

UK National Curriculum for Undergraduate Oral Surgery

Subgroup for Teaching of the Association of British Academic Oral and
Maxillofacial Surgeons

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Abstract

This paper describes a curriculum in oral surgery for undergraduate dental education in the United Kingdom prepared by the Education Subgroup of The British Academic Oral and Maxillofacial Surgeons (ABAOMS). This group is made up of representatives from each of the 13 UK Dental Schools, one Irish Dental School and one Post-graduate Institute. The document represents a group consensus of an undergraduate UK oral surgery curriculum that is founded on the frameworks outlined by the General Dental Council (GDC), the Quality Assurance Agency for Higher Education (QAA) and the Association for Dental Education in Europe (ADEE). Our curriculum document is more prescriptive than the information available in the a fore mentioned documents. It is based on UK undergraduate oral surgery experience and thus attempts to set achievable core competencies and, in a few areas, challenges the available curriculum and related documentation.

Key words: curriculum design; curriculum/standards; core curriculum; objective assessment, oral surgery, exodontia.

Word count: 3,911

The Association of British Academic Oral and Maxillofacial Surgeons is dedicated to discussing research and issues affecting education and training within Oral and Maxillofacial Surgery. The association's membership includes clinical

academic and NHS staff active in the teaching of oral surgery.

www.abaoms.org.uk

Introduction

Existing Oral Surgery Curriculum Guidance

There have been multiple dental undergraduate curricula and associated documents (1-8) produced over the last few years. Some have sought to address the whole curriculum under the auspices of a governing body or advisory association and others specialty delimited areas of the curriculum. All have had appropriate representation of academics in some form. The Association of British Academic Oral and Maxillofacial Surgeons (ABAOMS) decided that against this background and some disquiet over the ambiguity of some elements of the available guidelines and curricula to instigate a working group to develop a definitive UK curriculum in undergraduate oral and maxillofacial surgery. At the time of formation, this working group consisted of academics from each of the 13 UK dental schools, and one Irish dental school. In addition, the group had representation from the University of Central Lancashire and sought representation from the Peninsula Dental School. All members of the group are actively involved in the hands on teaching of undergraduates and have input on the varying types of Curricula and Examination committees at their respective schools.

The initiation of the oral and maxillofacial surgery curriculum started as a review of all other available curricula and other related guidelines, both specialty specific (8) and generic (5-7). The curriculum that has evolved has elements of all and is

cross-referenced to the three major curricula and/ or competency frameworks (5 - 7), the pertinent parts of which are contained in Tables 1 to 3. In addition, the move towards a common profile and competencies for the European Dentist (6) prompted our group to include Table 4 in recognition of this important development. The Profile and Competencies for the European dentist outlines major competencies and supporting competencies. All European dental schools will be expected to adhere to the 17 major competencies although supporting competencies will be subject to individual school variation. The proposed curriculum for undergraduate oral surgery has been approved by ABAOMS and it is our aim to establish this as our national curriculum for undergraduate oral surgery. It compliments the minimum requirements laid down in the GDC's First Five years documentation (5) which is essential for students training in the UK. It is recognized that there may be variations between curricula in dental schools across the European Union which would mean appropriate changes to this curriculum if it were in the future to be developed as a European-wide curriculum for undergraduate oral surgery.

Outline of the Proposed Oral Surgery Curriculum

This curriculum covers both the theoretical and clinical aspects of oral and maxillofacial surgery. The group recognises the essential requirement of the basic sciences in providing the foundations for successful surgery and emphasises their importance. In common with the General Dental Council we would insist on their vertical integration alongside clinical teaching wherever possible. Vertical integration is a key means of “linking theoretical ideas with practice” providing effective teaching (9) and moving students higher up the critical matrix of learning (10). Without it students can view the basic sciences as a collection of facts to be quickly superficially learnt and then as quickly forgotten.

The broad nature of oral and maxillofacial surgery means that it is very difficult to segregate it from allied disciplines such as oral medicine and pathology. Given this, within the following curriculum there is inevitably some overlap. It is not our intention to be prescriptive, or indeed set others' curriculum. We felt it appropriate however, to illustrate broad areas of crossover in which students could gain valuable experience whilst attending oral and maxillofacial surgery teaching. We feel if a disciplinary-limited view is engendered in our students by the curriculum, it may encourage superficial learning.

The proposed curriculum is defined in seven key areas, which cover both clinical and academic work:

1. Generic Competencies.
2. The Dentoalveolar System.
3. The Skeletal Structures.
4. The Oral Mucosa.
5. Disorders of the Face and Jaws.
6. Salivary Gland Disease.
7. Pain of Non-Odontogenic Origin

Each area is further broken down into its sub-components and the General Dental Council's terms and definitions have been used to outline the level of knowledge and ability required for each of these components. These are:

Be competent at:

Students should have a sound theoretical knowledge and understanding of the subject together with an adequate clinical experience to be able to resolve clinical problems encountered, independently, or without assistance.

