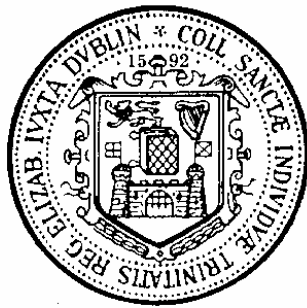




## **DENTED Site Visit**



**School of Dental Science  
Trinity College  
Dublin 2**

February 1999

School of Dental Science  
Trinity College  
Dublin 2  
IRELAND

**UNDERGRADUATE DENTAL CURRICULUM 1999**

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## INFORMATION FOR VISITORS

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## **Section 1 - Introduction**

### **1.1 Background**

The original institution “The Incorporated Dental Hospital of Ireland” was established in 1884 and moved into a new purpose-built dental hospital 100 years ago in 1899. The Dublin Dental Hospital Board, established in 1963 was given responsibility for clinical training within three separate dental schools in Dublin: Trinity College, Dublin; University College, Dublin; and the Royal College of Surgeons in Ireland. In the 1970s these three dental schools were amalgamated into one School of Dental Science, Trinity College, Dublin. A new clinical building was completed in 1997 and the old hospital’s refurbishment was completed in 1998. This followed a long and difficult period of uncertainty regarding the future of the school which made it difficult to recruit staff and carry out original research. The decision to retain and rebuild the Dublin Dental Hospital was announced in 1994, thereby ending 50 years of uncertainty.

The Dublin Dental Hospital is governed by the Dublin Dental Hospital Board. This is a Statutory Body appointed by, and answerable to, the Department of Health and Children. It is funded by the Department of Education and Science (50%) as well as the Department of Health and Children (25%) and the remaining 25% of the total income is self generated. The Dublin Dental Hospital Board is the employing authority for all staff including the clinical academic staff who also hold full academic appointments with the University of Dublin, Trinity College, which bears academic responsibility for the standards of education and research.

It was originally intended to transfer the Dublin Dental Hospital into Trinity College following the amalgamation of the three dental schools. This plan was abandoned when:

- (a) it was decided that the Department of Education could not justify the expenditure for a new building on the basis of the relatively small number of students being trained.
- (b) it was realised that the Dental Hospital Board had managed the Dental Hospital in an effective way with the ability to make expedient decisions in the management of a hospital.
- (c) the significant service commitment in the delivery of oral health services was recognised.

Because of its significant funding from the Department of Health and Children there is perhaps a greater service role than would normally be the case for most other dental schools. The School of Dental Science, Trinity College and Dublin Dental Hospital are theoretically and legally separate entities with a seamless boundary. However, both entities are fully integrated, as will be seen in the organisational diagram.

Appended to this report (Appendix A) is the Service Plan submitted to the Department of Health which includes the Hospital’s mission statement.

## **1.2 The primary functions of the institution are:**

Clinical training and education of undergraduate and postgraduate dental students subject to the standards laid down by the Dental Council of Ireland and the EU Dental Directives

Training and education of dental nurses, dental technicians and dental hygienists

Training of Consultant and Specialists, currently subject to the Committee for Specialists and Consultant Training in Ireland in conjunction with the Joint Committee for Specialist Training in Dentistry of the United Kingdom.

Research

Patient Services; the hospital treats 2,000 patients weekly, approximately 40% of whom are treated by undergraduate students

## **1.3 Curriculum**

In the past two decades there have been three major curricular revisions and the most recent and by far the most radical of these, was introduced five years ago and will be fully implemented in 1999. This recent revision allowed for the sequential implementation of a problem-based learning curriculum. Like all curricular reforms this was not without severe criticisms, and although there are still many aspects which need to be further refined, it has proved to be a successful and increasingly acceptable form of learning for students, staff and university authorities.

Major improvements have been accomplished in staff establishment, increased budgets and new physical facilities. The dental school can now look forward to building its research, clinical and academic base on a hard-won infrastructure. It is therefore with a sense of optimism that the school welcomes its visitors.

The curriculum in the School of Dental Science, Trinity College is like all other schools "unique". It is a problem-based learning curriculum with considerable emphasis on clinical competence in primary oral health care based on appropriate, prioritised and scientifically acceptable treatment methods.

For those who may not be familiar with a problem-based learning curriculum we have included in 1.4 a brief explanation of PBL.

### **General Aims**

To provide future dentists with an ethical and appropriate scientific foundation for a lifetime of learning and professional development

To promote and develop clinical competence in primary oral health care and prevention

To provide an environment that encourages self-learning, scientific analysis, moral values and recognition of societal responsibilities within a broadly-based liberal university

To seek to remove barriers to the acquisition of wisdom and common sense

To ensure that the educational programme at least fulfils national and EU requirements.

## **General Objectives**

These are set out in detail under the different subject headings in section 5-16 inclusive and are only covered in broad outline in this introductory stage of the report.

To produce dentists who on graduation are capable of carrying out the independent practice of dentistry in all facets as appropriate for adults, children and special needs patients, at least to the primary care level, including: oral diagnosis, restorative dentistry, periodontology, orthodontics, oral surgery, oral medicine and pathology, within the context of prevention and health promotion.

To provide competence in and knowledge of human diseases to a level that is compatible with the appropriate and safe management of dental patients including those who require first aid and cardio-pulmonary resuscitation

To provide sufficient education and training in the pre-clinical and para-clinical sciences in order to understand and acquire the competences required of a practising dentist

To ensure that students have an appropriate understanding of the basic and biological sciences that is sufficient for them to understand the clinical and para-clinical sciences and also to provide them with an acceptable scientific basis to perform as a member of one of the professions in the health sciences

To provide them with an acceptable basis in the science of materials appropriate to modern dentistry

To ensure that the dental student has a sufficient and appropriate understanding of the biological, psychological and sociological parameters of dental science and their appropriate application in clinical dentistry

To promote a responsible attitude both for the individual and the profession in the identification of appropriate and ethical priorities in the delivery of oral health services and prevention

To encourage the recognition of one's limitations in the provision of treatment for patients.

## **Strengths**

Integrated curriculum with complementary aims and objectives agreed by all

Problem-based self-directed learning curriculum

Student orientated

Transparency

Involves all staff and has had strong student input

Continuously under review

Most shortcomings are recognised

Developed as a result of considerable international advice

Highly user friendly and supportive

Assessment methods complement educational objectives and methods

## **Weaknesses**

Difficulty in balancing integrated patient care with appropriate patient supply

PBL is not as well accepted by staff from other disciplines and from other faculties

Assessment methods are still in the process of being introduced and refined

Implementation has caused a considerable additional workload for many.

Uncertainty, though diminishing, causes anxieties for students



## **Innovations**

PBL

Clinical Credit Hours

Competence Testing

New Assessment Methods

Physical Facilities

Student assessment of staff performance

Patient centred student orientated training/learning

## **Best Practices**

Liberal approach has not been a disincentive to student participation and work rate

Considerable staff and student involvement

Emphasis on educational outcome

Broad principles take precedence over details

Emphasis on clinical competence and prioritised primary care

Considerable priority is given to student education and patient treatment

General approach to prioritised patient care serves as a good example to students

#### **1.4 Problem-Based Learning**

The School has been committed to course review and the implementation of curricular change for the past fifteen years. In 1985 major changes were introduced in the clinical years of the course with particular emphasis on small group teaching and multidisciplinary approach to patient care. In 1993 it was decided to begin phased implementation of problem-based self directed learning as the principal method of delivery of theoretical knowledge.

An increasing number of medical and dental schools in North America, Australia and Europe have already successfully introduced problem-based learning (PBL) curricula which attempt to address some of the deficiencies in the traditional medical and dental curriculum. PBL is not a panacea. It is at least as effective as traditional curricula, is a more enjoyable process of learning for students and provides a basis for an integrated approach to the education of students and a platform for lifelong learning. The reasons for its implementation in the School of Dental Science include the following:-

promotion of learning rather than teaching

compatibility with the small group learning procedures already established in the Dental School

encouragement of self directed learning based on the "need to know" rather than fear of assessment

increased emphasis on assessment as a formative educational tool, recognising that assessment is a significant motivation for student learning

promotion of team work in learning from the outset

provision of learning in a contextual sense and the acquisition of knowledge and understanding of the basic and biological sciences set in the context of human diseases

development of problem-solving skills - essential abilities in the health caring disciplines

enablement of students in the practice of realistic self assessment

establishment of procedures for staff evaluation

availability of evidence based on the evaluation of problem-based learning as a teaching method which shows that it compares well with those traditional approaches which have been the source of serious dissatisfaction in the Dental School

ensurance of a comprehensive curricular approach between and within disciplines over the five years of the curriculum

reduction of the influence of individual teachers/examiners and encouragement of a more broadly based educators approach with emphasis on a multidisciplinary consensus on curricular content and delivery

promotion of the Socratic approach to education and learning

promotion of independent questioning and analysis of relevance of information in both students and staff

improvement of communication between students enabling those who are not native English speakers to communicate more effectively

increased emphasis on the relevance of basic sciences to clinical dental practice

compatibility with the developments in the Dental School which prioritise clinical competence with emphasis on prevention,

promotion of health, development of efficacious health care services as appropriate to the needs and resources of a community on sound ethical principles, based on primary oral health care.

The decision to change from traditional methods is inevitable in health care areas where there has been a massive increase in information in recent years making it impossible for any student to learn all available facts in a 5 year period. The graduate of today requires, above all, the skills of information handling.

The curricular change is therefore seen as being justified on its own merits and the potential it offers in addition to offering a more consistent programme of education with appropriate evaluation.

### **Terms used in respect of Problem-Based Learning**

Curriculum content and sequencing are determined by a central, academic, interdepartmental group. Planning groups are selected for each year and are responsible for the design, implementation and evaluation of the curriculum component in that year. Where possible there should be student representatives on planning groups.

### **Theme**

Themes form the basic framework of a problem-based learning curriculum. Themes are often generated by subject clustering but may also be based on systems or common disease patterns.

### **Topic**

Themes are sub-divided into topics. Topics are carefully chosen to ensure that they form a continuum of developing knowledge and understanding but always placing emphasis on the holistic approach to learning.

### **Problem**

The problem is the basic unit of problem-based learning and is structured by the planning group with due consideration of the level of knowledge of the students. Problems are structured to encourage the affirmation of prior knowledge and acquisition of new knowledge.

### **Block**

A block is a collection of five or six integrated problems related to a topic. On completion of a block of problems there is an opportunity for formative assessment. The results of these assessments may also be used for summative assessment.

At the start of each block a “block book” is given to each student. This typically contains the following:

Aims and Objectives

List of Planning Group Members

List of Student Tutorial Groups and Location of Tutorials

Set of five or six Problems

Sample MCQs

Recommendations for reading, CAL packages, WWW sites, etc.

### **Tutorial Group**

The tutorial group is composed of up to eight students who work as a team in resolving each problem. The tutorial group first meets to clarify and define what the problem is and the component pieces of information which are necessary in order to understand the

problem. As a group it develops a reservoir of information for discussion, debate and further development through individual study. The composition of the tutorial group is altered randomly at the end of each block.

### **Tutor**

The tutor must ensure that all students participate in the tutorials. The tutor must avoid direction in order to promote self-directed learning from the students but can help stimulate the learning process through questions, suggestions and appropriate information. It can be very difficult for an experienced lecturer to stand back and allow the principle of self-directed learning to take place. Students are asked to score the tutor performance in order to promote constructive development of problem-based learning.

### ***Visitors Comments***

#### ***1.3 Curriculum***

##### ***General Aims***

*The general aims of the programme are clearly stated and their formulation constitutes a thoughtful approach. The fact that the first mentioned general aim of the curriculum is:*

*“To provide future dentists with an ethical and appropriate scientific foundation for a lifetime of learning and professional development”*

*is well founded in a contemporary undergraduate programme. There is a good mixture of scientific and practice orientation in the formulation of the aims and objectives. Furthermore, they seem realistic and achievable.*

*We recommend adding the following aim:*

*“To stimulate student acquisition of an evidence- based approach to oral health science.”*

##### ***General Objectives***

*The objectives include a fairly large number. Priority could be given to the more important ones. Nevertheless, we suggest that two objectives should be added that are important in a curriculum for health care professionals:*

*“To promote independent questioning and analysis”*

*“To promote the development of problem-solving skills and improvement of communication skills”*

*When it comes to translation of the aims and objectives of the programme, the visitors regard the programme to be coherent and contemporary. It offers a multitude of possibilities to develop an understanding of future professional duties. There is an early introduction of clinical experience and students’ treatment of patients starts early. The students treat a wide range of adult patients including the medically compromised. Integration of different subjects reflects their future professional context outside the dental hospital.*

#### ***1.4 Problem-Based Learning***

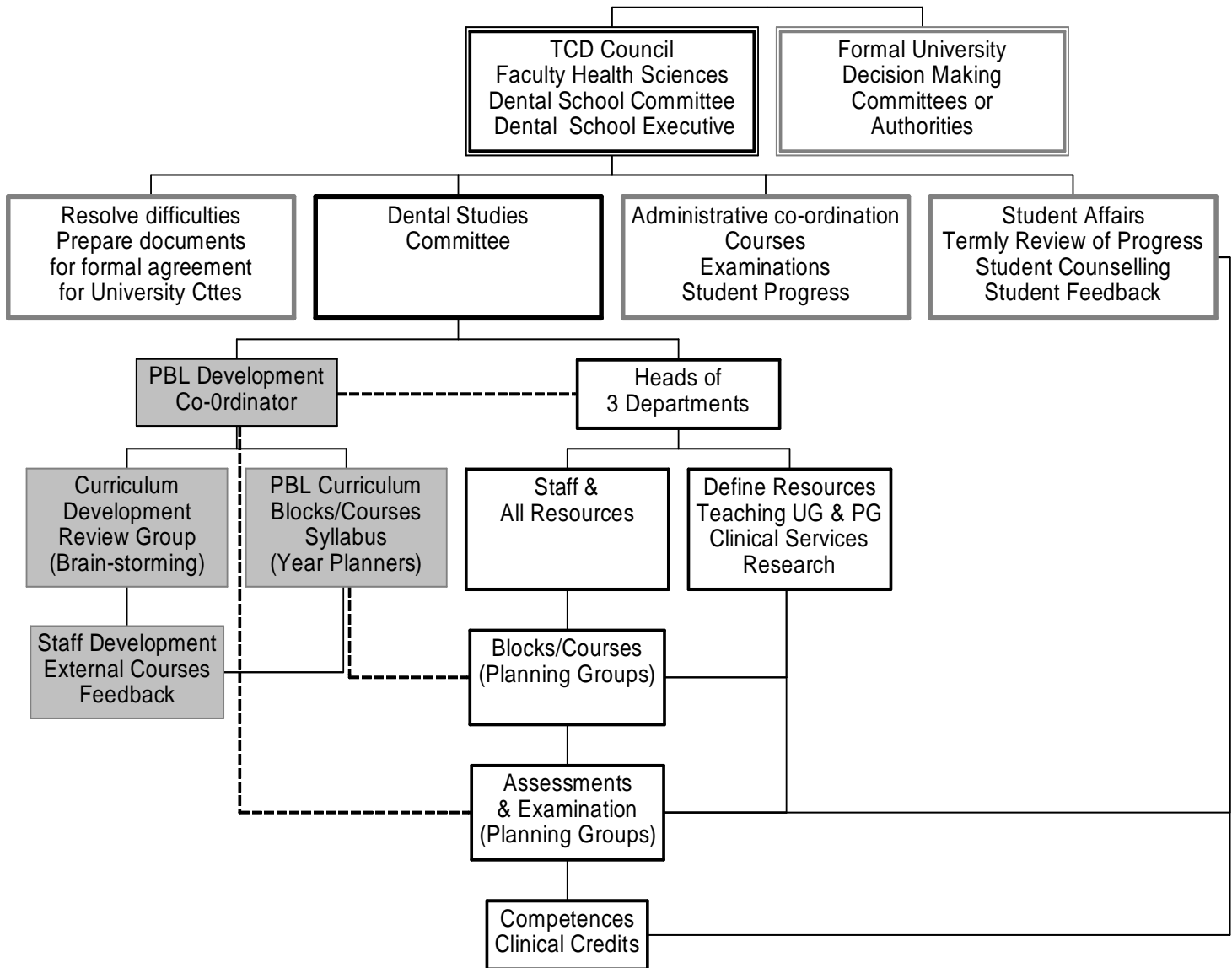
*The way self-directed learning, which is to facilitate life-long learning, is implemented in the major part of the programme is to be complimented. The staff is committed to this innovative educational approach.*

*However, the educational approaches in the basic biological sciences continue to be discipline-oriented and do not sufficiently encourage the student to integrate basic sciences and clinical sciences.*

*The use of computers is well integrated into the programme mainly regarding word-processing, search for information and in the virtual skills laboratory. The idea of changing the clinical cubicles into PC working places for students in the evenings is commendable.*

*We commend the educational approach taken to date and encourage the dental school to seek closer integration and collaboration with the basic sciences in the development and evolution of its problem-based learning curriculum. Inevitably the reservations of some will take time to be allayed.*

**Implementation, development and co-ordination of Problem Based Learning**



## **Section 2 - Facilities**

(including Library, Lecture Theatres, Seminar Rooms etc.)

Mr. Lorcan Birthistle, Ms Anne O'Byrne, Mr. Fran Lyons

### **Planned Developments & Innovations**

The recent physical development programme has now been completed and further physical development is not envisaged for the present.

### **Innovations**

The building is unique in incorporating so many features into a confined site and has won many accolades from architectural authorities

The entrance and the Atrium incorporate light, space and many works of art from young Irish artists which provides a welcoming and non-threatening centre to the building for patients, students and staff

Emphasis is on the primary responsibilities of patient care and learning; the primary emphasis in space allocation will be seen to have been devoted to these activities

There are shared academic offices which were controversial in concept but have worked well in practice in view of limitations of space and design

Considerable thought was put into maximising the benefits of learning facilities

The two 40-seater clinics (there are 40 students in each year) provide efficient multipurpose use without departmental segregation and lend themselves to effective utilisation of staff supervision in bays of eight chairs

The clinical cubicles double as learning areas in the evening and at present half of them are equipped with computers which students use for interactive learning on the Internet. The library is a learning centre and students also have access to Trinity's reference library.

The school has introduced a virtual reality operative technique laboratory

There is a sophisticated computerised patient/accounts/administrative system in place which has considerable potential for expansion and development

## **2.1 Clinical facilities (106 dental chairs/dental units)**

There are two main clinics each with 40 dental chairs. These are multipurpose clinics commissioned in 1998. They were designed for efficiency and economy in their operation and to facilitate the optimal use of staff in the supervision of students. In addition there is a clinic of eight separate surgeries which serve as a transitional training unit for final year students prior to embarking on independent dental practices.

Students also have access to an emergency/initial diagnosis clinic which is also used for oral surgery and oral medicine.

There are two operating suites combined with a recovery day-bed unit of six beds.

There is a 40 place teaching laboratory for preclinical training in procedures and learning within restorative dentistry/periodontics/histology/pathology.

### **Strengths**

Considerable research prior to planning, visits to other schools, planning and intensive discussions with the architects and engineers took place before the hospital was designed. These are carefully and well-designed modern, state-of-the-art facilities commissioned in the past two years, simple and efficient design to accommodate cross-infection control procedures, patient comfort, sense of privacy in a large clinic and ergonomic principles for staff & students. It is a pleasant environment which has won international architectural recognition. The design lends itself to the efficient rostering of full student classes supervised by teams of staff with complementary skills and varying ranges of experience.

Efficient use of nurses and nurse floor managers is combined with a computerised system of patient administration and instrument delivery according to planned treatments.

Student:staff ratios vary from 1:8 to 1:4 and even may be as low as 1:1 for more advanced irreversible procedures. For most clinical procedures it is 1:8.

### **Weaknesses**

The equipment will age and become obsolete throughout the hospital at the same time.

### **Best Practices**

See strengths

### **Innovations**

This is perhaps one of the most carefully designed modern dental teaching hospitals and might be useful as a reference source for others planning new facilities. It was planned as an integrated school/hospital within a very limited budget

## **2.2 Teaching Facilities**

The School of Dental Science has access to all of the teaching, recreational and cultural facilities in the main campus of Trinity College, Dublin. This is one of the most attractive of all city centre campuses. In addition the Dental School has the following:

2 Lecture Rooms (100 seater and a 50 seater)

8 Seminar Rooms

Common Room for both staff & students

### **Strengths**

Considerable research, visits to other schools, planning and intensive discussions with the architects and engineers took place before the hospital was designed. It is a pleasant environment which has won international architectural recognition.

Access to Trinity College Dublin

### **Weaknesses**

The space available and the budget was limited thereby reducing available space and resources

### **Best Practices**

Use of learning in seminar rooms rather than lecture rooms (PBL)

### **Innovations**

Integrated facilities around main lecture room

Integrated common room for staff & students



### **2.3 Teaching Laboratories**

The School of Dental Science has access to student and specialist laboratories in Trinity College, Dublin for use in physiology, anatomy, biochemistry and pathology. In addition the school has:

a 40 place teaching laboratory providing shared facilities for;  
prosthetics  
manikin heads  
pathology  
Surgery using pigs heads as simulation models  
DenX Laboratory – computerised simulation laboratory  
Technician students training laboratories (16 places)

#### **Strengths**

Most efficient use of resources and maximisation of available facilities

#### **Weaknesses**

The space available and the budget was limited thereby reducing available space and resources

#### **Best practices**

Design of laboratories for multi-purpose use

#### **Innovations**

DenX simulation laboratory

#### **Visitors comments**

*The clinical facilities are very well designed, state of the art, multipurpose clinics which lend themselves to efficient and economically sound management.*

*The overall design is extraordinary and can serve as an example for other dental schools. The IT equipment is omnipresent enabling the students to perform good patient management and offer the possibility to make use of the Internet. The instrument delivery system seems efficient.*

*There is only one X-ray equipment available for 40 units per each floor. This restriction of the use of radiological facilities to one centre to ensure safety and avoid inadequately supervised satellite facilities is a deliberate policy.*

*Some staff members seem unhappy with the shared office arrangement. Although the visiting team notes that the roster of most staff members does not allow them to be in their office more than 2 sessions a week*

*The teaching facilities are very well adapted to the educational approach of the programme. Thus, the seminar rooms are well suited for small- group education. The fact that the two lecture rooms are of different sizes is another design, which is well thought of as are the integrated facilities of lecture rooms and seminar rooms.*

*The common room for students and staff is a very innovative idea. It will facilitate informal discussions about education and the profession between students and staff. In this way it*

*will become one of the most important education facilities, not only for students to integrate into their future profession, but also for the educators to learn about the experience of their students.*

## **2.4 Research Laboratories**

Professor David Coleman  
email: [dcoleman@dental.tcd.ie](mailto:dcoleman@dental.tcd.ie)

### **Strengths**

The equipment used in the research laboratories for the diagnosis of oral candidosis includes a state of the art Biological Safety Cabinet and three dedicated incubators suitable for the culturing and analysis of pathogenic microorganisms, including samples recovered from HIV-infected individuals. The techniques used allow diagnosis to the level of species thus allowing the prescription of more efficient drug therapies. The laboratory also contains all of the equipment necessary to perform scientific research at an internationally recognised level, as recognised in peer reviewed journals.

### **Weaknesses**

In the initial design of the Dental School the space made available to the research laboratories was limited due to budgetary reasons. This in turn limits the numbers of technical and research personnel who can work in this area.

### **Best Practices**

The research laboratories were designed specifically for advanced molecular biological research and contain modern state of the art equipment required for accurate and comprehensive diagnostic and academic research studies. The equipment and techniques used are available for the routine analysis of clinical samples from the hospital clinics and other sites serviced by hospital personnel (eg prisons). In addition the equipment is used to monitor the quality control of CSSD autoclaves and are used by full time research staff as well as by postgraduate dental students in research projects.

### **Innovations**

Molecular biological techniques have been developed and introduced and are used in the provision of a more rapid and accurate diagnostic service. These techniques also allow the laboratory to take part in international epidemiological studies. In addition, the laboratory contains hundreds of stored isolates of the newly discovered species *Candida dubliniensis* and acts as an international reference centre for this organism.

### **Visitors comments**

*The need for a powerful academic and clinical research activity within a modern school of dentistry which is a component of a prestigious university has been identified by the School of Dental Science – Dublin Dental Hospital as one of the priorities for local and international recognition. Consequently, strong efforts have been put on both the design of new facilities and the acquisition of up-to-date equipment. The equipment available includes one biological safety cabinet and three incubators for the culturing and analysis of pathogenic microorganisms, including samples recovered from HIV positive patients. The laboratory also possesses all of the modern equipment necessary to perform molecular biological techniques, for the production of internationally recognized scientific research.*

*The space devoted to the research laboratories remains, however, limited due to budgetary reasons and by the space made available to the Dental Hospital during*

*refurbishing. This limits the number of researchers involved in the main research theme. Furthermore, this could hamper the development of research in other fields.*

*The major part of research produced at the highest international level remains mostly related to Microbiology, although other specialities have also contributed significantly to the research production of the school.*

*Due to limited space, a broad initiative to involve departments outside the School of Dental Science in dental research, would contribute to the research potential of the School and further ensure improvements in the educational (basic sciences) and research components of the mission of the School of Dental Science – Dublin Dental Hospital.*

## **2.5 Library**

Ms. Anne O'Byrne, Ms. Claire McGuinness, Ms. Gillian Deenihan  
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### **Strengths**

The Library of the Dublin Dental Hospital is the largest resource of dental literature available in Ireland, with archival holdings dating back to the 1800's, which makes it also an invaluable resource for dentistry in Europe.

