand the limitations of their current knowledge and abilities. They should be aware of the range of procedures available, and of the current evidence to support their choices. They must be able to refer back for an opinion on the design and manufacture of custom-made dental devices to a suitably experienced and qualified individual.

On qualification dental technicians will have developed fundamental manipulative techniques and the skills required to design and manufacture a range of custom-made dental devices within one of the following treatment modalities: fixed prosthodontics, removable prosthodontics or orthodontics.

On qualification dental technicians must appreciate the need to work in a safe environment in compliance with health and safety regulations. They must be familiar with the principles and practice of infection control, risk assessment, the control of substances hazardous to health and the need to maintain the safety of equipment and the manufacturing environment.

Subject benchmark statement: Health care programmes

The delivery of oral and dental care is very much based on a team approach. To assist in the development of a team approach to oral and dental care, it is helpful to provide joint teaching, where appropriate, to student dental technicians and other members of the dental team.

It is expected that on qualification dental technicians will have had experience of a wide range of design and manufacturing principles related to custom-made dental devices during their programme of study. They will not be highly skilled in all technical procedures. Flexibility exists within the programme of study to take account of the varying patterns of dental and oral health throughout the UK.

Subject knowledge and understanding

Students who successfully complete a programme in dental technology in the UK should be able to integrate material from all parts of their curriculum to demonstrate knowledge and understanding of the following areas and topics, **insofar as they are relevant to the practice of dental technology:**

- biomedical sciences which form the basis for understanding human growth, development and health
- integration of human body systems, normal homeostasis and mechanisms of responses to insults, including trauma and disease
- oral biology, to include detailed knowledge of the form and function of teeth and associated structures in health and disease
- modern developments in biomolecular sciences
- human diseases and pathogenic processes, including genetic disorders, and the manifestation of those diseases
- diseases and disorders of the oral cavity and associated structures, their causes and sequelae together with the principles of their prevention and management
- sources of infection and the means available for infection control
- medical emergencies that may occur in the workplace and their prevention and management, including basic life support and resuscitation
- communication between dentists, dental technicians and patients, other health professionals and the public in general
- interpersonal skills appropriate for working within a multi-skilled team
- the medico-legal and ethical principles upon which the practice of dentistry is based
- the principles and importance of prevention in relation to dental disease, and how these principles are applied
- the safe and effective management of the manufacture of custom-made dental devices and of the dental laboratory environment
- biomaterials sciences, including the modern developments thereof
- principles related to the design and manufacture of custom-made dental devices for fixed prosthodontics, removable prosthodontics and orthodontics
- other specific dental topics including behavioural sciences, dental public health and preventive dentistry

- when, how, and to whom to refer for specialist advice
- the system for the delivery of health care in the UK with special reference to oral health care
- the oral health needs of different sections of the community
- the broad principles of scientific research and evaluation of evidence that are necessary for quality control within the dental laboratory
- the importance of peer review and continuing professional education and development.

Skills and attributes of the dental technician on qualification

Key skills

In addition to the subject-specific skills itemised in the following sections, the programme in dental technology encourages the development of key transferable skills, which underpin the lifelong educational and training process.

Transferable skills

On qualification dental technicians should, therefore, have the ability to:

- exercise initiative and personal responsibility
- communicate effectively at all levels in both the scientific and professional contexts using verbal, non-verbal and written means
- work effectively as members of a team
- use health informatics and information technology as a means of communication, for data collection and analysis, for improving services to patients and for self-directed learning
- analyse and resolve problems, and deal with uncertainty
- manage time, set priorities and work to prescribed time limits
- make decisions based on sound ethical, moral and scientific principles
- manage their learning in the context of establishing a philosophy of continuing professional development
- evaluate the evidence published in refereed scientific journals and other publications for sound experimental design and statistical analysis
- evaluate the validity of claims related to products or techniques.