Have knowledge of:

Students should have a sound theoretical knowledge of the subject, but need have only a limited clinical/practical experience.

Be familiar with:

Students should have a basic understanding of the subject, but need not have direct clinical experience or be expected to carry out procedures independently.

There are some obvious coregeneric clinical competencies that span all dental disciplines and would be expected from any dental graduate. These are outlined at the beginning of the curriculum for clarity. Each statement is cross-referenced to statement(s) contained in one of the Tables 1-4, which contain existing frameworks and guidance for UK and European curricula and competency frameworks.

Assessment

Recently, there has been an increasing drive towards competency based education and assessments in medical and dental training (6, 11). The General Dental Council has defined competency in terms of academic progress; another definition encompasses both academic and clinical expertise. Competency according to Chambers is a group of “skills essential to beginning the practice of dentistry and allied dental practice. Competencies combine appropriate supporting knowledge and professional attitudes, and they are performed reliably in natural settings without assistance”(12). The progression towards competency has been described in stages; from beginner (the unconscious incompetent), novice (the conscious incompetent), and the consciously competent individual

(13). These stages must be supported by appropriate teaching modalities (clinical skill teaching).

Assessment is formative or summative. Formative assessment is the regular ongoing in-course evaluation of a student's progress whereas summative is a more comprehensive and in-depth examination of their progress up and to a point in time, usually the end of a module, semester or term. In either form it "drives learning" (9). Formative assessment and feedback should be viewed as disparate entities. Feedback should be used alongside formative assessment in a neutral non-judgemental way to help the student reflect on their performance (14). It is essential alongside the student's reflection to help identify the areas for improvement (15). There should be a mechanism by which the student can reflect and the tutor can provide feedback on their performance prior to any grades being awarded. Formative assessment and feedback can be used to help the student reach a point where he/she is happy to undergo summative assessment of their skills and knowledge. Longitudinal examination of these formative episodes can also provide helpful information for student and teacher.

Summative assessment must address both the clinical and academic knowledge bases. Written assessments in various forms including modified essay questions (MEQ), extended matching items (EMI), problem based learning (PBL) are all appropriate for the testing of academic knowledge and to a certain degree clinical

knowledge. However, the testing of clinical competence can become somewhat subjective for a professional examination.

The assessment of clinical competence has been described as a pyramid (16) (Figure 1), the base of which is the demonstration of knowledge of a particular procedure and its pinnacle the ability to perform that procedure. Within dentistry we have to assess all levels of this pyramid and many of the levels have assessments suited to the task (Figure 1). Unfortunately, there is still debate within the literature over how best to assess the pinnacle, “the ability to do”, within the clinical setting (17). The marginal consensus is to utilize objective checklists (18). Despite there being ongoing debate we would suggest that these are utilized until new evidence suggests otherwise, to this end we have made some available on the Association’s website (www.abaoms.org.uk). This type of in-course test will help assess students in specific skills. We would also advocate the use of appropriately constructed Objective Structured Clinical Exams (OSCE), alongside trained examiners to fully examine the individual’s clinical competence.

A review of UK dental school practice prior to commencing this curriculum development established that the majority of our schools are undertaking both formative and summative assessments of core clinical skills e.g, exodontia (10/13) and surgical exodontia (9/13). However, there is significant variation in the format and delivery of oral surgery courses with block teaching in some

schools whereas others have adopted a more longitudinal teaching. Nearly all schools deliver oral surgery as part of an integrated oral diseases course. There is huge variation in the case mix at each institution making standardization of the undergraduate experience difficult. This is compounded by increasing pressure to enroll more students. Outreach teaching, in the later years of the course, has many advantages but has taken the students out of the specialist environment of a Dental School and has therefore had a deleterious impact upon the students' exposure to minor oral surgery. The majority of our departments are staffed by a very small number of dedicated individuals who manage to balance their clinical and on call commitments, often at multiple sites, with their teaching and research responsibilities. In addition, the balance of the group is top heavy with many senior academics who are expected to retire within the next five years. Already some units are having problems recruiting new staff to fill vacated posts. This maybe because academic oral surgery is not viewed as an attractive career option due to the pressures of the post and in some instance uncertainty about training programmes and the career structure within the UK. Despite all of the above our group is dedicated to working towards a universal standard of teaching and assessment to guarantee optimal undergraduate experience of oral & maxillofacial surgery in the UK. To this end our group is working to unify the competencies that UK undergraduates undertake and the manner in which they undertake them. This will allow: a) a more consistent and comparable undergraduate experience in the U.K.; and b) pooling of data to allow greater understanding of the competency process.

Proposed Curriculum

Each statement is cross referenced to Tables 1-4 containing statements related to the oral surgery undergraduate curriculum outlined by the GDC' First Five Years (5), the QAA benchmarks (6) and the DentEd Project, profile and competencies for the European dentist (7).

