

Quality assurance and benchmarking: an approach for European dental schools

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Abstract: This document was written by Task Force 3 of DentEd III, which is a European Union funded Thematic Network working under the auspices of the Association for Dental Education in Europe (ADEE). It provides a guide to assist in the harmonisation of Dental Education Quality Assurance (QA) systems across the European Higher Education Area (EHEA). There is reference to the work, thus far, of DentEd, DentEd Evolves, DentEd III and the ADEE as they strive to assist the convergence of standards in dental education; obviously QA and benchmarking has an important part to play in the European HE response to the Bologna Process. Definitions of Quality, Quality Assurance, Quality Management and Quality Improvement are given and put into the context of dental education. The possible process and framework for Quality Assurance are outlined and some basic guidelines/recommendations suggested. It is recognised that Quality Assurance in Dental Schools has to co-exist as part of established Quality Assurance systems within faculties and universities, and that Schools also may have to comply with existing local or national systems. Perhaps of greatest importance are the 14 'requirements' for the Quality Assurance of Dental Education in Europe. These, together with the document

and its appendices, were unanimously supported by the ADEE at its General Assembly in 2006. As there must be more than one road to achieve a convergence or harmonisation standard, a number of appendices are made available on the ADEE website. These provide a series of 'toolkits' from which schools can 'pick and choose' to assist them in developing QA systems appropriate to their own environment. Validated contributions and examples continue to be most welcome from all members of the European dental community for inclusion at this website. It is realised that not all schools will be able to achieve all of these requirements immediately, by definition, successful harmonisation is a process that will take time. At the end of the DentEd III project, ADEE will continue to support the progress of all schools in Europe towards these aims.

Key words: dental curriculum; quality assurance; quality in education; dental education; benchmarking; DentEd.

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Accepted for publication, 21 November 2006

Introduction

The European Union has set out guidelines for quality assessment and quality assurance in higher education (1). In addition, in many countries, national systems, institutions and procedures have been set up to consider and take a lead on quality in higher education (2, 3). Quality improvement in dental education is required for a number of reasons (4):

1. Quality is an essential component of any service and production process. In order to be accountable to consumers, public and government, acceptable procedures on evaluation and quality assurance are necessary.
2. Quality is an important external measure of an organisation's performance.

3. International cooperation requires greater insight into the quality of graduates and standards of the teaching programmes.

In addition, the resultant progression to a consistent QA approach across Europe can only assist in a variety of other areas, for example: the development of student mobility; consumer protection (protection of the public) and the generic aim of making the profession more internationally based.

In 2001 the European Ministers of Education meeting in Prague invited the European Association for Quality Assurance in Higher Education (ENQA) (5) to collaborate in establishing a common framework of reference for Quality Assurance, which would directly work towards the establishment of the European quality assurance framework by 2010. There are now 45 signatory countries in Europe to this process.

Subsequently, the Berlin communiqué confirmed and mandated the Prague decision and further, at the Bergen summit in 2005, Ministers adopted agreed standards and guidelines for quality assurance within the European Higher Education Area (EHEA) (6). Thus, ENQA has, and will increasingly in the future, play an important role in establishing and maintaining European standards in university education. In line with this approach it is important to establish transnational quality management and assurance procedures in order to achieve greater transparency. In dentistry, considerable information was gathered from the DentEd (Thematic Network Project, funded by the European Union's Directorate for Education and Culture) visits to dental schools both in the existing EU countries and in those that joined in 2004. Through these visits a template for a 'dental school visit' was created and a 'catalogue of good practice' was generated for dissemination to members of the Association for Dental Education in Europe (ADEE) (7). The follow-up project was DentEd Evolves (8) and the current work has been undertaken within the successor project: DentEd III. It is envisaged that the information gained from this work should be available to help guide the development of a pan-European approach in a variety of areas of dental undergraduate education including Quality Assurance (QA). This will help to ensure that dental education is delivered across Europe to consistently high standards and with patient care and protection being of paramount importance. One important element that supports harmonised QA in the EHEA is the opportunity for properly structured (and appropriately recognised) student exchange within the dental curriculum. In addition, it will also help confirm that EU dental schools are providing high-quality research-led education, learning opportunities and experience to all students, so that they may then achieve a consistently high degree of professional excellence in an internationally recognised institution. Obviously, staff exchange between schools also has an important role to play in this harmonisation process and should be encouraged, in order to achieve even greater progress towards this common goal.