Professionalism

Professional behaviour and clinical governance

On qualification dental technicians should be able to:

- understand the role and function of the GDC in regulating dental professionals, and be familiar with its issued guidelines
- recognise the ethical issues that may arise in their practice
- understand the implications of informed consent
- understand the ethical and legal basis of confidentiality, including the need to maintain accurate and complete patient records in a confidential manner and to store them securely

Subject benchmark statement: Health care programmes

- provide and receive constructive criticism
- recognise and take appropriate action to help incompetent, impaired or unethical colleagues.

Behavioural science and communication

On qualification dental technicians should have knowledge of the psychological aspects of human behaviour. They should be able to:

- agree dental treatment plans with other dental professionals
- display appropriate behaviour towards all members of the dental team
- appreciate the importance of psychological and social factors in the delivery and acceptance of dental technology care by patients
- recognise the responsibility and demonstrate the ability to share information and professional knowledge verbally and in writing
- understand the principles of occupational stress and its management.

Becoming a reflective dental technician

On qualification dental technicians should be dedicated to the principle of lifelong learning and continuing professional development. They should be able to:

- identify and use sources of continuing professional development and apply critical thought to a continually expanding knowledge base such that professional competence is maintained
- discharge the obligations incumbent upon every professional person including contributions to, and support for, the profession's collective initiatives in self-regulation, maintenance of standards, and the advancement of knowledge and expertise
- assess personal progress, including the identification of strengths and weaknesses
- evaluate outcomes of the design and manufacturing process, including the unexpected, and undertake remedial action where appropriate
- recognise and fulfil their responsibilities both as adult learners and as teachers
- use the principles of peer review and quality assurance in the workplace.

Dental health and society

Oral health promotion

On qualification dental technicians should be able to:

- be aware of predisposing and aetiological factors that require intervention to promote oral health
- understand the pattern of oral disease in society.

Assessment of the provision of custom-made dental devices

This section and the following sections cover the full range of subject-specific skills which relate to dental technology.

Biomaterials science

On qualification dental technicians should be able to perform the correct selection and manipulation of dental biomaterials used by the dental technician.

Fixed prosthodontics

On qualification dental technicians should be able to:

- manage the receipt of work from the clinical area
- use a variety of types of information and data to establish the requirements for a particular fixed prosthodontic device
- know when and how to progress fixed prosthodontic cases within the dental laboratory matched to treatment plans
- undertake the initial planning and preparation of fixed prosthodontic appliances for manufacture in the dental laboratory
- assess the fitness for purpose both of custom-made dental devices employed in the manufacture of fixed prosthodontic devices and of the final device itself.

Removable prosthodontics

On qualification dental technicians should be able to:

- manage the receipt of work from the clinical area
- use a variety of types of information and data to establish the requirements for a particular removable prosthodontic device
- know when and how to progress removable prosthodontic cases within the dental laboratory matched to treatment plans
- undertake the initial planning and preparation of removable prosthodontic appliances for manufacture in the dental laboratory
- assess the fitness for purpose both of custom-made dental devices employed in the manufacture of removable prosthodontic devices and of the final device itself.

Orthodontics

On qualification dental technicians should be able to:

- manage the receipt of work from the clinical area
- use a variety of types of information and data to establish the requirements for a particular orthodontic device
- know when and how to progress orthodontic cases within the dental laboratory matched to treatment plans
- undertake the initial planning and preparation of orthodontic appliances for manufacture in the dental laboratory
- assess the fitness for purpose both of custom-made dental devices employed in the manufacture of orthodontic devices and of the final device itself.

(NB A higher level of competence is required in one of the main components of the programme [ie fixed prosthodontics, removable prosthodontics or orthodontics] than in the other two subsidiary components.)

Working environment

Health and safety/infection control

On qualification dental technicians should:

- adhere to health and safety legislation as it affects the workplace
- understand the legal basis of risk assessment
- implement and perform satisfactory infection control and prevent physical, chemical or microbiological contamination in the course of dental technology procedures
- arrange and use the working environment in the most safe and efficient manner for all staff and patients, undertaking formal risk assessments where appropriate.

Medical conditions and emergencies

On qualification dental technicians should be able to provide basic life support for medical emergencies.