1 Generic Competencies

- 1.1 Patient examination and diagnosis.
- 1.2 Treatment planning and patient management.
- 1.3 Medical emergencies and dental trauma.
- 1.4 Anxiety and pain control, anaesthesia, and sedation.
- 1.5 Therapeutic management disease of the head and neck.

1.1 Patient examination and diagnosis

Be competent in:

- 1. obtaining, assessing and recording a medical, dental, family, and social history. (34, 37,39, 41, 42, 43, 61,62)
- 2. performing a clinical examination of the clothed patient that encompasses facial, intra-oral, head and neck, general (vital signs, e.g. pulse, temperature, respiratory rate, O₂ saturations, BP) and behavioural aspects of a patient.(44,45,63,65)
- 3. prescribing, justifying and performing intra- and extra-oral radiographic examination appropriate for the diagnostic needs of the patient.(23)
- 4. assessing intra- and extra-oral radiographs. (67)

Have knowledge of:

- 5. facial and dental growth and development. (29,30,71)
- 6. the symptoms associated with temporomandibular disorders.(77)

Be familiar with:

- 7. the clinical features associated with oral mucosal diseases.(2, 12, 14, 47, 74)
- 8. developmental abnormalities.(30)
- 9. conditions which may require referral to a specialist.(28,35,47,97)
- 10. facial pain of non-odontogenic origin. (2,45,47,76,97)

1.2 Treatment planning and patient management

Be competent in:

- 1. developing treatment plans to a level appropriate for general dental practice.(24-28,34,37,40,43,44,53,61,62,65,66)
- 2. obtaining valid consent (72)

- liaise with other healthcare professionals either verbally or in written form. (35, 37, 47, 58)

1-3 Medical emergencies and dental trauma

Be competent in:

- assessing the patient and providing basic and effective life support. (78, 102, 103) in situations such as defined by the GDC (19)

Have knowledge of:

- the management of oral injuries and be able either to manage such injuries or refer appropriately. (91, 104, 105)

1-4 Anxiety, pain control, sedation and anaesthesia

Be competent in:

- recognising common signs and symptoms of pain and anxiety. (5, 6, 45, 63)
- the assessment and obtaining valid consent for patients prior to undergoing conscious sedation and general anaesthesia. (72)
- the administration of suitable local analgesia for pain management in patients, and recognise and manage complications relating to its use. (7, 46, 96)

Have knowledge of:

- the assessment and management of anxiety in patients using behavioural techniques, and when appropriate, with conscious sedation techniques. (8, 50, 79, 98)
- the prevention, recognition and effective management of complications relating to the use of conscious sedation. (8, 79, 80)
- the pharmacology, selection and prescription of drugs for the relief of pain and anxiety. (99)

1-5 Therapeutic management of disease of the head and neck

Be competent in:

- prescribing prophylactic drugs in relation to current national guidelines, e.g. antibiotics, steroids, (13, 31, 39, 42, 49, 73)

Have knowledge of:

- the management of bacterial, viral and fungal infections of the oral tissues. (4, 17, 22, 87)

Be familiar with:

- systemic conditions and associated treatments and their effect on oral health. (31, 39, 73)
- potential drug interactions which may occur between prescribed medications (22)

2 The Dentoalveolar System:

Be competent to:

- 2.1 extract erupted teeth (1,15,21,90)
- 2.2 remove simple erupted roots with forceps/elevators (1,15,92)
- 2.3 assess and perform surgical management for a failed exodontia by conventional techniques e.g failed extraction of a lower second molar fracturing off the crown necessitating raising a mucoperiosteal flap, bone removal +/- tooth sectioning to facilitate elevation of the roots and wound closure by suturing using appropriate suture materials (49,92)
- 2.4 diagnose and manage pericoronitis (14,17)
- 2.5 suture the soft tissues to facilitate healing by primary intention and for the management of haemorrhage (94)
- 2.6 manage an elective surgical case e.g. the removal of a retained root requiring the raising of a mucoperiosteal flap and bone removal to allow elevation of the root and then wound closure.(15,72,92)
- 2.7 recognise the need for a surgical extraction (21,28,35)

Have knowledge of:

- 2.8 the management and prevention of the common peri-operative and post-operative complications of extraction and surgical dentistry e.g. fracturing the tuberosity whilst extracting an upper lone standing second molar (50,94)
- 2.9 local and systemic factors complicating extraction (50)
- 2.10 the diagnosis and management a dry socket (50,87)
- 2.11 the local management of non-airway threatening acute infection presenting intra-orally e.g. incision and drainage of an isolated fluctuant swelling and appropriate conservative or non-conservative management of the offending tooth (2,12,17,40,87) limited experience of intra-oral drainage.
- 2.12 the management of cellulitis secondary to odontogenic infection including appropriate referral for potentially airway compromising infection (2,17,28,32,35,50,87)
- 2.13 the management of oro-antral communications including simple measures that can be instigated whilst awaiting referral for surgical management (94)
- 2.14 the management of teeth or tooth fragments displaced into the maxillary antrum (94)
- 2.15 surgical endodontics (21,28,35,36,81)
- 2.16 the management of trauma to the alveolus (91,104)

