

Looking forward: educating tomorrow's dental team

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Introduction

This publication reports a meeting of the stakeholders of dental education in the UK, hosted by the Council of Heads and Deans of Dental Schools (CHDDS). The meeting, held in Manchester, UK on 4-5 October 2007, occurred within days of the seventh anniversary of a dental hospitals and schools policy retreat hosted by the then Council of Deans of Dental Schools and the Association for Dental Hospitals. The proceedings of the retreat, intended to raise awareness and stimulate discussion on matters important to the planning of the future provision of dental education in the UK, were published in the form of a supplement to the European Journal for Dental Education (1).

The principle purpose of the meeting of stakeholders of dental education reported in the present publication was to raise and stimulate discussions on issues considered important to the further development of dental education in the UK. A secondary, but by no means less important purpose of the meeting was to give members of the CHDDS opportunity to interact with other stakeholders in dental education and, in the process, facilitate a shared understanding of existing and, in certain respects increasing tensions and challenges in the UK dental education system.

Introductory remarks

Professor Nairn Wilson, Dean and Head of King's College London Dental Institute and Chairman of the Council of Heads and Deans of Dental Schools.

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Looking back at the declaration and recommendations of the policy retreat of 2000 organised by the Council of Deans of Dental Schools and the Association for Dental Hospitals⁽¹⁾, it is apparent that much has been achieved, and many things have changed in dental education in the UK in the intervening time. As I said in the opening remarks of the 2000 policy retreat, then as President of the General Dental Council, and would repeat in these opening remarks, it is as important as ever to the future sufficiency of the dental workforce in the UK that dental schools and hospitals in the UK have the means and opportunity to best prepare future members of the dental team for their careers in dentistry. Furthermore, it is critical that there is joined-up working, involving all the relevant stakeholders in dental education, and that the guidance for the various educational programmes will lead to new members of the dental team being fit for purpose and prepared to be effective life-long learners, with a clear understanding and commitment to their new professional responsibilities.

At a time when patterns of oral health are changing, with many inequalities, together with an ageing population, increased service uptake, new and increasing patient expectations, an exponential growth in scientific and technological developments pertinent to dental care, and ongoing changes to the gender ratio, ethnicity and skill-mix of the dental workforce, let alone major changes in the funding organisation of dental care systems, mapping out the future direction of dental education in our post-modern society is no easy matter. It is hoped, however, that this report will help to point the way forward.

More of the same dental education, as set out in great detail in the guidance of the General Dental Council - The First Five Years (1), is not a realistic option for the future. The First Five Years and the related guidance for dental care professionals (DCPs) – good as they have been, have now served their purpose and should be replaced as a matter of priority. A new style of forward looking, less prescriptive guidance is now required to underpin a modern approach to dental education.

Dental education in the UK has been amongst the best in the world, and has the potential to excel internationally in the future. Most importantly, however, it has the ability to create a dental workforce capable of meeting whatever challenges the future may hold. To realise this goal, it is essential that events such as the present meeting have positive outcomes which stimulate reflection and, where appropriate, action to move matters forward. The CHDDS welcomes the opportunity to act as a catalyst in heralding yet another new chapter in the illustrious history of dental education in the UK.

As ever, a meeting is only as effective as the discussion, decisions and follow-up actions it generates. This report documents what proved to be a most successful meeting. Subsequent to publication, this report will hopefully act as an aide memoire to follow-up actions.

Reference

1. General Dental Council. The First Five Years. A framework for undergraduate dental education 2002.

Session 1 – Dental education: sufficient for future purpose?

Professor Nairn Wilson chaired this opening session of the meeting. The purpose of the session was to give representatives of key stakeholders the opportunity to present views on existing dental education in the UK, and to comment on the extent to which this education could be considered fit for future purpose. The presentations were followed by a general question and answer session, with many delegates joining in the lively discussion.

A view from the General Dental Council

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In introducing his presentation, Mr Cook reflected upon his own dental education 30 years ago to highlight how dental education has changed, with a reduction in the practical elements of dentistry and an increase in the “softer skills”. As student numbers have

increased, so also has the numbers of dental care professionals (DCPs) who undertake many of the tasks that dentists have traditionally been trained to undertake.

The changes that have taken place at the General Dental Council (GDC) in recent years were described, with particular emphasis on the increasing numbers of registered dentists and DCPs. The proposed changes for the constitution of the Council in 2008 were also presented, together with an update on the GDC's strategic review of dental education.

The assessment of a particular school's dental degree programme, with regard to its sufficiency, is the responsibility of the General Dental Council, as the sole competent authority for dentistry in the UK. The GDC's guidance on undergraduate dental education – The First Five Years (1), is the basis on which the GDC's visitors have assessed a school's sufficiency in the past. The report of the 2003-2005 round of visits (2), found all 13 dental schools to be sufficient, yet raised general concerns in a number of areas: adequacy of funding and facilities, staff numbers and dental nurse support. The report also welcomed the development of outreach teaching, but expected the GDC to be kept informed of all major developments, so as to monitor the effectiveness of education in extended clinical environments. The finding of sufficiency for all UK undergraduate dental schools was concluded before the recent, significant increase in dental student numbers and the rapid expansion of outreach teaching.

Focusing on the question – sufficiency of dental education for future purpose, a number of suggestions were made as to what the future may hold. It was stressed that these were

personal opinions and should not be considered as an official GDC view; rather they represented more of a vision of the current Chair of the GDC Education Committee. It was suggested, following on from the strategic review of dental education, that new GDC guidance will be produced to replace *The First Five Years* (1). It is to be hoped that this new guidance will adopt a more broad-brush and outcome approach, giving greater flexibility to schools to develop more individual dental degree programmes, whilst still having to achieve a core of essential competencies that will allow a newly qualified dentist to be fit for practice. The change in the role of the dentist from the performer of all dental tasks, to the leader of the dental team needs to be more widely recognised, and the curricula changed to reflect this change. More emphasis on team and leadership skills, and less emphasis on undertaking tasks that may well be undertaken by other members of the dental team, should be considered. An outcome based GDC guidance will lead to a different approach to GDC inspections and monitoring of dental schools.

It was suggested that not all schools may be able to provide dental students with the same level of clinical experience and that flexible ways of teaching may be needed to address this. In addition, this approach would need to be accepted by those who assess the sufficiency of dental school programmes.

The concept of a period of provisional registration, leading to “managed entry to the dental register” was presented. In the meantime, however, it was considered important to remind the Heads and Deans of Dental Schools that it is their signatures that advise the GDC that individual students are fit for registration.

References

1. General Dental Council, The First Five Years. A framework for undergraduate dental education, 2002
2. General Dental Council, General Visitation 2003-2005. General report of the visitors to the undergraduate dental degree programmes and final examinations in the United Kingdom, 2005

A view form the Department of Health (England)

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As the Government's chief advisor on dental policy issues, including dental education, the Chief Dental Officer has to be aware of developing trends in service needs and the ever-changing nature of the dental workforce whose task it is to meet those needs.

It is clear that the dental needs of the population of England have changed - the incidence of disease has reduced and the pattern of disease less destructive.

This presentation focused on identifying the nature of changing needs. Other factors that will influence the dental needs of the population in the future and their impact on the

modernisation of the education of the whole dental team, in particular, dental undergraduate training, were also considered.

All recent oral health surveys in the UK indicate that the level of dental caries in the young is reducing. As local NHS agencies take advantage of the amendment to the Water Act in 2003 to enable targeted fluoridation schemes to go ahead, where there is local support, there will be a significant impact on caries incidence.

At the same time, the percentage of adults with no natural teeth continues to reduce from 40% of the adult population in 1968 to around 10% in 1998 and, almost certainly, much lower in 2008.

This changing picture of oral disease will undoubtedly produce changing needs in terms of skills deemed essential for future generations of dental graduates to register with the General Dental Council, and will have significant implications for several of the dental specialties.

The necessity to include training in complete denture prosthetics is already being questioned in some areas. The nature of prosthodontic services will certainly change and, indeed is already changing, to a considerable degree.

The reduced incidence of dental caries will have a significant impact on the need for endodontic treatments, as will the high success rate in implant techniques. This potential

reduction in the need for endodontics training will, to some degree, be offset by increasing needs in the ageing dentate population. Workforce planning for endodontics will inevitably be complex.

Changing trends in the nation's general health will also impact on dental service needs with the links between systemic and oral diseases being better understood. The rising incidence of dementia in the older dentate patient will increase pressures on dental services.

One of the most significant developments over the last two to three years has been the rapid expansion of training for dental care professionals (DCPs). This expansion, coupled with the possible extension of clinical roles for DCPs, following on from registration, will certainly lead to a wider degree of skill mix in the provision of services. This, in turn, will lead to a need for dental undergraduate training to include enhanced understanding and appreciation of the roles DCPs can play, together with more instruction on dental team leadership. A good example of the impact DCPs will have on the way services are delivered is the potential of orthodontic therapists. At present, orthodontic therapists have very little impact on services; however, in 10 years time, it is anticipated that they will, in all probability, have brought about a fundamental change in the orthodontic workforce.

The classical model on which dental schools were historically organised is clearly based on the medical model, yet in the region of 96% of dental services are provided in the

primary care setting, compared to around 50% of medical services. Placing undergraduate students in the primary care setting for part of their clinical training would seem to be obvious, with the added benefit of allowing greater flexibility to be built into the estate, facilitating more rapid adjustments to need, in terms of student numbers. Above all else, it is clear that the current, relatively rigid and prescriptive educational guidance, on which undergraduate courses are constructed, will have to change.

Views of the Postgraduate Dental Deans and Directors

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Postgraduate Dental Deans in the UK are responsible for the provision and quality management of the education and training of dental graduates during Foundation (General Professional – GPT) and Specialty Training. Currently, there is a period of transition in moving from GPT to Foundation Training (FT).

The first two years after graduation – FT, will comprise periods of training in both primary and secondary care. Currently, for most, the first year is spent in a period of vocational training in a general dental practice with an educationally approved trainer, usually the practice principal. The experience in this year is designed to consolidate the

knowledge and clinical skills acquired during the undergraduate dental degree programme. It is designed to be an introduction to ‘service’ in primary care where most graduates will eventually work as independent practitioners. The second year of FT will vary from trainee to trainee; for most, this will comprise combinations of primary and secondary care experience, developing additional diagnostic and clinical skills, in particular in the management of patients with more complex medical and dental conditions.

In 2005, the English Department of Health commissioned a Curriculum for UK Dental Foundation Training (DFTC); this curriculum was launched in 2006. It is downloadable in PDF format from the Foundation Training section at www.copdend.org. In developing the curriculum, the project team reviewed a number of existing documents on dental curricula, including the guidance of the General Dental Council’s (GDC) – The First Five Years (1) and the Association for Dental Education in Europe’s Profiles and Competencies of the European Dentist (2). The aim of the curriculum was that its use would lead to:

“A competent, caring, reflective practitioner, able to develop their career in any branch of dentistry to the benefit of patients”.

The DFTC is based on four domains, each divided into separate major and supporting competencies. Assessment of progress is planned to focus on performance across a range of competencies in different domains.

It will be important to ensure a smooth continuum of education as undergraduates move into FT. Ideally this will link into the first validation by the GDC, with potential for managed entry onto the UK Dental Register. It is important that any new undergraduate curriculum design relates well to the DFTC. In many instances, FT competencies will be equally relevant to undergraduates, albeit at different levels of knowledge and skill.

It will be important to consider the product of the undergraduate dental degree programme and how this relates to the education and training of dental care professionals. It is crucial to recognise that the undergraduate course will produce knowledgeable graduates but with limited skills. The outcome to be achieved might be that of a 'safe beginner'.

Some feel that dental school training could be more efficient in the use of time and resources, to the better advantage of the patient. Therefore, undergraduates should be more aware of the concept of customer service. They will also need to further develop leadership and negotiation skills as they enter the changing NHS and general dental practice. It was suggested that consideration should be given to a three year course leading to a bacheloriolate degree in dental or oral sciences with subsequent selection onto a dental degree programme for those with the desire, aptitude and broad based skills to lead the dental team of the future.

To cope with clinical imperatives and the changing demographics of the population over the next 30 years, dental schools may need more freedom to develop their curricula within a broader based framework, rather than a tightly prescriptive one.