Teaching, learning and assessment

Teaching and learning

Teaching and learning in dental technology programmes use a variety of different approaches including:

- lectures
- tutorials/seminars/workshops
- practical and laboratory classes
- virtual learning environments
- work-based learning
- group work and problem-oriented learning
- projects
- directed self-study
- the use of information and communications technology
- the acquisition and development of practical skills
- observation of patients
- reflective practice and integration of learning.

The emphasis on different approaches is dependent upon the philosophy of each individual curriculum.

Traditional lectures provide a means for delivering core information and an introduction to issues, themes or relevant clinical aspects of subjects to be studied. Lectures are used to develop student skills in listening, note taking, understanding and reflection. Such 'formal' presentations can be increased in value by the incorporation of varied presentation techniques, such as encouragement of student participation and planned activity within lectures.

Tutorials, seminars and workshops are often related to clinical or technological issues or problems and are designed to provide an interactive focus for learning. They are

concerned with the development of skills such as communication, teamwork, reasoning and critical appraisal.

Practical and laboratory classes are an important means of reinforcing deeper understanding of topics as well as developing skills in scientific methodology and in methods of observation relevant to the design and manufacture of custom-made dental devices. It is essential that some of these classes are linked to actual work-based experience as part of the students' development.

Student engagement in group work or specific educational approaches such as problem-based learning fosters skills such as the location, sifting and organisation of information, time management, task allocation, team working and preparation of reports.

Dental technology students need to acquire the facility for directing their own learning. This is an essential attribute of the practising dental technician. Directed self-study and the process of undertaking projects independently encourage the development of study skills, self-reliance, independence of thought and the ability to manage time effectively.

Dental technology students should acquire transferable skills, including the use of information and communications technology for word-processing; sending email and accessing information by the internet; working with others in teams; making verbal and written presentations using appropriate audio-visual aids; and communicating with colleagues and the public. Computer aided learning programs can be part of the learning process and a means of delivering and reinforcing information technology skills.

Opportunities must be provided for the identification and acquisition of practical skills. The most common methods adopted are for students to spend time in a dental laboratory or an appropriately equipped area where they rehearse the procedures they will be required to perform. Virtual learning environments represent a modern approach that can enhance learning in these contexts.

Great emphasis is placed on the quality of student management of the design and manufacture of custom-made dental devices. The production dental laboratory environment provides an ideal focus for active learning, as each case presents a unique combination of parameters that affect proposed management. The continued development of practical skills is fundamental to the successful progression of the dental technology student, as is the acquisition of professional, attitudinal and ethical attributes appropriate to practice as a dental technician.

An attitude of reflection needs to be fostered so that dental technology students become increasingly motivated in their search for accuracy of self-assessment. The creation of progress files or reflective logbooks, in which students build a personal portfolio of learning, self-assessment and how they learn, may help. In this respect, integration of knowledge, understanding and skills, acquired from different sources and at different times, will be improved, fostering the first stages of lifelong learning.

Assessment

Assessment is recognised as an important factor in the way in which students learn and manage their time. There should be both formative and summative assessments. Summative assessments can be used formatively. The processes of assessment should be transparent: explicit criteria facilitate effective learning and allow for the provision of effective and meaningful feedback. In the development of knowledge, skills and attitudes

Subject benchmark statement: Health care programmes

appropriate to the practice of dental technology, the importance of student progression during the programme must be acknowledged. While, in a global sense, competence is seen to be achieved at the threshold level of qualification, students and teachers must see the value of 'staging posts' along the way. The attainment of learning outcomes should be demonstrated by clear links with methods of both teaching and learning, with methods of assessment and with the specific tasks of assessment.

Methods of assessment adopted should:

- be relevant to the purposes of dental technology education
- reflect student progression through the programme
- encourage integration of knowledge, understanding, skills and attitudes
- enable students to demonstrate their understanding, level of attainment and an appropriate range of abilities
- provide accurate, constructive feedback to students on their performance
- indicate whether a student has reached an appropriate standard
- examine students' communication skills
- allow records of student academic and technical performance to be collated
- allow the participation of external examiners
- engage in mechanisms of quality assurance
- provide information for course and programme organisers on the quality of provision
- reflect the intended learning outcomes of a course
- use methods which are appropriate to the specific technology.