Be familiar with:

- 2.17 the indications for, investigation of and the management of impacted teeth, supernumeraries and odontomes and be able to counsel patients on the complications associated with such management and to referral to an appropriate specialist (92)
- 2.18 hard tissue preprosthetic surgery (93)
- 2.19 implantology (95)

3 The Skeletal Structures:

Have knowledgeable of the presentation, investigation and management of:

- 3.1. fractures of the facial skeleton (19,29,44,49,57,58,75)
- 3.2. disorders of the temporomandibular complex (2,47,58 77)

Be familiar with:

- 3.3 the assessment of facial morphology and the role of the surgical management of abnormalities e.g. clefts, skeletal disharmony, syndromes (20,31,32,35,44,55,71)
- 3.4 systemic conditions that may manifest in the craniofacial skeleton (31,35,56,65,71,73)

4 The oral mucosa:

Be competent to:

- 4.1. recognise the clinical features of potentially malignant and malignant lesions and refer to a relevant specialist in an appropriate time frame(3,4,18,28,34,35,37,47,49,55,57,64,74)

Have knowledge of:

- 4.2 the aetiological factors associated with malignancy and be able to counsel patients on cancer prevention including smoking cessation (3,32,38,39,40,89)
- 4.3 the indications for and various techniques of biopsy: incisional; excisional; fine needle aspiration and cytology (67,85)

Be familiar with the presentation, investigation, interpretation of pathology reports and principles of management of:

(2,4,11,12,14,22,23,24,32,,38,40,42,50,84,86,87,88)

- 4.4 benign mucosal conditions
- 4.5 vesiculobullous conditions
- 4.6 bacterial, fungal and viral infections condition of the oral mucosa
- 4.7 ulcerative conditions of the oral mucosa
- 4.8 granulomatous conditions of the oral mucosa
- 4.9 dermatological conditions affecting the oral mucosa
- 4.10 gingival enlargement
- 4.11 soft tissue preprosthetic surgery

5 Disorders of the Face and Jaws:

(1-4, 11,12,23,27,28,35,40,43,44,49,55,57,58,67,71,93,)

Be familiar with the presentation, investigation and principles of management of:

- 5.1 odontogenic and non-odontogenic cysts
- 5.2 inflammatory bone conditions including osteomyelitis, bisphosphonate associated osteochemonecrosis and osteoradionecrosis
- 5.3 osseodysplasias
- 5.4 osteomas and tori
- 5.5 primary or metastatic malignant bone disease
- 5.6 giant cell lesions
- 5.7 other abnormalities of the jaws that may present on radiographic examination

6 Salivary Gland Disease:

(1-4, 11, 12, 17, 23, 32, 35, 47, 49, 69, 84)

Be familiar with the presentation, investigation and principles of management of:

- 6.1 disorders of salivation e.g. xerostomia
- 6.2 infective salivary gland conditions
- 6.3 obstructive salivary gland conditions
- 6.4 salivary gland cysts
- 6.5 non-infective salivary gland enlargement
- 6.6 benign and malignant salivary tumours

7 Pain of Non-Odontogenic Origin:

(2, 5, 22, 23, 28, 35, 45, 47, 50, 58, 49, 97)

Be competent to:

- 7.1 differentiate between pain of odontogenic and non-odontogenic origin

Be familiar with:

- 7.2 the presentation, investigation, principles of management and appropriate referral of pain of non-odontogenic origin e.g.:
 - neuralgia
 - atypical facial pain
 - migrainous conditions
 - temporal giant cell arteritis
 - burning mouth syndrome
 - psychogenic pain
- 7.3 iatrogenic causes of pain and the principles of surgical management of such conditions
- 7.4 drugs that can be prescribed to manage acute oral and maxillofacial pain.

Discussion

The outlined curriculum is a prescriptive document but has deliberately avoided giving quantitative targets for numbers of procedures to achieve the competencies outlined. Most schools continue to set minimum requirements that act as targets that students are expected to attain, however, the use of assessments of competence help identify students that require closer supervision and support (20). Indeed a recent study examining students' perceived barriers to undertaking assessments of competence in dentistry found the greatest barrier to be lack of case material both on which to practice and to undertake the assessment (21). This coupled to the recent finding that there is no obvious "required minimum number" of clinical experiences for the achievement of competence in oral surgery (22) would suggest that setting quantitative targets would be counter productive and could waste valuable clinical material. This move away from minimum quantitative targets to competency in the UK would parallel changes in the American pre-doctoral education system (23).