Important areas for particular development include:

- managing the dentition in the older patient, including advanced forms of caries management, domiciliary visits and an understanding of complex medical histories and their therapeutic treatment
- managing the partially dentate and badly broken-down dentition, using the latest materials and techniques, implants, and advanced restorative and orthodontic techniques
- improved pharmacology and therapeutics, especially in the older and anxious patients;
- microbiology, especially in respect of infection control and decontamination;
- orthodontic training with respect to the development of the normal and abnormal dentition and orthodontic diagnosis;
- professional behaviour and multiprofessional working.

References

1. General Dental Council. The First Five Years. A framework for undergraduate and dental education, 2002

2. Plasschaert A, JM, Holbrook WP, Delap E, Martinez C, Walmsley AD. Profile and competences for the European dentist. Eur J Dent Educ 2005; 9: 98–107

A view from the British Dental Association

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The recent social, political and economic changes, common to many caring professions are especially pertinent to the new dental graduate and have a marked effect on the education and training needs of younger members of the profession.

The skills, motivation and commitment of the health workforce in general are increasingly linked to the performance of the systems they serve (1).

These in turn are linked to current educational challenges.

Many educationalists suggest a pathway common to many professions. Horton (2) sets out four divisions particularly pertinent to the dental profession:

- Teaching of basic skills and knowledge
- Awareness of the scope of learning and social and professional responsibilities

- Experiential learning (3) - development of organisational and communication skills and audit.
- Pathways for self-directed learning.

The third of these, experiential learning, was an original cornerstone within the concept of dental vocational training (4) and has remained an important link in the transition of the new graduate into the workplace (5).

The phrases” have knowledge of,” “be familiar with” and “be competent at”, as described by Mossey and others (6) depend upon a degree of experiential learning to facilitate passage through the three levels.

However, the development of “blueprinting” for such a process remains difficult (7) and the development of those competences related to motor skills may be under considerable threat as a part of recent and anticipated changes.

If patient-focused dentistry remains the accepted goals of the good oral healthcare professional, then the skills mix and the competence of the new graduate needs to be changed accordingly

Whilst entry trends for new graduates feature “professional job”, followed by “healthcare –people” factors (8) the postgraduate reality may include a greater realism. This relates

to difficulties associated with fiscal pressures and the acquisition of sufficient cross practice competencies.

Future trends in the aspirations of new graduates, who actively choose to enter general dental practice, may well include a greater combination of specialisation and a trend towards provision of care within a ‘mixed’ practice. This may be linked to a growing trend in postgraduate qualifications specific to general practice, which may not necessarily justify specialist or academic status, but nevertheless demonstrate commitment and a more focused approach to patient care. The tendency of any clinician to review a treatment plan in the light of a given special interest, in particular when there are confounding factors, such as a transient patient in need of pain relief or seeking cosmetic gain, is nowhere more relevant than in this arena. Many patients may require staging of treatment or minimal initial intervention, with “patient focused dentistry”, in particular, in the older patient often contraindicating complex treatment.

Without the umbrella of appropriate skill mixes backed by a level of competence in several different areas, it may be impossible to make a correct choice of treatment, or more importantly to assist the patient in making the correct choice to best meet needs and circumstances. Choice, range and timing of treatments for many patients may not relate to the acquired competence of the practitioner, but to the lack of competence, or to the lack of a range of competences.

Given the importance of experiential learning, it is now pertinent to question the effect of the recent challenges to the profession posed by government forces (9) and whether the new graduate is being deprived of the opportunity of such useful educational experience.

Is there a conflict with recent proposals which relate to the second year post qualification (10), even though, for many recent graduates, these proposals may represent a broadening of career opportunities? A career in general practice for the new graduate must surely appear more rewarding when linked to a basket of indicators rather than targets.

Recent challenges to curriculum design at the undergraduate level (11), and the resulting alignment to changes to the profession as a whole, are undoubtedly significant.

The continuing support for vocational training and plans for foundation training, in tandem with the excellent resources of the postgraduate deaneries is to be welcomed. However, in re-defining the future of general dental practice, without the resources to improve skills and achieve improvements through experience, experiential learning and case defining planning it may be difficult to achieve patient-focussed dentistry.

References

1. Gallagher JE, Patel R, Donaldson N, Wilson NHF, The emerging dental workforce. BMC Oral Health 2007 7:7
2. Holton EF. The New Professional. Princeton, NJ:Petersons Guides 1998

3. Kolb D. A Experiential Learning: Experience as the Source of Learning and Development. Englewood-Cliffs: Prentice Hall 1984.
4. Mouatt RB. Chief Dental Officers Foreword to New Graduates Guide 7th Ed 1998.
5. Playdon ZJ. Perceptions of the teaching and Assessment of Skills Within Dental Vocational Training. UK Conference of Advisers 2002
6. Mossey PA. The First Five Years: Dawn of a new era. Brit Dent J 2003; 194: 350-351
7. WassV, Van der Vleuton C, Shatzer J & Jones R. Assessment of Clinical Competence. Lancet 2001; 357: 945-955.
8. Skelly AM, Flemming GJP. Perceptions of a dental career among successful applicants for dentistry compared with those of fifth year dental students. Primary Dental Care 2002; 9: 2
9. Chief Dental Officer: Letter from the Chief Dental Officer : All Dentists Gateway ref no 7106 London Dept of Health.
10. A Curriculum for UK Dental Foundation Training. Dept of Health. Eng, 2006
11. Manogue M, Brown G. Managing the curriculum – for a change Eur J Dent Educ 2007; 11: 75-86

Concluding remarks

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The assertion was made that the existing system of dental undergraduate education is very prescriptive and stifles innovation. There is little evidence to support this; on the contrary, transfer of disaffected students from one school to another is difficult because the courses are so different in both emphasis and delivery. Of course, all the schools currently produce a curriculum based upon the guidance of the General Dental Council – The First Five Years, implying that the graduate will be fit for independent practice on graduation. There is general agreement that this goal is unachievable, especially as dental practice changes and arguably, more knowledge and diversity in clinical skills are now required.

There seems to be a desire to place increased emphasis on core skills, but it is unclear about what those skills should be. Certainly due cognisance of the domains: professionalism, clinical, communication and management and leadership, will provide opportunities to develop innovative and exciting learning for all members of the dental team. Where this training should take place continues to be an issue, with concern about the role of outreach, especially within primary dental care. Concerns about quality assurance, suitable patient mix and longitudinal care for patients have been expressed. Placement of students into a carefully monitored and supportive general dental practice environment would be the ideal, but there is still some dubiety about whether dental

schools can pursue this route. There are issues of indemnity and patient fees that may impact on the provision of this approach. Certainly, the outreach developed at, for example, the University of Sheffield provides an excellent model for experience in the primary dental care sector. Outreach in Scotland is progressing well with purpose-built centres allowing students to care for patients within a primary care salaried service environment. The staff in these centres are enthusiastic, keen to learn and comply with quality assurance imperatives. The overall opinion of our students' outreach experiences is very positive. In addition, outreach provides an excellent opportunity to integrate all the dental team.

The teaching of professionalism is challenging. It becomes increasingly clear that we do not really know our students, their standards of professional behaviour and their aspirations. Students tend to be more demanding of their university and its teachers than even 10 years ago. It is important that standards required of a caring professional are taught to students, and all the dental team, throughout their programmes of instruction and post-qualification training.

Strengthening the educational opportunities in the post-qualification years is welcomed. The introduction of exciting configurations for foundation training will ensure that graduates in their early careers are able to make more informed choices and retain the enthusiasm for learning and continuing professional development. It also helps to provide a smooth continuum of education from undergraduate learning and teaching to postgraduate studies. It is clear that our students are not wishing to commit themselves to

a particular practice for all their working lives. The opportunity to have substantial experience in a variety of clinical activity enriches the learning experience.

It is clear that the modern dental graduate and dental care professional requires skills that are very different from those demanded 20 - let alone 30 years ago. I strongly assert that despite shortcomings, including a lack of core resource allocation and difficulty in recruiting staff to academia, the quality of the dental schools and the graduates they produce in the UK is extremely high. There is innovation, commitment and a keen dedication to produce graduates of the highest quality, ensuring that the clinical care of patients in the UK continues to be enhanced.

Session 2: Future trends in dental education

Professor Malcolm Jones, Cardiff University chaired this session. He introduced 'Future Trends in Dental Education' by highlighting the main theme of the session. This was to look beyond the borders of the UK, and indeed beyond the 'borders' of the dental profession, to see what impact current and future developments in professional education in Europe, and beyond, have had, and will continue to have on the delivery of the education and training of dentists in the UK over the next 20 years.

The first of three keynote speakers was Professor Jones who, as incoming President of the Association for Dental Education in Europe (ADEE), had been invited to speak on the impact of the ADEE and the DentEd projects on dental education in Europe, and comment on how the drive for harmonisation of standards across Europe, specifically the Bologna Declaration, will continue to influence the delivery of dental education in the UK.

The second speaker was Professor Diarmuid Shanley, past Dental Dean and Pro-Rector, Trinity College, Dublin. Previously, Professor Shanley had been the leader of a series of DentEd projects in Europe which led to a number of global meetings on dental education. On this occasion, Professor Shanley had been invited to speak on the core issues, outcomes and likely impact of the Global Congress on Dental Education held in Dublin the previous month, and at which 66 countries of the world had been represented.

The third speaker was Professor Olle ten Cate, Director of the Centre for Research and Development of Education in Utrecht, The Netherlands. This is a centre, with an excellent international reputation, which is renowned for its innovative thinking on future trends for the delivery of medical education. Professor ten Cate had immediate knowledge of the key issues in dental education, having been one of the team of Quality Assurance Netherlands Universities (QANU) visitors that inspected the curricula in Dutch Dental Schools, following the full implementation of the 'Bologna' requirements.

Keynote address: European trends in dental education

Professor Malcolm Jones

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Since the 1960s, the leaders and opinion formers of UK dental education have regularly engaged with their colleagues from universities across Europe. Initially, this occurred through a variety of informal contacts, based on a loose network of dental deans, which met annually at various venues across Europe. In addition, and at about the same time, the World Health Organisation sponsored meetings of teachers of undergraduate and postgraduate dental students (1968 and 1970) and in 1971 the Federation Dentaire Internationale (FDI) invited all Deans of dental schools to a formal meeting of dental educators. These various arrangements and fora eventually metamorphosed into the formally constituted ADEE, the first meeting of which was held in Strasbourg in 1975. The birth of ADEE, by good chance, occurred around the same time as the European Dental Directives were being developed and implemented - prepared in 1975 and published in 1978.

At the first meeting of the ADEE there were 39 attendees from 18 European countries. To put this in a modern context, there are now approaching 200 dental schools and other eligible related educational organisations - for example, UK Royal Surgical Colleges, as

institutional members of ADEE, and the annual meeting of the Association attracts in excess of 350 delegates, representing as many as 50 countries. It has also been very encouraging in recent years that the annual meeting of the ADEE has attracted increasing representation from the rest of the global community of dental educators.

In 1975 it was stated that:

‘The main purpose of the ADEE should be to promote the advancement of dental education in Europe; to foster co-operation and communication among dental and medical educators in Europe and to maintain contact with dental and medical educators in countries elsewhere; to review and evaluate suitable procedures for training dental teachers in Europe.’

This remains a valid vision, in particular as the European Union (EU) has expanded, the European Higher Education Area (EHEA) has been defined, and colleagues from countries around the world have become associate members of the ADEE and partners in collaborative working. The ADEE website (adee.dental.tcd.ie/index) includes an update and refined mission, as follows:

- To promote the advancement and foster convergence towards high standards of dental education
- To promote and help to co-ordinate peer review and quality assurance in dental education and training

- To promote the development of assessment and examination methods
- To promote exchange of staff, students and programmes
- To disseminate knowledge and understanding on education
- To provide a European link with other bodies concerned with education, particularly dental education

Inevitably, developments with regard to the dental profession have followed the regulations, requirements, needs and aims of the European Community and these, in turn, have influenced the work and priorities of the ADEE, which has become the representative voice of dental education in the EHEA and Europe.