Standards

Upon successful completion of the programme of study dental technicians are eligible to apply for registration with the GDC and then to practise according to the contemporary statutory framework. On qualification, dental technicians therefore will have the professional qualities, attitudes and attributes necessary for this role. As a minimum they will have demonstrated a systematic understanding of the knowledge outlined in the previous parts of this statement. They will be able to apply the key and professional skills gained during the programme, being aware of their limited experience, and able to develop new skills.

Professionalism

On qualification dental technicians must practise and conduct their personal lives with professional integrity such as to command the respect and trust of colleagues and the public, and justify the confidence placed in them through the demonstration of good practice. They should be able to tackle and solve problems and plan and implement tasks at a professional level. They should be dedicated to the principle of lifelong learning and continuing professional development.

Knowledge

On qualification dental technicians will demonstrate:

- systematic understanding of the subject knowledge
- comprehensive understanding of the basis of professional practice

- practical understanding of the evidence base of technological practice and the ability to evaluate new information.

Skills

On qualification dental technicians will demonstrate:

- key transferable skills including information appraisal and technology
- initiative and personal responsibility, making decisions based on sound ethical, moral and scientific principles, and applying an independent learning ability
- the ability to deal with complex issues in the design and manufacture of custom-made dental devices, make sound judgements, and communicate those decisions to patients and professional colleagues
- competence in, and comprehensive understanding of, the skills outlined in this statement.

Clinical dental technology

The nature and extent of programmes in clinical dental technology

Clinical dental technology is a professional clinical discipline concerned with the provision of a range of removable dental appliances¹ in order to maintain oral and dental health and function. Clinical dental technology is based on sound scientific and technical principles underpinned by knowledge and understanding of the relevant biological and clinical medical and dental sciences.

It is essential that all clinical dental technicians understand the need to act at all times reasonably, responsibly and within the public interest, putting the interests of their patients before those of themselves. On qualification clinical dental technicians are required to demonstrate a thorough understanding of the importance of ethical practice and professionalism, high levels of ability in communication skills and competence in the clinical and technical aspects of clinical dental technology.

The educational environment should inspire the student clinical dental technician to maintain high professional and personal standards and to recognise the importance of lifelong learning in a caring profession. This requires newly qualified clinical dental technicians to appreciate the importance of participation in further formal education and training.

The educational environment should allow the student clinical dental technician to develop an analytical approach to both the theory and practice of clinical dental technology. This will be derived from their education both in the basic and clinical sciences. Required components of student-selected study and project work aim to stimulate critical thought, and allow students to acquire research methods and skills in collection, evaluation and presentation of evidence. This form of educational provision should allow students to develop an adaptable approach to the practice of clinical dental technology so that they can respond effectively to the individual needs of patients and of the communities that they will serve.

The relationship between clinical dental technicians, dentists and their patients is based on trust. Students must be made aware of their responsibilities in relation to confidentiality of information obtained in a professional capacity.

It is essential that on qualification clinical dental technicians understand the limitations of their current knowledge and clinical abilities. They should be aware of the range of treatments available, and of the current evidence to support their choices, but not be expected to be able to provide them all. In such circumstances they must be able to refer back for an opinion on treatment and management to the dentist responsible for the overall care of the patient. They must understand how management regimes may need to take account of patients with special needs.

On qualification clinical dental technicians must be aware of the necessity for provision of information to patients so that informed consent can be obtained.

On qualification clinical dental technicians must appreciate the need to deliver clinical dental technology care in a safe environment for both patients and staff in compliance with health and safety regulations. They must be familiar with the principles and practice of infection control and radiation protection, risk assessment, the control of substances hazardous to health and the need to maintain the safety of equipment.

¹ In the clinical dental technology curriculum the term 'removable dental appliance' refers to appliances for intra-oral use only, including simple complete and removable partial dentures, mouthguards, retainers and splints, but excluding orthodontic devices and devices intended to affect temporomandibular joints, speech and other oropharyngeal functions.