It is a specialist Library providing undergraduate and postgraduate access to holdings specific to the teaching of dentistry and to the provision of patient care. Stock acquisition is directly related to teaching requirements and reflects the needs of all its users. As it is not a multidisciplinary Library, monograph and journal acquisitions are designated to the main discipline and to the broader area of medicine.

Its holdings include 80 current journal subscriptions, 4000 monographs, 4,500 periodicals. An active inter-library-loan service document supply/photocopy and a general reservation/loan service ensure continuing circulation of stock to all users. Postgraduate students and staff actively involved in research may avail of a "Current Awareness Service" which is specific to individual requirements and access to medical literature searching facilities i.e. Medline.

As the need for information technology increases, Library users have access to networked work stations providing access to modern word-processing facilities and specific packages i.e. Excel, Powerpoint etc. access to e-mail facility and Internet access. Library staff are committed to provide information guides to valuable sources of information via the Internet and to make this information available to staff and students. It is essential to keep abreast the availability of journals becoming available electronically and to "free Medline" sites available through the Internet. Qualified Library staff can use their training to not only keep abreast of this field but to provide for the dissemination of this information to its users.

The size of the Library, the number of its users, the specific training of Library staff assists communication and aids the delivery of an efficient Library Service.

### **Access to Other Library Resources**

In addition to the unique resources of the Dublin Dental Hospital Library, Library Users also have access to general Library facilities within the Trinity College Libraries and access to other collections both Irish and European via the Dublin Dental Hospital 'Inter-Library Loan' system. Access to its information service allows for professional delivery of documentation. Access to these resources are as follows:

Direct access as registered Trinity College students both undergraduate and postgraduate.

Indirect access via inter-lending facilities via the Dublin Dental Hospital Library.

### **Outline: Trinity College Library**

Trinity College Dublin Library dates back to 1591 and is the largest Library resource in Ireland. It houses almost 4 million volumes, with extensive collection of manuscripts. It is a legal deposit Library since 1901 and continues to receive material published in the United Kingdom and Ireland. It is a Library of International repute – a university Library and a research facility. The medical collection is housed in the John Stearne Library, which incorporated the Medical Library in 1993. Its holdings include core books and periodicals in clinical medicine, surgery, physiotherapy and nutrition. Pre-clinic tests and specialist reviews are held in the Hamilton on campus.

### **Information Service**

This is an additional service within the main Library service providing an information service to Irish Libraries; providing access to international databases and to specialist holdings.

### **Outline: British Library / Document Supply Service**

This is a document-delivery service available to registered users to a collection of modern books and periodicals from Britain and overseas. It also holds the worlds largest collection of conference proceedings.

### **Weaknesses**

Presently our weakness lies in the need for automation of Library work practices or a phased implementation of this automation as follows:

#### Computerisation of Library Card Catalogue

This process would not only provide our users with a 'user-friendly' system for retrieval of specific information regarding our holdings, but could allow access to a self-booking loan reservation system.

#### Journal Circulation and Book Acquisition Modules

Loan Reservation / Returns

Library Statistics – Production

Loan Issue / Procedure / Records

At present all of the above functions are manually assigned by Library staff. The function are out of date, tedious and time consuming. Automation would greatly assist in general delivery.

### **Best Practices**

#### User Education

Commitment to user education is essential. This can be individual or group, specific or general. The Library caters for its users as follows:

#### **Introductory Orientation – Undergraduate / Postgraduate**

Small modular group tutorials, ranging over an assigned 4-week schedule covering all aspects of Library usage and facilities. More emphasis on information retrieval, literature searching facilities, inter-library-loan and document delivery.

### **Library skills**

“Medline tutorials”, Internet access, use of modern Library sources.

### **Provision of documentation**

i.e. “Library Guide” list of journal holdings, holdings lists, “Internet Guide – Series”

The above practices assist in the development of the informed Library user and a greater exploitation of Library resources. It allows for communication and “feedback from users” and assists in planning and development.

### **Innovation**

Library services must not only reflect user needs but must reflect changing trends in information delivery and the need for innovation in Library planning and development. As an academic Library it must also reflect changing trends in the delivery of education and its support mechanisms.

Innovative practices within our Library reflect general and specific changes in undergraduate education as follows.

Introduction of “problem-based-learning” into curriculum. Library holdings must reflect a broader medical emphasis and the provision and on-going adaptation of “open-access-resources files”, ensure Library staff involvement in the development of a problem-based-learning theme. Students must actively research data via Library resources and teaching staff must liaise with Library staff in ensuring that these resources are made available, as appropriate.

#### **Internet Access**

The invaluable resources of the www can prove daunting to the inexperienced web searcher. Library staff exploration into useful web-sites and services via the web can assist in the efficient exploration of this medium.

Our Internet publications (to date) are as follows:

Library Guide to the Internet – List of www sites in dentistry

Library Guide to the Internet – List of www sites

Library Guide to the Internet – Free Medline Sites on the Internet

Library Guide to the Internet – Online Dental Journals on the Internet (1999)

The availability and suitability of electronic journals must be monitored and will play a significant role in library planning and future development.

### **Visitors comments**

*A well integrated library is of fundamental importance for all educational programmes, not least for those with a problem-based curriculum.*

*The location of the library in the middle of the building is a distinct signal to the students of its importance. It says that the students have to develop the skills of finding relevant information for their studies using different sources. The staff of the library gave a very*

*professional impression and seemed well aware of the philosophy of PBL and willing to make their contribution to make it work.*

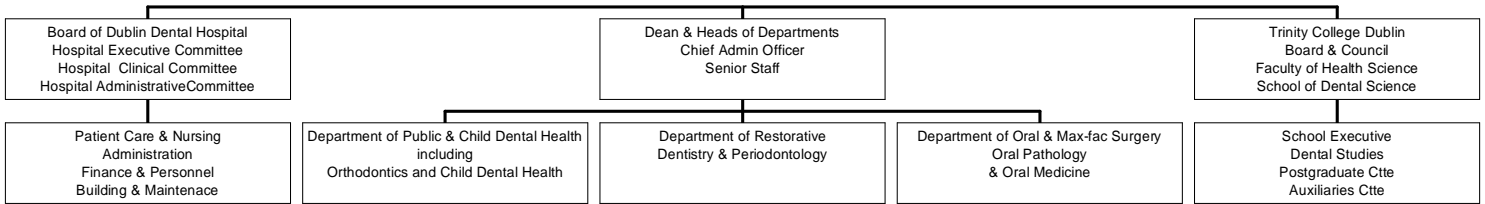
*We did, however, not at our short visit to the library get any indication whether the students actually also use the Trinity College Dublin Library. Sometimes the identification with their own library raises barrier for such wider use.*

*The need for automation seems urgent since the staff certainly is needed for student and teacher support through personal services, introductory orientation etc*

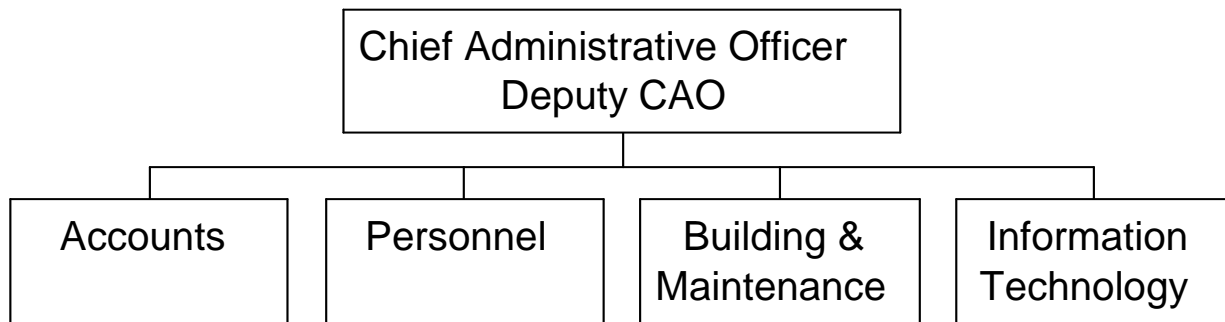


## **SECTION 3 - Administration and Organisation**

### **3.1 Clinical/Academic Organisational Structures for School & Hospital**



### **3.2 Non-Clinical/Academic Administrative Structures**



### **3.3 Information Technology**

#### Personal Computer Access for Students

20 PC's in Library Computer Room

40 PC's in Clinic 2

4 PC's in Postgraduate Room

#### Lecture Theatre Facilities

2 Lecture theatres incorporating:

Dual Slide Projection, Video, Computer Projection, Audio etc..

Undergraduate Teaching Laboratory - Small video camera at lecturers workstation which is projected onto 3 large television screens within the lab.

Plans to install video cameras in one Operating Theatre and one single surgery area.

Intra-oral, extra-oral and full view camera. The images captured within these rooms will be projected into any of the lecture theatres allowing interactive teaching.

The dental school will be used as a centre for distance learning (continuing education) aimed at dental practitioners in rural areas.

#### Patient Records System

Developed in collaboration with Hibernia 110 Ltd

Patient Record Module

Chart Tracing Module

Clinic Roster Module

Appointments Diary Module

Billing Module

Waiting List Module

Treatment Module

CSSD Instrument Ordering Module

#### Currently being developed and investigated

X-Ray Module

Digital Imaging - X-Ray, Video and Photography

Dental Production Laboratory Module

Beginning 1999 - Masters student preparing a thesis based on the Electronic Patient Record System.

#### Management and Finance systems

Full Finance System - Creditors, Debtors, Payroll and Nominal Ledger. 1 Full time staff member working at Management Information Systems/Reporting.

#### Other Innovations

DenX virtual Reality Module.

Commencing the development of an Intranet to allow the Problem-Based Learning Curriculum to be administered electronically.

**Visitors comments**

*A newly developed Patient Records System was presented. The visitors were impressed by this system, and will follow with interest how efficiently the system will work in the future.*

## **Section 4 – Staff**

Mr. Lorcan Birthistle  
email: [lbirthis@dental.tcd.ie](mailto:lbirthis@dental.tcd.ie)

The staff establishment and infrastructure in the Dental Hospital has been developed and increased particularly over the past 15 years. It is considered the most significant achievement of all developments in this Dental School and Hospital.

The hosts' view on the strengths, weaknesses and innovations in gaining maximum benefit from staff available.

### **Clinical Academic Staff Statistics:**

Professors	-	5
Other Senior Non-Professorial Staff	-	14.1
Non Senior Full-time Staff	-	6
Part-time Whole-Time Equivalent Staff	-	10

### **Full Time Academic Staff:**

#### **DEAN OF DENTAL AFFAIRS**

Diarmuid Shanley  
BDS (NUI), MA, MSCD (Indiana), FFDRCSI, FRSRCS (Ed), FTCD  
Professor of Oral Health

#### **DEPARTMENT OF PUBLIC AND CHILD DENTAL HEALTH**

John Clarkson  
BDS (NUI), PhD, MA, FICD, FACD  
Professor of Public Dental Health & Head of Department

Jacinta McLoughlin  
BDentSc, MDS  
Senior Lecturer in Public Dental Health

Barry Harrington  
LDS RCSI, MA, FICD, MGDS RCS (Eng)  
Senior Lecturer/Consultant in General Dental Practice

Lennart Lagerström  
LDS, MS  
Professor of Orthodontics

M. Thérèse Garvey  
BA, BDentSc, MSc (Lond), DOrth RCS, FDS RCPS (Glas), MOrth RCS  
Senior Lecturer/Consultant in Orthodontics

Paul Dowling  
BA, BDentSc, DOrth RCS (Ed), MOrth RCS (Ed), MDentSc (Ortho), FDS (Orth)  
Senior Registrar in Orthodontics

Liam Convery  
BDS (NUI), MA, MSD (Indiana), FFD RCSI  
Senior Lecturer/Consultant in Paediatric Dentistry

Pádraig Fleming  
BA, BDentSc, MSc, FDS RCS (Ed), FFD RCSI  
Senior Lecturer/Consultant in Paediatric Dentistry

## **DEPARTMENT OF RESTORATIVE DENTISTRY AND PERIODONTOLOGY**

William Edward McDevitt  
BDS (NUI), PhD, FDS RCS (Ed), FFD RCSI  
Professor of Prosthetic Dentistry,  
Head of Department of Restorative Dentistry & Periodontology,

Noel Claffey  
BDS (NUI), MDentSc, FDS RCPS (Glas), FFD RCSI, FTCD  
Professor of Periodontology.

Frank Houston  
BDS (NUI), MA, FDS RCPS (Glas), FFD RCSI  
Senior Lecturer/Consultant in Restorative Dentistry

Frank Quinn  
BA, MDentSc, FDS RCPS (Glas)  
Senior Lecturer/Consultant in Restorative Dentistry

Denise MacCarthy  
BDS (NUI), MDentSc, FDS RCS (Ed)  
Senior Lecturer/Consultant in Restorative Dentistry

Michael O' Sullivan  
BA, BDentSc, MSc (Lond), FFD RCSI, FDS RCS (Ed)  
Lecturer in Restorative Dentistry.

Osama Omer  
BDS (Khart), MSc (Manc), PhD (Manc), FFD RCSI  
Lecturer in Restorative Dentistry.

## **ORAL SURGERY, ORAL MEDICINE & ORAL PATHOLOGY**

Bernard E McCartan  
BDS, MA, MDentSc, FDSRCPS, FFDRCSI  
Senior Lecturer/Consultant in Oral Medicine and Head of Department (Acting)

Stephen R Flint,  
MB, BS, BDS, MA, PhD(Brist), FDSRCS, FFDRCSI  
Senior Lecturer/Consultant in Oral Medicine

Christine E McCreary,  
BDentSc, MB, BCh, FDS(OM)RCPS, FFDRCSI, DIP.MGT.MED(RCSI)  
Senior Lecturer/Consultant in Human Diseases

Hugh J Barry,  
BDS, MA, FDSRCS(Eng), FFDRCSI  
Senior Lecturer/Consultant in Oral Surgery

C David Ryan,  
MB, BCh, BDS, MA, DCH, FRCSI, FFDRCSI  
Senior Lecturer/Consultant in Oral & Maxillofacial Surgery

Mary Clarke,  
BDentSc, FDSRCPS, FFDRCSI  
Lecturer in Oral Surgery

Caroline Dooley,  
BDentSc, FDSRCSI, FFDRCSI  
Lecturer in Oral Surgery

Mary Toner  
BA, MB, FRCPath  
Senior Lecturer/Consultant in Pathology

David C Coleman,  
BA, PhD, MRCPPath, FTCD  
Professor of Microbiology

Derek Sullivan,  
BA, PhD(N'Cle)  
Lecturer in Microbiology

Ronald JR Kirkham,  
BAI, MB, MA, FFARCSI  
Senior Lecturer in Anaesthetics

J Alan Shields,  
BDS,FDSRCSI,DDRRCR  
Senior Registrar in Oral Radiology

**Other Clinical Staff**

Non Consultant Hospital Dentists (NCHD) 12

**Clinical Services Staff**

Floor Managers 3  
Registered General Nurses (RGN) 3  
Nurse Tutor 1  
Dental Nurses 34  
CSSD Staff 7  
Radiographers 3  
Dental Technicians 9  
Clinical Photographer 1

**Other Staff**

Senior Management 5  
(Chief Administrative Officer, Personnel Officer,  
Accountant, Director of Nursing, Building Officer)  
Information Technology 5  
Buildings Office 2  
Finance 3  
Personnel 2  
Appointments/Medical Records 12  
Supplies/Stores 3  
Nursing Administration 1  
Academic Dept. Administration 8  
Library 3  
Student Administration 3  
Crafts Persons 4  
Porters/Domestics 7

***Visitors comments***

*The qualifications of the staff are quite satisfactory. When opportunities of promotion are offered and qualifications assessed, it is important that educational competence is taken into account. The number of staff positions appears to be adequate to cover all the curriculum and service areas. All staff members have, however, a heavy clinic roster and the promised blocks for research are often taken up by administration/ tutoring.*

*One way of organising work could be to allow scheduling of research periods as well as periods for educational development that need to be respected. This can probably only be achieved by tailored plans.*

*Even though there is a number of scientific and professional publications each year, the visitors believe that additional staff would be welcome, especially in the field of research. We find a staff deficiency in coordinating PBL development and implementation. Therefore, the visitors strongly recommend that the School continues and enhances its support for research in both the basic and clinical science areas, and that a position should be established for PBL coordination, development and implementation.*



# The Dental Curriculum

## Sections 5 – 16 inclusive

Please refer to Section 1.4 for general aims and objectives

### **Introduction**

The dental curriculum is structured on Problem-Based Learning. With the exception of term one in year one all parts of the programme have been fundamentally altered in order to promote a student orientated learning with emphasis on self-directed learning. The compartmentalised approach of the DENTED visitation document does not easily lend itself to the seamless integration of learning and every effort has been made to comply with that approach. For those who are unfamiliar with a Problem-Based Learning curriculum, See Section 1.4.

### **Visitors comments**

#### *The general overall approach*

*The structure is well thought out. A lot of efforts have been made to achieve a successful translation of the aims and objectives in the programme.*

*The development of PBL blocks has been fairly openly divided in two lines: one including Oral Medicine, Oral Pathology and Oral Surgery, the other including Restorative Dentistry, Periodontology, Orthodontics and Child Dental Health. The visitors recognise the need for two lines in the development of this approach, but strongly advocate merging of the two in order to achieve better integration. The visitors recommend the School to organise some kind of retreat outside the University and Hospital environment to debate and discuss the content and time allocation of these two main lines in order to reach a well founded balance.*

*The basic biological science (structure and integration) and the pre-clinical parts of the curriculum need to be further developed to promote a more integrated approach, as recommended in the previous Section 1.4 and in some sections below.*

## **Section 5 – The Biological sciences**

### **5.1 Biochemistry**

Professor Clive Williams & Dr. Gavin Davey

email: [dwillims@tcd.ie](mailto:dwillims@tcd.ie)

[gdavey@tcd.ie](mailto:gdavey@tcd.ie)

#### **1. Introduction**

A knowledge of core concepts in biochemistry is seminal to the development of an integrated mental model of normal human structure and function. It is therefore an essential component of the dental undergraduate curriculum. In the first and second years of the problem based curriculum many of the problems / scenarios in theme A focus on structure and function of proteins, intermediary metabolism (carbohydrates and fats) and nucleic acids. A number of practical sessions are scheduled (approximately 4 in each year) which support and consolidate the theoretical concepts. In the third, fourth and fifth years biochemical concepts are revised as students consider metabolic aspects of human disease and the mode of action of drugs and anaesthetics. In the expanding area of prosthetics/implantology, where biocompatibility is a priority issue, biochemistry will become an even more important issue for dentists of the future.

#### **2. Primary Aims**

- (a) To provide students with a basic knowledge and understanding of biochemistry and its general application in human structure and function.
- (b) To enable students to understand the biochemical aspects of the practice of dentistry and to be aware of and capable of responding to the continuous advances in the field.

#### **3. Main Objectives**

At graduation students are expected to have an appropriate understanding of the following:

Protein structure and function including cell membrane channels and receptors and enzymology

Carbohydrate structure and metabolism including electron transport and oxidative phosphorylation, nutrition and energy

Lipid structure and metabolism

Cell membranes and metabolite transport

Endocrinology, the role of hormones

Neurochemistry.

Connective tissue with special emphasis on blood and bone

Calcium and vitamin D

#### **4. Hours in the Curriculum**

Because of our policy of integrated, contextual delivery of course material it is difficult to give a completely accurate estimation of hours devoted to one discipline. Students devote approximately 120 hours to biochemistry in the first two years of the course this includes practicals.

#### **5. Method of Learning/Teaching**

Problem-Based Learning (see general description) supplemented by lectures and visual aids as appropriate.

## **6. Assessment Methods**

Students in the first and second years are assessed at the end of each term in an integrated assessment where approximately 25% of the assessment is devoted to the discipline of biochemistry. Where appropriate biochemical concepts are also included in the various assessment formats in later years.

## **7. Strengths**

There is close liaison between the present and previous Heads of the Biochemistry department and part time secondment of one staff member. This allows for constant evaluation of the material and mode of delivery and facilitates continuous improvement of outcome.

## **8. Weaknesses**

A review of the content and structure of practicals is currently taking place as some of these were seen as somewhat irrelevant to dental students in recent years.

## **9. Innovations and Best Practices**

This biochemistry course is specifically designed for the dental curriculum which means that only the elements of biochemistry deemed relevant by the Dental School, in association with the Biochemistry Department, are included. Because of the continuous evaluation of student learning and their comments on the course there are many opportunities to ensure the deficiencies are rectified at the earliest possible opportunity.

## **10. Plans for Future Changes**

It is our intention to create a database for the curriculum so that individual disciplines will be able to identify the exact extent and location of their specific material in the whole curriculum and thereby ensure continuity and vertical integration without duplication or significant omission.

## **11. Visitors Comments**

*Primary objectives of the teaching of Biochemistry are clearly defined, taking into account the character of the dental curriculum. A good start of integration, in a non dogmatic way, has been accomplished.*

*Although the members of the Department of Biochemistry are well aware of the need for an appropriate programme for the dental curriculum, the visitors observe that the dental students do not clearly appreciate the importance of biochemistry for the understanding of 21st century dentistry.*

*The weaknesses underlined could be reduced by the involvement of a member of the faculty of Dental Science, with a PhD in biochemistry in some of the teaching of biochemistry.*

## **5.2 Physiology**

Dr. Mary Kelly  
email: [markelly@dental.tcd.ie](mailto:markelly@dental.tcd.ie)

### **1. Introduction**

The physiology course in the dental undergraduate curriculum introduces the students to all aspects of normal function. This course also includes general histology and special dental histology. It constitutes a major component for students in the first two years. It is also constantly revised in the third year where an understanding of dysfunction, diseases and their management requires a thorough knowledge of normal function. In all six terms of the first two years physiology is delivered, as part of the four themes which constitute the basis of the Problem-Based Learning programme. These themes are; Energy, Homeostasis and defence, Lifestyle, community and the individual, and The Oral Milieu. There are six practicals, each of 5 hours duration, in the second term of year two, which help to consolidate the didactic component.

The general histology component is delivered in year one and consists of a series of short talks combined with the use of Wheater's interactive histology CD-ROM.

The special dental histology is delivered in the third term of the first year and includes problems, lectures (6) and laboratory practicals (4).

### **2. Primary Aims**

To provide students with a thorough knowledge of the essential elements of normal function.

To ensure that students understand the relationship between histological structure and function so that they may proceed to the study of the diseases which disrupt the normal pattern.

### **3. Main Objectives**

At graduation students are expected to have an understanding of the following based on a knowledge of the physiology and its relation to the histology and the ultrastructure of the relevant tissues and systems:

Epithelia, connective tissue, nerve and muscle

Central and peripheral nervous system.

Hormones and hormonal mechanisms

Cardiovascular system

Respiratory system

Musculoskeletal system

Energy requirements, sources and metabolism

Renal function and general control of total body water

Digestion and absorption and balanced diets

Acid - base control

### **4. Hours in the Curriculum**

Because of the integrated curricular approach it is difficult to determine the precise number of hours devoted to any one discipline. The approximate number of hours including practicals is 120 in the first two years. A further 30 hours will be scheduled for special dental histology.

## **5. Method of Learning/Teaching**

Physiological concepts are presented by planners in a series of scenario / problems which stimulate students, working in small groups, to explore their prior knowledge and recognise the areas where their knowledge is deficient so that learning goals may be agreed and the deficiency rectified. Practicals are designed to reinforce important areas such as : blood, respiration, saliva etc.

## **6. Assessment Methods**

In the first and second years physiology is assessed by multiple choice and short answer questions at each end of term assessment. Practical assessments are held each week in the Hilary term of the second year and contribute 15% of the total marks of the Hilary term. Special dental histology is assessed as part of a multi-station assessment similar in structure to an objective structured clinical examination at the end of Trinity term year one.

## **7. Strengths**

The practical programme reinforces contextual delivery of physiological theoretical concepts.

The teaching of histology and tooth development is an excellent platform on which to build dental anatomy and detailed tooth morphology.

## **8. Weaknesses**

There is a need for streamlining and sequencing of topics and systems in order to insure vertical and horizontal integration throughout the course.

## **9. Innovations and Best Practices**

The development and use of interactive computer programmes in both physiology and histology

The achievement of integration of physiology with other basic sciences and the emphasis placed on their role in clinical practice

## **10. Plans for Future Changes**

Evaluation and close monitoring of the content and student response to the course will enable modification to be made as necessary.

## **11. Visitors Comments**

*This course, which also includes general histology and dental histology, is presented by the faculty as a major component of the first two years of the dental education. It is also revised in the third year when students begin to approach dysfunctions and diseases and their management. There is special effort to implement a comprehensive PBL program, consolidated by a number of practicals. There is a serious concern about assessment and feedback. The visitors remark that the person in charge should belong to the School of Dental Science, which ensures a contextual delivery.*

### **5.3 Genetics**

Dr. Derek Sullivan, Dr. Gavin Davey, Dr. Mary Kelly and Dr. Peter Humpheries

email: [djsullvn@dental.tcd.ie](mailto:djsullvn@dental.tcd.ie)

[gdavey@tcd.ie](mailto:gdavey@tcd.ie)

[markelly@dental.tcd.ie](mailto:markelly@dental.tcd.ie)

[pete.humphries@tcd.ie](mailto:pete.humphries@tcd.ie)

#### **1. Introduction**

Human diseases may be caused either by agents within our environment such as bacteria, viruses, chemical etc or as a result of genetic defects. Diseases of genetic origin have proven to be difficult to prevent and treat. A major problem in the development of therapies has been the virtually complete lack of knowledge, until recently, of the causes of such diseases. Cancer for example is a genetic disease that occurs in up to one in five humans at some stage in their lives. It is clearly important that all health-care-workers understand the basic principles of the science of genetics.