The initial work of the ADEE in the 1970's was informed by the European Dental Directives and was in close association with the business of the Advisory Committee for the Training of Dental Practitioners. The task, in relation to the dental directives, was to: 'ensure a comparably demanding standard in the training of dental practitioners in the community with regard both to the training of dental practitioners and that of practitioners in specialised dentistry' (Article 2 – Directive 78/688/EEC).

The ADEE has always been about sharing good practice, mutual assistance and support, and working towards the equalisation of standards across Europe and, increasingly, the rest of the world.

There was a further stimulation and resurgence of these three roles in the late 1990's under the leadership of Derry Shanley as President of the ADEE. During his presidency, Professor Shanley led the first ADEE visitation to a dental school in Minsk in 1996. Subsequently, this became the model for a new European visitation process both to enhance and help make educational standards more equal across the continent. Incidentally, the process also served to greatly increase European collaboration between dental schools and amongst participating dental educators. The programme became known as 'DentEd', which was supported by the European Union as the dental component as one of 36 Thematic Networks working in different academic subject areas.

To date there have been over 40 visitations of dental schools under the auspices of 'DentEd', working in close partnership with the ADEE (1,2). The process has been recognised to assist the development of all schools visited and has been of significant assistance to dental schools in Eastern Europe - as the 10 'accession countries' prepared for full membership of the EU in the Spring of 2004. In the UK, two schools have received visits, to date, one of which was Cardiff during my own term as Dean. After this visit, it was generally agreed within the school that the visit had, together with the report, been a useful formative process, as it was set against a more valid international benchmark than the traditional UK (General Dental Council) inspection.

Subsequently, DentEd metamorphosed into two subsequent EU supported projects: 'Dented Evolves' and then 'DentEd III', with the work expanding to include the development of European guidelines for key areas of dental education (3,5). The

visitation process still remains an important component of the programme of works; for example, in the current year (2007) there were the first visits to schools in the countries of Turkey and Russia.

Another very important driver for change in European dental education over the last decade has been the Bologna Declaration. In 1999, the 10 objectives of the Bologna Declaration were agreed by the Education Ministers of the European Union. There are now 47 signatory countries, including EHEA, to the Declaration which should be adopted by all signatories, including the UK, by 2010.

The 10 objectives of the Declaration, together with the subsequent extra two ‘Bergen Pillars’, added in 2005, constitute good educational sense and will have been largely achieved, if not fully implemented, by most UK dental schools by the 2010 deadline. The key ‘Bologna Action Lines’ are summarised by the HE Europe Unit (6,7), as set out in Fig. 1.

1. Adoption of a system of easily readable & comparable degrees
2. Adoption of a system essentially based on two cycles
3. Establishment of a system of credits
4. Promotion of mobility
5. Promotion of European co-operation in quality assurance
6. Promotion of the European dimension in higher education
7. Focus on lifelong learning
8. Inclusion of higher education institutions & students

9. Promotion of the attractiveness of the European Higher Education area
10. Doctoral studies and the synergy between the European Higher Education Area and the European Research Area.

Fig. 1 The Bologna Process 10 Key Action Lines

All European schools, including those in the UK, have been assisted in the process of Bologna compliance by the development of a number of ADEE/DentEd derived documents including: 'Profiles and Competences for the European dentist'(3), 'Curriculum structure and European credit transfer system for European dental schools (4), and Quality of assurance and benchmarking: An approach for European dental schools (5). These documents were developed in consultation with all European dental schools and were formally adopted at ADEE General Assembly meetings. Interestingly, these documents have generated much interest globally, with elements, for example those in respect of quality assurance, having been used as templates to develop 'global' documents from the Dental Education Global Conference held in Dublin in September 2007. More details of this are given in the following contribution by Professor Shanley.

The Bologna Declaration issues that remain for some UK dental schools to consider further relate to the European Credit Transfer System (ECTS) and the 'two cycle' dental degree structure - three year BSc followed by a two year MSc, covering the first five years of dental training. In 2005, at a seminar in London sponsored by the Universities UK Higher Education Europe Unit (8), attended by all key stakeholders, it was agreed

that the exit degree from a standard five year dental education programme should be at the Masters level. Subsequently, during 2006/7 this recommendation was supported by both the General Dental Council (GDC), at a meeting of its Education Committee, and also by the UK Council of Heads and Deans of Dental Schools (CHDDS). From the CHDDS there was a proviso that the fee and resource implications of dental courses changing to an exit MSc and/or a full BSc/MSc model should be neutral. The decision, however, as to whether to include a two cycle BSc/MSc within the five year dental degree programme will probably come down to decisions by those UK Universities, mostly within the Russell Group, which include a dental school. There is evidence from a number of countries in Europe that the 'two-cycle' model can be successfully implemented. One of these countries is The Netherlands where, in 2005/6, a UK academic was part of the national QANU inspection of new Dutch dental curricula, resulting from the full adoption of the BSc/MSc model and meeting all of the Bologna Declaration criteria, including the Dublin Descriptors (www.uni-due.de/imperia/md/content/bologna/dublin_descriptors.pdf).

Many of the recent developments in Europe have provided significant drivers for change, equalisation and improvement of dental education across the continent. The Bologna Declaration is but one example. Other examples include the impact of the DentEd projects and the significant leadership role of the ADEE. The presentation summarised in this text included the future strategy of the ADEE, as it takes over the role of DentEd in 2007. Some of the challenges faced by the ADEE in this task are listed in Fig.2.

- Increase ADEE institutional membership to 100% now approaching 80%

- To be fully representative of all dental schools and academics involved in dental education and training
- ADEE to continue the work of DentEd and maintain its momentum
- Maintain and expand visitation process and further development of all guidelines/protocols to continue harmonisation work
- Support schools in new EU member states and from those countries seeking future admission
- Support schools working towards Bologna Declaration compliance by 2010
- Further development work needed in postgraduate/speciality areas – Bologna Third Cycle
- Increase engagement of all key players in dental education through establishment of more special interest groups
- Lobby in Europe more effectively on behalf of academic dentistry
- Better engagement with European and National committees of Deans
- Maintain engagement with national competent authorities
- Achieve better strategic alignment with other European professional representative groups, including the Council of European Dentists (CED) and the European Chief Dental Officers Group

Fig 2: Future challenges for the Association of Dental Education in Europe (ADEE)

It is envisaged that the ADEE will continue to grow, provide an even greater focus for European and potentially global collaboration, and will need to engage with other equally important dental bodies, including the Council of European Dentists (CED), the views of which are increasingly sought by The European Commission in matters relating to dental undergraduate and postgraduate education. The current year has also seen the development of further ADEE Special Interest Groups (SIGs). These SIGs are providing useful ways of working to achieve consensus views in a number of areas. For example, one is examining the implications and opportunities of the Bologna Third Cycle. These implications and opportunities include the linking of professional doctorate programmes to dental speciality training – as already occurs in Orthodontics in some schools, the sharing of ‘outreach expertise’ across the continent, and the establishment of a Forum of European Heads and Deans of Dental Schools (FEHDD) which at its first meeting in 2007 had 45 deans present. This Forum, together with the ADEE could form a very powerful combined ‘lobby’ for dental education.

Conclusions

- The continued UK engagement with bodies such as the ADEE is crucial to ensure that our national vision and strategy for dental education aligns with developments in Europe.
- UK dental schools should continue to contribute to the delivery of the emerging global strategy for dental education. This will involve making contributions to the work of the International Federation of Dental

Educators and Associations (IFDEA) and the IFDEA Global Network in Dental Education.

References

1. Shanley DB (Ed.). Dental education in Europe. Towards convergence. Dental Press Kft Budapest 2001: ISBN 963-00-5305-5.
2. Shanley D, Nattestad A, Valachovic R. (Eds.). DentEd Evolves, Global Congress in Dental Education. Eur J Dent Educ 6, Suppl. 3, 2002: 5-184.
3. Plasschaert A. JM, Holbrook WP, Delap E, Martinez C, Walmsley AD. Profile and competences for the European dentist. Eur J Dent Ed 2005: 98–107
4. Plasschaert AJM, Lindh C, McLoughlin J, Manogue M, Murtomaa H, Nattestad A, Sanz M. Curriculum structure and European credit transfer system for European dental schools, Part I. Eur J Dent Educ 2006: 10: 123-130. Part 2. Eur J Dent Educ 2007: 11: 125-136.
5. Jones ML, Hobson RS, Plasschaert AJM et al. Quality assurance and benchmarking: An approach for European dental Schools. Eur J Dent Educ 2007: 11: 137-143
6. HE Europe Unit: The Bologna Process
http://www.europeunit.ac.uk/bologna_process/index.cfm
7. HE Europe Unit: Guide to the Bologna Process. Edition 2.
[http://www.europeunit.ac.uk/resources/Guide%20to%20the%20Bologna%20Proc
ess%20-%20Edition%202.pdf](http://www.europeunit.ac.uk/resources/Guide%20to%20the%20Bologna%20Process%20-%20Edition%202.pdf)

8. The Bologna Process: The implications for medicine and dentistry

<http://www.europeunit.ac.uk/resources/Full%20seminar%20report.doc>

Keynote Address: Dental education: An international perspective

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Background

The Global Congress on Dental Education (1) held in Dublin Castle in September 2007 was organised under the auspices of the International Federation of Dental Educators and Associations (IFDEA) and the EU DentEd Thematic Network Project. Sixty-six countries were represented by 330 invited leaders in dental education. This was the third in a series of such meetings (2,3). Participants were divided into 14 working groups which prepared draft reports in advance of the Congress. Four keynote speakers set a context in respect of poverty-related global disease, macroeconomics, evidence-based care, inequalities and recent advances in biomedical sciences, which will impact on dentistry and dental education. This paper is based on the core issues that were raised. The full details are available on www.ifdea.org (4) and are summarised in a special supplement to the European Journal of Dental Education (5).

Poverty and inequality

The enormity of poverty-related global disease was presented by Chancellor Mary Robinson, former UN Commissioner and a past President of Ireland. She highlighted the fact that 210,000 children under five years of age die each week due to poverty; the equivalent of a weekly tsunami that continues virtually unnoticed. The address focussed on inequalities in access to healthcare and education (6).

Jeffrey Sachs followed with a series of distressing examples of the human suffering consequent to poverty, deprivation and inequality (7). The facts of poverty-related diseases are carried on the IFDEA web site (4). Sachs concentrated on the poorest one billion who do not have access to safe water and live on a nominal US\$1 per day – money that they never actually handle. Sachs stressed the need for basic interventions such as insecticide soaked mosquito nets to prevent malaria; one of the greatest threats to life in sub-Sahara Africa. Simple improvements in water irrigation can help address one of the major causes of mortality in low income regions - contaminated water. He asked the developed world to address extreme poverty, which could be eliminated with a yearly investment of \$250 billion (8). This equates to just 1% of the total income of the developed world, or half of the annual amount spent by the United States on military operations and arms.

The report of Working Group 6 (1) describes inequalities in access to oral healthcare and the plight of special needs patients in developed economies; in many respects those patients most in need of care (4,5). Oral health is an integral part of general health. It is, however, only one part. Half the global population lives without sanitary facilities, and the vast majority without access to the most basic forms of emergency dental care. There is a chasm between the privileged and less privileged in the planet we share, and it is generally ignored, even in the health caring professions. Working Group 6 emphasised the importance of prioritised care for those most in need in all societies. On a global basis, oral healthcare must be integrated into the “primary health care approach”.

A specific example is that of India where there are vast regional differences for its population of around one billion people. More than 40% of the population comprises children who are generally deprived of primary healthcare, given deficiencies in the healthcare infrastructure. The challenges in delivery healthcare in such a diverse and complex society are difficult to comprehend, in particular, given the significant economic developments which are taking place in many regions of the country. Furthermore, low income countries continue to lose highly trained healthcare personnel to developed countries. Zambia lost 550 of 600 doctors trained in the last four years. Malawi, where 930,000 people have HIV/AIDS, has lost 85% of its doctors. There are moral implications in the loss of much-needed human resources from low income countries. Superficial explanations can hide serious misuse of educational and healthcare systems.