In this context it should be borne in mind that Dental Schools are part of a University and, in some countries, form part of a larger Medical Faculty. In these countries, the QA management systems imposed by these institutions would obviously have priority.

An essential part of QA management is evaluation and accreditation. Both, external and internal evaluation/accreditation systems are available. Furthermore, programme evaluation/accreditation (e.g. for Dentistry) or process evaluation/accreditation (e.g. for the

process of internal evaluation/accreditation within a university) can be performed. There is even the possibility that different modes are combined; for example, external process evaluation/accreditation and internal program evaluation/accreditation. It is the sole responsibility of the single University to specify, which, under the specific national regulations, of these evaluation/accreditation systems they employ. This document does not give any priority to any one of those systems.

The definition of quality

What is quality?

In its broadest sense, quality is a degree of excellence: the extent to which something is fit for its purpose. In the narrow sense, product or service quality is defined as conformance with requirement, freedom from defects or contamination, or simply a degree of customer satisfaction. In quality management, quality is defined as the totality of characteristics of a product or service that bears on its ability to satisfy stated and implied needs. Quality also involves rapidly embracing the nature or degree of impact an organisation has on its stakeholders, environment and society (see further reading/references which are available on internet websites at the end of this document).

To summarise, quality is based on a negotiation between stakeholders to recognise, as far as possible, their needs. Such needs should then be translated into objectives. The consistent realisation of these objectives is termed 'quality'.

What quality is not!

Quality is not perfection, a standard, a procedure, a measure or an adjective. No amount of inspection changes the quality of a product or service. Quality does not exist in isolation – there has to be an entity, the quality of which is being discussed. Quality is not a specific characteristic of an entity but the extent to which that characteristic meets certain needs. The value of the characteristic is unimportant – it is how its value compares with the needs of the 'customer' that signifies its quality.

Quality control, assurance, management and improvement

According to International Standards Organization (9), in simplified terms, quality control concerns the operational means to fulfil the quality requirements,

whilst quality assurance aims at providing confidence in this fulfilment, both within the organisation and externally to customers and authorities. Quality management includes quality control and quality assurance, as well as the additional concepts of quality policy, quality planning and quality improvement. Quality management operates throughout the QA system. An important overall test of whether all of the Quality systems are being effective in a dental educational environment might be as follows: initially students are appropriately selected for entry to a school which has modern clinical and teaching facilities. They are then exposed to training of a high quality within the modern teaching environment, the students being sufficiently supported so as to achieve the appropriate competencies at the appropriate milestones throughout the Quality Assured curriculum. They then graduate at the end of 5 years as a Dentist of a comparable standard against recognised national and European benchmarks. Thus, all aspects of quality management in a dental school (and the associated clinical facility, for example a hospital) should come together to efficiently produce consistently high quality dentists in a resource, time and cost-effective manner.

Quality processes

Quality is assessed in order to determine whether it meets the standard set and to lay the basis for improvement. However, quality assessment *per se* is no guarantee of quality improvement. In the dental school/hospital environment, quality assessment can be seen as consisting of two interrelated processes based on both internal and external evaluation. In a well-developed and mature process, results and recommendations from internal and external evaluations should be used in an integrated way to drive the improvement of education and produce graduates of a consistently high quality. Within educational quality improvement, four strongly correlated components can be distinguished:

1. There should be clear goals and objectives for a curriculum. Similarly, there should be objectives and standards set for the educational methods employed and also the systems and staff being used for delivery. All of these need to be clearly identified to develop an appropriate system of assessment.
2. There should be clear methods for the evaluation of all courses and also the modules from which the curriculum is built. Ideally, these should be

subjected to both internal and external scrutiny, and/or should be orientated according to international benchmarks. In the latter instance, it is helpful to have a 'benchmark' against which to measure the performance. The reported outcomes of assessment should be carefully considered and acted upon by a clearly defined process.

3. A system for internal quality assurance should be in place by which the improvements identified consequent to assessment (both internal and external) can be considered, then actions agreed, acted upon and implemented.
4. Subsequently, it is helpful to review those changes which have been implemented to be sure that they have achieved the desired effect in bringing about both change and improvement.