Genetics is currently incorporated into Problem-Based Learning themes in years 1 & 2 and is revisited again in later years as it applies human diseases and congenital defects.

#### **2. Primary Aims**

- a) To ensure that students understand the basis of genetic inheritance and the way in which protein structure is determined by DNA.
- b) To ensure that students understand gene mutations, how they occur, how they are inherited and their effect on human evolution and disease patterns.

#### **3. Main Objectives**

By the end of the second undergraduate year students should understand the following:  
The nature of the nucleic acids DNA and RNA, transcription, translation and the genetic Code

How transcription and translation may be inhibited by antibiotics

Mitosis, meiosis, recombination and dysjunction

Mutations

Mendelian genetics

The impact of genetic disease on society

#### **4. Hours in the Curriculum**

Approximately 36 hours in the first two years.

#### **5. Method of Learning/Teaching**

In the first year there are six problems which directly focus on genetics. There are two introductory lectures. Further lectures are included as deemed appropriate.

In the second year four problems deal with directly with genetics. Students are supplied with Professor Humpheries lecture course notes.

## **6. Assessment Methods**

All material is assessed in the end of term PBL assessments.

## **7. Strengths**

Students are encouraged to appreciate the significant advances which are currently being made in genetic science. The material is specifically delivered in a health care context and with emphasis on possible preventive measures.

## **8. Weaknesses**

## **9. Innovations and Best Practices**

## **10. Plan for Future Changes**

It is intended to review the genetics component of the course at the end of this academic year and, in discussion with Dr J Carroll, Dean of Faculty of Science and Professor P Humpheries to modify the teaching of genetics as necessary.

## **11. Visitors Comments**

*As presented in the primary aims and main objectives, the importance of properly teaching genetics to dental practitioners of the future is clearly identified. The education in genetics is carried out in the first two years, combining lectures and PBL. Furthermore, one of the teachers is involved in the research of the school.*

*Although in the documents provided, cancer is identified as a very important genetic disease, themes related to this disease, oncogenes for example, do not appear as such in the main objectives. This represents a weakness when considering the role of dentists in the early diagnosis of pre-cancer and cancer of the oral mucosa.*

*As suggested in the plan for the future, it might be advisable to have a broad discussion about the genetic component of the course of Dental Science.*

## **Section 6 – Pre Clinical Sciences**

### **6.1 Anatomy**

Professor Moira O'Brien and Dr. Paul Glacken

email: [mobrien@tcd.ie](mailto:mobrien@tcd.ie)  
[pglacken@tcd.ie](mailto:pglacken@tcd.ie)

#### **1. Introduction**

Anatomy is introduced in at the start of the dental undergraduate course. A two-week introductory course preceding the first term provides an overview of anatomy.

In the first term of the first year the anatomy of the head and neck is presented at two-hour seminars/workshops, held twice each week. In the second and third terms of the first year, seminars on the CNS [term 2] and Thorax [term 3] are held once a week. While the adoption of the policy of student-centred, self-directed learning has resulted in a large reduction in the number of lectures delivered, lectures are included where deemed appropriate and occur mostly in the second term.

In year two the major emphasis moves to normal function and there is a constant revision of structure in relation to function. In later years anatomy revision arises constantly in relation to oral surgery, occlusion and function, orthodontics and oral medicine.

#### **2. Primary Aims**

(a) To provide students with a detailed understanding of craniofacial structure and function, with a particular emphasis on oral anatomy, as a basis for clinical practice.

(b) To provide students with a basic knowledge of the structure and function of the major systems and organs of the human body appropriate to the understanding of important diseases.

#### **3. Main Objectives**

Students are required to have an appropriate understanding of the following:

The development of the pre-embryo and the subsequent development of the pharyngeal arches and related structures.

The skeletal system including joint classification, with particular emphasis on the cranium, mandible and temporomandibular joint.

The muscles of the head and neck with particular emphasis on the muscles of the first and second pharyngeal arches.

The cranial nerves, especially the trigeminal, facial, glossopharyngeal, hypoglossal, accessory and those parts of the vagus concerned with the head and neck.

The oral cavity, nasal cavity and sinuses, pharynx and larynx.

The blood supply of the head and neck

The trachea, bronchial tree and lungs, the thoracic wall and diaphragm, the heart and great vessels.

The structure of the cerebral hemispheres, brainstem, cerebellum and spinal cord

The major afferent and efferent pathways of the CNS, with particular emphasis on those associated with the cranial nerves mentioned above.



The blood supply of the CNS and the circulation of cerebrospinal fluid.

#### **4. Hours in the Curriculum**

Total contact hours in the first year are 85

Total contact hours in subsequent years in terms of the integration of anatomy in clinical practice is unquantifiable in terms of hours and instead is expressed in educational objectives and outcomes.

#### **5. Method of Learning/Teaching**

The two-week introductory course consists of lectures and seminars and deals with tissues, systems and embryology.

In the first year seminars/workshops usually start with a short introduction by a senior staff member outlining the objectives for the session. A handout on the topic is provided. The class then spends a little over an hour studying in groups of four, using bones, prosected specimens, models, charts, atlases of anatomy and other materials provided. During the last half-hour staff members discuss the topic with the students in small groups. The students are encouraged to visit the dissecting room and view relevant dissections. Topics are planned in a sequence designed to ensure the gradual development of an overall understanding of the interrelationship of structures of the head and neck. In the second term of the first year students attend lectures on the central nervous system as well as seminars. In the third term workshops on the thorax and abdomen are included.

#### **6. Assessment Methods**

In the first year anatomy is assessed as part of the problem-based component of the course. Three methods of assessment are used; multiple-choice questions [true/false], short-answer questions and practical examination [viva voce/ OSCE]. An assessment using all three methods is carried out at the end of each term and the final mark is the mean of the cumulative marks for the three assessments.

#### **7. Strengths**

The responsibility for learning and the scope of the chosen topics is clearly defined for the student at each seminar. Students get immediate and continuous feedback on the quality of their learning and have opportunities to remedy deficiencies.

#### **8. Weaknesses**

The course is in the process of development following the recent introduction of Problem-Based Learning and continues to undergo modification as it evolves.

#### **9. Innovations and Best Practices**

The development of interactive CAL packages for use by individual students at their own pace and the use of existing CD ROM programmes. The development of a course workbook to be supplied to each student at the start of the course. When completed this should constitute, for each student, an immediate reference source for essentials of head and neck anatomy.

#### **10. Plans for Future Changes**

Close observation of student progress will enable appropriate adaptations to be made on a continuous basis. It is also intended to expand the range of models and specimens, as finance becomes available.

#### **11. Visitors Comments**

*The visitors did appreciate the effort to implement a PBL anatomy course. One way to alleviate the workload, that the staff claimed to be present, would be to introduce CAL packages.*

*The facilities and environment in the Anatomy Department were less than ideal and outdated. The visitors were concerned about floor covering and outdated plumbing fixtures in this area.*

## **Section 7 - Para-Clinical Sciences**

### **7.1 Pharmacology**

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#### **1. Introduction**

Pharmacology course for dental students is comprised of about 32 lectures and problem based learning. The latter is accomplished as a part of human diseases. The course is given in their third year of training. Students learn the general principals of drug action and drug disposition in the body and also study the effects of disease, pregnancy, and extremes of age on drug handling. They gain a knowledge of adverse drug reactions , drug interactions and effects of drugs on infants when these are given to nursing mothers. The main part of the lecture course is completed in the Michaelmas term with a small number given in the Hilary term. Pharmacology as a part of problem based learning is provided over Michaelmas, Hilary and Trinity terms in the third year.

#### **2. Primary Aims**

To provide dental students with:

an understanding of principles of drug absorption, distribution, metabolism, excretion, mode of action and adverse drug reactions.

a knowledge of drugs used in dentistry, the relevance of a concurrent medical condition and its therapy, the use of drugs in pregnancy, lactation and extremes of age.

#### **3. Main Objectives**

By the end of the course unit students will be able to:

Describe methods of drug absorption, distribution, metabolism and excretion.

List the principles of drug action and drugs acting on the autonomic system.

List the actions of important autocooids and their antagonists.

List the groups of drugs used in dentistry, their modes of action, metabolism, adverse reactions, precautions and interactions with other drugs.

Describe the precautions in prescribing drugs for pregnant and lactating women

Describe the precautions in prescribing drugs for patients particularly susceptible because of their age or a prevailing medical condition.

Write a legal prescription for a dental patient while possessing a knowledge of drug schedules and controlled drugs under the current regulations.

#### **4. Hours in the Curriculum**

The lecture course comprises of 32 lecture hours and weekly PBL (Problem Based Learning) sessions which start early in September and continue throughout the year with small breaks at term ends. Teaching terms for dental students are longer than the traditional university terms. Currently each PBL session is of 90 minute duration.

#### **5. Method of Learning/Teaching**

Students learn pharmacology from traditional lectures and from pharmacology books. They also learn drug treatment of various dental conditions from an extensive range of dental and medical problems under the PBL programme which is continuously reviewed and updated.

#### **6. Assessment Methods**

There is no separate pharmacology examination and students are assessed as a part of an integrated course in human diseases. The knowledge of students is assessed with block MCQ tests and a final year end examinations. The block tests are conducted at the end of each block period and deal with subjects of the respective block. The year end assessment is also in the form of MCQ but includes OSCE questions.

#### **7. Strengths**

The method of PBL promotes the activation and elaboration of a prior knowledge to actively gain information on drugs used in dental treatment. This programme is supplemented by traditional lectures in general pharmacology and some selected topics in systemic pharmacology.

#### **8. Weaknesses**

The recent introduction of Problem-Based Learning has changed the emphasis from traditional lecture based learning to student centred learning. The method of assessment from a single subject structure has also changed to a multiple subject appraisal. This requires further revision in respect of:

- a) role of external examiner
- b) compensation between subjects
- c) guessing answers in MCQs – a matter under active review

#### **9. Innovation and Best Practices**

The key success to PBL programme depends on the design and quality of problems. The role of the tutor in this process is mainly supportive. This is an inter-disciplinary approach to active student learning in which the tutor must be able to understand the problem oneself, motivate students and provide directions without spoon feeding or group lecturing them.

#### **10. Plans for Future Changes**

The success in PBL depends on small group discussions which require more space and more teachers. It also requires the availability of adequate library, audio-visual and internet facilities, all of which require financial resources. The problems and assessment methods must be continuously reviewed and facilities provided for teachers to continuously update themselves and attend workshops whenever possible. Future development must also include the provision of unlimited photocopying of published material without causing infringement of copyrights.

## **11. Visitors Comments**

*The main objectives in pharmacology as described in the self-assessment report are a mixture between knowledge-based objectives stated as “Describe of....” and very simple objectives stated as “List...”. The latter type objectives are not in accordance with the primary aims described in the self-assessment report. Only the last mentioned objective is stated as a competence. Application of pharmacokinetic mechanisms is an important and integrated part of contemporary oral health care. Therefore, the mechanisms considered relevant for dental students to learn should be selected with special account to their clinical relevance.*

*A PBL curriculum with its integrated approach between basic sciences and clinical sciences lends itself very well to increase the students’ understanding of biological interactions of different drugs and their implications for clinical oral health care. The visitors appreciate therefore that pharmacology is learnt from “an extensive range of dental and medical problems under the PBL programme.” There are, however, obvious problems to motivate the students to attend the educational part, which consists of traditional lectures.*

*The visitors had a fruitful discussion with the teacher responsible. The teaching responsibilities were claimed to be too heavy for one teacher and there is a lack of adequate educational material in pharmacology for dental students. Several approaches were discussed. A further modification of the educational approach supported with computer- based material designed for dental students was discussed. Another way to increase students’ interest in drug interaction might be to arrange occasional lectures on new research areas with particular emphasis on their implications for clinical oral health care and to collect topics of seminars/small group discussions from the students’ own learning experiences in the clinical settings.*

## **7.2 Microbiology**

Dr. Derek Sullivan, Prof. David Coleman and Prof. Cyril Smyth

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### **1. Introduction**

Because of the importance of microorganisms and microbial diseases in dentistry, microbiology represents a significant proportion of the undergraduate curriculum. The oral cavity is home to a large number of very diverse microorganisms. For the most part these are harmless in nature, however, under certain conditions some of these organisms can cause disease. One of these diseases, gingivitis, is the most common infectious disease in the world. In addition, since the oral cavity is the opening for the respiratory and digestive tracts it is also the portal of entry for a wide array of disease-causing pathogenic microbes. Although the students are introduced to the microbial world in year 1 the subject is developed and expanded upon in Year 2. Teaching takes the form of PBL tutorials that take place throughout Year 2 and practical classes that take place during the first term of Year 2. In addition, aspects of microbiology in relation to oral disease are encountered frequently in Years 3, 4 and 5.

### **2. Primary Aims**

To encourage a thorough understanding of the general biology of bacteria, viruses and fungi. Particular attention is paid to how these organisms interact with the human body and how they cause disease.

To facilitate an understanding of the many facets of the human immune response and the mechanisms and treatments used to prevent and/or cure infectious diseases, including vaccines, antimicrobial agents and cross-infection control.

### **3. Main objectives**

To describe microbial diversity and adaptability, and the omnipresence of microorganisms in the huge variety of environmental niches they inhabit.

To describe the morphology, structure and metabolism of bacterial cells, including how they are grown and recognised in the laboratory.

To describe in general terms how bacteria cause disease.

To introduce how specific bacterial species can cause oral disease, e.g. caries, gingivitis and periodontal disease.

To describe the morphology and pathogenesis of viruses.

To describe the morphology and pathogenesis of fungal pathogens.

To describe how the humoral and cell-mediated immune systems recognise and eradicate microorganisms and the consequences of immune deficiency syndromes.

To describe the development and mode of action of vaccines.

To describe the development and mode of action of antibacterial, antiviral and antifungal agents.

To introduce the concepts of cross-infection control.

#### **4. Hours in the Curriculum**

The microbiological content of the course is comprised of 15 PBL tutorials (each consisting of 2 hrs) which take place throughout the year. In addition, there is a significant microbiological involvement in tutorials from other themes (e.g. The Oral Milieu). At the beginning of the year there are also two lectures introducing the subject of microbiology and 8.2 hr practical classes. (Total = 48 hrs). The total amount of time in applied microbiology throughout the clinical course is unquantifiable.

#### **5. Method of Learning/Teaching**

Because of the perceived importance of microbes and microbial diseases in dentistry, microbiology represents a significant proportion of the undergraduate curriculum. In line with the rest of the second year course, microbiology is mainly learned through PBL. Particular aspects of the microbial world are presented to the students in the form of problems that are initially discussed using prior knowledge. Learning goals are then generated which form the basis for self-directed study, the results of which are discussed in detail during the following tutorial. The final problem consists of a mini research project where individual groups study a microorganism currently in the news and relate this to the rest of the class in an oral presentation. In order to ensure that all students are familiar with basic concepts and terminology, two special orientation lectures are given at the beginning of the year. Eight practical classes introducing basic microbial techniques and concepts also take place during the first term.

#### **6. Assessment Methods**

Students are assessed at the end of each term. The format of the examination includes true/false questions, pathway multiple-choice questions and short answer questions. Students are also assessed on the basis of their performance in PBL tutorials.

#### **7. Strengths**

Microbiology is a broad and diverse subject which requires a basic understanding of a wide variety of biological disciplines, including biochemistry and genetics. The self-directed approach to learning encouraged by PBL lends itself very well to a holistic understanding of basic microbiological principles. In addition, the generation of problems from overlapping disciplines (e.g. microbiology and oral medicine) further encourages students to not think "in boxes". This is further reinforced by the use of practical classes, which strengthen these concepts and introduce the techniques used in the analysis of microorganisms in clinical laboratories. In addition, due to the formats and the high staff/student ratios of these classes the progress of individual students can be monitored readily.

#### **8. Weaknesses**

Active participation in PBL tutorials can sometimes be daunting for students who are shy or who don't speak English as their native language. However, as the year progresses these students tend to become more involved in the dynamic process of the tutorial, thus helping to improve their communication skills.

#### **9. Innovations and Best Practices**

One of the microbiology PBL problems takes the form of a mini research project where each tutorial group researches a topical microorganism (e.g. E. coli O157 or Ebola virus) and presents their findings in an oral presentation to their class.

## **10. Plans for Future Changes**

PBL problems and methods of assessment are constantly evolving and being updated.

## **11. Visitors Comments**

*The teaching and learning of Microbiology is seen by the visiting group as the most efficient of all basic biological sciences. It is perceived as a result of the existence of a strong research team in the field as being part of the School of Dental Science.*

*The organisation of the teaching emphasises to dental students that Microbiology is an integrated part of oral health sciences, and not an alien field belonging to the Faculty of Sciences or to the Faculty of Medicine. This approach and organisation could serve as a model for the educational approach.*



## **7.3 General Pathology**

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### **1. Introduction**

This course is taught in an integrated course with general medicine and surgery. The students attend some basic pathology lectures at the end of the second year, with the medical students, but most is covered in the third year through PBL. There are a small number of pathology pot sessions and microscopy practicals, allowing illustration of pathological processes.

### **2. Primary Aims**

To develop an appreciation of the underlying basic principles of disease, covering mechanisms of tissue damage, inflammation, immune processes, neoplasia.

To understand the pathological processes underlying the commoner systemic diseases.

### **3. Main Objectives**

The students should

understand the different types of insult which may result in tissue damage.

know the various reactions to insult at a cellular and gross pathological level.

understand the consequences of insults, such as healing and repair, chronic inflammation, scarring, neoplasia.

understand the concept of premalignant states and benign and malignant tumours.

understand the pathology of vascular disease, thrombosis and embolism.

know the pathology of infective endocarditis.

appreciate the pathology pertinent to an understanding of hypertension ischaemic heart disease and heart failure.

understand the pathology of chronic lung disease and pneumonia.

### **4. Hours in the Curriculum**

See general medicine and surgery which is integrated with pathology.

### **5. Method of Learning/Teaching**

Most of the theoretical part is delivered by PBL, complemented by introductory basic pathology lectures, prior to the PBL course and occasional refresher lectures during the third year, to illustrate material covered in tutorials, rather than introduce new material. There are practical sessions during the second term in St. James's, which are attended by the students.

### **6. Assessment Methods**

Pathology is assessed with the rest of human diseases mainly by MCQ and short answer papers, and in the final exam of the year, by OSCE.

### **7. Strengths**

The course benefits from the input at both planning and tutor level of a general pathologist on the senior staff of the dental hospital, and a lecturer in pathology whose

only teaching commitment is to this course. The practical sessions are staffed only by these two people, rather than relying on general pathology residents.

The integration of the course with general medicine and surgery is a major benefit in learning pathology in context, but see comments below also.

### **8. Weaknesses**

While reading material is reasonably adequate for the PBL system, and the practical sessions are helpful, expansion of illustrative computer based programmes for pathology would be a definite advantage (this is being dealt with this year).

Integration of the course with general medicine and surgery occasionally allows the students to cover clinical signs only without sufficient reference to the underlying pathology.

### **9. Innovations and Best Practices**

Recent review of entire pathology course with a group of doubly qualified (medical and dental) staff to examine and refine exactly what is relevant in this area to dental education.

Practical sessions are specifically designed to assist the theoretical course, and with detailed practical handouts to work through which include numerous questions to be answered which demand correlation of the microscopic findings with clinical features.

The use of gross pathological photographs in the PBL tutorials are very useful in prompting clinicopathological correlation.

### **10. Plans for Future Changes**

The PBL course, being only a few years old, is still undergoing constant review (with students, tutors and planning groups). Improvement of computer assisted learning programmes is planned.

## **Section 8 – Human Diseases**

### **General Medicine, Surgery and Pathology** (includes Anaesthesiology and Sedation)

#### **8.1 Human Diseases**

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##### **1. Introduction**

General medicine and surgery are taught under the title Human Diseases in our curriculum. The theoretical part of this course is taught throughout the third year via PBL with an additional attachment for three hours once a week for one term to a general teaching hospital. This allows experience at examining patients and the development of clinical skills at the bedside. Case presentations and lectures in medicine and surgery are also part of this attachment.

##### **2. Primary Aims**

Develop in the students an understanding of human diseases (embracing general medicine, surgery and pathology as well as pharmacology and microbiology) that is required for a dental practitioner to safely care for patients.

Enable the student to recognise the signs and symptoms of systemic diseases ascertained in history taking from and observation of a dental patient and to implement prophylactic measures.

##### **3. Main Objectives**

The main objectives of this course are to develop history taking, communication and examination skills in our students so that they can recognise major system symptomatology and the consequences that this might have for the dental treatment of their patients.

They should:-

Be capable of taking a relevant and succinct medical history.

Have a clear understanding of normal blood formation and coagulation.

Understand the significance of and differentiate between the various types of anaemia.

Be familiar with the common bleeding disorders and their consequences for dental patients including anticoagulated patients.

Understand the basic disruption of function caused by leukaemia and lymphoma

Understand normal function of the cardiovascular and respiratory systems.

Be aware of the common disorders associated with these systems and the signs and symptoms which may occur with disease.

Have a working knowledge of the consequences of atrial fibrillation, hypertension, endocarditis, thrombosis and embolism.

Understand the significance of relevant alterations in the electrocardiogram.

Be capable of monitoring pulse and blood pressure.

#### **4. Hours in the Curriculum**

70 hours of PBL tutorials in the year (Seven blocks of five problems)

Twelve x 3 hour sessions in St James's Hospital (the general teaching hospital for the Faculty of Health Sciences, Trinity College)

#### **5. Method of Learning/Teaching**

The major didactic part of the human diseases course is delivered via a PBL approach. This is complemented by a number of core lectures and lectures requested by the students once they have completed a particular block. In the Hilary term the more practical elements of the course are delivered during their weekly session in St. James's Hospital.

This session involves small group teaching at the bedside for 60-90 minutes in either a medical or surgical ward. They then have two lectures at each session from the various medical and surgical consultants in St. James's Hospital.

#### **6. Assessment Methods**

The human diseases course is assessed by a number of different methods. The PBL part of the course is assessed by a continuous assessment system using MCQ and MSA format papers. There is an OSCE examination at the end of the year in which human diseases has five stations. A number of practical skills are assessed (e.g. taking a BP, auscultation of a chest, discussing a radiograph, history taking etc.)

#### **7. Strengths**

This course is jointly organised by two dental school consultants who are medically qualified and who have attachments in St James's Hospital. This means that they know the tutors, lecturers and consultant staff who are being asked to deliver the practical "hands on" part of the course and this has proved to be a big advantage. In relation to the PBL curriculum the teaching of human diseases fits very well with this style of delivery and the human diseases blocks have been very well received by the students.

#### **8. Weaknesses**

The separate geographic locations of the Dublin Dental Hospital and the nearest teaching hospital does make it awkward for students who have to travel between the two institutions during Hilary term and consequently attendances at St. James's are monitored very closely. Careful briefing of the medical tutors whom we need to use for the bedside teaching is required. These clinicians often cannot appreciate why dentists need to know about medical/surgical topics. The teaching of dental students is something that they are asked to participate in and we are depending a lot on good will. The number of medical and paramedical students using the facilities in St James's means that patients and tutors are over exposed to students

The priority that these tutors give to involvement with our students is often less than is required.

#### **9. Innovations and Best Practices**

Organisation of the Human Diseases course from within the school rather than delegation to different members of the faculty of Health Sciences.

Close liaison with the Trinity lecturer in Clinical Medicine who is also a tutor on our PBL course

We are increasingly trying to plan our PBL course component to complement the clinical experience gained during the hospital attachment  
the formal teaching of this subject in the third year is revised continuously through years four and five

Range of general hospitals used by the Dental School include central or national centre for haemophilia, oncology, maxillo-facial surgery, ear, nose & throat, cardiology, gastroenterology & hepatology, sexually transmitted diseases and endocrinology.

#### **10. Plans for Future Changes**

At present the PBL component of the course is being monitored and revised almost continuously. Over the next 2-3 years a new lecture based component will be developed to complement and clarify the PBL tutorials. The topics covered in these lectures will be a combination of what the students have asked for and what the organisers see as deficiencies in the course. The other potential change, and it is one that has been considered before is to utilise other hospitals with which we have links including St Columcilles and St Vincents and the new Tallaght Hospital.

#### **11. Visitors Comments**

*In the future, the number of medically compromised patients and patients on various medications, will increase in dental practice. The visitors find it of particular value that students attend hospital clinics and meet the patients in a hospital environment, where they can meet and interview medically compromised patients. Ear-nose- and throat diseases are covered within this section as well.*

*One problem that needs to be solved is that the teaching material is intended for medical students which sometimes makes it difficult to select relevant sections for dental students.*

## **8.2 Anaesthesiology**

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### **1. Introduction**

This course was previously principally concerned with general anaesthesia, conscious sedation being but a small component. Following the publication of the Poswillo report and others, the emphasis has shifted to conscious sedation. The course is now taught in the fifth year. This allows the students to build on the knowledge they have already gained in biology, physiology and anatomy, human diseases and pharmacology. In addition, students may be expected to have attained a reasonable degree of clinical maturity at this stage.

### **2. Primary Aims**

The course aims to engender an awareness of the full range of methods of modification of human behaviour with particular reference to the management of anxiety experienced in the delivery of dental care.

It also aims to foster an understanding of the inherent risks associated with the commonly used forms of sedation and anaesthesia and the distinction between conscious sedation and general anaesthesia.