Arguably the most difficult competency to deliver is surgical exodontia, and this is where the above outlined curriculum differs from the available frameworks. As a group we found marked inter-institutional variation in the delivery of surgical exodontia leading to, in some cases, low levels of exposure for students. This lack of exposure has led some vocational trainees and their trainers to report reluctance to undertake surgical exodontia in practice (24). This dilution of exposure to surgical exodontia will become further compounded by the recent

increase in undergraduate student numbers for most dental schools, coupled with a difficulty in recruiting or retaining academic staff (25). The teaching of minor oral surgery is very labour intensive requiring dedicated, vigilant staff to ensure a consistent standard of teaching, supervision and assessment. Despite these obstacles our group believe that we should still be delivering new graduates with surgical skills that can be further developed in Dental Foundation Training (26). Familiarity with a competency based curriculum should facilitate the transition into a competency based foundation training programme.

A curriculum that is competency based with a transparent and consistent process of clinical assessment allows early identification and subsequent targeted training of those students requiring additional support. In addition, it also allows the early identification of very able students so that those individuals can be advanced to the next surgical challenge and be placed in a “holding pattern” in the competency achieved. This situation not only frees limited clinical teaching time that can be focused on advancing the other students, but also ensures exceptional students would not be disadvantaged and may actually be able to inspire these students to act as mentors for those who have not yet achieved competency. This outcome may become more important with the development of graduate entry programmes, as potentially individuals with greater life experience and more developed skills may have a positive effect on the learning environment.

Ideally we would like to deliver graduates who are competent in minor oral surgery. We would however like to limit this to retrieval of failed exodontia, more in line with the American Dental Schools (8) ie, the removal of “*an erupted uncomplicated tooth*” requiring the raising of a mucoperiosteal flap, bone removal and the sectioning of roots. The expectation that new graduates would be competent to surgically remove uncomplicated, **unerupted** teeth in line with the European profile and competency document is open to too much interpretation and could conceivably include impacted maxillary canines or mandibular premolars as well as third molars especially as no example of “uncomplicated” is given.

We accept that this is a supporting competency within the ADEE’s profile but would suggest that even though it is not compulsory, it is the accepted gold standard we should be achieving with our undergraduates. It should, therefore, be carefully worded so that it is realistic and achievable. It is only realistically achievable in Schools where sufficient time and resource is given to Oral Surgery. We, as a group, are all too aware of the staffing shortages within our departments and the difficulty of fitting into an ever enlarging general curriculum. It is important, however, to strive to deliver undergraduates who are able, within reason, to rectify their own surgical complications or else should they be initiating the procedure in the first instance?

In addition, there is a suggestion within the GDC major competency text that, “minor soft tissue surgery” should be within the competence of a graduating

dentist. This could be interpreted as biopsy, a subject of much recent public debate (27, 28). There is no real need for General Practitioners to be able to biopsy lesions outside of a specialist centre, especially in light of the new referral guidelines, as the chance for errors, either diagnostic, logistical or surgical are high. These may then serve to delay optimal treatment.

One other difference with the European profile and competency document is the designation of pre -prosthetic surgery as a competency (6). Pre-prosthetic surgery is a broad term encompassing a number of procedures that are now, with the generalised introduction of soft and hard tissue surgery associated with implant dentistry, rarely performed.. Considering this fact we do not believe that is it possible for it to be delivered as a competence given the limited undergraduate exposure to this aspect of oral surgery.

Despite a number of issues we have raised in relation to the European profile and competency document (6) we do believe it is a real step forward towards achieving uniformity in undergraduate competence . The suggestions we have made are to ensure that ambiguous phrases are clarified to avoid placing unreasonable and unrealistic demands on undergraduates and their teachers. The differences between the existing frameworks and our curriculum framework are summarized in Table 5. As a group we would be happy to be involved in any further modifications of the document .

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Figure 1 - Miller's Pyramid (16) with suggestions of suitable assessment modalities