Evidence-based care and education

Professor Sir Ian Chalmers emphasized the importance of utilizing available resources to best effect, in particular, in low income regions. He stressed the responsibility of educators to help distinguish reliable evidence about the effects of healthcare. He said that professional good intentions are not enough to promote the right to effective health systems. He drew attention to the seriously polarised views on water fluoridation and the scientifically unsubstantiated positions taken in this ongoing debate. He advocated that systematic reviews of research evidence should inform decisions about healthcare and research. Important continuing uncertainties revealed in systematic reviews should be addressed in further research, as an integral element of responsible professional practice.

Working Group 5 provided an elegant review of evidence-based oral healthcare and dental education (1). The Group described evidence-based oral healthcare in three domains:

- patient's biology, preferences, values and expectations
- clinician's expertise and experience to recognise their patients' needs
- the use of best available evidence.

The Group advocated a curriculum that is patient-centered, learner-centered, active and interactive, modeled to develop expert clinicians, that exploits clinical setting and circumstances, and is well-prepared, multistaged and well-structured.

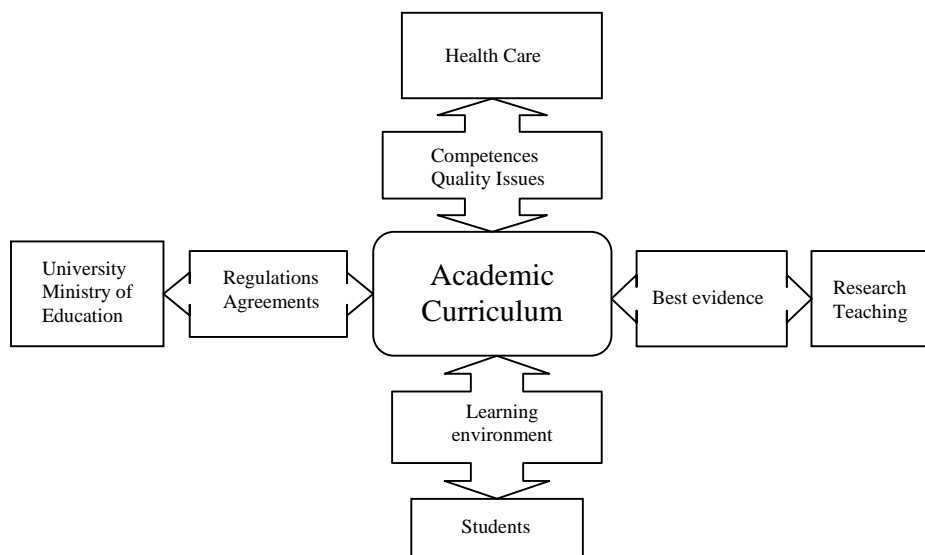
Biomolecular developments

Dr. David Wong explained the significance of the biomolecular sciences on dental education and practice. Working Group 4 expanded the subject in their report (1). Developments in genomics, transcriptomics, proteomics, metabolomics, nanotechnology and bioinformatics have the potential to transform medical and dental practice and students need to be prepared to adapt to such change. Wong described new possibilities in salivary diagnostics with the ability to identify biomarkers of serious diseases, including diabetes, oral and ovarian cancers as well as other serious systemic conditions. Such possibilities open up new responsibilities for both medical and dental practitioners. If dentistry is to play a role in the application of new discoveries, the curriculum must accommodate these sciences in a constructive manner, yet avoid becoming cluttered with unhelpful detail. Emphasis must be placed on continuing education and access to reliable information. The Working Group advised that meaningful research developments now require multinational collaboration to address the complex challenges and opportunities created by the sequencing of the human genome.

New developments in science and education can now be disseminated much more effectively through advances in information and communications technologies. One working group speculated on future advances and reviewed what is already available as a consequence of miniaturization, enhancing the quality and efficiency of dental education, knowledge retrieval and management of learning, whilst ensuring that all such developments have a sound evidence-base from both an educational and health promotion perspective.

Curriculum and quality improvement

The process of curriculum reform and development were expertly articulated by Working Group 12 (1). This process is distilled in Fig. 3.



The report of this Working Group will be especially helpful for those engaged in curricular reform and innovation. It identifies the steps to follow in gaining consensus for the need to change and the process, while sharing ownership of the new curriculum. The Group advised that “you should teach what you assess and assess what you want to train for”. Another complementary working group on quality assurance, benchmarking and assessment recommended international convergence towards mutual recognition of diplomas in order to help free movement of professional on a global basis. They advised

that the DentEd/ADEE profile of the European dentist (10) offers a useful basis for adoption in all continents; a view echoed by many other groups.

Working Groups 1 and 2 reported on the profile of the dentist and the oral healthcare team in developing economies respectively. Even in the most developed economies, where there are increasing demands for more sophisticated forms of restorative care and cosmetic dentistry, there are significant unmet needs in basic dental care in the more disadvantaged sections of society. In developing regions, national oral healthcare plans were advocated, based on the traditional oral healthcare team, but modified according to regional needs and resources. Both groups also commended the ADEE/DentEd profile of the dentist as a basis for international convergence.

One of the most informative reports was that of the student group. They demonstrated considerable knowledge and understanding of the need for change in their education and the challenges they will face as dentists. They asked for more formative and self-assessment, use of reflective portfolios, more literacy in information and communications technology, earlier clinical exposure, implementation of qualitative criteria in clinical education, collaborative learning, community placements, international exchanges and more exposure to issues of global health and inequality. Students stressed the importance of constructive assessment methods; otherwise students will be encouraged to wilfully short-circuit unhelpful examination barriers to progression.

Governance, management staffing and sustainability

The report on governance and management (1), in the context of a rapidly changing third level education environment, should be required reading for all with aspirations to lead in dentistry. This report offers those aspiring to leadership in dental education an informative and practical set of guidelines. It suggests how best to achieve sustainability within the university and community healthcare system. Increasingly deans and heads of dental schools have to engage in leadership and governance issues, motivating and developing staff and faculty in teaching, overseeing service and research, whilst ensuring the school satisfies key performance indicators set by funding authorities. The new environment demands more accountability, effectiveness and efficiency. As part of this new world order, another group reported on the importance of recruiting and retaining high calibre members of faculty whose academic pursuits should be rewarded in a balanced manner, whether that be in education, clinical care or supervision, research or administrative tasks. There was a plea to appoint staff who would engage and share the visions of the school and university throughout a lifetime of academic development. The report advises that staff and faculty members should contribute to strategic planning and development at all levels. Intellect was identified as the fundamental resource of a university school or faculty, both in staff and students. Boyer's concepts of scholarship (11) were emphasised in several of the reports as the most equitable basis for staff promotion, as well as fulfilling the schools' missions.

The Next Phase

There were over 70 recommendations from the 14 Working Groups which should constitute priorities for IFDEA and its new Global Network in Dental Education. The industry-based group offered more recommendations than any other. These included more emphasis being placed on the importance of partnership between those in industry, in particular their researchers, and those in dental academics. Both sectors shared a common goal of improving the oral health of the global community through better education. The potential for collaboration went far beyond the traditional concepts of corporates financing various activities. Both sectors faced similar challenges and values. The report from the industry sector (1) includes an informative insight on the source of corporate funding of dental school activities. The concept of creating a global faculty using the IFDEA web site www.ifdea.org was proposed for further consideration.

The Congress culminated in the launch of the IFDEA Global Network on Dental Education www.ifdea.org by the President of Ireland (12). She complimented the aspirations of IFDEA and its mission - to contribute to improving global health by improving oral health on a global basis by sharing experience, knowledge and resources. IFDEA will serve as an axis of information, best practices, exchange programmes, news and details of professional development for the many regional dental education associations, academic dental institutions and individual dental educators worldwide. It will disseminate relevant and current information to dental educators on a global basis. IFDEA will provide assistance in helping dental educators to implement recent developments in educational methodologies, research, biomedical sciences, biotechnology, information technology, and clinical dentistry. It will promote literacy on issues related to global health and disease and the inequalities in access to care and

education (13). The potential of a global community of dental educators is illustrated in Fig. 4.

Fig. 4. Regions of origin of delegates engaged in IFDEA Global Network

In conclusion, the fundamental role of the Council of Heads and Deans of Dental Schools in the United Kingdom together with the General Dental Council in international developments should not be underestimated. Many of the developments which have evolved in the UK have been central to EU developments, ADEE and DentEd, notably, in providing the basis for the profile of the international dentist. It is therefore important to ensure that flexibility is retained. In such a leadership position the CHDDS and the GDC have a responsibility to look beyond national priorities and accommodate international perspectives in elevating standards of dental education and oral health gain.

References

1. Manogue M, Shanley D. (Eds). Global Congress on Dental Education. Supplement to Eur J Dent Educ 2008: 12: Suppl 1

2. Shanley D. et al. Dental Education in Europe. Towards Convergence. The DentEd Thematic Network Project Report. Budapest: KFT Publishers, 2001, ISBN 963-00-5305-5.
3. Shanley D. (Guest Ed) DentEd Evolves Global Congress in Dental Education. Eur J Dent Educ 2002: 6 Suppl 3
4. <http://www.ifdea.org/gkc/Pages/GlobalCongressonDentalEducationIII.aspx>
(accessed October 31st 2007)
5. http://www.ifdea.org/gkc/Global%20Congress%20Reports/22.Chapter_4.2_Summary-and-Challenges_Global_Congress_2007.pdf (accessed October 31st 2007)
6. Realizing Rights: the ethical globalization initiative www.realizingrights.org
Accessed September 2007
7. Sachs J. (2003). The End of Poverty: Economic possibilities for our time. Penguin Books, New York, 2005
8. UN Millennium Development Goals www.un.org/millenniumgoals/ Accessed July 2007
9. Luoto L, Lappalainen M. Opetussuunnitelmaprosessit yliopistoissa. Korkeakoulujen arvointineuvoston julkaisu (Abstract in English) 10: 2006.
10. Plasschaert J M, Holbrook W P, Delap E, Martinez C, Walmsley A D. Profile and competences for the European dentist. Eur J Dent Educ 2005: 9: 98–107
11. Boyer EL. Scholarship reconsidered: priorities of the professoriate. Carnegie Foundation for the Advancement of Teaching, Princetown, NJ, 1990.
12. <http://www.president.ie/index.php?section=5&speech=394&lang=eng> (accessed October 31st 2007)

13. <http://www.ifdea.org/ghr/Pages/default.aspx> (accessed October 31st. 2007)

Keynote Address: Future Trends in Learning and Teaching in the Health Professions

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Predicting future trends in any field, for any substantial period of time, is a precarious enterprise. To foresee what will happen in the field of learning and teaching in the health professions, it is of help to observe current developments in healthcare and education, and to draw conclusions as to how these developments may affect future developments in the domain of their intersection. Threats as well as opportunities are apparent.

In healthcare, at least five domains show important developments that are likely to affect education in the future: growth of knowledge and technologies, cost containment and its far reaching effects on the practice of care, the nature of doctor-patient relationships, the number, type, origin and demands of healthcare workers, and the nature and global distribution of healthcare. Developments on the education side include learning theory, principles and technologies, the increasing emphasis on outcome of education, the

changing student population and national and international policies in healthcare education.

To some extent, all these factors are connected, and their myriad possible interactions indicate how complex predictions of future healthcare education trends may be. Within the limitations of this resume, only a few elements can be touched upon.

Clearly, students must be prepared to work in increasingly time- and cost-constrained clinical circumstances. As demands of patients and technological possibilities rise, the cost of healthcare increases. Frictions between the demands of patients and society, and what they are willing or able to pay, place huge pressures on the efficiency of healthcare. This will affect healthcare education in two ways, which are increasingly apparent (1).

The demands of healthcare make it increasingly difficult for doctors to take time to teach. And the teaching that does take place is expensive, as teaching time must compete with time for high income earning care. In some countries this leads to a vicious spiral. Extremely high tuition fees for healthcare education may burden graduates with enormous debts that force them to charge high fees for whatever professional services they deliver, be it patient care or teaching future generations. Methods of learning in the healthcare environment must therefore adapt to this situation, with efficient, effective care blending with education in a way that benefits all parties.

The other effect is that the provision of care may differ from what is taught in the class room. The importance of adequate communication with patients, thorough physical examination, reflective practice and interprofessional teamwork are all stressed during education, but increasingly diverge from what role models are able to demonstrate in practice. This leads to a “*do-as-I-say-not-as-I-do*” approach that psychologists believe to be ineffective.