### **3. Main Objectives**

Students will be facilitated in learning:

the causes, signs and symptoms of dental anxiety or phobia;

the criteria and techniques of assessment of patients' suitability for conscious sedation and the indications and contraindications to the use of sedation;

to calculate the appropriate safe dose of sedation agents and to recognise the conscious sedation end-point;

to care for the patient until fully recovered and to appreciate the importance of and use of appropriate monitoring;

to develop the clinical skills necessary to perform conscious sedation safely.

### **4. Hours in the Curriculum**

Students spend on average one and one half hours (90 minutes) each week for three terms of the fifth year actively involved in treating or assisting at the treatment of patients under sedation or general anaesthetic.

A further one and one half hours (90 minutes) on average spent in the oral surgery out-patient assessment clinic will provide complementary experience.

### **5. Method of Learning/Teaching**

The didactic component will include an introductory course of six lectures on sedation and anaesthesiology. Prescribed reading material will include textbook and current literature material. The clinical course will consist of laboratory practicals, chairside tutorials and demonstrations, attendance at general anaesthetic operating sessions and "hands on" experience of intravenous and inhalational sedation techniques. Attendance at oral surgery out-patient clinics will provide complementary experience in the assessment of patients' suitability for sedation or general anaesthesia as necessary.

## **6. Assessment Methods**

A competence test in intravenous sedation will be undertaken by each student. In addition, the present written examination in Anaesthesiology will be modified to include a preponderance of material pertaining to sedation reflecting the emphasis of the course.

## **7. Strengths**

The course will be learned in a clinical context and students will be actively involved in all aspects. This will be facilitated by small group learning.

The general anaesthesiology component will be moderated by consultant anaesthetists with university appointments.

The present availability of a large pool of clinical material will provide a climate for ongoing clinical research into the field of sedation and allied topics. This will lead to the development of innovations and best practices.

## **8. Weaknesses**

This is a new course still under development. There is no staff dedicated to teaching of sedation techniques. Intravenous sedation is at a more advanced state of development than inhalational sedation and at present, only one member of staff (part time) has expertise in this field.

## **9 Innovations and Best Practices**

### **10. Plans for Future Changes**

In-service courses are being organised to expand the pool of expertise in both inhalation and intravenous sedation techniques. This will lead to an improvement in the availability of teaching in both modalities of sedation and will encourage the expansion of the use of sedation to other disciplines of dentistry within the dental hospital.

### **11. Visitors Comments**

*This course is not taught until the fifth year, which means that the students do not get any practice in sedation of their patients in the Dental School. The visitors find it difficult to see how methods of learning and teaching and of assessment reflect the primary aims and objectives of the course. The course is, however, still under development, and the visitors encourage the plans to organise the training more efficiently.*

## **Section 9 - Orthodontics and Child Dental Health**

### **9.1 Orthodontics**

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#### **1. Introduction**

Undergraduate students are introduced to clinical orthodontics in the second dental year. The second, third, fourth and fifth year students are scheduled to attend the child dental health clinic on a weekly basis. Students alternate between paediatric dentistry and orthodontics. Every effort is made to integrate the treatment of children in the child dental health clinic.

#### **2. Primary Aims**

Graduating students should be able to perform an appropriate diagnosis for all forms of malocclusion and evaluate the need for orthodontic treatment. Students should be able to treat Class I alignment problems, mild Class II division 1 cases and single tooth anterior crossbites.

#### **3. Main Objectives**

To identify normal growth and development.

To develop a knowledge of abnormal development of the dentition.

To understand the relationship between development of the dentition and facial growth.

To appreciate the use of functional appliances in orthodontics.

To develop clinical skills placing orthodontic bands and brackets.

To emphasise the integration of orthodontics and paediatric dentistry in the treatment of the child.

To recognise those conditions which need to be referred for secondary care.

#### **4. Hours in the Curriculum**

Second, third, fourth and fifth year students attend the orthodontic clinic on an alternate week basis. Second year students observe and assist the fourth year students. No patients are booked in the first term for third year students but in the following two terms they spend 140 hours treating patients. Fourth and fifth year students spend 165 hours per academic year treating patients in the clinic. The total number of clinical hours in orthodontics in the present curriculum is 471.

#### **5. Method of Learning/Teaching**

Problem-based learning is used throughout the undergraduate curriculum. Orthodontics is an integral part of the problem-based learning programme.

Case-based learning has been introduced into the fifth dental year. The purpose of the case-based learning course is to allow students to apply previously acquired knowledge to solve clinical problems. The cases selected are clinically based and multifaceted and some of the cases require orthodontic intervention.

Students learn orthodontic diagnosis and treatment planning in the clinic. They also get an opportunity to treat patients and benefit from "hands-on" experience.



## **6. Assessment Methods**

Continuous assessment is used to assess student theoretical knowledge and clinical performance. Clinical activity is assessed after each 3-hour clinical session. Each session merits 3 clinical credits. Each student must obtain 67% of credits in child dental health in each academic year. Theoretical knowledge is assessed using multiple choice questions, short answer questions and structured questions at the end of each problem-based learning block.

Competence tests are carried out in the third, fourth, and fifth dental years. Competencies are judged as satisfactory or unsatisfactory.

Objective structured clinical examinations (OSCE) are carried out at the end of the third and fourth dental years. The examinations include an orthodontic component.

## **7. Strengths**

The structure of the programme allows students to commence and complete patient treatments in the orthodontic clinic. Students actively participate in clinical orthodontics.

## **8. Weaknesses**

Ideally there should be continuity of care for patients treated in orthodontics. The same team (supervisor and students) should treat patients from diagnosis to treatment completion.

## **9. Innovations and Best Practices**

Students have an opportunity to diagnose problems and carry out orthodontic treatment under supervision. Students gain experience in the use of removable, functional and fixed appliances.

## **10. Plans for Future Changes**

Students should benefit from attending the child dental health clinic from the second dental year. Changes in the curriculum, which facilitate students continuing the care of patients from the second year to the final year, should enhance students understanding of growth and development. Changes currently taking place should also improve patient care.

## **9.2 Child Dental Health**

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### **1. Introduction**

Undergraduate students are introduced to clinical paediatric dentistry in the second year. The second, third, fourth and fifth year students are scheduled to attend the Child Dental Health Clinic on a weekly basis. Students alternate between paediatric dentistry and orthodontics. Every effort is made to integrate the treatment of children in the Child Dental Health Clinic.

### **2. Primary Aims**

The student on graduation should be able to recognise and treat the oral health needs of the average child in a sympathetic and preventively oriented manner.

### **3. Main Objectives**

To understand the child as a growing individual in all respects.

To develop patient management skills so that the child patient can develop a positive attitude to his/her dental health.

To guide younger patients through their first time dental experiences.

To understand the underlying causes and the appropriate treatment for the four most important conditions affecting the Irish child population: - dental caries, accidental damage to anterior teeth, occlusal problems and periodontal disease.

To use history taking and clinical diagnostic skills to identify the dental problems of the typical child that would be attending for routine care in a general practice.

To provide the treatment planned

To develop and get informed consent for a comprehensive treatment plan which should deal with the immediate problems and outline the longer-term strategy.

To identify the more complex problems for which more detailed and specialist advice will be required.

To emphasis the integration of orthodontics and paediatric dentistry in the treatment of the child.

### **4. Hours in the Curriculum**

Second, third, fourth and fifth year students attend for paediatric dentistry experience in the Child Dental Health Clinic on alternate week basis. Second year students observe and assist the fourth year students. No patients are booked in the first term for third year students but in the following two terms they spend 140 hours treating patients. Fourth and fifth year students spend 165 hours per academic year treating patients in the clinic. The total number of clinical hours in paediatric dentistry in the present curriculum is 471.

### **5. Method of Learning/Teaching**

Problem-Based Learning is used throughout the undergraduate curriculum. Paediatric dentistry is an integral part of the Problem-Based Learning programme particularly in the fourth year. Students treat patients in the clinic. The treatment plan when developed is presented by the student to the clinical teacher and student group colleagues. When finalised it is explained to the child and parent before being formally entered in the chart and signed up.

In a case, where an orthodontic dimension exists, the student can discuss it informally with the orthodontic tutor who is supervising the same student group the following week. When necessary a joint treatment plan emerges. The process is reciprocal and more routine dental care is now being provided to the orthodontic patients in the paediatric session.

Students from earlier years can learn from participating as clinical assistants, recorders and providers of oral hygiene instruction and other preventive actions.

The curriculum schedule allows a student by direct observation to see and learn the process of growth and development in all aspects of their assigned patient. The recall and scheduled maintenance appointments after the provision of the basic care treatment package are valuable learning experiences and allow discussion of treatment outcomes.

Topic Based Learning items in paediatric dentistry are scheduled in the fifth year.

## **6. Assessment Methods**

Continuous assessment is used to measure both theoretical knowledge and skills acquisition. Assessment of theory is carried out using multiple choice questions including true/false and extended matching pairs, short answer questions, short essay questions and structured problems. The individual student's participation in the process of PBL is marked at each session. Objective Structured Clinical Examinations (OSCE) are used to assess clinical and practical performance in year 3 and 4.

Clinical activity is assessed after each 3-hour clinical session. Each session merits 3 clinical credits. Each student must obtain 67% of credits in child dental health in each academic year. Theoretical knowledge is assessed using multiple choice questions, short answer questions and structured questions at the end of each Problem-Based Learning block.

Competence tests are carried out in the third, fourth and fifth dental years. Competences are judged as satisfactory and unsatisfactory.

## **7. Strengths**

The student is being introduced to the management of a child dental patient earlier in the dental course than previously in an impressive new clinical environment.

## **8. Weaknesses**

The increase in scheduled clinical exposure requires an increase in the throughput of suitable patients. The commissioning of the intra-oral radiography unit and the special surgery unit on each clinic floor will improve the scope of experiences that can be offered to students, particularly in the final year. The provision of visual evidence of a child friendly atmosphere when the full clinic is scheduled for child patients is a challenge.

## **9. Innovations and Best Practices**

Comprehensive care on a continuous basis for the growing child with an emphasis on prevention is being provided.

A significant improvement in the integration of paediatric dentistry and orthodontic teaching is developing in the new environment.

## **10. Plans for Future Changes**

Students should benefit from attending the Child Dental Health Clinic from the second dental year. Changes in the curriculum, which facilitate students continuing the care of patients from the second year to the final year, should enhance students understanding of growth and development. Changes currently taking place should also improve patient care.

## **11. Visitors Comments**

*The integration in the clinic seemed to work very well and the possibility to have access to teachers in orthodontics and paediatric dentistry simultaneously is valuable for the patient care as well as for students' development of clinical competence. Even if the clinic was very busy, the atmosphere seemed relaxed and friendly.*

*The students had, however, some problems finding the relevant patients for their competence tests. There were some complaints that they, generally, had too few child patients. If possible, they should be offered a greater variety of patients.*

*The plans to have the students in the clinic from their second year should be encouraged, as this would benefit their understanding of growth and development.*

*The plans to get an adequate supply of appropriate child patients should be given priority.*

*Students should be given the opportunity to attend treatment sessions for children with physical and mental disabilities, to make them acquainted with the special problems involved.*

*The use of preoperative sedation in the clinic was not introduced to the students. This would be one way to teach the students how to help and support children with fear and anxiety of dental treatment.*

## **Section 10 - Public Dental Health and Prevention**

### **10.1 Public Dental Health and Prevention**

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#### **1. Introduction**

Undergraduate training in Public Dental Health & Preventive Dentistry is incorporated into the Problem-Based Learning (PBL) curriculum throughout the dental undergraduate training. Problem-Based Learning (PBL) uses a contextual, integrated, multidisciplinary approach to education. For this reason there is not a defined Public Dental Health course, however preventive, social, community, ethical and economic issues are essential components in all aspects of public health in the undergraduate training. Areas of public dental health covered include legal and economic aspects of the policy framework, management and delivery of oral health care, preventive, health promotion and treatment programmes, outcome evaluation including health and social gain. Outcome evaluation also includes epidemiological analysis, monitoring the effectiveness of programmes or strategies and recognising the barriers to health in sub groups or whole populations.

#### **2. Primary Aims**

The primary aims of the undergraduate training programme are:

To provide students with a broad knowledge, understanding and experience of public health, including public dental services.

To enable students to understand, implement and evaluate preventive programmes at the community and individual level

#### **3. Main Objectives**

Year 1: To provide a general introduction to public health, prevention, epidemiology and health care economics. Also to create awareness in students of the needs and responsibilities of each individual in the community and of the forces which modify the delivery of a comprehensive health care service by the state.

Year 2: To create a general understanding of the role of government in the delivery of health care and in particular state funded dental services. Also to obtain a general understanding of current health status, barriers to health care and social issues that influence health outcomes.

Year 3: To create an understanding of how the core principles of Public Dental Health as learned in earlier years, may be incorporated into health care for individuals and groups in different communities.

Year 4: To provide the students with the opportunity to design, implement and evaluate a community research project and to gain experience and working knowledge of the community health dental services in Ireland.

Year 5: To enable the students to explore Public Dental Health issues in depth through topic based learning and to have a working knowledge of public and preventive dentistry.

#### **4. Hours in the Curriculum**

It is not possible to provide the exact number of hours involved in specific areas of the curriculum, approximately 70 hours are spent on the Fourth Year projects.

## **5. Method of Learning/Teaching**

Problem-Based Learning is used throughout the undergraduate curriculum, it provides learning in a contextual sense with the acquisition of knowledge and understanding of the basic and biological sciences set in the context of human diseases. It also encourages self directed and evidenced-based learning, with a comprehensive curricular approach between and within disciplines over the five years of the curriculum. Lectures, seminars and topic based learning along with the research projects complement the Problem-Based Learning format.

## **6. Assessment Methods**

Continuous assessment is used to measure both theoretical knowledge and skills acquisition. Assessment of theory is carried out using multiple choice questions including true/false and extended matching pairs, short answer questions, short essay questions, structured problems, essay, open essay questions. The individual student's participation in the process of PBL is marked at each session. Objective Structured Clinical Examinations (OSCE) are used to assess clinical and practical performance in years 3,4 and 5.

In the Fourth Year, Public Dental Health research projects are carried out on one session per week for approximately two terms. Participation in and contribution to the project are individually marked; a group mark is given for the written report and the oral presentation. There is also a written short answer examination on general issues in Public Dental Health as well as specific questions about the other groups projects

## **7. Strengths**

Public Health and Prevention are incorporated into the whole curriculum and not separated as an isolated discipline. Students are taught by full time staff and also by staff from the community services, thus giving a balanced view of the systems operating in the country. The integration of the social, community, ethical and economic issues throughout the curriculum results in Public Dental Health issues being seen as relevant to all aspects of dental practice and all types of dental practitioner.

## **8. Weaknesses**

Ideally students should have a broader experience outside the school, working in the community clinics or institutions.

## **9. Innovations and Best Practices**

Research projects for the Fourth Year students provide practical experience in research methodology, computer skills and working in the community. Students are given the opportunity to present their research at conferences. Topic based learning provides a comprehensive review of key subject areas

## **10. Plans for Future Changes**

Students will be provided with an understanding of the evidenced based approach to provision of care; how audit, accountability, clinical governance will influence care; a broader experience of general and community dental practice and the need for life long

learning. Post graduate and continuing education programmes appropriate to the needs of community health personnel will be developed.

## **11. Visitors Comments**

*The aim is, that public health and prevention is integrated throughout the undergraduate training programme. The different components of these items seem well structured and sequenced during years 1 to 5 of the curriculum.*

*The visitors appreciate the attitude of regarding the students as future members of the health team, and find this a very positive approach. Community projects are a good way for students to learn about community dentistry and prevention. Such projects have already been introduced and should be complimented on. The visitors did not study the projects more closely but find that they further underline the students' role as future health workers.*

*Obviously the projects were presented as posters/ oral presentations. As the visitors could not find that the students presented any written material during their undergraduate training one suggestion is that they present their projects in written form.*

*The visitors specially appreciate the idea to let each student visit a family with a new-born child, that the student can follow.*

*The plan to let the students work in the Community Service for a certain period is encouraged by the visitors.*

## **Section 11 - Restorative Dentistry**

### **11.1 Operative Dentistry**

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#### **1. Introduction**

This programme introduces the students to the treatment and prevention of dental diseases especially dental caries and periodontal diseases. In addition they apply the theory and practice of other disciplines exemplified by cross-infection control and communication, and the biological, psychological and sociological basis of patient care.

The introduction to the clinical examination is staged to introduce closely together, the normal appearance of the oral structures, the dental hard tissues, the periodontal tissues and the screening examination for function in the masticatory system.

In term two, the operative principles of caries management are taught and practised in the laboratory and, having completed a “competence test”, repeated in the clinical setting. The appropriate clinical information on the choice, mechanical and handling properties of dental amalgams, composite resins and glass ionomer materials, is learned by the students also. The appropriate use of base and liner materials, and temporary filling materials.

During this and the following clinical year, the students elect to complete clinical competence tests in class 11 and 111 cavities.

#### **2. Hours in the Curriculum**

Time commitment for 2<sup>nd</sup> year dental students to this programme is 171 hours.

Hilary Term

Laboratory 9x6 hours

Clinical 9x3 hours

2) Trinity Term

Laboratory 12x3 hours

Clinical 12x3 hours

#### **3. Primary Aims**

Understand the biological basis for common dental diseases and the rationale for their prevention and management.

Develop clinical and communication skills necessary for students to competently diagnose the common dental diseases and undertake primary dental treatments.

Understand the basis of cross-infection control and its routine application to modern dental practice.

Understand and develop competence in the application of local preventive measures.



#### **4. Main Objectives**

Clinical competence in diagnosis, management and treatment of common dental diseases

The student must be able to

Manipulate and maintain dental instruments, including hand instruments and rotary instruments.

Undertake and interpret common special tests, both radiographic and clinical.

Eliminate dental caries and restore teeth to a satisfactory level of aesthetics and function.

Select and manipulate appropriate restorative materials.

Carry out periodontal screening, comprehensive probing pocket depth measurement and recording.

Counsel and train patients in local preventive techniques.

Control moisture contamination of the intraoral work area.

Provide local anaesthesia.

Place fissure sealants and preventive resins.

Identify and quantify, plaque, calculus, gingival bleeding and pockets

#### **5. Methods of Learning/Teaching**

Problem-Based Learning

Patient treatment, under direct supervision.

Simulation laboratory

Demonstration of clinical and technical procedures, with student repetition.

Lectures, where necessary.

#### **6. Assessment Methods**

Clinical credits

Clinical Competences

Termly reporting (formative)

PBL evaluations and exams

OSCE

#### **7. Strengths**

Well motivated clinical and laboratory teaching staff, with excellent student facilities.

Individual and small group teaching

#### **8. Weaknesses**

Clinical credits and strategic attendance

Difficulty in management of the remedial student, within a class of 40, without disrupting the individual progress

The nature of some of the teaching material (knowledge based)

## **9. Innovations and Best Practices**

Highly motivated teachers and the introduction of simulation units for objective operative treatment.

Modular groups with some continuity of instructors.

## **10. Plans for Future Changes**

### **11. Visitors comments**

*The visitors were impressed with this course. It was well structured and there was a rationale approach to assure that the students acquired the competence needed for contemporary clinical practice. Thus, there was a good balance between the students' training in the laboratory and in the clinical settings. The immediate follow-up of the training in the skill laboratory in the clinical settings empowers the students to take care of patients and facilitates the students' clinical competence development. The fact that the operative principles, materials and instruments were identical in the skill laboratory and in the clinical settings is worthwhile to implement in dental undergraduate programmes overall. The competence test, which is similar for the two settings, is also an efficient approach.*

*The visitors were also impressed with the modern laboratory facilities and the units for computer aided learning that was very modern and advanced.*

## **12. 11.2 Endodontics**

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### **1. Introduction**

The course takes place in the third term of the second year. Twenty, 3 hour sessions are used.

This programme is devoted to the diagnosis and management of pulpal diseases. Students undertake access cavities, pulp extirpation, conventional instrumentation and lateral condensation obturation, with sealer and gutta percha, of single and multi-rooted teeth. The histophysiology and pathology of normal pulp chamber and root canal anatomy are covered in depth, for all the teeth. The use and inspection of radiographs for diagnosis and length estimation is introduced and practiced. Alternative means of length estimation are also introduced and practised.

The use of alternative instrumentation, both manual and automated, is introduced and discussed with students. Finally surgical endodontics is introduced, emphasising the limited clinical indications, technique and clinical success.

Students first must demonstrate preclinical competence in the access, instrumentation and obturation of a straight or curved single canal.

In the following year, the students continue to practice clinical endodontic skills and must demonstrate competence in the complete endodontic treatment of a single rooted , or multi-rooted, tooth. A deadline has been set for this to have been completed, if a student is to be deemed to have successfully completed the year.

### **2. Primary Aims**

To develop:-

Knowledge and understanding of the normal and pathological status of the pulp.

The diagnostic and clinical skills required to carry out endodontic procedures

### **3. Main Objectives**

The student must be able

to undertake simple endodontic treatment and understand the principles of more complex endodontic procedures.

Assess the status of the dental pulp

Diagnose and manage pulp exposure

Achieve proper access to the pulp chamber and root canals

Assess the root canal(s) and measure their length

Remove the pulp remains

Control bleeding from the pulp

Prepare the root canal for obturation

Obturate the root canal so as to promote the maintenance of the normal status of the periapical tissues.

### **4. Hours in the Curriculum**

60 hours in clinical treatment

## **5. Method of Learning/Teaching**

Problem-Based Learning

Patient treatment, under direct supervision.

Simulation laboratory

Demonstration of clinical and technical procedures, with student repetition.

Lectures, where necessary.

## **6. Assessment Methods**

Clinical credits

Clinical competences

Termly reporting (formative)

PBL evaluations and exams

OSCE

## **7. Strengths**

Well motivated clinical and laboratory teaching staff, with excellent student facilities.

Individual and small group teaching

## **8. Weaknesses**

Clinical credits and strategic attendance

Difficulty in management of the remedial student, within a class of 40, without disrupting the individual progress

The nature of some of the teaching material (knowledge based)

## **9. Innovations and Best Practices**

Modular groups with some continuity of instructors.

## **10. Plans for Future Changes**

Development of suitable virtual imaging learning programs

### **11.3 Prosthodontics [Fixed and Removable Prosthodontics, Edentulous State]**

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#### **1. Introduction**

Fixed and removable prosthodontics programmes introduce the student to the options available for restoration of partly dentate, and edentulous adult patients on an acceptable and appropriate biological and functional basis. These programmes develop the principles involved in assessment and construction of the fixed and the removable types of prostheses, and management of the edentulous state. Students are trained in designing the prostheses, the required clinical procedures and some necessary laboratory skills. Emphasis is placed on integration of treatment for the partially dentate patient. The clinical protocol for fixed and removable prosthodontics requires the student to carry out prosthodontic restoration under the supervision of specialist teachers, and to have each stage formally approved by them. A special clinical session each week in the fourth and fifth year is dedicated to this task.

#### **2. Primary Aims**

The main aims of this course are

To develop an awareness of the need for comprehensive planning in the case of partly dentate patients, and in the transition to the edentulous state, in order to ensure good oral health, good function, and patient satisfaction with the sequence of treatment and the final prosthesis.

To train students in presenting the full range of options for rehabilitation of the partly dentate state, and edentulousness, even though many of the options may not be available to the patient in our clinics.

Make the student aware of the nature, scope and potential of prosthodontics for edentulous people.

#### **3. Main Objectives**

Mastery of the Kennedy Classification system for partly dentate arches

Skill in the use of a dental surveyor to select a suitable path of insertion for a fixed or a removable prosthesis.

For a tooth-supported, removable prosthesis:-

- Knowledge and skill in occlusal analysis, planning and clinical procedures for the establishment of a suitable treatment position and occlusal plane in which to construct the proposed prosthesis.
- Knowledge and skill in the design of all the standard components.
- Knowledge and skill in the design and clinical procedure for the provision of suitable supporting, retaining, stabilising and guiding alterations to the remaining dentition.

Knowledge and skill in identifying and prescribing alterations to the residual ridges and sulcus tissues when these are required for fixed and removable prosthodontics.

Knowledge and skill in carrying out tooth preparation for single unit cast metal, ceramometal, and porcelain restorations.

Knowledge and skill in carrying out tooth preparation and restoration of endodontically treated teeth.

Knowledge and skill in making and assessing provisional (temporary) restorations on teeth prepared for single unit crowns.

The capability to integrate the principles and practice of complete denture prosthodontics with those of the biological sciences and other clinical dental disciplines.

Ensure that at graduation undergraduates will have sufficient mastery of the theoretical principles, clinical and laboratory procedures related to the edentulous state to equip them for:-

- The provision of primary dental care in this area.
- The transition to complete dentures using immediate dentures,
- The maintenance of complete dentures.

Knowledge and skill in the making of impressions and master casts.

The capability to communicate with the dental technologist and write a suitable three-dimensional prescription.

Knowledge and skill in the critical appraisal of the fit of a prosthesis on a cast and in the patient's mouth.

#### **4. Hours in the Curriculum**

Introductory Laboratory Programme (removable prosthodontics): - 24 hours

Introductory Laboratory Programme (fixed prosthodontics):- 90 hours

Time taken to fulfil the requirements of the clinical protocol for tooth-supported removable prostheses under supervision in the fixed and removable prosthodontics clinic.

Edentulous State programme

- Laboratory program:- 24 hours
- Introductory clinical program:- 48 hours
- Clinical demonstration of complete denture technique - 24 hours
- Clinical practice supervised by specialist teachers - 24 hours

Clinical practice supervised by specialist / consultant teachers in fixed and removable prosthodontics Clinic.

#### **5. Method of Learning/Teaching**

Supervised Laboratory Exercises

Interactive Computer Program Learning

Supervised Clinical Exercises

Problem-Based Learning

Recommended reading.