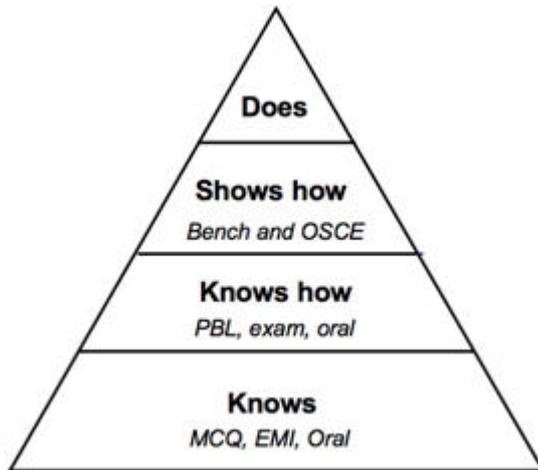


Table 1: GDC general learning outcomes relevant to oral surgery

Cross reference to Subject area First Five Years section Requirements

1	92 Oral surgery. The student should have an understanding of the range of surgical procedures which may be used to manage diseases and disorders of the mouth and jaws. ...
2	93 Oral medicine. It is important to ensure that the dental student is taught the clinical presentation, diagnosis and management of the common diseases of the oral mucosa, of other oral soft tissues, of the salivary glands, of the facial bones and joints as well as the oral manifestations of systemic diseases. The various manifestations of facial pain of both dental and non-dental origin, its diagnosis and management must also be considered
3	94 Oral surgery and oral medicine. Teaching should include clinical instruction in the prevention, diagnosis and management of potentially malignant and malignant lesions and conditions of the oral mucosa
4	95 Oral pathology and oral microbiology. The course in oral pathology and oral microbiology should integrate with pathology and medical microbiology. Initially, the processes underlying the common oral diseases and methods of their diagnosis, prevention and management should be described. The teaching should continue through the clinical course and the full range of oral and dental diseases should be considered with particular attention being given to potentially malignant and malignant lesions and conditions of the oral mucosa
5	101 Pain And Anxiety Control. The control of anxiety and pain is fundamental to the practice of dentistry and requires full awareness of the social and psychological needs of the individual patient. Building on a sound knowledge of the prevalence and nature of dental phobias and anxieties
6	102 The value and range of behavioural non-pharmacological methods of anxiety management must be emphasised.
7	103 By the end of the undergraduate programme students should be competent to administer all forms of local and regional analgesia for dental operations and procedures and have been trained in the management of the complications which may arise in the application of such methods of pain control.
8	104 All dental students must have a range of practical experience in the administration of inhalational and intravenous conscious sedation including assessment and preparation.....
9	105 The theoretical principles of general anaesthesia should be taught to students and they should have this knowledge reinforced by attachment to an anaesthetist

Table 2: GDC UK specific learning outcomes relevant to oral surgery (The First Five Years section 111) (1)

Cross reference to subject areas: oral pathology, oral microbiology, and oral surgery

10	Have knowledge of the role of laboratory investigations in diagnosis
11	Have knowledge of the pathogenesis and classification of oral diseases
12	Have knowledge of the aetiology and processes of oral diseases
13	Have knowledge of Matters relating to infection control
14	Have knowledge of the causes and effects of oral diseases needed for their prevention, diagnosis and management
15	Be competent at undertaking the extraction of teeth and the removal of roots where necessary
16	Be competent at undertaking minor soft tissue surgery
17	Have knowledge of the management of acute infection
18	Be familiar with the diagnosis of oral cancer and the principles of tumour management
19	Be familiar with the principles of assessment and management of maxillofacial trauma;
20	Be familiar with the principles of treatment of dento-facial anomalies including the common orthodontic/maxillofacial procedures involved;
21	Be familiar with the basic principles of oral surgery practice;
22	Have knowledge of the drugs commonly used in oral medicine and of their side-effects and drug interactions
23	Have knowledge of appropriate special investigations and the interpretation of their results
24	Be familiar with the pathogenesis of common oral medical disorders and their treatment
25	Be competent at obtaining a detailed history of the patient's dental state
26	Be competent at obtaining a relevant medical history
27	Be competent at using laboratory and imaging facilities appropriately and efficiently
28	Be competent at arranging appropriate referrals

Table 3: UK QAA benchmark statements relevant to oral pathology and oral surgery

Cross reference to Paragraph Statement 2: Students should be able to integrate material from all parts of the undergraduate curriculum to demonstrate knowledge and understanding in a number of areas and topics including:

29	2.2 Integration of human body systems, normal homeostasis and mechanisms of responses to insults including trauma and disease
30	2.3 Oral biology, to include detailed knowledge of the form and function of teeth and associated structures, in health and disease
31	2.5 Human diseases and pathogenic processes, including genetic disorders, and the manifestation of those diseases which are particularly relevant to the practice of dentistry
32	2.6 Diseases and disorders of the oral cavity and associated structures, their causes and sequelae together with the principles of their prevention, diagnosis and management
33	2.7 Sources of infection and the means available for infection control
34	2.9 Communication between dentist and patients, their families and other health professionals and the public in general
35	2.16 When, how and to whom to refer a patient for specialist advice or treatment
36	2.19 The broad principles of scientific research and evaluation of evidence that are necessary for an evidence-based approach to dentistry
37	3.1 Communicate effectively at all levels in both the scientific and professional contexts using verbal, non-verbal and written means
38	3.5 Describe and understand prevalence of oral diseases in the United Kingdom adult and child populations
39	3.6 Recognise predisposing and aetiological factors that require intervention to promote oral health
40	3.7 Apply their knowledge of the aetiology and processes of oral diseases in prevention, diagnosis and treatment
41	3.8 Obtain and record a relevant medical history which identifies both the possible effects of oral disease on medical well-being and the medical conditions that affect oral health or dental treatment
42	3.8 Assess and appraise contemporary information on the significance and effect of drugs and other medicaments, taken by the patient, on the dental management
43	3.8 Obtain a detailed dental history to include chief complaint and history of present illness
44	3.8 Perform a physical and oral examination to include head and neck, oral hard and soft tissues, vital signs, and recognise disease states and abnormalities including detrimental oral habits
45	3.11 Recognise common signs and symptoms of orofacial pain, anxiety and apprehension
46	3.13 Manage fear and anxiety with behavioural techniques and, when appropriate, with conscious sedation techniques