Recent world-wide emphasis on professionalism, communication and collaboration skills in training is therefore justified in an attempt to counter these developments. But as patients demand high quality of care that satisfies modern standards, provided by caring, listening and thoroughly trained healthcare workers that take time for patients, a tension between desires and financial possibilities will result. This tension also affects education. Specifically, in countries in which healthcare is a profit enterprise and insurance companies must optimise their benefits, hard times lie ahead for education.

On the educational side, new adult learning theories emerge and affect curricula, and a changing student population asks for adapted education. The changing nature of learning and teaching may be illustrated by the recent emphasis on competency outcomes. A modern approach to defining the competencies that might be necessary for medicine(2), but are equally applicable to dentistry, is illustrated in Fig. 5.

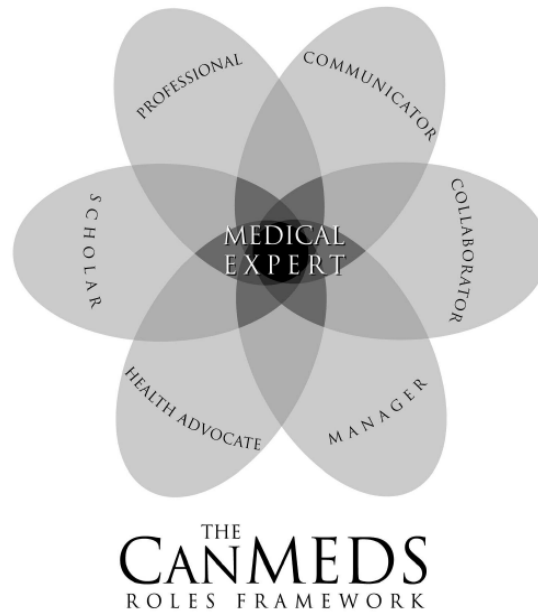


Fig 5: The CanMEDS 2000 project (2) – the skills/competencies that might be required of a modern ‘medical expert’.

As we want graduates that can be entrusted with critical patient care, theorists increasingly analyse what is necessary in education to maximise these competencies. Contextualisation of education may be used as a term to describe several movements in healthcare education. The general idea is that efficient education benefits from the embedding of learning in a logical and relevant context, related to circumstances in which the knowledge and skills will be used in the future (3). Problem-based learning, with problems to force students to integrate information concurrently from several disciplines, is one of these movements. Early clinical experience and vertical integration of basic science with clinical teaching also serve this contextualisation (4). In addition, the rapid emergence of simulation techniques, such as technological simulators, virtual reality methods and standardised patients or actors prepare students for their clinical duties in a

contextualised educational environment (5). Contextualisation has roots in education psychology. Cognitive and social constructivism are terminologies used to signify how learners construct their own idiosyncratic knowledge in interaction with their context (6). Another element of the competency-based education is the development of sophisticated assessment methods directed toward a valid appraisal of the actual performance in practice, both during the training period and in subsequent clinical practice (7).

Movements in healthcare and in education seem to coincide, working towards the aim of efficient healthcare provision and education in a clinical environment. A reduced emphasis on rote learning and independent in-depth study based on text books runs the risk of superficiality. Universities, however, strive to preserve their objective to educate for leadership and intellectuality. Arts and humanities, which have recently received renewed attention in medical courses (8), and the Bologna Declaration, intended to harmonize higher education in the European Union, with emphasis on generic academic objectives, are examples of recent movement (9,10). The international dimension increases the awareness of the accelerating global migration of healthcare workers, with effects on equality in healthcare delivery around the world (11).

The question as to whether learning and teaching in the health professions will in the future be squeezed between conflicting demands of healthcare practice and education, or whether they will prosper and, as a consequence, advance the quality of healthcare delivery, will depend on the long term vision of leaders in the field, both in society as a whole and in institutions for healthcare education in particular.

References

1. Ludmerer KM. Time to Heal – American Medical Education from the turn of the Century to the Era of Managed Care. Oxford University Press, Inc., 1999
2. Frank JR, Jabbour M, Tugwell P. Skills for the new millennium: report of the societal needs working group, CanMEDS 2000 Project. *Annals Royal College of Physicians and Surgeons of Canada* 1996; 29: 206-216
3. Kaufmann DM, Mann KV. Teaching and learning in medical education: how theory can inform practice. Assoc for the Study of Med Ed 2007: ISBN 978-0-904473-44-5
4. Dornan T. Experience based learning. Learning clinical medicine in workplaces. Doctoral dissertation. Maastricht University, Maastricht, 2006.
5. Issenberg SB, McGaghie WC, Petrusa ER, Gordon DL and Scalese R J (2005) Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Medical Teacher* 2005; 27: 10-28
6. Mayer RE. Designing instruction for constructivist learning. In: Reigeluth CM. Instructional-design theories and models. A new paradigm of instructional theory – volume II. Lawrence Erlbaum Associates. Mahwah, New Jersey, 1999.
7. Epstein RL. (2007). Assessment in medical education. *NEJM* 2007; 356: 387-96
8. Gordon JJ, Evans HM. Learning medicine from the humanities. Assoc for the Study of Med Ed, Edinburgh, 2007. ISBN 978-0-904473-46-9
9. Plasschaert A, McLoughlin J, Keogh J (eds). European convergence in dental education. DentEd III publication, 2007

10. World Federation for Medical Education. Basic Medical Education - WFME Global Standards for Quality Improvement. <http://www2.sund.ku.dk/wfme/>
11. Burch VS. Medical Education in South Africa – assessment practices in a developing country. Doctoral dissertation Erasmus University, Rotterdam, 2007

Concluding Remarks

Following a wide ranging, series of questions and answers, Professor Jones concluded the session by summarising the ‘take-home’ messages from Session 2.

Firstly, the importance of keeping UK Schools connected to events in Europe. The ADEE, now it has taken over the various aspects of the DentEd Thematic Network projects and with its greatly increased representation from European Dental Schools (now at 85%), is going to have even an increased influence on developments in dental education in the EU, EHEA and Europe as a whole. It has been a great power for good over the last decade in the equalising of standards in dental education, the sharing of good practice and the support of dental schools in new member and other states with aspirations of entering the EU. The ADEE intends to work to connect views in Europe to achieve a greater and more powerful dental lobby when it comes to key issues in dental education. UK dental academics need to become all the more aware of the work of the ADEE and contribute to the ongoing developing guidelines in areas, including competencies, ECTS, QA and benchmarking. It is intended that the relevant documents will continue to be amended and their supporting task forces will continue their work. This is linked to the implementation of the key principles of the Bologna Declaration. Medicine might view aspects of the Bologna Declaration as a threat to the current style of education, in particular, in the UK. In contrast, the dental profession has seen the Bologna Declaration as a positive driver for change, improvement and the equalisation of dental education standards across Europe. To date dentistry in the UK has responded very

positively to all aspects of the Bologna Declaration in partnership with colleagues in Europe, notably in the ADEE. It is important that this continues.

In many ways, it appears that dental education is better organised and connected across Europe than medical education. Much of this must be attributed to the leadership over the last two decades of Derry Shanley. His vision to achieve a global network under the auspices of IFDEA should be supported. He shared, in his presentation, the many positive outcomes from the recent global meeting in Dublin, which was the largest and most representative of its kind. The papers from the working groups are required reading for anyone with an interest in future developments in dental education. Many of the papers include globally agreed guidelines in a number of key areas, of which quality assurance is but one example. One very significant theme from the Global Congress is the need for dental educators within the developed countries to raise their sights and to look to partnerships with their colleagues within the developing world. Dentistry has an important part to play in the work needed to defeat poverty and inequality in the global health setting, and education is where to start. As well as being work that dental educators should be engaged in as 'good international citizens', it is also work that is clearly in line with national UK policy following the 'Crisp Report' (www.dfid.gov.uk/pubs/files/ghp.pdf). Furthermore, the Millennium Development Goals of the G8 were targeted at health education and the education of the health professions, in particular, in Sub-Saharan countries.

Many of the challenges facing dental education are common to all the health professions. It was particularly helpful to get a view, rooted in European requirements from one of the leading international institutes in medical education. It was also helpful having a person such as Olle ten Cate, with his knowledge of dental education in The Netherlands, to draw important comparisons between medicine and dentistry where there are undoubtedly going to be shared solutions. He drew a different picture to the traditional one of key competencies for a health professional, in particular, a 'medical expert'. He emphasised the need to join up all aspects of professional education and training to give a properly delivered and assessed programme of lifelong learning, but in an affordable way, using modern techniques and technology. In this last presentation, common themes of the session - the need to realise the global nature of challenges in health, the impact of easier travel and the inequalities of resource (of which education was an important part) were emphasized. Modern models of health professional education and assessment were presented.

The overall conclusion was to view future challenges and solutions in dental education not just in a UK context, but within the European and global environment; to do otherwise might be construed as folly.

Possible Action Lines

1. Encourage full engagement of all concerned in UK dental education with European and global partners. In particular, the ADEE and IFDEA Global Network provide the mechanisms for this engagement.
2. Strong support should be given to the developing role of the ADEE and the developing FEHDD. One clear method of doing this might be for UK schools to invite ADEE visitations.
3. Maintain the very positive stance taken by all stakeholders in dental education to the implementation of the Bologna Declaration principles by 2010. This requires support for the agreed CHDDS, GDC and government view that this is achievable and desirable within the European context.
4. Leading UK opinion formers in dental education should become involved in the work of the SIGs within the ADEE. It is in these areas that future guidelines and ADEE policy are likely to be forged.
5. There is a need for key stakeholders in dental education to understand the global context and support the concept of partnership arrangements between the developed and developing world as part of the national and international strategy to defeat poverty and inequality.

Session 3: Evolving challenges in dental education:

Professor Cynthia Pine, University of Liverpool, arranged and coordinated this session.

Workshops were conducted to address key issues in dental education in the UK with five themes introduced by facilitators with a specific expertise in the topics:

- **Student welfare and conduct**

Dr Deborah White, University of Birmingham

- **Recruitment and retention of academic staff**

Professor John Stamm, University of North Carolina

- **Quality assurance in the extended clinical environment**

Professor Callum Youngson, University of Liverpool

- **New technologies to enhance learning**

Professor Patricia Reynolds, King's College London

- **The effects of skill mix on undergraduate education**

Professor Margaret Kellett, University of Leeds

The facilitators made brief presentations providing context and a framework for discussions by participants in the workshops. The resulting discussions were summarised by rapporteurs from each group at a plenary session of all delegates. The following synopses present the combined outputs for each topic.

Student welfare and conduct

The principle aim of this workshop was to explore issues which might impact on the provision of student welfare.

Change in the profile of dental students

The profile of undergraduates has changed markedly in UK universities. While many of these changes are reflected in those entering dental courses, some changes have been progressive. In the 1960s, less than one in five dental students were women; in contrast, in the 2000s, at least 50% of students are women and in some Dental Schools, this is around 60%. A similar change in gender profile has been observed in medicine, but with higher percentages of women across all institutions .

Unlike other courses within universities in which numbers of overseas students have increased, this has not occurred in dentistry. Since the outset of undergraduate dental and medical education, the National Health Service has contributed the major part of funding for these programmes and a quota of overseas students (5% of total) is applied. Nevertheless, the ethnic profile of undergraduates has changed. Alongside the increased numbers of women, in many schools significant numbers of students, (>30%) are British Asian whose families originated from the Indian subcontinent. This has led to a change in the cultural diversity of the dental student body. This has raised some organisational matters that can impact on delivering the curriculum. For example, a significant minority of students observe the Muslim faith. This involves some schools in issues around conducting exams and clinics during Ramadan, the exposure of forearms in the interests

of effective infection control, and ensuring access to prayer rooms. Although specific examples were raised relating to Muslim students, it was recognised that many more substantial curriculum organisational issues; for example, outreach teaching generated problems that were not exclusive to any particular faith group. Difficulties reported for students newly attending outreach locations varied depending on the distance from their main academic base. It was recognised that some students are anxious in the new and busy environments of outreach practice. Initial concerns of some students included a need to achieve greater experience in a short time. Students at outreach locations lacked their usual home or support networks. It was considered that easy access to tutors who could help with problems and support students throughout their degree course remedied potential problems effectively.