Case-Based Learning

Topic-Based Learning

#### **6. Assessment Methods**

Preclinical competence

Clinical Protocol stages repeated until correct

Clinical Credits

Formal Competences

## **7. Strengths**

Integration of the fixed and removable prosthodontics course to establish a rational approach to assessment and treatment planning for partly dentate patients. The teaching emphasises the importance of maintaining the health of the remaining natural dentition. Clinical part of the programme integrated with all aspects of prosthodontics and periodontology in the fixed and removable prosthodontics Clinic.

## **8. Weaknesses**

Finding enough suitable, Kennedy-classification III cases for the whole class.  
A time lapse between the introductory programme and clinical practice in fixed prosthodontics.

## **9. Innovations and Best Practices**

Integration of the removable partial denture course with the fixed prosthodontics course.

## **10. Plans for Future Changes**

The reinforcement of crown preparation and abutment alterations using the Virtual Reality Unit. Integrating the options offered by implants for the support of removable prostheses into the teaching programme, via lectures / seminars, demonstration clinical cases.  
Solving the problems mentioned under Weaknesses above.

## **11 Visitors comments**

*This course presents a positive and creative approach that emphasises the clinical procedure and mimics a 'real-life' context. The laboratory part of the course is structured to fit the needs of the clinical training and to underpin the students' ability to communicate with the dental technician. Furthermore, team approach with dental technicians is trained in this course. The importance of competence development in dental materials was discussed and so was the need for a scientific support in dental materials to enhance evidence-based clinical training.*

*There is an integration of the course on removable dentures with the course on fixed prosthodontics. This is a well-thought of approach as it focuses on a holistic view on the care of partly dentate patients more on only the technical items used to solve the dental situation. The visitors were impressed by the staff who emphasised the importance of preventive measures and the maintenance of the natural dentition.*

*As commented on in Section 11.1 Operative Dentistry, the well-equipped laboratory and the facilities for computer-aided learning with the virtual reality unit were impressive. The visitors look forward to the evaluation of the learning effects of the virtual reality unit.*

## **1.4 Occlusion and Function of the Masticatory System.**

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### **1. Introduction**

The course is directed towards developing knowledge and understanding of the adult dentition, clinical dental occlusion, the simulation of dental occlusions, and mandibular positions and movements. The material in this course is applied in all of the programmes in restorative dentistry and periodontology. In the first dental year an overview of the anatomy and physiology of the masticatory system is given to the students. In the second year dental morphology and the static factors of occlusion are taught, in the third year clinical occlusion in the context of the normal masticatory system, and in the fourth year clinical occlusion in the context of ageing and dysfunctions, are learned.

### **2. Primary Aims**

The program aims to develop

An organised, objectively based understanding of the dental occlusions and function in the masticatory system.

Clinical skills and procedures.

### **3. Main Objectives**

To understand:

The anatomy of the dentition, the functional anatomy of the masticatory system and the physiology of the masticatory system.

The kinesiology of mandibular movements and the reference positions of the mandible.

The dental occlusal relationships, static and dynamic.

The effects of occlusal impact and the dissipation of occlusal force.

Simulate mandibular positions and movements.

Analyse static and dynamic relationships of the dentition.

Make clinical adjustments to natural and artificial teeth to improve the maximum intercuspation.

Identify excessive wear of the dentition.

Prescribe, fit and adjust flat-plane, occlusal splints

The common chronic dysfunctions of the masticatory system and how they may affect planning and treatment for general dentistry.

### **4. Hours in the Curriculum**

Year 1: - ten hours

Year 2: - twenty four hours

Year 3: - forty eight hours

Year 4: - thirty six hours

Students apply the knowledge and skills learned on the program in the other introductory courses in the Department of Restorative Dentistry and Periodontology, and in the hospital Adult Dental Health clinics.

### **5. Method of Learning/Teaching**

Year 1: - lecture series, Literature resources available in the library.



Year 2: - small group practical learning with 3-dimensional models, in the clinical skills laboratory. Literature resources available in the library. Problem-Based Learning [PBL]. Video and computer material.

Year 3: - small group practical learning in the clinic. Students work in pairs, on each other, under supervision of specialist teachers. Reading assignments. Problem-Based Learning. Video and computer material.

Year 4: - small group practical learning in the clinic. Students work in pairs, on each other, under supervision of specialist teachers. Reading assignments. Problem-Based Learning. Video and computer material.

Year 5: - Case-Based Learning; Topic-Based Learning.

## **6. Assessment Methods**

Year 1: - As part of the "Oral Milieu" in PBL

Year 2: - Preclinical competence test. Some Problem-Based Learning questions.

Year 3: - End-of-Course Ordered Structured Clinical Examination. Some Problem-Based Learning questions. Formal Clinical Competences.

Year 4: - End-of-Course Ordered Structured Clinical Examination. Some Problem-Based Learning questions.

Year 5: - Integral component Final Dental Examination – written, oral, clinical examination

## **7. Strengths**

Widely useful in patient assessment, treatment planning, and restorative treatments. Provides assessment data, which are useful medico-legally. Provides a basis for further learning and to challenge the diverse and sometimes very mechanical views abounding in this subject.

## **8. Weaknesses**

Preclinical courses in anatomy and physiology historically provided an inadequate basis for this program (see 10 below). A comprehensive range of three-dimensional models for teaching the kinematics of mandibular movements and the way they affect the dental occlusions is needed. Existing textbooks on the subject in English are out of date. Terminology recommended by the Department [Glossary of Prosthodontic Terms, 1994] is not used consistently throughout the School.

## **9. Innovations and Best Practices**

The program relates the topics learned to the everyday practice of general restorative dentistry.

Assessment of the Maximum Intercusping Position is developed as a central feature of dental treatment planning.

Evidence-based clinical techniques are used throughout the programme wherever possible.

The influence of dysfunctions and ageing in the system on the identification of reference positions is discussed and emphasised.

## **10. Plans for Future Changes**

Development of

Three-dimensional models with CAD technology to facilitate learning.

Computer-based interactive learning programs.

Database of modern literature references.

The evolution of integrated PBL provides the opportunity to increase students' understanding of this subject in both Anatomy and Physiology.

## **Section 12 - Periodontology**

### **12.1 Periodontology**

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#### **1. Introduction**

Periodontics is learned, both in the didactic sense and the clinical setting, as an integral part of overall patient care. Exposure to periodontology commences in the first dental year with the learning of related pertinent basic concepts, examples of which are dental histology, anatomy (both general and specific dental anatomy) and human development. The didactic learning continues in the second dental year with Problem-Based Learning (PBL) approaches to the more elementary aspects of the clinical management of patients with periodontal diseases. This is complemented by the integrated Basic Dental Care course, in which the students learn the practical elements of primary periodontal treatment. In the third and fourth dental years, the knowledge of the students is built upon within the PBL framework and with as much integration as possible with other patient care disciplines. There are two terms of dedicated periodontics clinics, occurring weekly, in the third dental year, with teachers trained to a postgraduate level in the subject, full time and part time “specialists”. There is one further term in the fourth dental year, in which the students re-evaluate patients treated by non-surgical therapy and carry out more advanced surgical therapy as indicated under the supervision of periodontists. As in all other years, periodontal care is an integral part of integrated patient care in the fifth dental year.

#### **2. Primary Aims**

To open the biological basis for periodontal health to students through science and the literature and to explore the aetiology, pathogenesis, progression, and epidemiology of periodontal diseases.

To enable the student to diagnose and manage diseases of the periodontium using an evidence base for decision making; an integrated, holistic approach to dental care and with respect to the needs of the individual and the community.

#### **3. Main Objectives**

Students should:

Be able to describe the anatomy and physiology of the periodontium in health.

Be able to describe the features, both microscopic and clinical, of periodontal disease.

Be able to describe the role of the oral microflora and in particular putative periopathogens, on the causation of periodontal diseases.

Be able to describe the role of the host response in periodontal diseases.

Be able to diagnose, document and formulate a treatment plan for patients with periodontal diseases within the context of evidence based dentistry.

Be able to integrate periodontal treatment within the overall care of the patients.

Be able to describe and effectively carry out non-surgical periodontal treatment for patients with periodontitis and evaluate the results.

Gain experience in a periodontal surgical procedure preferably aimed towards access to inaccessible areas for root planing.

Appreciate the systemic implications of periodontal diagnosis and treatment.  
Understand the surgical principles of intervention tissue management and understanding of healing.  
Have been introduced to a critical approach to reading periodontal scientific literature.

#### **4. Hours in the Curriculum**

The curriculum is essentially integrated in nature and as a consequence students at all stages are exposed to periodontal patients in the basic dental care course, in the integrated patient care clinic and in the community care clinic. However in addition, students attend clinics supervised by periodontists in two terms in their third year and one term in their fourth year; representing 126 hours of clinical learning.

#### **5. Method of Learning/Teaching**

Learning in periodontology is primarily self directed and student centered (Problem-Based Learning). A small number of lectures and seminars are held as appropriate to supplementing self directed learning. Clinical training is provided by periodontists in a ratio of one teacher to eight students. In the final year, the students gain experience in interdisciplinary treatment planning for complex cases by self directed learning followed by access to a panel of experts from different disciplines, including periodontists.

#### **6. Assessment Methods**

Continuous assessment: Students must pass all end of year assessments of which periodontology is an integral component (years 1,2,3 and 4) in order to rise with his/her year.

Clinical Credit Hours: Students must achieve 67% of the credits for the clinical periodontics courses in the third and fourth years.

Competence Tests : Students must complete satisfactorily competence tests in root planing and periodontal surgery.

#### **7. Strengths**

Well motivated part- and full-time periodontists make optimal usage of clinical learning time for students. Curriculum encourages integration of periodontology into the holistic and therefore non-departmentalised approach to patient treatment. The periodontal unit is actively involved in international periodontology/periodontal research and the enthusiasm this generates among students may encourage learning.

#### **8. Weaknesses**

The use of periodontal specialist teachers so early in the curriculum (first term of third year) may be inappropriate. Emphasis on the importance of the maintenance phase of periodontal treatment should be strengthened. There should be more emphasis on teamwork with dental hygiene in the management of periodontal patients.

#### **9. Innovations and Best Practices**

Reliance on evidence based dentistry as much as is feasible

Students encouraged to rely on primary sources of knowledge (articles in peer reviewed journals rather than on textbooks) as much as is feasible

Students encouraged to be self-directed in learning and to develop analytical approach to periodontal literature

Students can observe and discuss research being carried out in collaboration with overseas researchers

Students encouraged to enter competitions for student prizes

#### **10. Plans for Future Changes**

Practical periodontics courses are currently held in two terms of year 3 and one term of year 4. It is hoped that the scheduling be altered so that there would be one term of periodontics in each of years 3, 4 and 5. This would help to further promote the integration of periodontology within the integrated holistic care of patients.

#### **11. Visitors comments**

*The periodontology course is spread over the full 5 years of the dental curriculum. The department has achieved a very good integration of the PBL system in their course. The basic science concepts which are related and pertinent to periodontology are introduced to the students in a PBL fashion. The practical elements of clinical treatment are given in a basic dental course which is more traditionally designed. During their two final years the students are exposed to a large number of patients, on which they perform periodontal treatment under the supervision of full and part time periodontists.*

*Besides the heavy involvement of the department in the development and evaluation of the PBL system, there is a strong involvement in research. The visitors were impressed by the enthusiasm of the teachers to make the system succeed, in spite of a heavy task load.*

## **Section 13 - Oral Surgery, Dental Radiography and Radiology**

### **13.1 Oral Surgery**

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#### **1. Introduction**

Oral Surgery is introduced into the curriculum in the 3<sup>rd</sup> year and continues throughout the 4<sup>th</sup> and 5<sup>th</sup> years. The foundation for the course is provided in the 1<sup>st</sup> and 2<sup>nd</sup> years with instruction in the Basic Sciences and Human Diseases, and develops in parallel with courses taught in Oral Medicine, Oral Pathology and Oral Radiology in the three final years.

#### **2. Primary Aims**

To develop in the student an awareness of the need for accurate diagnosis in relation to oral surgical problems.

To develop in the student an awareness of the need for careful and gentle handling of soft and hard tissues during all dental procedures and to develop the skills for the proper extraction of teeth.

#### **3. Main Objectives**

The student should understand at the completion of the course:

The principles of surgical anatomy, pathology and physiology which relate to the practice of oral surgery

The principles of sterilisation as it applies to oral surgery practice.

The principles of the control and management of dental pain.

The principles of controlling post-extraction haemorrhage.

Be capable of performing exodontia using forceps.

Be capable of performing minor oral surgical procedures as would apply to dental practice.

#### **4. Hours in the Curriculum**

	3 <sup>rd</sup> year	90 hours
	4 <sup>th</sup> year (PBL)	40 hours
5 <sup>th</sup> year	Ass. Clinic DDH theatre	90 hours

St Mary's

## **5. Method of Learning/Teaching**

Practical hands-on oral surgery is provided in the 3<sup>rd</sup> and 5<sup>th</sup> year with an oral surgery clinic devoted to dental extractions in the 3<sup>rd</sup> year. Assessment clinics and more advanced oral surgery is carried on in the final year.

The major didactic part of the oral surgery course is delivered in the 4<sup>th</sup> year by a PBL approach. Exposure to oral surgery is complimented by attendance of students at general anaesthetic sessions at St Mary's Hospital and local anaesthetic and sedation sessions in the new dental hospital day bed unit theatres.

## **6. Assessment Methods**

The didactic component of learning is accessed by a continuous assessment system using MCQ and MSA format papers. There is an OSCE examination at the end of 3<sup>rd</sup> and 4<sup>th</sup> years.

Clinical competency tests in-exodontia and in minor oral surgery must be completed prior to sitting the final examination.

## **7. Strengths**

The opening of the new dental hospital and theatre has improved the environment for teaching undergraduate students by providing a readily accessible facility where oral surgery and sedation techniques can be practised. One would expect that these facilities together with developing expertise in the newer teaching methods will result in enhanced overall performance of our students.

## **8. Weaknesses**

Although the scheduling of the whole third year class (approximately 40 students) on one session for exodontia is innovative, it does not yield the expected results: provision of an adequate number of patients for uncomplicated exodontia has proved to be a problem. This department is now actively addressing the problem with a number of new measures.

## **9. Innovations and Best Practices**

Ensuring that our PBL teaching complements our clinical teaching.

The simultaneous teaching of 40 oral surgery students at one oral surgery clinic on a Friday afternoon.

## **10. Plans for Future Changes**

Development of interactive learning in the area of oral surgery.

## **11. Visitors Comments**

*The objectives are well defined in Oral Surgery and the education is well provided for by the modern and spacious clinical facilities. However, there is a lack of patients in need of extractions and minor oral surgical procedures to develop the students' competence as described by the objectives. The idea that was presented to the visitors to utilize manikins to develop the students' skills in some oral surgical procedures could be one solution to the problem and will be interesting to evaluate in the future.*

*The introduction of lectures in the course is under consideration, as the students' understanding of some course components did not reach the expected level. Now when*

*PBL is established throughout the programme and the educators comprehend the importance of empowering the students and their learning, it would be appropriate to match the objectives, knowledge content and different educational formats. It should, however, be emphasized that the educational format whether it is small-group studies, lectures, seminars and so forth, should be congruent with the overall values of the programme.*



## **13.2 Radiography and Radiology**

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### **1. Introduction**

Radiography is taught in the second and third years as a combined theoretical, laboratory simulation and clinical course. Radiology is taught in the fifth year in a seminar course along with practical clinical radiographic experience. Both courses are designed to comply with national and EU statutory requirements and may require changes to anticipate the new EU Directive due to be implemented in May 2000.

### **2. Primary Aims**

The primary aims of the course in radiography are to develop the students' understanding of ionising radiation and its biological effects, radiation protection and the dental uses of ionising radiation. The primary aims of the course in radiology is to develop the students' knowledge of the relevant dental and maxillofacial radiological anatomy and the radiological presentation of common dental and maxillofacial pathological conditions.

### **3. Main Objectives**

The student should understand the indications and contraindications for the use of radiographic imaging in dentistry and the most appropriate views in different clinical situations.

The student should understand the use of bitewing, periapical and panoramic radiographs, should be able to produce diagnostic quality examples of each.

The student should understand the errors which may arise during radiographic examination, how these will affect the final image, and how they can be corrected.

The student should be capable of managing radiographic records, specifically the recording of doses and the mounting and storing of radiographic images.

The student should understand the normal dental and maxillofacial anatomy as seen on common radiographic projections and should be able to describe the radiological appearances of common pathological conditions affecting the teeth and maxillofacial structures.

The student should understand the Code of Practice for Radiological Protection in Dentistry issued by the Radiological Protection Institute (RPII 96/2).

### **4. Hours in the Curriculum**

Year 2 - Lectures in relevant radiation physics and radiation biology and technique 20 hours

Year 2 - Practical simulations 3 hours

Year 2 and 3 - Radiographic practice 6 hours

Year 5 - Radiology seminars 15 hours

Year 5 - Radiographic practice 15 hours

Method of Learning/Teaching

Year 2 - Lectures, simulations, practical clinical experience, Problem-Based Learning

Year 3 - Practical clinical experience

Year 5 - Small group seminars, practical clinical experience.

In addition, students who have completed a competence in a specific radiographic examination are permitted to use peripheral radiographic equipment in the dental clinics under the supervision of clinical supervisors. Elements of radiology relevant to specialist areas of dental practice (e.g. interpretation of cephalometric projections) are covered in the relevant departments.

## **5. Assessment Methods**

Theoretical knowledge is included in the assessment of Problem-Based Learning from year two onwards. Radiology and radiography are examined in the final dental examination within the subject 'Oral Surgery, Oral Medicine and Oral Pathology'. Competences in periapical, bitewing and panoramic radiographic imaging must be completed by the end of Michaelmas term of the third year. Clinical credits are recorded and assessed in radiography and radiology as in other clinical subjects.

## **7. Strengths**

The course in second and third year has been developed from that designed in collaboration with the School of Diagnostic Imaging, National University of Ireland, Dublin for dental nurses and hygienists. The department has modern equipment available and is about to implement a change to digital imaging and has recently appointed a superintendent radiographer. The senior registrar in dental and oral radiology has recently passed the final part of the Diploma in Dental Radiology of the Royal College of Radiologists.

## **8. Weaknesses**

Student postings in this area tend to be under prioritised and secondary to main dental clinics. As a result student attendance in the department often clashes with the smooth running of the department.

## **9. Innovations and Best Practices**

Close liaison with the School of Diagnostic Imaging, National University of Ireland, Dublin. Recent appointment of superintendent radiographer and success of senior registrar in exit qualification examination.

## **10. Plans for Future Changes**

The planned implementation of a digital imaging system in 1999 both within the imaging department and in peripheral radiographic units elsewhere in the hospital complements the investment in IT infrastructure in the clinics, library, and PBL learning environment.

## **11. Visitors Comments**

*The courses in radiography and radiology in its current format were recently implemented and should be complemented. The presentation of radiography early in the programme is motivated so that the students understand the principles, which form the basis for image formation. Furthermore, the knowledge in radiation physics and radiation biology is important for students early in the programme in order that they practice radiation protection throughout their clinical training.*

*The major part of the diagnostic section of the radiology course seems to be implemented during the final year. It might be advantageous to learn more about principles for*

*interpretation and radiology early in the programme. If radiology could be more integrated with other subjects, both in the problems for the PBL sessions and in the students' clinical training, the students could further develop their competence in diagnostics in general and in selection criteria of diagnostic methods in particular.*

## **Section 14 - Oral Medicine and Oral Pathology**

### **14.1 Oral Medicine**

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#### **1. Introduction**

Oral medicine is taught principally in the fourth and fifth years, but some elements are included in the PBL course in second and third year.

#### **2. Primary Aims**

The primary aims of the course are to develop in students an understanding of diseases of the oral mucous membranes, of those dental and oral diseases which have systemic complications and of the oral manifestations of systemic disease and drug therapies.

#### **3. Main Objectives**

The student should be able to diagnose the commonly occurring and the unusual diseases of the oral mucous membrane which are of significance to health, or which are of special interest because of their clinical, immunological or histopathological features, by the interpretation of clinical and laboratory findings

The student should be able to describe the relationships between oral and systemic diseases

The student should be able to co-operate with appropriate medical practitioners in the provision of dental care for medically compromised patients and in the planning of medical care for patients with special dental needs

The student should understand Irish and British oral cancer figures in the context of global epidemiology and of known aetiological factors applicable to Irish and British communities and be able to describe the major known and suspected aetiological factors in oral cancer  
The student should understand the principles underlying the use of drugs in dentistry and be able to prescribe appropriately and safely for common dental and oral diseases.

#### **4. Hours in the Curriculum**

Year 2 - Integrated into PBL relating to Basic Dental Care course

Year 3 - Integrated into PBL relating to Oral Diagnosis course

Year 4 - Integrated in to PBL Themes A and B

Year 5 - Clinical attendance 45 hours, lectures 10 hours

#### **5. Method of Learning/Teaching**

Year 2 - PBL

Year 3 - PBL with some clinical component in Oral Diagnosis course

Year 4 - PBL

Year 5 - Clinical attendance at oral medicine consultant clinics, lectures in therapeutics.

## **6. Assessment Methods**

Theoretical knowledge is included in the assessment of Problem-Based Learning from year two onwards. Oral medicine and therapeutics are examined in the final dental examination within the subject 'Oral Surgery, Oral Medicine and Oral Pathology'. Clinical credits are recorded and assessed in oral medicine as in other clinical subjects.

## **7. Strengths**

There are three oral physicians at senior lecturer/consultant level involved in undergraduate teaching.

## **8. Weaknesses**

Sharing clinical facilities with Accident and Emergency and Oral Surgery pending completion of single surgery units in the new building

## **9. Innovations and Best Practices**

The oral medicine unit is involved formally with the genitourinary unit in St James's Hospital, the National Haemophilia Unit, the National Maxillofacial Unit, the penal institutions in Dublin, the cardiac, respiratory and hepatology units in St Vincent's Hospital and the City of Dublin Skin and Cancer Hospital. This range of expertise is reflected in the teaching and in the case load of the clinics. Within the Department of Oral Surgery, Oral Medicine and Oral Pathology there are very strong links with the oral pathology unit. There are also strong links and collaboration with relevant medical specialities throughout the city.

## **10. Plans for Future Changes**

It is intended to involve clinical dental students in the management of high risk dental patients such as infectious disease carriers and the immunocompromised. It is proposed to introduce a fifth year competence in Oral Medicine, Oral Surgery, Patient Management and Treatment planning in the academic year 2000-2001.

## **11. Visitors Comments**

*The fact that the teachers in Oral Medicine are both medically and dentally qualified oral physicians was presented to the visitors as a strength. The teachers seemed to approve of the educational approach for students' learning, even though it was time consuming. Generally, it was considered that Oral Medicine lends itself well to the PBL approach, as this subject is based on reasoning. MCQ was used as an assessment method, and was generally well accepted by the teachers.*

*It was discussed with the visitors that it would be valuable for the students to take part in scientific work in Oral Medicine to encourage a research interest in this field. This is to be recommended.*

## **14.2 Oral Pathology**

Dr. Mary Toner

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### **1. Introduction**

Oral pathology is taught throughout the fourth year in an integrated course with oral medicine and oral surgery, mostly in a PBL format but with occasional lectures, and with a short block of practical classes.

### **2. Primary Aims**

To develop an understanding oral disease processes from basic principles

To develop a knowledge of the pathology of the commoner oral diseases of both hard and soft tissue.

### **3. Objectives**

To develop an understanding of the need for clinicopathological correlation in diagnosis

To understand the pathology of dentofacial infection

To understand the pathology of oral red and white lesions and oral cancer

To understand the pathology of the causes of oral ulceration, blistering and pigmentation

To know the pathological entities giving rise to radiolucency of the jaw

To understand the pathology of soft tissue swellings of the mouth

To understand the pathology of the salivary glands

To understand the pathology of the dental hard tissues and bone

### **4. Hours in the Curriculum**

Total integrated course involves one PBL tutorial session per week for the year (60 tutorial hours) with 14 hours of practical classes.

### **5. Method of Learning/Teaching**

Mainly PBL tutorials with some lectures where appropriate to the block. The use of gross and histological illustrations in the PBL tutorials helps to direct the students to the underlying disease process, rather than clinical aspects alone. The reading material includes a basic textbook but is supplemented by atlases and up-to-date literature references. The practical classes are held in a block with supplied handouts allowing the students to work their way through a case easily, with numerous questions to prompt clinicopathological correlation and consideration of differential diagnoses. The cases are demonstrated at the end of each class using a video projection system, and all the cases are illustrated on large posters with text displayed in the laboratory. At the end of the block, there is a (very popular!) CPC competition with teams of two or three presenting their findings on unseen clinical and histological material, for the whole class.

### **6. Assessment Methods**

Oral pathology is examined with the other fourth year subjects by serial block exams consisting of MCQs, structured questions and end-of-year OSCE.

### **7. Strengths**

The strengths lie firstly in the entire revision of the course which was done in integrating with other subjects with elimination of unnecessary detail, a process which is ongoing as

the planning group reviews the whole course each year, taking into account comments from tutors and students.

The second strength lies in the integration itself which has the advantage of the students learning pathology in the relevant clinical context, rather than the rigid classifications of the textbook e.g. the classification of jaw cysts, which is of little clinical relevance.

## **8. Weaknesses**

Current lack of computer assisted programmes for illustration – a factor which is more important in a PBL course than a lecture based one. This is being addressed currently.

## **9. Innovations and Best Practices**

The use of histological practical classes as a basis for clinicopathological discussion, rather than as pure histological interpretation sessions works well and these classes are attended almost 100% although no penalty exists for lack of attendance.