The delivery of oral and dental care is very much based on a team approach. To assist in the development of a team approach to oral and dental care, it is helpful to provide joint teaching, where appropriate, to clinical dental technology students and other members of the dental team.

It is expected that on qualification clinical dental technicians will have had experience of a range of clinical tasks during their student programme. They will not be highly skilled in all clinical procedures. Flexibility exists within the programme of study to take account of the varying patterns of dental and oral health throughout the UK.

Subject knowledge and understanding

Students who successfully complete a programme in clinical dental technology in the UK should be able to integrate material from all parts of their curriculum to demonstrate knowledge and understanding of the following areas and topic, **insofar as they are relevant to the practice of clinical dental technology:**

- biomedical sciences which form the basis for understanding human growth, development and health
- integration of human body systems, normal homeostasis and mechanisms of responses to insults, including trauma and disease
- oral biology, to include detailed knowledge of the form and function of teeth and associated structures in health and disease
- modern developments in biomolecular sciences
- human diseases and pathogenic processes, including genetic disorders, and the manifestation of those diseases which are particularly relevant to the practice of dentistry
- diseases and disorders of the oral cavity and associated structures, their causes and sequelae together with the principles of their prevention and management
- sources of infection and the means available for infection control
- medical emergencies that may occur in the dental surgery and their prevention and management, including basic life support and resuscitation
- communication between dentists, clinical dental technicians and patients, their families, other health professionals and the public in general
- patients' responses to dental care and an understanding of how these may be affected by experience and psychological, social and cultural influences
- interpersonal skills appropriate for working within a multi-skilled team
- the medico-legal and ethical principles upon which the practice of dentistry is based, especially those relating to treatment of patients and involvement of patients in research
- the principles and importance of health promotion, health education and prevention in relation to dental disease, and how these principles are applied
- the safe and effective management of patients
- specific dental topics including behavioural sciences, biomaterials science, dental public health, oral and maxillo-facial surgery, oral medicine, oral microbiology, oral pathology, oral radiology, paediatric dentistry, pain and anxiety control, pharmacology and therapeutics, preventive dentistry and restorative dentistry

Subject benchmark statement: Health care programmes

- when, how, and to whom a patient should be referred for specialist advice or treatment
- the system for the delivery of health care in the UK with special reference to oral health care
- the oral health needs of different sections of the community, such as those with special needs
- the broad principles of scientific research and evaluation of evidence that are necessary for an evidence-based approach to dentistry
- the importance of clinical audit, peer review and continuing professional education and development.

Skills and attributes of the clinical dental technician on qualification

Key skills

In addition to the subject-specific skills itemised in the following sections, the programme in clinical dental technology encourages the development of key transferable skills, which underpin the lifelong educational and training process.

Transferable skills

On qualification clinical dental technicians should, therefore, have the ability to:

- exercise initiative and personal responsibility
- communicate effectively at all levels in both the scientific and professional contexts using verbal, non-verbal and written means
- work effectively as members of a team
- use health informatics and information technology as a means of communication, for data collection and analysis, for improving patient care and for self-directed learning
- analyse and resolve problems, and deal with uncertainty
- manage time, set priorities and work to prescribed time limits
- make decisions based on sound ethical, moral and scientific principles
- manage their learning in the context of establishing a philosophy of continuing professional development
- acquire, analyse, process and communicate information in a scientific manner to solve problems and to guide clinical decision-making
- evaluate the evidence published in refereed scientific journals and other publications for sound experimental design and statistical analysis
- evaluate the validity of claims related to products or techniques.

Professionalism

Professional behaviour and clinical governance

On qualification clinical dental technicians should be able to:

- understand the role and function of the GDC in regulating dental professionals, and be familiar with its issued guidelines
- understand the role, function and obligations of the National Health Service

- manage the ethical issues that may arise in dental practice
- apply jurisprudence to the practice of dentistry
- understand the implications of and obtain informed consent
- understand the ethical and legal basis of confidentiality, including the need to maintain accurate and complete patient records in a confidential manner and to store them securely
- provide empathetic care for all patients, including members of diverse and vulnerable populations, and respect the principle of patient autonomy
- provide and receive constructive criticism
- recognise and take appropriate action to help incompetent, impaired or unethical colleagues and their patients.