Levels of student debt

The introduction of tuition fees has led to increasing levels of student indebtedness. This has affected students on all university courses but has had a particular impact on dental students who follow a five-year rather than a three-year undergraduate programme. In addition, dental students are engaged in full-time study from second year, with attendance on clinics and little opportunity for part-time working to help limit debt. Changes in gender and ethnic mix have been accompanied in several schools by changes in the average age students begin their undergraduate programme. While, the majority of students still enter from school at 18-19 years of age, an increasing number of students

are mature, entering either into one of the three or four-year graduate-entry programmes, or onto the 5-year programmes as mature students.

In response to widening access initiatives in various universities, some students enter following an access course; however, these numbers are small both in medicine and dentistry.

Welfare issues

The provision of appropriate student welfare support needs to recognise the changing profile of the student body and the various challenges current students may face in completing a dental degree programme. Welfare issues may range from coping with student debt, death or divorce of parents; managing part-time work and study, to aspects faced by mature students who may be juggling the commitment of their studies with family or carer commitments. Informal support within the student body is often the first port of call for students in difficulty. Ensuring personal tutors have appropriate training to recognise the diverse range of cultural and family issues is an institutional responsibility. Some schools have noted particular differences across sects and religious groups, confounding relationship issues and highlighting the importance of offering appropriate counselling. Awareness of cultural attitudes to, for example, secrecy, and the need to sensitively work around this difficulty before insurmountable problems arise, is an increasingly important aspect of student welfare. Staff training may need to be differently tailored for academic staff dealing with students in professional healthcare programmes.

This consideration is reflected in the observation that several institutions have organised separate student counselling services, catering for both medical and dental students, in recognition of the different challenges they face in their clinical degree programmes. In summary, awareness of potential welfare problems, tolerance and understanding is needed, together, wherever possible, with specific support.

Notwithstanding the importance of welfare issues in general, it is important to ensure that mitigation rights are understood by students. Procedures for handling students who cite mitigating circumstances in relation to examination performance are in place across all institutions, albeit with some minor variations. Students' expectations from support procedures vary, with some students wanting condoned passes if mitigation is shown and special provision for students in some minority groups who refuse to speak of personal problems unless absolutely necessary. Understanding mitigation and the danger of problems overshadowing lack of ability were discussed at length. Delegates considered that it is important to encourage students to be responsible for their own actions - a key aspect of developing professionalism.

Conduct and Fitness to Practise

Delegates had experienced a range of challenges in ensuring that students are 'fit to practise' on completion of their dental degree programme. Indeed, measuring and monitoring professionalism occupied much of the time in discussion. A universal definition of professionalism proved elusive to the group. However, a core minimum

level of behaviour expected of a dental student was agreed. In exploring this issue, concerns were expressed that some students are not able to understand their responsibilities in respect of their professional behaviour, colleagues or patients. It was noted that this understanding had to be taught from first principles, using very basic language.

It was recognised, with considerable concern, by some delegates that there is a culture of drug abuse, including Class A drugs, as well as excessive alcohol consumption amongst a minority of students. In reality, this is likely to have been a feature of various student bodies, dating back many years; however, identifying the problem was thought to be challenging and subsequent advice and support was deemed an area requiring professional referral and advice. Several delegates were critical of the General Dental Council over lack of guidance in relation to appropriate actions in respect of dental students in difficulties; for example, those who had received police cautions for drug possession or driving while over the legal limit for alcohol. This lack of guidance encouraged some delegates to support some form of student registration to provide a framework for addressing student fitness to practice issues. Although, schools have the ability to refer students to fitness to practice panels within their universities, support from universities varied between schools. In addition, there was not necessarily concordance between what a university would regard as sufficient cause to take action in response to students' conduct, as compared to standards set by a regulator. For example, a requirement that the Head of School should have the right to suspend a clinical student from studies, at least on a temporary basis, was felt to be necessary. However, this option

did not appear to be available in every institution. In summary, a universal fitness to practice code was called for by delegates.

Recruitment and retention of academic staff

The aim of this workshop was to consider key aspects of the challenges involved in the recruitment and retention of academic staff.

There is a dual purpose in educating tomorrow's dental team. One is to ensure that the public may continue to be served by an adequately sized, configured, and accessible cadre of suitably trained dental healthcare professionals. The second is to begin to prepare future academics needed by universities to ensure that ever higher standards will be applied to dental education, as well as to the research enterprise that drives dentistry forward. Simply preparing graduates for the possibility of an academic mission may not, however, be enough. It appears increasingly important to devote more attention to the development and retention of future dental academics. Human capital is central to any organization. The challenge of recruiting and retaining future academics is nearly universal: it affects virtually all dental schools, and is a concern for much of higher education. The approaches to a solution rely significantly on institution specific initiatives, at both faculty and institutional level.

Developing a strategy

It is recognised that recruitment of dental academics is a problem in many countries. Indeed, recruitment of appropriate people into academic appointments is a problem in most academic disciplines. As the UK has a relatively small number of dental schools, recruiting between schools is not a sustainable strategy. The key to addressing the issue lies in expanding the pool of applicants on which all schools can draw. It was agreed that part of a school's strategy should be a well-developed recruitment plan, built on a shared vision. This may vary across schools and at different times. For example, it may involve reviewing vacancies as they arise, programmes of expansion, or changing the character of the school by strategic, focused recruitment of individuals new to academia. The balance between full-time and part-time appointments, expertise and areas of development need to be part of the strategic plan.

There are three broad strategies to consider. These are to develop the future academic base internally – “grow your own”, recruit from overseas, or thirdly, extend the type of people that could be considered for a career in dental schools.

Recruitment

The challenges of recruitment include ever increasing expectations of individuals. Over time, schools have tended to seek “triple-threat staff” – those are expected to excel in research, teaching and clinical service. However, as the complexities of science have grown and the need to develop learning and teaching expertise has been highlighted, let alone new requirements of specialised practice, it has become unrealistic to expect an

individual to maintain excellence in all areas. Nevertheless, it is appropriate as part of a human resource strategy to set higher standards; for example, the percentage of staff with a PhD. The vocabulary of the new biology makes identification of promising talent a challenge for deans, department chairs and search committees. It is essential to guard against settling for what we understand, rather than for the staff that the future really requires. Recruitment, critical as it is, receives variable attention and effort by the leadership. In that context, it should be a shared responsibility of senior management teams.

Student-focused recruiting strategy

This is emerging as one of the most compelling strategies. If it were applied both nationally and internationally, it would significantly enlarge the pool of future academics. Applied locally, it allows Schools to take a “grow your own approach”. It does require an active postgraduate programme and funding for PhDs and clinical specialisation. In the UK the “Walport” programme is an example of an initiative that will make a contribution to developing future dental academics; however, given limited numbers, this can make only a relatively small contribution, but it does provide a model for other sources of at least partial funding. Nevertheless, a key issue has been finding people to apply for these programmes. This may be explained in part by the significant differences in salary that exist between junior academics and those in practice. The barriers to good recruitment are not, however, solely financial, as evidenced by the under presentation of, in particular, females in notably senior academic positions.

Internationally, institutions have recognized that interesting current and future students in academia is increasingly difficult. This may reflect a lack of understanding of academic careers by recent graduates and the need to do more in dental schools in terms of careers advice. However, students tend to question the “effort/reward ratio” of a career in academia.

Recruitment from overseas

All UK higher education institutions have a significant minority of staff who are from outside the UK. Undoubtedly, targeted recruitment from overseas can be successful; for example, from other countries where dental schools may be reducing numbers of academics, closing, or where conditions are no longer attractive for research or development of teaching. There are, however, a number of procedural difficulties in the practicalities of overseas recruitment. These included navigating visa restrictions, completing registration and, where necessary, specialist listing procedures in a timely manner.

Expanding the applicant pool

In considering expanding the type of people considered for careers in dental schools, it was recognised that universities have developed two principal types of post: clinical academic and clinical teacher. In the UK, with most dental schools being part of a

research-intensive Russell Group university, a clinical academic is required to actively pursue research, as well as excellence in clinical teaching and service provision. The increasing workload required of people attempting to excel in all three areas has, however, led to the development of the alternative pathway, that of full-time clinical teacher. These posts tend not to have an explicit research component, with the main duty being developing and delivering excellent clinical teaching.

Retention

The retention of academic staff is defined, in significant part, by the quality and precision of the initial employment contract. Academic environment and institutional culture are critical retention factors. Opportunities for personnel development should be explicit and reviewed regularly. Mentoring new staff through probationary periods can provide focused support. Periodic evaluation of progress can identify barriers before they become an issue.

Deans need to be prepared for counter offers and ideally pre-empt them by ensuring able, strongly performing staff are brought forward for promotion in a timely fashion. Deans need to work with the central university administration to ensure requirements for promotion recognise the additional burdens often faced by clinical academic staff. Full-time clinical teacher posts are relatively new. For these posts to remain attractive, with opportunity to contribute to academic excellence, incumbents should help develop scholarship and, through such activity, have opportunity for career progression.

To reshape the academic profile of a dental school, it is often more successful to take a strategic, co-ordinated, incrementalist approach rather than wholesale change. Successful teams are built on complementing strengths rather than a series of individuals pursuing separate agendas in teaching, research or clinical practice.

Quality assurance in the extended clinical environment:

The aims of this workshop were to consider how the reference standards derived for traditional dental school curricula are monitored and to discuss whether adaptation of these standards is required to ensure that standards are met in extended educational clinical environments.

Outreach teaching has long been an integral part of dental education. Traditionally, clinical teaching outside of dental schools and hospitals was confined to attachments in secondary medical care. In the 1970s, several schools introduced attachments in community settings, principally in school dental service clinics, providing experience in the care of children. With the development of the Community Dental Service in the 1980s, attachments provided experience in the care of special needs children and adults. Later, attachments to salaried services, providing care in dental access centres gave a different dimension to clinical attachments, providing students with experience of what is largely an emergency service for adult patients. In the late 1990s, with the introduction of personal dental service contracts, attachments in which students could provide dental

treatment in general dental practice became possible. The establishment of the graduate entry Peninsula Dental School, without a dental hospital, may have rendered the term “outreach” a misnomer. The varying facilities provided within curricula may, in future, be better described by the term “dispersed clinical environment”.

A key issue to consider in dispersed clinical environment teaching is the maintenance of consistency in measuring the acquisition of clinical competence when the teachers evaluating progression are geographically dispersed. In discussing this issue, comparisons were made between guidance given by the General Dental Council in the First Five Years and by the General Medical Council in Tomorrow’s Doctors. The First Five Years is a long, detailed document that is prescriptive, with a focus on process. In contrast, Tomorrow’s Doctors takes an outcomes or competencies approach, but leaves the listing of details and process to individual medical schools. This supports delivery in an extended clinical environment where inevitably, detailed delivery processes will vary.

The UK Quality Assurance Agency defines general principles in relation to workplace learning. It denotes that where placement learning is an intended part of a programme of study, institutions should ensure that their responsibilities for placement learning are clearly defined. The intended learning outcomes contribute to the overall aims of the programme, and any assessment of placement learning is part of a coherent assessment strategy. In order to provide a robust framework, the QAA notes that institutions should have in place policies and procedures to ensure that their responsibilities for placement learning are met and that learning opportunities during a placement are appropriate. As

part of these measures, institutions should be able to assure themselves that placement providers know what their responsibilities are during the period of placement learning. In addition, prior to placements, institutions should ensure that students are made aware of their responsibilities and rights. Institutions should ensure that students are provided with appropriate guidance and support in preparation for, during, and after their placements.

In relation to the acquisition of clinical competence and its assessment, there are two broad areas to consider - knowledge and skills. In practical terms, curriculum content needs to be shared, developed and disseminated with placement tutors. For those in clinical placements, there is a need to train the trainers, and then monitor the trainers in their delivery. It is straightforward to organise quality assurance procedures to ensure consistent standards in the assessment of knowledge acquisition and academic performance; for example, second marking of scripts, essays and projects. However, different considerations arise when it is a question of checking consistency in grading clinical work. There is a need to clearly describe the standard required. This may require the creation of a body of clinical examples, including models, slides, radiographs and cavity preparations around which to organise training, calibration and recalibration. Ideally, face-to-face discussions are needed with all placement providers, not least in the initial assessment of suitability of premises and facilities. There are good examples in existing schools of tutor training and maintenance of standards of assessment through virtual learning environments.