The CPC competition is very popular with the students. It allows development of presentation skills as well as demonstrating the importance of clinicopathological communication in practice.

## **10. Plans for Future Changes**

There may still be some fine tuning of the course content to be done but the latest year review (last month) did not require major changes. Some input into the fifth year case - based programme may be appropriate. Establishment of CAL programmes is a priority.

## **11 Visitors Comments**

*Oral Pathology is taught as an integrated part of Oral Medicine and Oral Surgery. The course seemed well planned and organised. Such an integration with Oral Medicine and Oral Surgery helps to avoid overlapping – a problem frequently encountered in traditional discipline-oriented courses.*

*The students appreciate the methods of learning and of assessments.*

*The students learn the principles for biopsy taking but do not practice it independently.*

## **Section 15 - Integrated Patient Care, Dental Emergencies and Special Needs Patients**

### **15.1 Integrated Patient Care**

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#### **1. Introduction**

This is mainly a clinical course in which decisions in relation to the type of care offered and provided to patients are compatible with their needs and desires. The course takes place in the third, fourth and fifth years. It is supervised mainly by committed General Dental Practitioners with a Consultant in overall charge. The students explore diverse solutions for patients, taking into account social, psychological and financial factors, as well as clinical factors.

#### **2. Primary Aims**

The primary aims of this undergraduate training programme are:

To afford the undergraduate students the opportunity to investigate the various options available to match the patients aspirations. Thus an appropriate treatment option, appropriate to the individual patient, is decided upon.

To provide the undergraduate students with opportunities to appreciate and evaluate the medical, dental, social, financial and psychological demands of the patient, and compassionately evaluate and prioritise such factors so as to provide the optimum service.

#### **3. Main Objectives**

To assure that the scholarly and practical acquisition of dental knowledge and skill ultimately forms the basis of a dental service to the community, on a group and individual level.

To assess patients (taking into account all their needs and desires).

To determine the possible solutions to patients' problems from those available and to present the appropriate alternatives to the patients in an understandable fashion.

To involve the patients in choosing appropriate solutions to their problems.

To allow students to gain confidence while developing the various skills necessary for the independent practice of dentistry.

#### **4. Hours in the Curriculum**

It is impossible to quantify the exact number of hours involved. The clinical time involved is two sessions per week during the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> years. In addition to the clinical sessions allocated, a number of additional hours are spent per week in researching solutions and investigating the practical skills necessary to fulfil the treatment required to solve the patients' problems.



## **5. Method of Learning/Teaching**

An appreciation of the 'whole' patient including their problems and appropriate solutions is one of the driving philosophies throughout the undergraduate curriculum.

The students are asked to appreciate a wide range of problems presented by the patient, including social, psychological, and economic, that impact upon the delivery of appropriate dental care.. These are discussed with their Clinical Supervisors or other Senior Clinical Staff. This allows the undergraduate student to develop a contextual series of problem solving solutions, and allows the students the opportunity to interpret a holistic approach to patient care.

## **6. Assessment Methods**

Continuous assessment is used to measure the theoretical knowledge and skill acquisition throughout the years and especially in the clinical situation in the 5<sup>th</sup> year.

Clinical credits are used in the clinical situation, as mentioned elsewhere in this document.

## **7. Strengths**

Because the 'Integrated Dental Care' philosophy is incorporated throughout the whole undergraduate course culminating in a special approach in the final year, the understanding achieved by the undergraduate students is considerable. It is supported by a strong team of committed part-time General Dental Practitioners who support this educational concept, together with the consultants involved.

Undergraduate students are exposed to various approaches to providing a definitive solution to any particular problem.

## **8. Weaknesses**

Ideally, undergraduate students should have an opportunity to observe the provision of dental services in various other clinical situations as they apply in the practice of dentistry, whether private or public.

## **9. Innovations and Best Practices**

Recent developments of the 'Team Approach' will help to reinforce this 'Integrated Care Approach' to patients. Its application to undergraduate students will allow the concept to develop more comprehensively before the undergraduate students' attitude has fully formed and this will allow for significant new developments.

## **10. Plans for Future Changes**

The development of the significant psychosocial philosophy, coupled with clinical skills, will help to further the 'Integrated Patient Care Approach' to patient care in changing social and economic settings and will foster a realistic patient centred service to the community.

## **11. Visitors Comments**

*The visitors found several components that stimulate integrated patient care, such as the premises, the organisation of the clinical facilities and the PBL sessions. We were impressed by the way the primary aims and main objectives had been implemented.*

*The extensive number of patients, reflecting the population of a large city provides the students with a good insight into the needs and expectations of such a population.*

## **15.2 Dental Emergencies**

Dr. Bernard McCartan  
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### **1. Introduction**

The management of dental emergencies is taught in the fifth year as a clinical course, at a time when students have already learnt the appropriate dental procedures for the management of outpatient emergencies.

### **2. Primary Aims**

The primary aims of the course are to develop the students' understanding of dental emergencies, and to develop the skilful and compassionate management of patients in pain or who are suffering from acute dental conditions.

### **3. Main Objectives**

The student should be able to diagnose and manage dental emergencies with specific reference to: pulpitis, acute periapical periodontitis, acute periapical abscess, acute swellings of dental origin acute gingivitis, acute periodontal abscess, dry socket, post extraction haemorrhage, traumatic fracture of teeth, subluxation and avulsion of teeth.

### **4. Hours in the Curriculum**

Year 5 - Clinical practice 25 hours

### **5. Method of Learning/Teaching**

Year 5 - Clinical practice under the supervision of non consultant hospital staff in the Dublin Dental Hospital's Accident and Emergency Clinic.

### **6. Assessment Methods**

Theoretical knowledge is included in the final dental examination within the subject 'Oral Surgery, Oral Medicine and Oral Pathology'. Clinical credits are recorded and assessed as in other clinical subjects.

### **7. Strengths**

Students see patients in need of emergency dental care in a 'real life' situation in a modern dental accident and emergency department.

### **8. Weaknesses**

Clinical facilities at present shared with oral surgery and oral medicine pending completion of new clinical facilities for the latter.

### **9. Innovations and Best Practices**

Students are fully involved in the operation of the Accident and Emergency Clinic

### **10. Plans for Future Change**

It is proposed to involve fifth year students in working with non consultant hospital staff in the after hours emergency on call service.

### **15.3 Care of Special Need Patients**

Professor John Clarkson and Dr Christine McCreary

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#### **1 Introduction**

Because of the broad nature of the requirements of special needs patients their management takes place in all three departments of the Hospital and School. Special needs includes medical, physical, psychological, social, economic factors affecting the care of patients, and these issues are covered in relevant aspects of the undergraduate curriculum. In addition students also obtain some exposure in managing and treating the distinct clinical needs of these patients.

#### **2. Primary Aims**

To ensure that students obtain training in the clinical and management issues affecting the care of special needs patients and to provide experience in treating such patients.

#### **3. Main Objectives**

To provide students with a broad knowledge and understanding of the medical and sociological issues affecting dental care delivery and how to manage these issues. To have a general understanding of mental illness and the relevant factors affecting patient management. To understand physical disability its effects on oral health care and the factors and management issues necessary to deal with such patients. To provide clinical exposure in most of these areas.

#### **4. Hours in the Curriculum**

The teaching is incorporated into the PBL system so it is difficult to quantify the hours separately.

#### **5. Method of Learning/Teaching**

Problem-Based Learning and practical clinical sessions are the main teaching methods

#### **6. Assessment Methods**

Continuous assessment

#### **7. Strengths**

Students have a broad understanding of the requirements of special needs patients

#### **8. Weaknesses**

More practical training in the management and treatment of certain categories of special needs patients is required.

#### **9. Innovations and Best Practices**

#### **10. Plans for Future Changes**

It is planned to allocate times for students to attend and observe at treatment sessions for special needs patients in various locations such as a children's hospital or general hospitals where patients of various ages and with different types of disability are treated

## Section 16 – Behavioural Sciences

### 16.1 Behavioural Sciences

Dr. Mary Kelly

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#### 1. Introduction

The need for the inclusion of comprehensive behavioural sciences programmes in the undergraduate curricula in all health care courses has become increasingly obvious in the past twenty years. Ideally such programmes include aspects of the individuals social and personal development, attitudes and communications skills. At the Dublin Dental Hospital elements of behavioural sciences have been included in the curriculum for many years with particular emphasis on ethics in the early clinical years and patient communication in later clinical years. Revision of these programmes are currently in progress with the assistance of the Faculty of Health Sciences, Trinity College, Dublin and visiting Professor G. Browne, psychologist, Nottingham and the Department of Psychology, Royal College of Surgeons in Ireland.

#### 2. Primary Aims

To enable students to develop life skills and attitudes which will maximise their educational experiences as undergraduates.

To enable students to become reliable dental practitioners, committed to the bio-psycho social model of health care delivery and secure in their ability to assess and accept their own strengths and weaknesses.

#### 3. Main Objectives

To facilitate the development of student self confidence and communication thus enabling general social interaction on entry to third level education.

To assist the development of efficient study skills and a deep approach to learning.

To create an awareness in students of the needs and responsibilities of each individual in the community.

To emphasise the need to prioritise patient welfare in all aspects of dental practice.

To provide each graduate with sufficient life skills.

To enable him/her to cope with the stresses of continuing professional practice often in relative isolation.

#### 4. Hours in the Curriculum

As the curriculum is currently run the total number of hours is approximately 60. Approximately 30 hours are delivered in year one in lecture format.

#### 5. Method of Learning/Teaching

The main method of delivery is lecture with some workshops and Problem-Based Learning in the early years. In the fourth year communication workshops using video recording and analysis of patient interviews is used.

## **6. Assessment Methods**

Assessment is incorporated into a number of formats such as: communication/history taking stations at O.S.C.E.'s; Case presentations in years 4 and 5, continuous observation of clinical practice via clinical credit hours.

## **7. Strengths**

## **8. Weaknesses**

The Dublin Dental School is dissatisfied with the current approach, which lacks structure and continuity and is therefore engaged in review and restructuring.

## **9. Innovations and Best Practices**

## **10. Plans for Future Changes**

## **11. Visitors Comments**

*The visitors agree with the statement in the introduction about the need for inclusion of comprehensive behavioural sciences programmes in the undergraduate curricula in all health care courses. The students need to know much more about Health Psychology, they need communication skills and how to act according to ethical principles to develop their professional work.*

*The teachers and other members of the staff of the Dental School are well aware of the aims and objectives. The PBL approach is well suited for the students to reach those objectives and competences. There are a lot of ambitious efforts to integrate this into the PBL.*

*Despite the efforts, those objectives still do not seem to be naturally integrated. The School seems to depend on some external staff – perhaps less acquainted with the new educational approach.*

*The visitors advice the Dental School to appoint a project group – including some students – to review the problems of different blocks, in order to guarantee the integration of behavioural and biological, dental sciences. The tutors should be trained to continuously give feedback and assessment of those aspects as well. Role- playing, video recording etc should be developed. The students should assess their peers and even have training sessions with peer assessment without a tutor. This gives the students possibilities to test the borders of their skills, without being marked, and it saves staff resources.*

## **16.2 Communications**

Professor John Clarkson  
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### **1 Introduction**

The ability of the students to communicate with their patients in a meaningful way and the facilitation of information transfer to and from the patient/dentist are vital issues in ensuring appropriate patient management and treatment. Successful outcomes in patient care and risk management when measured in terms of patient satisfaction or litigation, may also depend heavily on the interpersonal and communication skills of the clinician dealing with the problem. Undergraduates are provided with opportunities to learn these vital skills throughout their undergraduate career. In addition in their fourth year a specific communications course is provided for this purpose.

### **2 Primary Aim**

To improve the interpersonal skills of undergraduate students so as to equip them to handle a range of situations that may arise during their dealings with the public and individual patients.

### **3 Main Objectives**

Each Fourth Year student is video recorded while dealing with a particular situation created by an actor. Situations may include: patients complaining about another dentist's treatment; patient alleging malpractice on part of the dentist; suspicion of non accidental injury in child; strong suspicion of malignant oral lesion where patient may/may not wish to accept referral; clinical incident such as extraction of incorrect tooth or fracture of endodontic file has just occurred.

Appropriate feedback is be provided on the individual's performance in groups on aspects such as:

- general appearance
- body language
- listening skills
- effective verbal/communication skills
- medico-legal issues

Lecture for the whole class by communications experts.

### **4 Hours in the Curriculum**

Approximately 21 hours

### **5 Method of Learning/Teaching**

Analysis of communications skills in video interview, feedback, workshop and lecture.

### **6. Assessment Methods**

Appropriate feedback is provided on the individual student's performance

**7. Strengths**

Realistic scenarios, which are not likely to have been encountered otherwise are presented, the student's performance is analysed and expert advice given

**8. Weaknesses**

No matter how realistic the scenarios are, they do not compare with real life situations

**9. Innovations and Best Practices**

Video recording and use of actors to simulate real life problem situations

**10. Plans for Future Changes**

The programme is being expanded to include student hygienists.



### **16.3 Ethics and Jurisprudence**

Mrs Catherine McNamara and Dr. Mike Collins  
email: [aidanmcn@indigo.ie](mailto:aidanmcn@indigo.ie)

#### **1. Introduction**

This course comprises a first year taught course; PBL sessions in 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> years; and an intensive small group seminar programme in the fifth year.

#### **2. Primary Aims**

To introduce students to the basic principles of medical ethics; and to ensure that they have some minimum competence in the professional regulations and the legal framework within which dentistry is operated out in this country.

To stimulate students towards independent thought and judgement on ethical issues by exposure to a range of speakers who have much experience in dental ethics and dento-legal problems.

#### **3. Main Objectives**

By the end of the course students should be able:

(a) to analyse a case using the four principles of medical ethics and considering any relevant professional rules and legal constraints.

(b) to deal safely and professionally in the hospital in terms of the ethical/legal framework as it applies to

- consent to treatment
- confidentiality
- good record-keeping
- avoidance of negligence

#### **4. Hours in the Curriculum**

The first year lecture course comprises 8 x 1Hour lectures.

In the second, third and fourth years a variable number of problems combining clinical and ethical/legal issues are considered by students in the PBL programme. In the fifth year each module has an intensive 3-hour session with a dento-legal expert.

#### **5. Method of Learning/Teaching**

The course is based closely on the experience of the Medical School at Newcastle, Australia. Newcastle is a PBL School with a strong ethics/law department, which has published widely on its experience in teaching ethics/law through PBL. Following the experience of this school, the course comprises a first year taught course, a strong ethical/legal strand in 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> year PBL and intensive small group seminars in the 5<sup>th</sup> year.

#### **6. Assessment Methods**

In the first year students are asked to analyse a case and to give short answer questions to ethical/legal problems. In the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> years, ethics/law is included with other assessments of the year.

## **7. Strengths**

The inclusion of ethics/law material in every year of the undergraduate programme encourages the students to develop their views on ethics/law issues throughout their training. Research work from Canada and the U.S. shows that health care students are most responsive to ethical problems in their 1<sup>st</sup> year. The concentration of a broad group of dental and dento-legal experts in the first year course builds on this strong research basis.

## **8. Weaknesses**

There are some indications that students in PBL may at times tend to concentrate more on clinical issues and not take into account the ethical/legal aspects of problems in setting their own learning goals. The problems have been re-designed to take account of this factor.

## **9. Innovations and Best Practices**

The course has changed with the introduction of PBL. Some evaluation has already been carried out but it will obviously take a few more years before it can fully assessed.

## **10. Plans for Future Changes**

It is not envisaged that any major changes will occur until the present programme has been evaluated over the next 2-3 years.

## **16.4 Practice Management**

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### **1. Introduction**

This course is now incorporated into the Problem-Based Learning curriculum as an integral component of learning, especially throughout the fourth and fifth years. Learning is reinforced in the clinical setting by direct contact between students and general dental practitioner supervisors, thus ensuring that treatment plans are formulated in a manner compatible with the realities of general dental practice.

### **2. Primary Aims**

To give the undergraduate student an understanding of the financial/legal organisational/logistical requirements in providing dental treatment, in the context of the needs of each individual patient and of the community at large.

To introduce the students to the practical aspects of organising a dental practice.

### **3. Main Objectives**

To make the students aware that the provision of dental care has a time and cost value associated with it. To give the student an opportunity to understand that in order for treatment to be successful it must be compatible with the needs of patients, be financially acceptable to them and be within the time available to the patient.

### **4. Hours in the Curriculum**

There are no specific hours allocated in the curriculum as this topic is covered as an integral part of both integrated patient care and Problem-Based Learning in years 2, 3 and 4. There is a component of the clinical training in year 5 where the students work with patients in a setting more similar to actual practice than heretofore; for example each student works in his/her own surgery

### **5. Method of Learning/Teaching**

This is integrated into Problem-Based Learning and in the clinical setting as described above. Throughout their clinical training, students are responsible for scheduling their own patients.

### **6. Assessment Methods**

Practice management is assessed on a continuous basis in the problem-based approach. Furthermore, each student has to achieve a level of clinical credits. The student does not gain credit if, for instance, the patient fails to attend or if the student is not in the clinic, thus simulating the realities of practice, where these eventualities result in a loss of income. It is also examined in both written and clinical parts of the final Adult Dental Health examination.

### **7. Strengths**

The introduction of Problem-Based Learning has facilitated the incorporation of principles of practice management in a structured progressive learning process with reference to the students' stage of development.

The clinical credit hours stimulate effective usage of facilities for the time allotted to each student and are designed to simulate income generation following graduation. The more autonomous clinical training in year five provides a more progressive link between studentship and later practice.

#### **8. Weaknesses**

All the 'Business Management' skills necessary to run a single handed dental practice are not included. These are recognised as more appropriate to be undertaken as a postgraduate in a vocational training environment.

#### **9. Innovations and Best Practices**

These are as outlined under Strengths (b) and (c) above:  
Clinical credits and more autonomous treatment of patients in year five.

#### **10. Place for Future Changes**

It is hoped that plans can be developed for students to visit private practices outside the academic institution to prepare them for general dental practice. Vocational training is being introduced on a pilot scheme basis and similar to the UK scheme. This has the potential to offer considerable practical benefits.

## **Section 17 - Examinations, Assessments and Competences**

Professor Noel Claffey & Dr. Mary Kelly

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### **1. CONTINUOUS ASSESSMENT OF LEARNING FOR YEARS 1, 2, 3 AND 4**

At the end of each term (Years 1 and 2) or learning block (years 3 and 4) an assessment is carried out. The design and content of which is tailored to the characteristics of the learning goals set out for that aspect of the curriculum. As no format of assessment has been shown to be superior, and as some assessment methods lend themselves more to one aspect of learning than another, a combination of any of the methods set out below are used.

Multiple Choice Questions of various formats

Short Answer Questions (<10 minutes allocated per question)

Short Essay Questions (10-20 minutes allocated per question)

Structured Problems

Essay-Open Essay

Objective Structured Clinical Examinations-Usually 20 stations attended by each student (for example:- Cardiopulmonary Resuscitation and patient communication stations as well as stations assessing aspects of learning more suitably assessed using models, radiographs etc.):- applicable to years 3 and 4

Clinical Case Presentation:-Applicable to Year 4 only

Participation in the process of PBL (assessed at the end of each PBL session (except year 1)

Competence Tests:- Preclinical and clinical tests of competence at designated procedures (applicable to years 2,3, 4 and 5)

Clinical credits:- A measure of assuring appropriate clinical experience (applicable to years 2,3 4 and 5)

Formative assessment is considered important and therefore results are made available to the students following each block or term as appropriate. Examination review sessions provide feedback and a useful learning opportunity for the students. Summative assessment is achieved over all assessments throughout any one year. The dental school has designed its assessment system as an integral and complementary part of student learning allowing the important formative and summative elements of student evaluation to be used to their full potential.

## **ASSESSMENTS FOR YEAR 1**

The candidates mark for the year will be the mean of the three in-course termly assessments. A pass mark of 50% will apply.

### **Michaelmas Term**

The first in-course assessment constitutes one third of the annual course assessment.

Areas to be assessed are:-

PBL themes, Behavioural science, and Anatomy. 50 multiple choice statements (PBL related, Anatomy related): Marks allocation 20% of total

10 short answer questions (PBL related, Anatomy related, Communication) Marks allocation 45% of total.

Ethics case analysis: Marks allocation 5% of total.

Practical Anatomy: Marks allocation 30% of total.

### **Hilary Term**

The second in course assessment constitutes one third of the annual course assessment and includes all material covered previously excluding Physics and Chemistry.

10 short answer questions related to PBL themes,  
related to Anatomy and Human Development:

Marks allocation 70%

Practical Anatomy

Marks allocation 20%

Participation in PBL

Marks allocation 10%

### **Trinity Term**

The third in course assessment includes the following and constitutes a third of the in course assessment for the year:

10 short answer questions (related to themes in PBL, related to Anatomy, related to Human Development): Marks allocation 60% of total.

Practical (OSCE including Dental Histology, Dental and general anatomy): Marks allocation 30% of total

Participation in PBL: Marks allocation 10% of total.

### **Assessment of Physics and Chemistry**

Chemistry and Physics are separately assessed with a combination of essay papers and continuous assessment of practical course work.

At the end of Trinity term, compensation will be possible between any of the three components (the mean for the three in course assessments, Physics and Chemistry) provided 45% has been achieved. Supplemental examinations for all components will be held in early September.

## **ASSESSMENTS FOR YEARS 2,3 AND 4**

In general, the assessments are divided into three main sections as follows:  
55 of the marks available are allocated to multiple choice questions. In order to discourage guessing and in order to avoid educationally undesirable negative marking, a reference mark of 65% is applied as a pass to multiple choice questions. Therefore, for a pass in the multiple choice section a student must achieve 37.75% of the overall 100 marks (65% of 55 marks).

35 of the marks are allocated to those components chosen from 2,3,4,5,6 and 7 above. The remaining 10 marks are allocated to participation in PBL.

There are exceptions to the foregoing where additional emphasis on practical/clinical skills are desirable as follows:-

Practical physiology in year 2 will constitute 15% of the multiple choice component in the second in-course assessment

In block examination 5 of the fourth year, the short answer component is replaced by the assessment of the Community Dental Health Project

Objective Structured Clinical Examinations (70% of marks) and a clinical case (20% of marks) substitute for the final block examinations in year 4. PBL participation contributes 10% in each case.

For a student to rise with his/her class, he/she must have achieved a cumulative mark over all assessments for the year of at least 60% ( $37.75 + 22.5 = 60.25$ ) for the combined sections a and b. In addition, each section must be passed in its own right. Compensation of up to 5% is possible between sections a and b.

Second class honours will be awarded for a combined cumulative mark of  $\geq 70\%$ . First class honours will be awarded for a mark  $\geq 75\%$ . However, a student must have passed both sections before being awarded either first or second class honours.

### **THE OBJECTIVE STRUCTURED CLINICAL EXAMINATION (OSCE)**

In an OSCE examinees rotate around a series of tasks (usually called stations). At each station the examinee is asked to perform a clinical task or make some decision. Stations might involve examining patients, technical procedures or data interpretation. This task is arranged into sub units, frequently as a checklist for different stages or aspects of the task. This checklist is used to score the performance of the candidate in, for example, Cardiopulmonary Resuscitation. Compliance with the checklist is then summed to give a total score. Alternatively such lists are used to focus the examiner's attention to allow a global rating, for example a score out of ten on the station.

## **CLINICAL CREDITS**

The clinical credits system was designed to ensure sufficient clinical experience is gained by the students before qualification which attests that a dentist is capable of carrying out the independent practice of dentistry. The clinical credit system also encourages students to be productive and efficient in the usage of clinics. It is important to recognise that the system is not designed to assess student work on a qualitative basis. Students are scheduled in the clinic for a set number of hours for the various clinical activities. Keeping these principles in mind, the following points are intrinsic to the clinical credit system:

The basic units for clinical credits is hours productive work. " Productive" in this sense is defined as a student performing what would be expected of her/him at their particular stage of development.

Failure to do clinical work in the clinic when the student is scheduled, whatever the reason, will result in no credits being awarded. Student illness and patient non-attendance are examples of situations in which credits will not be awarded. However, in the event of patient non-attendance, students may be assigned clinical work at the discretion of the clinical teacher which may result in the student gaining full or part of the clinical credits for the session.

The expected clinical credits awarded in any particular session would in general terms, amount to the number of productive hours spent by a student. The usual award to a student should be 3 credits. Credits should only be subtracted if the supervisor observes that the student has not spent the session on the clinic productively at the expected level for the student's stage of clinical development. The supervisor is required to explain to the student why credits have been deducted.

In order to compensate for inevitable problems associated with occurrences such as patient non-attendance or student illness or failing to gain full credits at each session, each student will be expected to meet only 67% of those credits made possible to her/him within the curriculum. In the event of the target of 67% not being reached for a course, the student will not be permitted to rise with his/her year unless appropriate remedial work is completed by the student in consultation with the appropriate clinical teacher.

The clinical credits system is designed to ensure productive learning in the clinical setting by students and maximum utilisation of our clinical facilities. It is not a qualitative grading of the excellence or otherwise of the work done. For the purpose of the clinical credits, work is either adequate or inadequate. If inadequate, the work must be rectified.

In the coming year, students clinical credits are to be computerised. This will allow constant surveillance of any one particular student and indeed will allow surveillance of the credits awarded by any one supervisor.

The clinical credit system will be applied to each preclinical laboratory course and clinical course. They will be cumulated over an academic year for any course, such as integrated patient care, which spans more than one term.



The hallmark of this system is simplicity. It is therefore more likely to be effective. So far, although not yet computerised, the system has picked up weak students and instigated remediation.