Quality management should be an ongoing, dynamic process, as well as forming an essential, and integral, part of every function in the dental school and hospital. There are different methods available for quality evaluation. However, decision-making processes and implementation opportunities may vary between schools and thus, not all recommendations may necessarily lead to immediate improvement. Perhaps, the most important point is to have a clear system for Quality Assurance and Improvement built into the management structure of a dental school (and hospital). Ideally it should be a continuous repetitive process, selectively benchmarked and with appropriately timed internal and external validation included in the cycle. The key outcomes of improvement should never be assumed to have been achieved just by implementing change but should be checked against what was intended, in a further process of review and follow-up.

A framework for QA

In the context of Higher Education, Vroeijenstijn (10) introduced a framework for quality assurance that includes both internal and external elements. The external process is built on, and is preceded by, the internal process.

Internal evaluation comprises monitoring, student evaluation and a method of school (and hospital) self-evaluation. Some system of external peer review is included.

In such a framework as that proposed, the following objectives can be identified:

1. Accreditation – usually an external quality evaluation by which an outside body formulates the criteria and standards (a benchmark) against which

the institution and the program will be assessed. Improvements are usually aimed at fulfilling criteria for accreditation.

2. Accountability – this usually considers the appropriate use of resource and would include an assessment of the value for money. Benchmarking by some method is usually fundamental to this process, which may be based on an external evaluation. Any resultant improvement would usually be in the form of increased efficiency.
3. Self-regulation (and autonomous systems) – where quality management comprises internal and external evaluations with linked internal procedures for improvement. This is aimed at maintaining high educational standards in an independent, academic institution.

It is apparent that all of these objectives are of paramount importance in achieving a good system for quality management in dental schools.

A different approach, which is based on the ISO 9000 series or related guidelines, differs between process evaluation/accreditation and programme accreditation (11):

1. Process evaluation involves the control of processes within an institution (e.g. the University), by which the necessary quality level within this institution is evaluated and controlled. This process evaluation/accreditation is normally performed by an external institution/group of experts.
2. Programme evaluation/accreditation involves the control of each single teaching programme within the University. This may be performed by external or internal peer review.
3. External process evaluation/accreditation and Internal programme evaluation/accreditation can be combined. For Dentistry, international benchmarks (e.g. as those set up by ADEE) can be implemented as part of the process, and thus, such benchmarks are required for, and are relevant to, internal evaluation/accreditation.

However, perhaps self-regulation is the most fundamental component. It can be seen as the basis for achieving robust quality management, which will encompass all of the key processes in a dental school (and hospital), including education, research and also patient care and protection.

There are also several perspectives to quality of care. Quality of care is an integral part of clinical training and the running of the university/hospital clinics. Varieties of models/approaches have been presented to structure and conceptualise the assessment of, and factors related to, quality of care. The most enduring of these seems to be that described by Donabedian in

1966 (12) with its further development by Starfield in 1973 (13). This conceptual framework includes three dimensions:

1. Structure – relating to the facilities, equipment, personnel and organisation available for provision of care,
2. Process – referring to actual provision of care,
3. Outcome – denoting effects of care on patient's health status.

Each of these dimensions and the dynamics of the relations between them can be assessed separately (or in combination) in relation to the quality of care provided in dental schools and hospitals. Again, they are all fundamental to the development of an appropriate environment for dental education and form an important part of the overall mechanism of QA.

In the case where patient treatment is performed within a hospital environment, the QA management system of the hospital, as well as the corresponding national regulations, should apply.

Definition of terms

Requirements – A requirement is a binding or mandatory policy and, in this document, it is also a 'best practice'.

Recommendations (guidelines) – A recommendation or guideline in the EU is not binding or mandatory, and in this document constitute suggestions for the improvement of practice.

ADEE requirements

The following requirements originally were developed through work in an earlier Task Force and have been considered and supported in a DentEd/ADEE workshop in Athens in 2005. Subsequently, they have been carefully considered and subject to minor amendment by the authors within Task Force 3. They are strongly supported by all members of Task Force 3, who believe them to be fundamental to achieving a high quality, modern, dental educational QA system that is fit for purpose in the 21st century. They were unanimously supported by the General Assembly of the ADEE in Krakow in September 2006.