Behavioural science and communication

On qualification clinical dental technicians should base their care of patients on a sound knowledge and experience of the psychological aspects of human behaviour. They should be able to:

- discuss dental treatment plans with patients of all ages and, where necessary, through the intermediate consent of a parent, guardian or carer
- display appropriate behaviour towards all members of the dental team
- understand the principles of dental anxiety management (behavioural) as applied to the treatment of the anxious dental patient
- appreciate the importance of psychological and social factors in the delivery and acceptance of dental care by patients
- recognise the responsibility and demonstrate the ability to share information and professional knowledge verbally and in writing
- understand the principles of occupational stress and its management.

Becoming a reflective clinical dental technician

On qualification clinical dental technicians should be dedicated to the principle of lifelong learning and continuing professional development. They should be able to:

- identify and use sources of continuing professional development and apply critical thought to a continually expanding knowledge base such that professional competence is maintained
- discharge the obligations incumbent upon every professional person including contributions to, and support for, the profession's collective initiatives in self-regulation, maintenance of standards, and the advancement of knowledge and expertise
- assess personal progress, including the identification of strengths and weaknesses
- evaluate all treatment outcomes, including the unexpected, and undertake remedial action where appropriate
- recognise and fulfil their responsibilities both as adult learners and as teachers
- use the principles of peer review and quality assurance in dental practice.

Dental health and society

Dental public health

On qualification clinical dental technicians should understand the health care system in which they will work, and should be able to:

- evaluate social and economic trends and their impact on oral health care
- recognise their role in and responsibility for improving the general and oral health of the community through treatment strategy, education and service
- describe and understand the prevalence of oral disease in the UK adult and child populations.

Oral health promotion

On qualification clinical dental technicians should be able to:

- recognise predisposing and aetiological factors that require intervention to promote oral health
- understand the pattern of oral disease in society and be able to contribute to health promotion
- assess the need for, and provide, preventive procedures, dietary advice and instruction in oral health methods that incorporate sound biological principles in order to preserve oral hard and soft tissues, and to prevent disease
- use and provide appropriate therapeutic agents and treatment modalities.

Assessment of the patient and oral environment

This section and the following sections cover the full range of subject-specific skills which relate to the clinical practice of the clinical dental technician.

Biomedical science

On qualification clinical dental technicians should be able to:

- apply their knowledge and understanding of biomedical sciences, oral biology and biomolecular sciences to the management of their patients
- recognise the changes that occur with normal growth and ageing and apply their knowledge in the management of the oral environment
- apply their knowledge of the aetiology and processes of oral diseases in prevention and treatment.

History and examination

On qualification clinical dental technicians should be able to:

- check and evaluate a relevant medical history and recognise the possible effects of oral disease on medical well-being and the medical conditions that affect oral health or dental treatment
- recognise the significance and effect of drugs and other medicaments, taken by the patient, on dental management
- obtain a detailed dental history of the patient's dental state

- make a general evaluation of a patient's appearance, including the identification of abnormalities in their physical, emotional or mental status
- recognise signs of physical, emotional and substance abuse and seek advice from appropriate authorities
- perform an examination of the oral hard and soft tissues, recognise vital signs, and recognise disease states and abnormalities including detrimental oral habits
- establish and maintain accurate patient records.

Oral radiology

On qualification clinical dental technicians should be able to:

- take and process appropriate intra-oral and dental panoramic radiographs
- interpret findings from the history, clinical and radiographic examinations.

Patient care

On qualification clinical dental technicians should be able to:

- identify patient expectations and goals for oral care
- interpret, present and discuss prioritised individual treatment options for patients of all ages, and recognise the need for referral to the dentist who has overall responsibility for the care of the patient
- explain and discuss the patient's responsibilities and time requirements
- use their knowledge of the properties of modern dental materials to select and use appropriate materials for treatment
- manage circumstances where the patient's wishes are considered by the dental team not to be in his/her best interests.