Scoring of the kind outlined above is, by necessity to a large extent subjective. Nevertheless, intersupervisor standardisation is obviously desirable. Below are some examples as to how the system is applied. Please note that these are guidelines and cannot be rigidly applied.

#### Score 0

Patient(s) did not attend and student left clinic.

Student did not attend (this should be indicated on the form with the letter A).

Student attended clinic but made a serious basic error with respect to a hospital protocol which would have potential for risk to patients or hospital personnel/staff/students.

#### Score 1

Student had no patient but remained on clinic and carried out productive clinical activity of benefit, for instance, assisted another student for the full session. However, a student may elect instead to work in the library whereupon no clinical credits will be awarded.

Student worked for less than half a session at a productive level below that expected for stage of development.

Student worked at expected level for less than one third of a session.

#### Score 2

Student worked at expected level for more than one third but less than full session.

Student worked for full session but at a level below that expected for his/her stage of training.

#### Score 3

Student worked to reasonable level for full session.

The above are inexact guidelines to help supervisors. Total standardisation is impossible. However, the system, if conscientiously applied, will provide feedback as to student clinical development and will encourage use of clinics.

## FIFTH YEAR - FINAL DENTAL EXAMINATION (B.DENT.SC.)

Students are required to pass the end of year written and clinical assessments, to complete satisfactorily the designated competence tests and to have achieved at least 67% of their clinical credits.

MODE	DEPARTMENT	TOPICS	MARKS
Paper	Public and Child Dental Health	Orthodontics Paedodontics Public Dental Health Ethics	100
	Restorative Dentistry and Periodontology	Integrated Patient Care Restorative Dentistry Periodontology	100
	Oral Surgery, Oral Medicine and Oral Pathology	Oral Surgery Oral Medicine Oral Pathology	100
Clinic/OSCES	Public and Child Dental Health	Seen and Unseen Clinical Case Presentations	100
	Restorative Dentistry and Periodontology	Seen and Unseen Clinical Case Presentations	100
	Oral Surgery, Oral Medicine and Oral Pathology	Unseen Clinical Case Presentation + OSCE	100

All Departments ensure that emphasis is placed on prevention, primary care and ethics. Questions are structured to test practical understanding, evidence based treatment, analytical skills and common sense as well as current developments and classical papers in the literature when appropriate.

All papers normally include no more than 1 essay question and 20 short answer questions. Students are required, normally, to complete either 1 essay question and 16 short answer questions or 20 short answer questions. Departments endeavour to test students' analytical abilities of more complex problems and avoid questions which simply test memory. Any anticipated deviation from this general pattern should be communicated to students and the dental school office two months before the final examination.

### **Marking of Papers:**

All questions are marked out of ten. Marks are to be awarded as follows:

- 0 - no answer given or equivalent
  - 2 - hopeless answer
  - 4 - less than satisfactory
  - 5 - bare pass
  - 6 - better than pass
  - 8 - excellent response
- as much as could be expected from an undergraduate in the time allotted (i.e. not the full text book or all of a specialist's knowledge on the subject!)

### **Marking of clinical examinations/orals:**

Each of the three Departments will award marks as follows in respect of clinical examinations:

50 marks to the major or seen case.

50 marks to the minor or unseen case.

(this may be translated to OSCE type examinations in Department 3).

Students are required to achieve 50% in each section.

Compensation will not be permitted between paper and clinic unless the candidate achieves at least 40%.

**N.B.:** All Departments must ensure that throughout the final year, students are regularly given the opportunity to present their patients in the manner and format anticipated in the final clinical examination as well as examine, diagnose, analyse and present new cases throughout the year. The regular presentation of "seen" and "unseen" cases is an essential part of the students preparation for the final dental examination.

Examiners are reminded that students admitted to the Final Dental Examination are considered to be safe in the clinical care of patients - it is not a stand-alone or once-off test as was previously the case. It is therefore reasonable to expect that all students should be confident of success once admitted to sit the final dental examination. On the basis of average performance, the school would expect that about 10% of that class would receive an overall A (>70%), 40% B (60-70%), 40-50% C (50-60%) and 10% - 0, a fail mark.

Students who have not completed their competence tests and/or reached 67% of clinical credits will be deemed not to have completed the requirements to sit the Final Dental Examination.

## **2. How much does the school rely on exams to motivate students**

As explained above all assessments are designed, with the exception of the final examination, to be formative and summative, and therefore play an important role in student motivation towards learning in as least threatening a manner as possible.

### **3. Strengths**

Our assessment systems are under constant review as part of the work of the curriculum development unit; a subgroup of the dental studies committee. As much as is practical, our assessments are based on evidence from internationally respected educational sources. Members of our staff attend conferences on medical and dental education and assessment in order to ensure continuing development of the curriculum and the assessment methods which both drive and ensure quality in student learning. The system of competence testing allied to the clinical credits ensure that students are competent in understanding the background to dental practice and have adequate clinical experience prior to qualification.

### **4. Weaknesses**

Evolving and new systems of assessment cause insecurity. Also they can be difficult to implement within a well-established college system of assessment. There is no assessment system that has been demonstrated as to be ideal. The dental school recognises this but is attempting to keep abreast of respected developments internationally, with a view to evolving towards an optimal system.

There are too many assessments and examinations and these need to be reduced in time.

### **5. Innovations and/or Best Practices**

The school has been in the forefront in developing clinical competences. These can be tested in a non-threatening manner and ensure the student has the background knowledge, rationale and practical ability to carry out aspects of dentistry essential to general practice. Objective structured clinical examinations are used to test practical ability in those areas in which competence testing may not be applicable. In order to ensure students attendance at clinics as a measure of adequate clinical experience the school has developed a system of clinical credits (see above for both competencies and clinical credits). For the didactic knowledge assessment continuous assessment, designed to be both summative and formative is under development.

### **6. Plans for Future Changes**

For the continuous assessment of didactic knowledge more comprehensive and searching multiple choice systems than those currently used (True/False questions) are being developed, for example extended matching and best option designs.

### **7. Explain as to what level external examiners are involved**

External examiners are involved at each end of year examination. Three external examiners, one in each of Department of Public and Child Dental Health, Department of Restorative Dentistry & Periodontology and the Department of Oral Surgery, Oral Medicine and Oral Pathology are involved in the Final Examination.

### **8. What formal completion of an exam is required of the school/university for students to qualify and register as dentists.**

The students undertake a final dental examination detailed above. The University of Dublin is the degree awarding authority. The Dental Council, the registration authority, inspects at intervals the courses, facilities and examinations to ensure their acceptability.

**9. The extent to which the school seeks those competences recommended by the EU Advisory Committee on the Training of Dental Practitioners.** The system of competence testing outlined above is developed with the guidelines of the EU Advisory Committee on the Training of Dental Practitioners taken into account.

#### **10. Visitors Comments**

*Overall, the section on Examinations and Assessments comprises a detailed description of a well-founded approach towards the assessment of student learning outcomes. Several examination formats, such as multiple choice questions (MCQ), short essay questions, open essays, Objective Structured Clinical Examinations (OSCE) and clinical case presentations are implemented in order to assess different aspects of student competence. These multiple-method combinations are important since no single assessment method can adequately measure clinical competence, which is a multidimensional entity.*

*There seems, however, to be a domination of MCQ throughout the programme. A further development of the overall approach would be to define which of the formats of assessments and examinations evaluate different aspects of competence and whether several components of clinical competence are incorporated in some of the examinations. The result of such an exercise should be a reduction of the number of examinations, which according to the self-assessment reports, are far too numerous. Another way to reduce the number of examinations and assessments would be to further integrate the assessment of knowledge with that of skills in different subjects.*

*The written part of the final dental examination consists of short essay questions in orthodontics, paedodontics, public dental health, ethics, integrated patient care, restorative dentistry, periodontology, oral surgery, oral medicine and oral pathology. The major part of the questions are clinically oriented. However, there is room for further development, as this examination seems more oriented towards a discipline-oriented curriculum than to a PBL approach. Nevertheless the Visitors appreciate that the School's innovative curricular approach withstands potential questions from the Irish competent authority, the Dental Council. Hence the need to retain the traditional type final examination. However, this is being modified.*

*Credits are given to the students in each PBL sessions for participation in the PBL process. The students seem not be encouraged/ willing to perform peer-assessment as such an assessment might influence the credits. In the pre-clinical laboratory and in the clinical settings, students are given credits for 'productivity'. This credit system is described in detail and will be further developed and computerised in the coming year.*

*As mentioned in the description of the clinical credit system, a total standardisation of the scoring of the students' clinical experience is impossible. However, some means to achieve an improved agreement among the clinical supervisors' assessment would be beneficial. It might decrease the students' apprehension that the scoring sometimes is more dependent on a supervisor's individual interpretation of the guidelines, than on the individual student's performance. It should also be discussed whether the discrimination power of the clinical credit system could be improved. In order to promote team-work in learning and communication, students self-and peer- assessment in the PBL sessions and in the clinical settings should be encouraged.*

*The Competence Tests, which comprise pre-clinical and clinical tests of competence at designated procedures comprise an excellent approach. The fact that the competence tests are a self-initiated activity is in accordance with the overall objective of the programme on self- directed learning. It is also important that these tests take place in the ordinary clinical environment in a non-threatening manner.*

## **Section 18 - Other Influences**

Professor John Clarkson & Professor Noel Claffey

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Please describe how the following influence the students' curriculum and/or clinical training:

- 18.1 **Regional oral health needs**
- 18.2 **Evidence based treatments**
- 18.3 **Involvement in other university activities and sport**
- 18.4 **Recreation**
- 18.5 **Student selection procedures**

### **18.1 Regional Oral Health Needs**

Oral health disease patterns in Ireland have changed over the past 30 years. Water fluoridation was introduced in 1964 and 74% of the population live in fluoridated areas. The prevalence of dental caries has fallen dramatically since the 1960's e.g. the DMFT was 8.5 at age 12 in 1963 and is now at 1.2 in the Dublin area. Forty six percent of 12-year-olds are now caries free and the percentage edentulous at age 65 has fallen from 72% in 1979 to 48% in 1990. National and local surveys have now provided valuable information of oral health needs and the information has been of benefit in planning oral health services. The School has responded to changing patterns of disease and the needs of the community. Public health including oral health needs, is an integral part of the programme, as is prevention. Dental students carry out research projects in the community, and hygienists/nurses get practice experience in community settings. Training programmes, both clinical and didactic, have been modified to take account of the changing needs of the community.

### **18.2 Evidence Based Treatments**

The PBL approach to teaching has a strong component of an evidence based approach to learning within it. Students are expected to review the literature on problems and provide evidence for their views on issues. A similar approach occurs in the clinical area, in that the scientific basis for any treatment plan or intervention has to be clear before it is implemented.

### **18.3 Involvement in other University Activities**

Students are encouraged to be actively involved in student affairs and University Societies. Trinity College has a strong reputation in these areas and students have responded well to these cultural, sporting and indeed other extra-curricular activities whose scholarly attributes may be difficult to describe! Students have also taken part in the Erasmus/Socrates programmes and in addition have arranged other travel programmes to Universities and treatment centres in different regions of the world. The DOVE (Dental Overseas Elective Programme) which provides up to 50 per cent of the 4th year class with experience in developing countries has been an outstanding success. An

award is made to the group with the most interesting report at the annual dental student presidential inaugural meeting. This has helped to provide students with an insight into different cultures and to develop an international perspective on education/training in dentistry.

#### **18.4 Recreation and Sport**

The School considers it important that students have opportunities to spend time, outside of study periods, on other activities. Students of the Dental School have a strong sporting reputation in many fields and indeed over the years some have represented their counties and country in major sports. The recreational and sporting facilities in Trinity and Dublin are excellent and in general students avail of them. Depending on the availability of students, the Dental School has had excellent teams in sports such as rugby, gaelic football and soccer. The level of intensity of the dental course however is a significant disadvantage in this respect.

Although more demands are made on time than on most other courses, the Dental School is aware of the danger of dental students not availing of a broader development within the university setting. Students are allocated at least one free session for these purposes.

One of the highlights of the student calendar is their annual pantomime during which each staff members' peculiarities are fully exploited in an hilarious if uncharitable review. This is perhaps one of the most effective system of audit! Staff/student events include golf, cricket, sometimes hockey, and other arrangements which defy time-tabling.

#### **18.5 Student Selection Procedures**

Students are selected by the procedures established by the State's Central Applications Office; the government controlled agency responsible for allocating third level education places. Applicants who state a higher preference for Dentistry and who has achieved over the required number of points in the leaving certificate examination at the end of secondary education, are selected on the basis of merit based on the number of points achieved. A smaller number of non-EU students, eight or less, is selected by the Student's Admission Officer in Trinity College. Not more than two places are reserved for mature students who have reached an acceptable academic standard and who have, by interview, satisfied a panel from the committee of the Dental School executive committee (e.g. medical or science graduates).

#### **What efforts are made to ensure students have sufficient time for student reflection.**

There was, in the past, an unrealistic amount of reading material apportioned to the students. With the development of the problem-based curriculum, there is opportunity to focus on the essentials of a knowledge base, thereby facilitating streamlining of student reading material so as to allow more time for extracurricular activities and reflection. Still, this is insufficient and a problem which is not unique to this Dental School.



## **Section 19 - Student Affairs**

Mr. Brian Murray  
email: [bmurray@dental.tcd.ie](mailto:bmurray@dental.tcd.ie)

Visitors should meet full class of final year together with the class representatives of earlier years

Name of Student representatives who will discuss this:

Final Year: Aideen Ni Mhuineachain

Fourth Year: Karl Cassidy

Third Year: Peter Harrison

Second Year: Caroline Askew

This will be the basis of a discussion with visitors.

### **19.1 Basic Data from Dental Schools**

- a) Average number of dental students qualifying per year: 40
- b) Average number of dental students admitted to the first year: 40
- c) Length of course in years and/or semesters: 5 years/semesters
- d) Is there a separate period of vocational training following graduation as a dentist in your country?  
YES/NO
- e) If yes to d) above, is that organised by the University/Dental School  
YES/NO N/A

### **19.2 List Different Postgraduate Courses**

Master in Dental Science (M.Dent.Sc.). This is an unsupervised degree awarded upon the presentation of a research thesis.

Master in Dental Surgery (M.Dent.Ch.).

Specialist taught courses which include clinical teaching training to an advanced level have been established in the following areas:

Department of Child and Public Health

Orthodontics

Paediatric Dentistry

Public Dental Health

Department of Restorative Dentistry and Periodontology

Prosthodontics

Endodontics

Periodontics

Department of Oral Surgery, Oral Medicine and Oral Pathology

Oral Surgery

Oral Medicine

Oral Pathology

Postgraduate Diploma in Clinical Dentistry [Dip.C.Dent]

A modular, practical, clinical programme over 3 years for 40 general dental practitioners.

Annual Continuing Dental Education Lecture Programme.

A monthly, evening lecture programme for general dental practitioners.

**19.3 List different auxiliary/technology/other courses and state number who qualify per year**

Nursing	-	20 students per year
Dental Hygiene	-	8 students per year
Dental Technology	-	6 students per year

## **Section 20 - Research and Publications**

### **20.1 Publications in Refereed Journals**

Professor David Coleman  
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#### **Publications by Staff and Students of the Dublin Dental Hospital and School of Dental Science T.C.D. (1995-1998).**

##### **1995**

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## **20.2 Invited to participate at Major Conferences**

- 1996** European Workshop on Oral Cancer. **(Dublin, Ireland)**. May, 1996. The Role of the General Dental Practitioner in the Management of Head and Neck Cancer Patients. {D. MacCarthy}  
(Dublin,
- 1996** Annual Scientific Meeting, Royal College of Surgeons in Ireland. **(Dublin Ireland)**. November, 1996. Medico-legal Implications in Periodontal Examination. {D. MacCarthy}.
- 1996** Second European Workshop on Periodontology: Working Group. **(Ittigen, Switzerland)**. February, 1996. Formulation of current status report. {N. Claffey}
- 1996** American Academy of Periodontology. **(Baltimore, U.S.A.)**. July 1996. Formulation of current status report. {N. Claffey}
- 1996** Atrix Laboratories Workshop on Tissue Regeneration. **(Nice, France)**. September 1996. {N. Claffey}
- 1996** Eastman Dental Center Meeting. **(Rochester, New York, U.S.A.)**. May 1996. "The interaction of research and education in US Dental Schools". {J. Clarkson}
- 1996** Third International Workshop on the Oral Manifestations of HIV Infection. The Royal College of Physicians **(London, U.K.)**. May 29th-June 1 1996. "Molecular aspects of Candida differentiation and epidemiology". {D. Coleman}
- 1996** Specialist Practitioners Group of The British Orthodontic Society. **(United Kingdom)**. March 1996. " Different aspects on aesthetics in orthodontics: extraoral traction and functional treatment". {L. Lagerström}
- 1996** 3M Unitek forum AAO Congerence. **(Denver, U.S.A.)**. May 1996. "Orthodontic decalcification: current needs for prophylactic measures and techniques". {L. Lagerström, Programme Chairman and Moderator}
- 1996** Third European Congress of Oral Medicine. **(Belfast, Northern Ireland)**. September 1996. "Clinical management of oral lichen planus". {B. McCartan}
- 1996** Annual Scientific Meeting, Faculty of Dentistry, Royal College of Surgeons in Ireland. **(Dublin, Ireland)**. November 1996."Malignant transformation in oral lichen planus. {B. McCartan}
- 1996** Annual Scientific Meeting, Faculty of Dentistry, Royal College of Surgeons in Ireland. **(Dublin, Ireland)**. November 1996. "Clinical management of leukoplakia". {B. McCartan}
- 1996** UBC Dental School. **(Vancouver, Canada)**. July 1996. "Problem-Based Learning - the Dublin experience". {C. McCreary}

- 1996** Royal College of Surgeons in Ireland Annual Scientific Meeting. (**Dublin, Ireland**). November 1996. "Oral candidosis - an update". {C. McCreary}
- 1996** British Society for Restorative Dentistry Meeting. (**Manchester, U.K.**). April 1996. "Marginal opening by various clinical/laboratory techniques on refractory dies". {M. O'Sullivan}
- 1997** NIH Workshop/ Conference: Health Promotion /Education – Research Needs. (**Washington DC, U.S.A.**). April 1997. "Health promotion needs in the community". {J. Clarkson}
- 1997** American Association of Public Health Dentistry. (**Washington, U.S.A.**). October 1997. "Research in public health dentistry". {J. Clarkson}
- 1997** South East Asian Division IADR. (**Puket, Thailand**). November 1997. "The role of IADR in promoting research" {J. Clarkson}
- 1997** University of Leeds, Department of Microbiology (**Leeds, U.K.**). January . "*Candida dubliniensis*: a novel species associated with oral candidosis in HIV-infected patients". {D. Coleman}
- 1997** Fungal Infections in the Immunocompromised Patient. Symposium on fungal infections in humans. Royal College of Physicians (**Dublin, Ireland**). May 1997. "Resistance patterns in *Candida* infections in humans". {D. Coleman}
- 1997** Thirteenth Congress of the International Society for Human and Animal Mycology [ISHAM]. Salsomaggiore Terme (**Parma, Italy**). June 1997. "*Candida dubliniensis*: a novel pathogenic species associated with oral candidiasis in HIV-infected and AIDS patients". {D. Coleman}
- 1997** Thirteenth Congress of the International Society for Human and Animal Mycology [ISHAM]. Salsomaggiore Terme (**Parma, Italy**). June 1997. Co-convenor of symposium entitled "The growing importance of non-albicans *Candida* species as opportunistic pathogens". {D. Coleman}
- 1997** European Academy of Dermatology and Venereology (**Dublin, Ireland**). September 1997. "The application of molecular tools to the analysis of populations of *Candida species*". {D. Coleman}
- 1997** University of North Carolina. (**North Carolina, U.S.A.**). October 1997. "Dental restorative management of children with dystrophic epidermolysis bullosa. {P. Fleming}
- 1997** South Wales Orthodontic Society Meeting. (**Wales**). February 1997. "Retention, why, when and how". {L. Lagerström}
- 1997** 3M Unitek Forum AAO Conference. (**Philadelphia, U.S.A.**). May 1997. " New Wire Technology". {L. Lagerström, Programme Chairman and Moderator}

- 1997** International Symposium-The Future of Orthodontics. (**Leuven, Belgium**). September 1997. "Quality control in future orthodontics". {L. Lagerström}
- 1997** 11th International Conference for Orthodontists. (**Munich, Germany**). Oct. 30-Nov 1st, 1997. {L. Lagerström, Programme Chairman and Moderator}
- 1997** European Academy of Dermatology and Venereology (**Dublin, Ireland**). September 1997. "What the mouth tells us in bullous disease". {B. McCartan}
- 1997** EU Working Group on Tobacco and Oral Health. (**Copenhagen, Denmark**). November 1997. "Smokeless tobacco: the Irish and European experience". {B. McCartan}.
- 1997** Irish Dental Association Annual Scientific Meeting [Hygienists]. (**Dublin, Ireland**). April 1997. "Diet, nutrition and dental health". {C. McCreary}
- 1997** Thirteenth Congress of the International Society for Human and Animal Mycology [ISHAM]. (Salsomaggiore Terme (**Parma, Italy**)). June 1997. "Molecular epidemiology of non-*C.albicans Candida* species". {D. Sullivan}
- 1997** EC Concerted Action Workshop -Molecular Variability of Fungal Pathogens. (**Evian, France**) September 1997. "Variability of human pathogenic fungi". {D. Sullivan}
- 1997** European Academy of Dermatology and Venereology (**Dublin, Ireland**). September 1997. "*Candida dubliniensis*; a new species of *Candida* which is pathogenic in humans". {D. Sullivan}
- 1997** RAMI-section of Pathology: Combined Meeting with Otolaryngology section (**Dublin, Ireland**) October 1997. "Pathology of white lesions of the mouth". {M. Toner}
- 1998** The Dutch Society of Periodontology. (**Utrecht, Holland**). March 1998. "The scientific basis for periodontal treatment and maintenance". {N. Claffey}
- 1998** French Society of Periodontology. (**Marseille, France**). May 1998. "The basis for clinical and radiographic diagnosis of periodontitis and disease progression". {N. Claffey}
- 1998** European Federation of Periodontology. (**Amsterdam, Holland**). October 1998. Group evaluating postgraduate periodontology programmes for ACTA. {N. Claffey, Chairman}
- 1998** Study Group of the Swedish Society of Periodontology. (**Vaxjo, Sweden**) October 1998. Two-day course on scientific basis for periodontal therapy. {N. Claffey}
- 1998** Study Group of the Italian Society of Periodontology. (**Bologna, Italy**) October 1998. Two-day course on scientific basis for periodontal therapy. {N. Claffey}



- 1998** International Womens Conference. **(Cannes, France)**. June 1998. "Developing an infrastructure for research and training". {J. Clarkson}
- 1998** FDI World Dental Congress. **(Barcelona, Spain)**. September 1998. "Optimal intake of fluorides: FDI Commission". {J. Clarkson}
- 1998** IADR 76th General session **(Nice, France)**. June 1998. Irish Division Symposium. "Research developments in oral candidiasis among adults". {D. Coleman}
- 1998** Sixth International Mycological Congress **(Jerusalem, Israel)**. August 1998. "*Candida dubliniensis*-recognition of a new pathogen". {D. Coleman}
- 1998** Controversies in Fungal Infections V **(Surrey, U.K.)**. October 1998. "Antifungal resistance". {D. Coleman}
- 1998** Third Annual Meeting of the Institute of Molecular Medicine **(Dublin, Ireland)**. November 1998. "The worldwide emergence of *Candida dubliniensis*". {D. Coleman}
- 1998** American Academy of Dentistry. **(Dublin, Ireland)**. October 1998. "Incisor trauma". {P. Fleming}
- 1998** Manchester and Region Orthodontic Study Group. **(Manchester, U.K.)**. March 1998. "Orthodontics-Why, where and when". {L. Lagerström}
- 1998** Consensus Conference on Ectodermal Dysplasia. Institute of Postgraduate Education, Jönköping. **(Sweden)**. March 1998. Member of the expert group. {L. Lagerström}
- 1998** 3M Unitek Forum AAO Conference. **(Dallas, U.S.A.)**. May 1998. "Intra-oral class II techniques". {L. Lagerström, Chairman and Moderator}
- 1998**. Israel Orthodontic Society International Convention. **(Israel)** November 1998. "Aesthetics in dentistry - an interdisciplinary approach towards the 21st century". {L. Lagerström, Chairman and Moderator}
- 1998** Federation of European Microbiology Societies Meeting: Little Known Organisms of Clinical Importance. **(Athens, Greece)**. September 1998. "*Candida dubliniensis*-the world-wide emergence of a novel human pathogen". {G. Moran}
- 1998** Problem-Based Learning Dental Symposium. **(Lake Arrowhead, California, U.S.A.)**. April 1998. "Introducing PBL top down; the experiences of Trinity College Dublin". {B. McCartan}
- 1998** IADR 76th General session **(Nice, France)**. June 1998. Association for Dental Education in Europe. "The value of Problem-Based Learning in an integrated curriculum". {C. McCreary}
- 1998** Association for Dental Education in Europe. **(Nice, France)**. June 1998. "The value of Problem-Based Learning in an intergrated curriculum". {C. McCreary}

**1998** Belgian-Irish Dental Conference. **(Dublin, Ireland)**. April 1998. "The internet in dentistry". {M. O'Sullivan}

**1998** American Society for Microbiology, 98th General Meeting. **(Atlanta, Ga, U.S.A.)** May 1998. "Molecular epidemiological analysis of *Candida dubliniensis*, a newly described pathogen". {D. Sullivan}