There are a number of significant benefits for students attending placements away from their principal clinical base, not least of which is broadening their perspectives. Evaluations of placements have shown that they are a consistent source of student satisfaction, for the vast majority of students. They provide an extended opportunity for close support dentistry, team-working, observation and development of leadership skills, let alone the acquisition and enhancement of clinical competence in a broad range of procedures. Critically, placements often provide exposure to a different patient base and a greater understanding of how clinical decision-making may need to be adjusted, according to the realities of how a service is organized - the business of dentistry, including people's ability and willingness to pay for care.

In summary, to support students' equality of opportunity on placements, it is important to discuss with the placement providers: patient selection, treatment staging, use of clinical facilities and feedback processes, and to ensure access to pastoral support - a particularly important issue for students at a distance from their usual base.

New Technologies to enhance learning

The aims of this workshop was to demystify the roles of technology in teaching and to discuss innovative solutions that aim to benefit dental education. Technological support to enhance learning opportunities has been a major growth over for the last 10 years. It has dramatically changed the educational environment. Keeping pace with changes in the field is an important part of ensuring optimal communication, both internal and

externally. How universities, and their dental schools present themselves to prospective students is an important part of recruitment at both undergraduate and postgraduate levels. For registered students, email communication is vital. Being able to access university electronic systems remotely is now taken as a matter of course by students and staff. All universities have internal electronic systems that create virtual learning environments for their students. The extent to which these are used in dentistry vary amongst schools and with the stage of the course. Common examples are sharing support material for lectures and tutorial groups, discussion boards and providing electronic expert enquiry sessions. Some schools have blogs in which staff and students can share news, both course-related and in respect of social events. Effective communication with alumni is important, as all universities look to enhance their involvement as part of growing their community of scholars, support for work placements and financial support for a range of initiatives.

Some years ago, schools invested in computer assisted learning (CAL) packages and many of these have been up-dated onto CD/DVD. However, this technology, in which information is fixed at a point in time, requires regular up-dating and is relatively expensive. In fact, these media which can be seen as intermediate hardware - video, CD and DVD are being surpassed by direct communication via the internet. This change is already manifest in the music industry with DVD sales reducing dramatically, and customers downloading directly to their personal MP3 players, selecting what they want, in their order and mix. This revolution is happening with television, with options opening up to interface with programme making. Universities' virtual learning environments

(VLE's) are also diversifying with the advent of multimedia lectures and webcasting. Video-conferencing and the use of Skype opens up possibilities for simultaneous communication across distant sites. This is already a reality for dental schools, with students at dispersed sites, or, in some cases, tutorials with students in different countries. Mobile technologies are part of everyday life with PDAs and smartphones, allowing access to the internet on the move. Some clinic patient record systems can communicate effectively across a number of environments, so that students' clinical experience at a range of sites can be collated and compared, subject to robust provision for patient data confidentiality. The potential of social networking sites has been recognised and many will be familiar with Facebook, Utube and Second Life. However, for the most part, these tend to be linked to students' social activities, although some academic links have been established in Second Life.

IVIDENT – the International Virtual Dental School, is funded by a grant from HEFCE – the Higher Education Funding Council of England, and the Department of Health in England. It is led by King's College London and brings several institutions together. It is based on new technology called a 'service orientated architecture' - a type of electronic super glue. The flexible learning platform (FLP) provides a blueprint that enables seamless integration with any other IT infrastructure, especially the VLE. SOA is being used increasingly to create "connected campuses" across the UK. The main benefits in delivering the dental curriculum in this way has been found to be the ability to generate globally distributable learning for hard pressed dental specialties, with limited numbers of highly trained academic staff, including oral radiology, pathology, human disease and

oral medicine. In the schools involved, it is considered that this approach ensures optimum utilisation of teachers and resources.

It is evident from the range of examples discussed at the workshop that new technologies have significant capabilities to provide students with a range of materials and learning opportunities. These can enhance the acquisition of knowledge and, when compared with didactic teaching, chairside clinical instruction and tutorials, provides blended learning through mixed media. It is well recognized that people learn in different ways and providing a range of opportunities and methods means students can tailor their learning to best suit their style. Clearly, technology is a tool and not an end in itself, and will always need face-to-face support. Nevertheless, it is critical that dental schools do stay up-to-date with their learning methods.

An issue often neglected is that the vast majority of students enter university are well versed in electronic communication methods, but the relevant skill level of staff who are teaching them can be very variable. At the time when the majority of senior staff were students themselves, video was still a distance away and the internet had not been invented. There is a small but significant minority of staff who remain uncomfortable with computers. To counter this, it is essential that staff development opportunities include computing skills. In addition, schools need to be mindful of opening up the same opportunities for part-time staff coming in from primary care.

Undoubtedly, for some time to come, students will be ahead of staff and their communication methods inherently different. This is an example of where schools can usefully involve students in developments and seek their involvement in designing new courses and making material fully accessible. Undoubtedly, there are also financial issues for schools to consider in ensuring connectivity - access to computer suites, and investment in full-time web support staff.

The effects of skill mix on dental education

The aim of this workshop was to consider the educational implications of the registration of dental care professionals (DCPs) and further developments in specialist lists in distinctive branches of dentistry.

There are several factors combining to make a step-change towards diversifying roles for oral healthcare providers, and dentists becoming team leaders in the delivery of primary dental care. These factors include the introduction of registration for all dental care professionals (DCPs), all registrants with the General Dental Council (GDC) working within their competencies, rather than to a prescriptive list of procedures, the increased number of DCPs being trained and entering the primary care workforce, and issued around the provision of, and access to primary dental care.

Expansion of the number of, in particular, dental therapists in training has occurred at the same time as a substantial increase in undergraduate dental student numbers. However,

the programmes of training for DCPs and dentists are commissioned differently in England and this has caused a number of problems in educational provision. While undergraduate dental student numbers are fixed and predictable, for the foreseeable future, the number of dental therapists in training is subject to local variation, with the possibility of funding-related perturbations. Such variation has introduced uncertainties into the dental education system, with knock on effects in respect of planning and development.

While there is agreement on the need for integrated training of members of the dental team, this is not always feasible. As a consequence, many undergraduate dental students have a limited understanding of the roles and capabilities of DCPs, let alone experience of working as a leader of a dental team. This should be addressed and curricula amended accordingly. In addition to joint teaching and learning of students, DCP tutors should have a much greater level of involvement in undergraduate dental degree programmes. The educational interaction amongst all those involved in training members of the dental team should be seamless. This would help to ensure equality and equal access to facilities and patients.

The ability of DCPs to go on to become dentists by means of a skills escalator is in reality limited. In this respect, dentistry would appear to have lagged behind medicine. Perhaps there are lessons to be learnt from interprofessional training and consideration of career pathways for professionals allied to medicine.

The requirement for DCPs to undertake continuing professional development (CPD) following registration will place new pressures on the dental educational system, both in dental schools and postgraduate deaneries.

Dentists with special interests and specialist training

There is a lack of common understanding in respect of the roles and competencies of dentists with special interests (DWSI) and practitioners recognised as specialists. Areas of concern span endodontics, orthodontics, implant dentistry, oral surgery, aspects of periodontology and conscious sedation. Specifically, it remains to be determined which levels of advanced knowledge and clinical skill most benefit the patient and offer enhanced protection of the public.

With changing needs and demands in the provision of oral healthcare, there may be merit in the undergraduate dental degree curriculum being of a core and specialist optional modules design, to encourage, amongst other benefits, further study and development in specialist aspects of clinical practice. Such an approach is well established in medicine, with most undergraduate medical degree programmes including special study modules (SSMs). The current, prescriptive approach of The First Five Years frustrates such developments, notably given the crowded nature of most undergraduate dental degree programme curricula.

Session 4: Admissions and professionalism

This concluding session of the meeting was chaired by Professor Robin Seymour, Newcastle University. The two keynote addresses, summarised below, were followed by a general question and answer session, prior to Professor Nairn Wilson, King's College London, summarising the outcomes of the meeting in his concluding remarks.

Keynote address: Emerging trends in admissions

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Introduction

In common with other professions, dentistry is facing a time of unprecedented change. The dental profession is required to meet the developing needs of the population. This challenge raises concerns about the appropriate make up of the dental workforce, how dentists work with other members of the dental team, the actual practice of dentistry, and the contractual arrangements of providing both a NHS run system and private services. Despite these pressures, dentistry continues to remain a popular career choice for many university applicants. The purpose of this keynote presentation was to summarise who

dental schools should recruit to best support the work of the future dental profession and, consequently, how to then select these applicants appropriately.

Background context

There has been a steady climb in both applications and acceptances onto undergraduate dental degree programmes in the UK from 2001, resulting in a total of 1,187 undergraduate dental students enrolling in 2005 (1). Most courses now accept more females than males and increased numbers of EU and overseas dental students (2). Dentistry attracts Asian students, but other ethnic and social groups are not equally represented compared with the general population. Many widening participation initiatives aim to both raise aspirations and increase the numbers of students from underrepresented groups admitted to undergraduate dental degree courses.

Selection for dental courses is challenging. Many more suitably qualified candidates apply than there are places. Discriminating between applicants on the basis of their cognitive ability, as judged by traditional educational attainments - A Level grades, is becoming impossible, given the increasing numbers of candidates achieving the highest grades. Furthermore, many dental schools wish to select applicants considered to have the non-cognitive attributes that make good dentists. This paper outlines alternative cognitive tests that have arisen to help selectors make decisions alongside traditional academic qualifications, and the means by which non-cognitive attributes may be assessed.

Main messages

Tests of cognitive ability correlate well with traditional preclinical curricula and assessment. For example the well-established Dental Admission Test (DAT) in the United States consists of four major parts: natural science, perceptual ability, reading and comprehension, and quantitative reasoning. The reading comprehension portion of the DAT is significantly related to all of the subtests of Part I of the National Board Dental Examinations and highlights the importance of verbal reasoning in understanding basic science (3).

More recently in the UK, new tests of cognitive ability that feature similar components have been developed for use by the majority of dental and medical schools in selection (BMAT, UKCAT). It is not yet known whether these tests possess the same robust predictive validity, but they have been designed with the same purpose in mind - to assist selection in as fair, objective and transparent a manner as possible. Initial evaluation confirms that UKCAT used in dental selection has good internal validity and reliability. Dental schools have used this extra selection tool in a variety of ways and research is currently underway to ascertain its impact.

From 2007 the UKCAT will have an additional on screen assessed component which aims to highlight non-cognitive variables considered important in practising dentistry - robustness, integrity and empathy. Other measures of personality have previously found that traits such as conscientiousness and openness are related to academic success at

dental school (4). Further assessment of these potential selection tools is, however, required before any major recommendations for their use can be made.

Currently, non-cognitive attributes are frequently evaluated by traditional semi-structured, typically fairly short 15-20 minute interviews. A variety of non-cognitive attributes: communication skills, motivation, empathy and time management are claimed to be assessed by interview. Whilst there is some evidence that good performance at interview is related to performance during clinical training, concerns are raised about the subjectivity and reliability of such selection measures, as well as the costs and selector time involved. This has been one of the driving forces in the increased interest in the development of assessment centres for the selection of healthcare practitioners.

Institutions can group together to deliver assessment centres and process more candidates at one time in a more standardised way. Assessment centres provide opportunities for applicants to take situational tests that place candidates in situations that resemble or simulate “real life” (5). This facilitates the assessment of candidates’ knowledge, skills and attitudes that are desired in professionals, such as team working. Pertinent to dentistry would also be the opportunity to test for manual dexterity, though evidence indicates that this improves with training, and therefore need not be a barrier to admission (6).

Selection based on evidence from candidates' written personal statements and references from schools and colleges is decreasing, in particular, given recent increased concerns over reliability and plagiarism.

Conclusions

Currently a variety of both cognitive and non-cognitive selection tools best predict which applicants will make good dentists. Further research is required to gauge the reliability and predictive validity of innovative selection techniques.