47	3.17 Manage patients with facial pain, disease and disorders of the oral cavity and associated structures, including a recognition of when it is appropriate to refer for specialist help and advice
48	3.17 Understand the importance of and procedures for submitting specimens for laboratory diagnosis and demonstrate the ability to interpret diagnostic reports
49	<u>3.17</u> Manage basic dento-alveolar surgical procedures, including intra- and post-operative complications and recognise when it is appropriate to refer for specialist help and advice;
50	3.21 Recommend and prescribe appropriate pharmaco-therapeutic agents, monitor their effectiveness and safety, and be aware of drug interactions

Table 4: ADEE Profile and Competences for the European Dentist
 Statements relevant to oral pathology, microbiology and surgery

51 Domain I	Professionalism – all aspects required for UK oral surgery
52 Domain II	Communication and interpersonal skills – all aspects required for UK oral surgery
Domain III	Knowledge base, information handling and critical thinking
Major competence	Basic biomedical technical & clinical sciences
53	3.2 Have knowledge of the scientific principles of sterilisation, disinfection and antisepsis to prevent cross-infection in clinical practice.
54	3.5 Have knowledge of disease processes including infection, inflammation, disorders of the immune system, degeneration, neoplasia, metabolic disturbances and genetic disorders.
55	3.6 Be familiar with the pathological features and dental relevance of common disorders of the major organ systems, and have knowledge of the oral manifestations of systemic disease.
56	3.7 Have knowledge of the aetiology and pathological processes of oral diseases (in individual and in society) in order to facilitate their prevention, diagnosis and management.
Major competence	Acquiring and using information
57	3.11 Be competent to recognise his or her clinical limitations and refer appropriately.
58	3.13 Be competent to evaluate published clinical and basic science research and integrate this information to improve the oral health of the patient.
59	3.14 Be competent to apply experience, scientific knowledge and methods to manage problems of oral health care.
Domain IV	Clinical information gathering
Major competence	Obtaining and recording a comprehensive medical history of the patient's oral and dental state
60	4.1 Be competent to identify the chief complaint of the patient and obtain a history of present illness as part of a comprehensive medical history.
61	4.3 Be competent to produce a patient record and maintain accurate patient treatment record entries.
62	4.4 Be competent to identify abnormal patient behaviour (including anxiety).
63	4.5 Be competent to initiate an appropriate written medical consultation or referral in order to clarify a question related to

	the patient's systemic health.
64	4.6 Be competent to perform an extraoral and intraoral examination appropriate for the patient, including assessment of vital signs, and record those findings.
65	4.7 Be competent to complete and charting a comprehensive dental, periodontal and mucosal examination.
66	4.11 Have knowledge of appropriate clinical laboratory and other diagnostic procedures and tests, understand their diagnostic reliability and validity, and interpret their results.
67	4.13 Be competent to assess sensory and motor function of the mouth and jaws.
68	4.14 Be competent to assess salivary function.
69	4.15 Be competent to assess orofacial pain.
70	4.16 Be competent to assess facial form and deviations from the normal.
Domain V Major competence	Diagnosis and treatment planning Decision making, clinical reasoning and judgement
71	5.1 Be competent to obtain informed consent e.g. for operative procedures.
72	5.2 Be competent to recognise the presence of systemic disease and know how the disease and its treatment affect the delivery of dental care.
73	5.6 Be competent to recognise the clinical features of oral mucosal diseases or disorders, including oral neoplasia, and identify conditions that require management.
74	5.7 Be competent to recognise maxillofacial problems, the clinical characteristics of acute and chronic craniofacial pain of somatic, neurogenic and psychogenic origin, and identifying and diagnosing conditions that require management by the dentist or other health providers.
75	5.8 Be competent to recognise patient behaviour contributing to orofacial problems, and identifying conditions that require diagnosis, prevention and management.
76	5.11 Be familiar with the diagnosis of temporomandibular joint disorders
77	5.12 Be competent to diagnose medical emergencies.
78	5.13 Have knowledge of the role of sedation in the management of adult and young patients .
79	5.14 Be competent in when, how and where to refer a patient for sedation and general anaesthesia and at making other appropriate referrals based on clinical assessment.
Domain VI Major competence	Establishment and maintenance of oral health Educate patients and manage comprehensive primary care
80	6.2 Be competent to apply evidence-based treatment.