### **Visitors comments**

*The yearly list of publications shows that research is going on in various fields, and even if the Microbiology team has been the most successful, other disciplines have contributed. The planning and building of a new School and the introduction of an entirely new educational approach must have taken considerable time and efforts during the last years, and research may have been suffering.*

*Although a number of scientific papers are published each year it is a concern of the visitors that the teachers have an apparent overload of clinical, teaching and administrative work, resulting in little time for research. This situation is in no way unique, rather is it well-known for most academic teachers in dentistry and medicine. Nevertheless, the visitors strongly support increased resources for research. The recent appointment of a new chair in Restorative Dentistry with a strong research background is applauded by the visitors, and bodes well for the future research of the School.*

*One approach suggested by the visitors, is that the Staff of the Clinical Departments approach Microbiology to design and implement common research projects, as has already been done by the Staff of Periodontology. This could create fruitful and stimulating links between Clinic and Basic Sciences.*

### **20.3 Grants Awarded to Staff of the Dublin Dental Hospital and School of Dental Science T.C.D. 1996-1998**

<b>Source of grant and purpose of funding</b>	<b>Amount of grant</b>
<b>1991-1996:</b> Irish Health Research Board Unit Grant: Scheme. To investigate opportunistic infection of the oral cavity and central nervous system in Irish HIV+ve and AIDS patients. Five year research programme funding. [D. Coleman, S. Flint & G. Atkins]	<b>IR£275,000-00.</b>
<b>1993-1997:</b> European Community: To facilitate collaborative research on Candida species between European laboratories. [D. Coleman]	<b>IR£7,500-00.</b>
<b>1995-1997:</b> Kristianstad County Council, Sweden Peridontal disease. [N. Claffey & S. Renvert]	<b>IR£5000,00.</b>
<b>1995-1997:</b> Irish Health Research Board: Early steps in oral carcinogenesis [C. Mothersill & S. Flint]	<b>IR£36,000-00.</b>
<b>1995:</b> T.C.D. Academic Development Fund To investigate dysplasia in lichen planus. [M. Toner & C. Timon]	<b>IR£2000-00.</b>
<b>1996-98:</b> The Wellcome Trust: To investigate the molecular properties of selected genes representing different aspects of yeast cell biology from the novel oral pathogenic yeast <i>Candida dubliniensis</i> [D. Coleman]	<b>IR£70,000-00.</b>
<b>1996-99:</b> Irish Health Research Board: To perform a comparative analysis of the novel oral pathogenic yeast <i>Candida dubliniensis</i> and <i>Candida albicans</i> . [D. Coleman, C. McCreary & D. Sullivan]	<b>IR£33,000-00.</b>
<b>1996:</b> T.C.D. Academic Development Fund Lichen planus. [B. McCartan]	<b>IR£1000-00.</b>
<b>1996:</b> Laboratory Medical Services Research Fund: Proliferation markers and p53 expression in human cancer [M. Toner]	<b>IR£3,500-00.</b>

<b>1996:</b> Irish Health Research Board: A biochemical investigation of 5-Hydroxytryptamine function and metabolism in human dental pulp [M. O'Sullivan, K. Tipton & W.E. McDevitt]	<b>IR£35,000-00.</b>
<b>1997:</b> Irish Health Research Board: Characterisation of lichen planus-associated basal cell cytoplasmic autoantigens. [B. McCartan]	<b>IR£3,800-00.</b>
<b>1997-2000:</b> Irish Health Research Board: To perform a detailed prospective investigation of oral <i>Candida</i> populations in HIV-infected and AIDS patients receiving triple therapy with HIV- protease inhibitors and reverse transcriptase inhibitors [C. McCreary, D. Coleman, B. Harrington & F. Mulcahy]	<b>IR£26,000-00.</b>
<b>1997-2000:</b> Irish Health Research Board: To investigate the incidence and mechanisms of antifungal drug resistance in clinical isolates and derivatives of <i>Candida dubliniensis</i> [D. Sullivan & D. Coleman]	<b>IR£30,000-00.</b>
<b>1997:</b> Socrates-Erasmus thematic network project: To promote convergence towards higher standards in dental education throughout Europe [D. Shanley]	<b>IR£40,000-00.</b>
<b>1997:</b> T.C.D. Academic Development Fund To investigate the role of EBV and CMV viruses in the aetiology of gland tumours [M. Toner]	<b>IR£2000-00.</b>
<b>1998:</b> T.C.D. Academic Development Fund Molecular analysis of <i>Candida dubliniensis</i> [D. Sullivan]	<b>IR2000-00.</b>
<b>1998:</b> T.C.D. Academic Development Fund Mechanical strength of resin-bonded bridges [W. McDevitt and Colm Sugrue]	<b>IR3000-00.</b>
<b>1998:</b> Medical Science Systems Inc., Linkage and association analysis of IL-1-gene polymorphisms with severe periodontal disease [N. Claffey]	<b>IR£53,000-00.</b>

**20.4 Higher Degrees Awarded By The University Of Dublin, Trinity College Dublin  
For Projects Supervised By Staff Of The Dublin Dental Hospital And School Of  
Dental Science 1995-1998**

<b>Year</b>	<b>Thesis Title</b>	<b>Name</b>	<b>Degree</b>
1995	A comparison of two debonding techniques for removing ceramic brackets	Harry. Kearns	M.Dent.Sc. Orth.)
1995	Methicillin-resistant Staphylococcus aureus in four Dublin hospitals (1988-1994)	Angela S. Rossney	Ph.D.
1995	An investigation into the behavioural characteristics in orthodontic elastometric modules	Paul. Dowling	M.Dent.Sc. Orth.)
1995	An in vitro investigation into the sealing ability for four restorative techniques in mixed class v cavities	Frank Quinn	M.Dent.Sc.
1995	The use of chlorhexidine digluconate as an alternative to mechanical oral hygiene in the non-surgical treatment of human periodontitis	Philip Christie	M.Dent.Sc.
1995	The causes and outcome of reduced salivary flow in elderly people	Najiya Ibbieyou	M.Dent.Sc.
1995	Evaluation of different thicknesses of base metal retainers for resin-bonded prostheses on maxillary anterior teeth	Ali A. Ibrahim	M.Dent.Sc.
1995	A comparison of the dimensional accuracy of the splinted and the unsplinted implant impression techniques for the bone-lock implant system	G. El-Jebali Burawi	M.Dent.Sc.
1995	Expression of early indicators of growth deregulation (p53, bcl-2 and ras) in normal human oral epithelial cells in cell culture	Rafa A. El-Gehani	M.Dent.Sc.
1995	Comparison of early wound strengths at the soft tissue to dentine and soft tissue to bone interfaces	Salma O.M. Werfully	M.Dent.Sc.
1995	Significance of traditional dentistry and concepts of traditional healing for the oral health of Tanzanian children	John B. Qamunga	M.Sc.
1995	The role of direct immunofluorescence (DIF) in diagnosis of oral mucosal disease	Gamila M. Issaw	M.Sc.
1996	Molecular genetic analysis of lysogenic conversion by serotype F phages of Staphylococcus aureus	Rita M. Dempsey	Ph.D.
1996	An investigation of the oral health status of a group of in-patients children with congenital heart disease at a major paediatric hospital	Fowziya M. Ali	M.Dent.Sc.

1996	Root canal anatomy of maxillary first and second molar teeth from an Irish sample determined by a clearing technique and by the examination of standardised radiographs	Rakiya Alshalabi	M.Dent.Sc.
1996	Molecular epidemiological analysis of populations of Helicobacter pylori from gastric antral biopsy specimens	David Marshall	Ph.D.
1996	Facial profile in children with increased overjet	M. H. Al-Sharood	M.Dent.Sc.
1996	The efficacy of Delmopinol (HCL) mouthwashes of 0.1% and 0.2% strengths on plaque and calculus formation.	Paul O'Reilly	M.Dent.Sc.
1997	Laboratory study of the fit of cast and pre-machined implant abutments	Declan Byrne	M.Sc.
1997	An appraisal of continuing dental education in Ireland	Jane Renehan	M.Dent.Sc.
1997	A sequential monitoring of procollagen, collagen type IIIs and collagen type V during periodontal wound healing at bone/soft tissues and dentine/soft tissue interface	Aisha Areibi	M.Sc.
1997	Histological evaluation of repair after mechanical furcation perforation in dogs' teeth using a bioresorbable membrane beneath a resin modified glass ionomer	Mohammed Salman	M.Dent.Sc.
1997	Early events in epithelial oncogenesis	Sergio A. Colucci	Ph.D.
1997	A study of the orthodontic treatment need in the Eastern Health Board Region.	Shona Leydon	M.Dent.Sc. (Orth.)
1997	Bracket displacement and its effect on the frictional characteristics at the bracket-archwire interface	Damian O'Reilly	M.Dent.Sc. (Orth.)
1997	A study of the effect of Nd:WAG lasers on dentine	Ailbhe McDonald	Ph.D.
1998	Phenotypic and molecular genetic analysis of fluconazole resistance in oral Candida dubliniensis isolates from HIV-infected patients	Gary Moran	Ph.D.
1998	The effects of groove placement on the retention/resistance of maxillary upper second molar and lower second molar in resin-bonded retainers	Riyadh Z. Emara	M.Dent.Sc.

## **Section 21 - Quality Development**

Dr. Mary Kelly & Professor Derry Shanley

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### **Introduction**

Quality development is an integral part of a continuous improvement programme. To be successful, quality development should be based on continuous evaluation of all the component parts of the curriculum, i.e. the staff, the course content and the student progress. It is clear that the quality of an educational process can only be measured in relation to the aims and mission of the institution. It should also be accepted that some outcomes of education may be difficult to assess.

### **Aims & Objectives**

To identify strengths and weaknesses, promote good practice and enable remedial action. Evaluation is only effective if accompanied by a programme which develops support structures for staff enabling them to rectify weaknesses and reward strengths where these are identified.

### **CURRENT PRACTICES IN DUBLIN**

#### 1. Evaluation of staff performance.

In problem based learning, staff who act as tutors are evaluated by student responses to structured questionnaires. This is done with the agreement of all staff. Each tutor is given details of his/her results and is also made aware of how he/she compares to average performances for all other tutors. Tutors who wish peer advice on remedial activities are facilitated to obtain these.

#### 2. Continuing Education and Training for Staff

In-service training for staff includes in-house workshops (usually two per year) on aspects of curriculum design, new education approaches and new methods of clinical and didactic assessment.

Special workshops are held for new and continuing problem based learning tutors.

International experts in various areas of dentistry are invited to deliver guest lectures to students and staff (usually 3-4 per year).

Travel to international workshops where senior staff are frequently invited to deliver keynote lectures and more junior staff are expected to submit papers and posters (approximately 3 large and 4-5 smaller workshops per year involving usually at least two and occasionally up to eight staff members).

3. Course content is continuously monitored by the usual formal assessment methods. Below average performance by students at assessment is regarded as a signal of a defect in course delivery or assessment format since the student selection process ensures students of high intellectual quality.

Course content is also continuously monitored by student and staff questionnaire and recommendations issued by these groups are considered at dental studies committee meetings and frequently adopted in subsequent years.

4. Student progress and motivation is the subject of a longitudinal study which has been in progress for the past two years. Volunteer students from each year participate in a battery of tests which are designed to measure changes in cognitive processing and in knowledge recall. This study is scheduled to continue for a minimum of two further years.

Students clinical performance is monitored as previously described by clinical credit hours and competences. These measures are reinforced by a clinical adviser system where a group of eight students is supported by a senior staff member who liaises with clinical teachers and ensures that students who are experiencing difficulty for any reason are identified at a very early stage.

### **PLANS FOR THE FUTURE**

Development of Objective Structured Clinical Examinations especially to assess communications and attitudes.

Development of methods to measure cognitive processing.

Consultation with recent graduates (3-10 years) as to their perceptions of the relevance of course material to post graduate practice.

### **Visitors comments**

*The School of Dental Science certainly can be characterised as an active learning organisation. The signs are numerous:*

- \* *Decision processes involving many staff and students*
- \* *An ongoing review of the curriculum*
- \* *Major changes in educational philosophy and methods*
- \* *Implementation of different evaluation methods*
- \* *Strong leadership on different levels.*
- \* *An open mind to learn from others, nationally and internationally*
- \* *A capacity to cope with different opinions and continuous changes.*

*The students have insufficient contact with research done by the staff.*

*Some staff members indicated that they needed a period of stabilization and the time to sit back. The introduction of PBL has stretched all staff members at a maximum. Although the visitors understand the urge for stability for all the staff after introducing PBL and changing all the facilities, we think that there needs to be a continuous evolution of the system, although taking into consideration the limited strength of the Staff to implement any further major changes for the time being.*

*The visitors recommend that seminars on quality development and assessment for department heads and other managers should be provided.*

*Future self-assessments of the programme should be developed in a more analytical format and indicate clear priorities as a mean of dealing with the potential shortcomings.*

*Staff development has been a prominent feature during the implementation phase of PBL, including several training sessions at Maastricht. Strong support for this development activity has been provided for the administration.*



*A potential danger may exist for a reduction in the level of educational development of the subsequent generation of mentors.*

*To ensure a continuous supply of well trained leaders in education, the School is encouraged to provide further development activities for junior faculty members and consider including some house officers and perhaps also auxiliaries in the PBL sessions. The situation of the House officers should be considered. With some training they could supervise group sessions.*

## **Section 22 - Visitors Comments on the School**

### **FOREWORD**

*The visitors wish to thank the administration, staff and students for their courtesy and hospitality during our visit. Everyone was most eager to enter into discussion with us, was forthright and willing to provide us with additional oral and written information as requested.*

*The documents provided for our visit were valuable as primers for our visit but could have been more concise. The visiting team believes strongly that the programmes in the School more than meet the needs of the School's mission and primary function of the institution.*

*Even though we are very satisfied with the quality of the programme we have several recommendations which we believe could further strengthen the academic, service and research efforts of the school.*

*Each section is considered and comments made under the categories of:*

1. *Strengths*
2. *Weaknesses*
3. *Recommendations*

### **1. AIMS AND OBJECTIVES**

#### **Aims**

##### Strengths

*The formulation of general aims and objectives of the programme for clinical training and education of dental students constitutes a thoughtful approach and are clearly stated. The fact that the first mentioned general aim of the curriculum is*

*“To provide future dentists with an ethical and appropriate scientific foundation for a life time of learning and professional development”*

*is well founded in a contemporary undergraduate programme. There is a good mixture of scientific and practice orientation in the formulation of the aims and objectives. Furthermore, they seem realistic and achievable.*

##### Recommendations

*We recommend adding the following aim:*

*“To stimulate student acquisition of evidence based approach to oral health science”.*

#### **Objectives**

*The objectives include a fairly large number. Priority should be given to the more important ones. Nevertheless, we suggest that two objectives should be added:*

#### Recommendations

*“To promote independent questioning and analysis*

*“To promote the development of problem-solving skills and improvement of communication skills.*

*These objectives are important in a curriculum for health care professionals.*

### **Translation of the aims and objectives in the programme**

#### Strengths

*The programme is coherent and contemporary. It offers a multitude of possibilities to develop an understanding of future professional duties.*

*Students’ treatment of patients start early.*

*The students treat a wide range of adult patients including the medically compromised.*

*Integration of different subjects reflects their future professional context outside the dental hospital.*

#### Weakness

*An inadequate supply of child patients.*

### **THE STRUCTURE AND CONTENT OF THE PROGRAMME**

#### Strengths

*The structure is very well thought of. A lot of efforts have been contributed to develop a structure that has achieved a successful translation of the aims and objectives of the programme.*

#### Weaknesses

*The development of PBL blocks is divided in two lines: one including Oral Medicine, Oral Pathology and Oral Surgery, the other Restorative Dentistry, Periodontology, Orthodontics and Child Dental Health. The Visitors would encourage a seamless integration between these lines.*

#### Recommendations

*The content and time allocation of the two main lines need to be further debated and discussed in order to reach a well founded balance. We think the School should organise a sort of retreat outside the University and Hospital environment to revue these considerations and plan for the development.*

*The basic biological science (structure and integration) and the pre-clinical parts of the curriculum need further integration, evolution and development in order to promote a seamless inter-relationship between the clinical and biological sciences and within the PBL context of education.*

## **EDUCATIONAL APPROACH**

### Strengths

*The way self-directed learning, which is to facilitate life-long learning, is implemented in the major part of the programme is to be complimented. The way that the Staff of the Dental Hospital is committed to an innovative educational approach will help the students to develop their competence.*

*The use of computer is well integrated into the programme mainly regarding wordprocessing information, search and in the virtual skills laboratory.*

### Weaknesses

*The educational approaches in the basic biological sciences continue to be discipline-oriented and do not engage the student sufficiently in the integration of basic sciences and clinical sciences.*

### Recommendations

*Try to further develop the balance between different educational approaches (lectures, tutorials, practicals, self-study with means of IT) in relation to content and skills to be learned.*

*Introduce innovative educational approaches in the teaching of basic biological science and improve integration of these sciences in oral health education. It is important to encourage self-directed learning from the outset of the Dublin Curriculum.*

## **EXAMINATIONS AND ASSESSMENTS**

### Strengths

- *Numerous assessments for every PBL block and for every clinical hour.*
- *Assessment is performed of the PBL process.*
- *Plans to revise the assessment.*
- *Feedback of the assessment to the students, the tutor and the planning group.*
- *Organising extra seminars after blocks where the assessment has indicated deficiencies.*
- *Continuous assessment and adaptation of the assessment system.*

### Weaknesses

- *Dominance of MCQ and true/false questions in the exams (although serious efforts are being made to change to short answer questions). More weight should be put on OSCEs.*
- *The number of assessments made are quite substantial.*
- *The summative examination is unrelated to the PBL learning system but more orientated towards the assessment of traditional teaching methods, but this is related to the recognition of the education system by the Dental Council of Ireland.*
- *The students report having difficulties to find patients with the need for a particular treatment and/or the supervisor to perform a competence test.*
- *The heads of the departments are far less involved in the direct assessment of students.*

- *The scale used for clinical credit grading appears not to be discriminating enough.*

#### Recommendations

- *The integration of more open-ended and essay questions in the examination (which is already in process).*
- *To change the grading scale for clinical credits to a 5 or 6 points grading.*
- *More follow up of the student's assessments of the tutors, as the students have indicated important variations in tutorial skills.*

### **STUDENTS' SKILLS**

#### Strengths

*The students have a high competence and capacity. They are also highly motivated. The students appreciate the PBL education methods.*

#### Weaknesses

*The students were reluctant to do peer reviews on the tutorials. This might have to do with the fact that they are young and competitive.*

*The students have a high workload that prevents them to take part in recreation activities.*

#### Recommendations

*Develop and implement a 'string' of student self-assessment and peer review.*

*The students should be given more possibilities to take part in sport and recreational activities*

### **FACILITIES**

#### Strengths

- *The clinical facilities are very well designed, state of the art, multipurpose clinics which lend themselves to efficient and economically sound management.*
- *The IT equipment is omnipresent enabling the students to perform good patient management and offer the possibility to make use of the Internet.*
- *The overall design is extraordinary and can serve as an example for other dental schools. It is a particularly good design for a PBL positive, very efficient environment.*
- *The instrument delivery system seems very efficient.*

#### Weaknesses

- *There is only one X ray equipment available for 40 units per each floor.*
- *Some staff members seem unhappy with the shared office arrangement. Although the visiting team notes that the roster of most staff members does not allow them to be in their office more than 2 sessions a week*

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**STAFF**

Strengths

*The qualifications of the staff are quite satisfactory and the number of staff positions appears to be adequate to cover all the curriculum and service areas.*

Weaknesses

- *Even though the number of scientific and professional publications is numerous, the visiting team believes that additional staff would be welcome, especially in the field of research.*

*We find a staff deficiency in coordinating PBL development and implementation.*

Recommendations

- *It is strongly recommended that the School continues and enhances its support for research in both the basic and clinical science areas.*

*We strongly recommend that a position is established for PBL development and implementation.*

**STAFF PROMOTION**

Weaknesses

*All staff members have a heavy clinic roster and the promised blocks for research are taken up by administration/ tutoring. The educational skills are not taken into account enough.*

Recommendations

*Allow scheduling of research periods as well as periods for educational development that need to be respected. This can probably only be achieved by tailored plans.*

*The visitors recommend the institution to pay attention to staff-members' educational achievements in a qualitative way for promotion.*

**STAFF DEVELOPMENT**

Strengths

*Staff development has been a prominent feature during the implementation phase of PBL including several training sessions at Maastricht. Strong support for this development activity has been provided for the administration.*

*The establishment of parity in remuneration between dental academic staff and medical academic staff provides a secure structure which will attract staff of the highest calibre.*

Weaknesses

*A potential danger may exist for a reduction in the level of educational development of the subsequent generation of PBL leaders.*

### Recommendations

*To ensure a continuous supply of well trained PBL leaders; the School is encouraged to provide further development activities for junior faculty members and might consider including some house officers and perhaps auxiliaries in PBL programmes.*

## **INTERNATIONALIZATION**

### Strengths

*Participation in the Erasmus and Socrates programmes. In 1998, ten students participated in a Dental Overseas Elective Program in Malawi, South Africa and Peru.*

*The diversity of the composition of the Dental School classes demonstrates the reputation of the school and can enhance the understanding of different cultures. There are positions available for non EU citizens as well as for students from U.K. and Northern Ireland.*

*The leaders of the Dublin Dental School play an active and leading role in international education. One of their initiatives is the EU network- DENTED.*

### Recommendations

*The same policy should be continued, but more efforts should be made to make it possible for students to take part in Erasmus student exchange.*

## **RESEARCH**

### Strengths

*The research efforts of the School have been effective and successful. This is shown by the adequate number of publications produced by the Faculty, the success in acquiring funding and the continued development of a strong postgraduate programme. The seminal contributions made in the area of Candida infection in HIV infected patients, particularly the identification of a new species, Candida dubliniensis, is noted.*

### Weaknesses

*The main concern of the visiting group is the load of clinical, teaching and administrative work, resulting in little time remaining for research.*

### Recommendations

*Other disciplines have also contributed significantly to the research efforts of the School and the visitors urge the School to provide further support in all areas of research, including Oral Medicine, Oral Surgery, Oral Pathology, Orthodontics, Paediatric Dentistry, Public and Child Dental Health, and Restorative Dentistry. The recent appointment of a new Chair in Restorative Dentistry with a strong research background is applauded by the visitor and this augurs well for the future research plans of the School.*

*Furthermore we recommend that the School should adjust the present system of staff scheduling to devote appropriate percentage of staff time according to their particular attributes and skills.*

*A broad research initiative by Trinity College, to involve Departments outside of the School of Dentistry, will also contribute to the research potential of the School and further ensure improvements in the educational and research components of the mission of the Dental School.*

## **QUALITY DEVELOPMENT**

### Strengths

*The School of Dental Science certainly can be characterized as an active learning organisation. The signs are numerous:*

- *Decision processes involving as many staff and students as possible.*
- *An ongoing review of the curriculum.*
- *Major changes in educational philosophy and methods.*
- *Implementation of different evaluation methods.*
- *Strong leadership on different levels.*
- *Open mind to learn from others, nationally and internationally.*
- *A capacity to cope with different opinions and continuous changes.*

### Weaknesses

*The students have insufficient contact with research done by the staff. Some staff members indicated that they needed a period of stabilization and the time to sit back.*

### Recommendations

- *Seminars on quality development and assessment for department heads and other managers should be provided.*
- *Although the visitation group understands the urge for stability for all the staff after introducing PBL and changing all the facilities we think that there needs to be a continuous evolution of the system and an effort to avoid any unnecessary major changes.*
- *Try to develop future self-assessments of the programme in a more analytical format and indicate clear priorities as a mean of dealing with the potential shortcomings.*

## **ADMINISTRATION**

*The visitors were very impressed by the management and the efficacy of the administration. A very good plan for the staff development within the administration had been designed, which could be used as a model for the in service training of the whole School.*

*We found a highly motivated team with different competences, well integrated with the clinical staff.*



## **INNOVATIONS AND BEST PRACTICES**

### ***The Problem-based learning approach***

***The Competence Tests-*** which were carried out in a non-threatening way and in the clinical context where the students use to practice. The fact that the students have to self-assess when they are ready to perform the competence test is very important and in line with the approach of self-directed learning.

***The Examination and Assessment System-***with different formats to assess student performance. The implementation of the OSCE is very intriguing.

***Students involvement-*** in the Quality Assurance and Quality Improvement.

***The Quality Plan-*** describing the changes of the course which have taken place due to course evaluations

***Community-Oriented Health Education-*** both the scientific projects taking place in community dental health and the “adoption” of a family to follow throughout the students’ programme.

***Students attend hospital clinics-*** where they meet and interview patients in a hospital environment

### ***The Plan for IT-Education***

***The combination of a top-down and bottom-up approach-*** in the educational programme

***Team approach of junior and senior students***

***Common room for students and staff***

***Early clinical experience for the students***

***Integrated clinical facilities***

***Premises that stimulate integration***

***The Leaders of the School are aware of the importance of educational skills - and that they should be taken into account at promotions. The visitors look forward to follow how this will be implemented and evaluated.***

***The design of the new Dental Hospital and School represents a new approach. The atmosphere and the technical facilities enhance the implementation of the PBL design and of a patient centered treatment philosophy.***

***The administration has a dedicated and motivated staff that facilitates the work of the teaching staff and students and enables an adequate function of the new hospital.***

## **CONCLUSIONS**

*Our comments above should be read in the light of the fact that the undergraduate programme at the Dublin Dental Hospital as a whole is excellent.*

*We find it specially admirable that such extensive changes as a new building, a new curriculum and a new educational approach have been possible to implement during a short period of time and almost simultaneously.*