Establishment and maintenance of a healthy oral environment

Pain and anxiety control

On qualification clinical dental technicians should be able to:

- recognise the common signs and symptoms of oro-facial pain, anxiety and apprehension
- assess the level of anxiety in adult and child patients and have experience of using recognised psychological inventories
- manage fear and anxiety with behavioural techniques.

Dental emergencies

On qualification clinical dental technicians should be able to identify and manage dental emergencies arising during the course of treatment by clinical dental technicians.

Dental caries and tooth surface loss

On qualification clinical dental technicians should be able to understand patient risk for dental caries and non-bacterial tooth surface loss.

Prosthodontics

On qualification clinical dental technicians should be able to manage and integrate the procedures necessary to provide biocompatible, functional and aesthetic removable dental prostheses in sympathy with patient requirements or needs.

Special needs

On qualification clinical dental technicians should be able to:

- recognise their duty of care regarding the oral health of the patient with special needs (including the additional considerations for the dental team) and involve the patient's carer where appropriate
- take account of the dental health care needs of those who may be considered to be socially excluded.

Working environment

Health and safety/infection control

On qualification clinical dental technicians should:

- adhere to health and safety legislation as it affects the workplace
- practise according to the legal basis of radiographic practice
- implement and perform satisfactory infection control and prevent physical, chemical or microbiological contamination in the course of clinical dental technology treatment
- arrange and use the working practice environment in the most safe and efficient manner for all staff and patients, undertaking formal risk assessments where appropriate.

Medical conditions and emergencies

On qualification clinical dental technicians should be able to:

- recognise whether patients are fit to undergo routine dental care and recognise those patients who are beyond the scope of their management
- provide basic life support for medical emergencies.

Teaching, learning and assessment

Teaching and learning

Teaching and learning in clinical dental technology programmes use a variety of different approaches including:

- lectures
- tutorials/seminars/workshops
- practical and laboratory classes
- virtual learning environments
- group work and problem-oriented learning
- projects
- directed self-study

- the use of information and communications technology
- the acquisition and development of practical clinical skills
- observation and treatment of patients
- reflective practice and integration of learning.

The emphasis on different approaches is dependent upon the philosophy of each individual curriculum, but direct clinical treatment of patients is central to all.

Traditional lectures provide a means for delivering core information and an introduction to issues, themes or relevant clinical aspects of subjects to be studied. Lectures are used to develop student skills in listening, note taking, understanding and reflection. Such 'formal' presentations can be increased in value by the incorporation of varied presentation techniques, such as encouragement of student participation and planned activity within lectures.

Tutorials, seminars and workshops are often related to clinical issues or problems and are designed to provide an interactive focus for learning. They are concerned with the development of skills such as communication, teamwork, reasoning and critical appraisal.

Practical and laboratory classes are an important means of reinforcing deeper understanding of topics as well as developing skills in scientific methodology and in methods of observation relevant to the treatment of patients. Virtual learning environments represent a modern approach that can enhance learning in these contexts.

Student engagement in group work or specific educational approaches such as problem-based learning fosters skills such as the location, sifting and organisation of information, time management, task allocation, team working and preparation of reports.

Clinical dental technology students need to acquire the facility for directing their own learning. This is an essential attribute of the practising clinical dental technician. Directed self-study and the process of undertaking projects independently encourage the development of study skills, self-reliance, independence of thought and the ability to manage time effectively.

Clinical dental technology students should acquire transferable skills, including the use of information and communications technology for word-processing; sending email and accessing information by the internet; working with others in teams; making verbal and written presentations using appropriate audio-visual aids; and communicating with colleagues and the public. Computer aided learning programs can be part of the learning process and a means of delivering and reinforcing information technology skills.

Opportunities must be provided for the identification and acquisition of practical clinical skills. The most common methods adopted are for students to spend time in a clinical skills laboratory or an appropriately equipped clinical area where they rehearse the procedures they will be required to perform on patients. This is another activity where the employment of virtual learning environments can be beneficial.