Bibliography

1. University Central Administration System
<http://www.ucas.com/figures/reports/applications.html>
2. Duguid R, Drummond JR. The admission of students to UK Dental Schools - Recent trends (1983-1998). *Eur J Dent Educ* 2000; 4: 71-76.
3. De Ball S, et al. The relationship of performance on the dental admission test and performance on Part I of the National Board Dental Examinations. *J Dent Educ* 2002; 66: 478-84.

4. Poole A, Catano VM, Cunningham DP. Predicting Performance in Canadian Dental Schools: The New CDA Structured Interview, a New Personality Assessment, and the DAT. J Dent Educ 2007; 71: 664-76.
5. Anastasi A, Urbina. Psychological Testing. 7th ed. Upper Saddle River: NJ:Prentice Hall, 97 A.D.
6. Giuliani M., et al. Is manual dexterity essential in the selection of dental students? Br Dent J 2007; 203: 149-55.

Keynote address: Dental professionalism in a changing world – the role of dental education

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Public trust and professional regulation

Dental patients have no choice but to place their trust in dental professionals. The system of professional regulation operated by the regulator, the General Dental Council, underpins that trust. By excluding the unqualified from its professional registers, the regulator protects the public from incompetent or unprofessional dental care. By regulating those who are on its professional registers, the regulator provides assurance to the public of the continuing suitability of registrants to be involved in providing dental

care and services. The regulator is not a party to the care relationship between patient and professional, and it does not protect patients from dental professionals; the professionalism of the conscientious practitioner provides the most immediate and effective protection for their patients. The regulator articulates and underpins that professionalism, and the values on which it is based.

Demonstrating “knowledge and skill”

One of the cornerstones of professional regulation is the regulator’s responsibility to limit access to the register to those who have demonstrated their fitness to practice. The legal framework specifies the criteria for access to the professional registers in terms of knowledge and skills, good character and good health. Specified academic and vocational qualifications are recognised as a proxy for individual evidence of the requisite level and breadth of knowledge and skill*. The regulator relies on qualifications in this way, on the basis that they meet the standards defined by the regulator. The standards required of educational providers, and the regulator’s process for measuring compliance with those standards, are therefore the twin pillars of the gateway to registration, and professional life.

Qualified – so what?

* Overseas applicants for registration are required to provide individual evidence of knowledge and skill by passing a standardised registration examination overseen by the regulator – the *Overseas Registration Examination*.

Control over the gateway to registration gives the regulator a much wider perspective on the significance of the qualification than whatever evidence it provides of the academic standards achieved by the qualifying student. Given the central role of practitioners' professionalism in patient protection, the regulator has a legitimate interest in looking to the qualification to provide the best available evidence that the would-be professional has demonstrably acquired and reliably puts into practice the values, attitudes and behaviours (which we call 'professionalism') to equip them for professional life caring for their patients. This is an important challenge for education providers who wish to continue to offer a qualification which directly opens the gateway to professional privileges.

Raising standards

In parallel with the public protection provided by its control of access to the professional register, the regulator seeks to regulate in a way which facilitates and promotes the advancement of standards for individual practitioners and the profession as a whole; the only alternative to forward movement is moving backwards, maintaining the status quo not being an option in a dynamic system.

From the point of view of the profession as a whole, the public has an interest in both consistency of standards, as between different providers, and in the continuous development of good practice - a dynamic process which can be inhibited by uniformity. One of the regulator's challenges is to manage the tension which can exist between these

different imperatives of consistency of standards on the one hand, and innovation and development on the other.

In relation to individual professionals, the implication of a standards-raising approach is that access to the register should be restricted to those whose professionalism – as evidenced by their qualification – includes:

- an intellectual understanding of their qualification, as an initial staging post in the development of their skills, rather than the end of that process
- a personal ethical commitment to continuing professional development throughout their professional life,
- the academic and organisational skills to be able to analyse and identify their evolving development needs and to seek out opportunities to meet those needs.

This requirement presents another set of challenges to education providers, who will increasingly be expected to demonstrate that they are equipping their students to manage their professional development proactively over the 40 or so years of their careers in dentistry.

Address to the delegates

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The Council of Heads and Deans of Dental Schools (CHDDS) is to be congratulated on its contributions to dental education in Britain and beyond. Bringing together partners in the education, research and service aspects of dentistry is critical if the profession is to move forward, and the productive relationships that CHDDS has established with the Medical Schools Council (MSC) and Universities UK (UUK), are welcomed and I hope will continue to be strengthened in future. I am conscious of how far the CHDDS and the dental profession in general have come – not only in terms of scientific and technical prowess but also in terms of coherence, independence, self confidence and organisational effectiveness – since modern dental education began to develop in the mid-19th century.

In this address I will focus on the issue of the relationship between higher education and the Health Service particularly in connection with education and research for the dental profession. To do this, it is necessary first to consider the wider context. Both the health service and the higher education sector are facing similar challenges in terms of meeting the needs of more demanding users – be they patients or students or the funders of research. Higher expectations from all parts of UK society and rising competition abroad mean that we all face pressure to do more and do it better – whether it's teaching, researching, or providing care. As a consequence, we have to be open to new ways of delivery if we are to continue to provide services of world class quality that meet society's expectations. At the same time, we have to manage the changing funding flows and different sources of finance that are becoming available in the UK. For instance, the Leitch Report (1) has put considerable emphasis on employer engagement in

education provision. The expertise gained in managing that interface is going to be of increasing interest to other parts of the higher education (HE) sector, as universities start to engage more generally with Sector Skills Councils and other employer organisations.

Yet despite persisting rhetoric about ‘joined up government’, policymakers are finding it difficult to understand that changes in the health service affect universities, and vice versa. As we have seen over the last few years, re-organisation and financial instability in the health service can disrupt the higher education sector. Despite the wealth of expertise and skills universities can offer to the health service as it modernises, it can sometimes be a struggle to get health service partners to recognise the scope for collaboration and the range of expertise that universities can offer. We also have the challenge of working with very different time horizons – education and research work on a much longer time line than does the health service. Closer alignment would enable universities and their health service partners to develop stronger strategic relationships, and would certainly make more robust the workforce planning issues that are so critical. Universities UK is working with the Department of Health, Department for Innovation, Universities and Skills (DIUS), Strategic Health Authorities and the Higher Education Funding Council for England (HEFCE). We are trying to enhance education planning capacity and devise a system, based on evidence and research, that would take account of HE supply, as well as incorporating health service demand experience.

So the environment is dynamic and complex. Dental schools, being relatively small organisations, face big challenges in meeting the needs of the health and education

services. The changing patterns of dental disease, recent workforce developments, new skill mix initiatives and technological advances - as well as international trends in education and professional mobility, must all be addressed.

Assuming that the remit of UK dental schools continues to be focussed on: dental workforce development, postgraduate education and training, research, and advanced clinical care, it follows that joint planning, co-operation and understanding are essential at both local and national levels. However, the most recent expansion in student numbers, in 2004/5, showed how hard it can be to achieve such co-ordination. While new dental schools and places and innovations in teaching techniques have extended undergraduate dental education to areas of the country where there are serious gaps in provision, there is a risk that the necessary critical mass is being diluted, and most schools seem to be facing difficulties in recruiting staff to key specialties. This, combined with the more general difficulty of attracting good graduates into clinical academic roles, is a growing concern. Although the decline in the numbers of medical and dental clinical academics in the UK has slowed the current emphasis on expanding the profession to meet patient need has to be matched by resources to attract and develop clinical academic staff. The recent expansion has attracted 200-odd additional students. How many of them could or should be attracted to a clinical academic career at some stage in the future? In all our dental schools we need to identify talented junior teachers and researchers and provide them with the necessary support to develop their future careers in dental education and research.

Unlike in medicine, clinical academic dentists are largely financed by the funding councils – as much as four-fifths of established posts.. However, recent analysis suggests that this long standing pattern may be changing: over the last three years a rising proportion of clinical academics in dentistry is being funded by the NHS. If this is a genuine trend, the need for close engagement between the two sectors is even more important.

While it may seem to the outsider that the profession is facing a period of expansion and innovation, concerns about the future recruitment of clinical academic staff, combined with limited opportunity funding, mean that dental schools are struggling to keep pace with new technologies. Also they have not been able to address residual infrastructure backlogs caused by a long history of inadequate capital funding. Since university dental hospitals, not to mention extended clinical environments, are capital intensive – this aspect of provision is one that cannot be ignored, and where further collaborative work is necessary to ensure adequate future funding. At a time when the health service is devolving responsibilities and fragmenting services, it is crucial that there are suitable accountability arrangements between the Department of Health, Strategic Health Authorities and Trusts. Without these key links, there is a risk that the necessary infrastructure and specialty skills may be lost. National oversight of dental education and research capacity therefore remains essential.

Going back at least as far as the 1990s – when, according to Professor John Murray (2), collaboration between CHDDS and the then CVCP helped to raise the funding councils’

unit of resource for dentistry, your council and UUK have worked closely together to support the case for improved funding and workforce planning. We would expect to continue to collaborate in future. Priority issues include developing the academic base for dentistry, and integrating oral health sciences with the other health and relevant sciences. Initiatives such as the present stakeholders meeting provide an ideal opportunity to explore more fully the implications of recent developments and identify ways to facilitate future collaboration. I wish to thank the CHDDS for taking the lead in bringing together the stakeholders in dental education to discuss and map out future directions, roles and responsibilities.

References:

1. Her Majesty's Stationery Office. Leitch review of skills: Prosperity for all in the global economy – world class skills - http://www.hm-treasury.gov.uk/media/6/4/leitch_finalreport051206.pdf
2. Murray J J. The Council of Heads and Deans of Dental Schools: 75 years.
Br Dent J 2007; 202: 331-334

Closing remarks

Professor Nairn Wilson concluded the meeting by reviewing what he considered to be consensus views from the meeting. These included:

- Existing General Dental Council guidance on education for members of the dental team should adopt a less prescriptive, outcome-based approach, giving greater flexibility to dental schools to develop more individual dental degree programmes.
- The role of the dentist should change from the performer of all dental tasks to the leader of the dental team, with curricula being changed to reflect this shift in emphasis.
- Dental schools need to be further developed to include, or at least be linked to extended (“dispersed”) clinical environments, in ways in which placement learning and teaching is part of a robust, coherent, quality assured, modern approach to the training of the future dental workforce.
- The changing picture of dental disease, expectations of oral healthcare provision, and attitudes of young and aspiring members of the profession, amongst other factors, have implications for education in respect of primary dental care and the dental specialties. The mix and balance of different aspects of dentistry in curricula will change over time.

- The aim of the dental foundation training programme should be to develop the “safe beginner” product of undergraduate dental degree programmes into a competent, caring, reflective practitioner, able to develop a career in any branch of dentistry to the benefit of patients.
- The continued UK engagement in the Association for Dental Education in Europe (ADEE) and the International Federation of Dental Education and Associations is critical to ensure that the national vision and strategy for dental education aligns with developments in Europe and elsewhere in the world.
- Recent world-wide emphasis on professionalism, communication and collaboration skills in education is justified to counter increasing tensions in the time-and cost-constrained circumstances anticipated to influence all aspects of healthcare provision.
- Changes in the gender ratio, cultural diversity and attitudes of the dental student body, together with the implications of increasing student debt and new and developing student welfare and fitness to practice issues will have many, varied ramifications throughout the profession and its service to society.
- It is increasingly important to devote more attention and resources to the recruitment and retention of academic staff in dental schools.

- It is critical that dental schools stay up-to-date with learning methods, taking full advantage of new technologies to enhance learning; however, technologies are tools rather than solutions to be employed in addressing new and emerging educational needs and demands.
- While there is widespread agreement on the need for integrated learning and teaching for members of the dental team, new approaches to curriculum design are required to make this a reality.
- It remains to be determined which levels of advanced knowledge and skill most benefits patients and offer enhanced protection of the public.
- Further research is required to gauge the reliability and predictive validity and innovative techniques to predict which individuals are best suited to a career in dentistry.
- Education providers in dentistry will increasingly be expected to demonstrate that they are equipping their students to meet enhanced requirements in terms of professionalism and its management, both at the time of qualification and initial registration and thereafter throughout their professional careers.

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