81	6.4 Be competent to educate patients concerning the aetiology and prevention of oral disease and encourage them to assume responsibility for their oral health.
82	6.5 Be competent to prescribe and monitor the effects of appropriate pharmaceutical agents including the chemical control of dental plaque.
Major competence	Oral medicine management
83	6.10 Be competent to counsel patients regarding the nature and severity of non life-threatening oral mucosal diseases and disorders, providing the patient with realistic options and expectations of management.
84	6.11 Be competent to perform limited soft tissue diagnostic procedures.
85	6.12 Be competent to participate in the diagnosis and proper referral of the patient with life-threatening oral mucosal diseases.
86	6.13 Be competent to manage acute oral infections, including patient referral and prescription of appropriate drugs.
87	6.14 Be familiar with the treatment of common oral medical disorders, both medical and surgical.
88	6.15 Have knowledge concerning the effects of tobacco on the oral mucosa and ways in which to help patients who wish to stop using tobacco.
Major competence	Surgical procedures
89	6.28 Be competent to perform uncomplicated extraction of erupted teeth.
90	6.29 Have knowledge of the management of trauma in deciduous and permanent dentitions and be familiar with the surgical and non-surgical aspects of the management of maxillofacial trauma.
91	6.30 Be competent to perform surgical extraction of an uncomplicated unerupted tooth and the uncomplicated removal of fractured or retained roots.
92	6.31 Be competent to perform uncomplicated pre-prosthetic surgical procedures.
93	6.32 Be competent to manage and treat common intra-operative and postoperative surgical complications.
94	6.33 Be competent to describe the indications and contraindications, principles and techniques of surgical placement of osseointegrated implant fixtures.
Major competence	Pain & anxiety management

95	6.34 Be competent at infiltration and block local anaesthesia in the oral cavity for restorative and surgical procedures or other treatment, as needed, for orofacial pain management, including management of potential complications of local anaesthesia.
96	6.35 Be competent in diagnosing orofacial pain, treating it as appropriate or referring the patient to relevant specialists.
97	6.36 Have knowledge of inhalation and intravenous conscious sedation techniques for dental procedures.
98	6.37 Be competent to select and prescribe drugs for the management of preoperative, operative and postoperative pain and anxiety.
99	6.38 Be competent to identify the origins and continuation of dental fear and anxiety and manage this fear and anxiety with behavioural techniques.
Major competence 100	Restorative/ prosthodontic management 6.42 Be competent in describing for patients the principles and techniques involved in the use of osseointegrated implants for restorations.
Major competency 101	Emergency treatment 6.49 Be competent to develop and implement an effective strategy for preventing dental and medical emergencies in the dental surgery and establish policies for the management of such emergencies should they occur.
102	6.50 Be competent to carry out resuscitation techniques and immediate appropriate management of cardiac arrest, anaphylactic reaction, upper respiratory obstruction, collapse, vasovagal attack, epileptic fit, haemorrhage, inhalation or ingestion of foreign bodies, hypoglycaemia, and diabetic coma or other medical emergencies that may occur in the course of dental practice.
103	6.51 Be competent to identify and manage dental emergencies including those of pulpal, periodontal or traumatic origin.
104	6.52 Be competent to identify and promptly refer dental or medical emergencies, which are beyond the scope of management by a general dentist.

Table 5: Summary of Differences between Existing Frameworks (paragraphs in the documents)

GDC	ADEE	ABAOMS	Summary of difference
be competent at undertaking the extraction of teeth	(6.28) Be competent to perform uncomplicated extraction of erupted teeth.	(2.1) Be competent to extract erupted teeth	none
(91) should be able to undertake the extraction of teeth and the removal of roots, where necessary utilising surgical techniques	(6.30) Be competent to perform surgical extraction of an uncomplicated unerupted tooth and the uncomplicated removal of fractured or retained roots	(2.3) Be competent to perform surgical management for a failed exodontia by conventional techniques and (2.7) manage an elective surgical case e.g. the removal of a retained root	ABAOMS is prescriptive over limitations of competence
Not mentioned	(6.31) Be competent to perform uncomplicated pre-prosthetic surgical procedures.	(2.19) Be familiar with hard tissue preprosthetic surgery	Preprosthetic surgery is increasingly uncommon and therefore general practitioners unlikely to perform this surgery. ABAOMS considers it more appropriate that new graduates should be familiar with this surgery
(111) be competent at undertaking minor soft tissue surgery;	(6.11) Be competent at performing limited soft tissue diagnostic procedures	(4.3) Have knowledge of the indications for and various techniques of biopsy.	Following debates in peer-reviewed journals (23, 24) we feel the limitations of general practice biopsies are well documented. Therefore it is appropriate to leave at the familiar level