Great emphasis is placed on the quality of student management of patients in a variety of healthcare settings. The clinical environment can provide an ideal focus for active learning, as each patient presents a unique combination of parameters that affect proposed management. The development of students' oral communication skills and listening skills is of utmost importance in this. The transfer and continued development to clinical reality of practical clinical skills is fundamental to the successful progression of

the student clinical dental technician, as is the acquisition of professional, attitudinal and ethical attributes appropriate to practice as a clinical dental technician.

An attitude of reflection needs to be fostered so that clinical dental technology students become increasingly motivated in their search for accuracy of self-assessment. The creation of progress files or reflective logbooks, in which students build a personal portfolio of learning, self-assessment and how they learn, may help. In this respect, integration of knowledge, understanding and skills, acquired from different sources and at different times, will be improved, fostering the first stages of lifelong learning.

Assessment

Assessment is recognised as an important factor in the way in which students learn and manage their time. There should be both formative and summative assessments. Summative assessments can be used formatively. The processes of assessment should be transparent: explicit criteria facilitate effective learning and allow for the provision of effective and meaningful feedback. In the development of knowledge, skills and attitudes appropriate to the clinical practice of clinical dental technology, the importance of student progression during the programme must be acknowledged. While, in a global sense, competence is seen to be achieved at the threshold level of qualification, students and teachers must see the value of 'staging posts' along the way.

The attainment of learning outcomes should be demonstrated by clear links with methods of both teaching and learning, with methods of assessment and with the specific tasks of assessment.

Methods of assessment adopted should:

- be relevant to the purposes of clinical dental technology education
- reflect student progression through the programme
- encourage integration of knowledge, understanding, skills and attitudes
- enable students to demonstrate their understanding, level of attainment and an appropriate range of clinical and other abilities
- provide accurate, constructive feedback to students on their performance
- indicate whether a student has reached an appropriate standard
- examine students' communication skills
- allow records of student academic and clinical performance to be collated
- allow the participation of external examiners
- engage in mechanisms of quality assurance
- provide information for course and programme organisers on the quality of provision
- reflect the intended learning outcomes of a course.

Standards

Upon successful completion of the programme of study clinical dental technicians are eligible to apply for registration with the GDC and then to practise according to the contemporary statutory framework. On qualification, clinical dental technicians therefore will have the professional qualities, attitudes and attributes necessary for this role. As a minimum they will have demonstrated a systematic understanding of the knowledge

outlined in the previous parts of this statement. They will be able to apply the key and professional skills gained during the programme, being aware of their limited experience, and able to develop new skills.

Professionalism

On qualification clinical dental technicians must practise and conduct their personal lives with professional integrity such as to command the respect and trust of both colleagues and patients, and justify the confidence placed in them through the demonstration of good clinical practice. They should be able to tackle and solve problems and plan and implement tasks at a professional level. They should be dedicated to the principle of lifelong learning and continuing professional development.

Knowledge

On qualification clinical dental technicians will demonstrate:

- systematic understanding of the subject knowledge
- comprehensive understanding of the basis of professional practice
- practical understanding of the evidence base of clinical practice and the ability to evaluate new information.

Skills

On qualification clinical dental technicians will demonstrate:

- key transferable skills including information appraisal and technology
- initiative and personal responsibility, making decisions based on sound ethical, moral and scientific principles, and applying an independent learning ability
- the ability to evaluate critically the health care system in which they will work, and to assume responsibility for oral health promotion of individual patients and social groups
- competence in, and comprehensive understanding of, the skills outlined in this statement.

Appendix 1

Professions complementary to dentistry benchmark group membership

Richard Clifford	General Dental Council
Tony Griffin	The People's College, Nottingham
Mike Laugharne	Quality Assurance Agency for Higher Education
Sheila Phillips	University of Portsmouth
Clare Roberts	King's College London
Kevin Seymour	Queen Mary, University of London
Colin Smith (Chair)	University of Sheffield