However, for many, these requirements may be only an aspiration, at least for a time. To fully achieve these requirements there will be a need for appropriate local, national and European support. The appendices to this document are found on the DentEd III and ADEE websites (14) and are intended to support

those taking the initial steps towards achievement of these goals, by providing a 'toolkit', and, in time perhaps, a network of expertise, to support the progress of European schools towards the meeting of these requirements.

1. Quality management can only be implemented when the explicit goals and objectives of all of the functions of a dental school are clearly defined. A well-described curriculum, the basic DentEd III/ADEE 'Profile & Competencies for the New European Dentist' (15) and the DentEd III/ADEE 'Curriculum Structure & European Credit Transfer System for European Dental Schools' (16) and also this current document could form the basis for this process.
2. Every dental school (and hospital) should pursue explicit quality management, improvement and enhancement. Of course, quality management is a much wider issue than purely relating to the curriculum. It includes teaching, research, clinical care, professionalism/'fitness to practise' and also includes the physical facilities and infrastructure.
3. Quality is the responsibility of everybody, including all those involved in dental education, including members of the dental support staff and students. Ideally, patients should also have some means of input into the QA process.
4. Appropriate Quality systems should be an integral part of all of the activities at a dental school (and hospital). It should not be purely an administratively led 'paper' exercise.
5. Schools should have critical self-evaluation systems in place with an appropriate (and consistent) documented method of analysis.
6. Assessment of quality should be systematic, periodic and cyclical in nature. It is suggested that, as an ideal, an annual appraisal of teaching programmes is undertaken along with a periodic (e.g. 5-year) review.
7. Continual quality management processes and their outcomes should always be documented properly.
8. Student feedback, obtained through appropriate evaluation mechanisms and teacher/student liaison meetings (or forums), are an essential component of quality improvement.
9. Feedback from recent graduates on how the dental undergraduate programme has facilitated their ability to work as dental care providers should be included amongst the tools available for QA. The views of employers or postgraduate trainers about the graduates (from the school) can also be of enormous value.
10. Feedback from patients and support staff (nurses, receptionists, etc.) is an important tool and can be used in the assessment of the quality of care provided by both students and staff.
11. Any quality improvement method employed should ensure that outcomes from the feedback and review mechanisms are communicated to teachers, students, graduate and postgraduate trainers. This fosters an ethos of transparency, continued professional development and life-long learning.
12. All of those involved in, and associated with, learning and teaching should receive a regular formal appraisal based on documentation that might include a personal portfolio. This will identify training and development needs, whilst identifying good practice for dissemination. There should be a strategy and associated budget for the development of all staff involved in learning and teaching.
13. There should be a properly documented period of 'educationally related' training for all new (and returning) teaching staff with clear guidelines and achievable targets. This should form part of the overall strategy for the training and development of staff.
14. The management and committee structure within the Dental School, Hospital and the providers of other 'clinical support' training facilities should include systems for quality assurance and improvement at every level.

Recommendations

1. Every school should carry out, on a regular cyclical basis, internal quality assessment and review of the provision of the teaching programmes and academic structure. This process should be overseen at the appropriate level within the University or an equivalent body.
2. The University, or equivalent body, should ensure that a larger periodic quality assessment (a review) of the undergraduate dental programme should take place – this might, for example, be approximately every 5 years. Ideally, the individuals making up assessment panels should be drawn from those in cognate discipline areas but should also include external representation of experts from other dental teaching institutions.
3. There should be some periodic assessment of the provision by, for example, a national body to ensure consistency amongst dental schools in the state/country. Ideally, this external periodic review process should include the use of external

assessors (which could be representatives from other dental schools in the same state/country and/or a different state/country). Such assessors should be experienced in visiting curricula/examinations and be prepared to comment on the appropriateness of the programme and its component courses, as compared to other institutions, both national and international (e.g. DentEd/ADEE). Some schools feel that there is benefit in including student representatives in this process [e.g. Dutch Dental Accreditation Process – Quality Assurance Netherland Universities (QANU)]. The type of periodic process described could form part of the national course accreditation – an agreed desirable outcome in the Bologna Declaration.

4. Peer review and student assessment of teaching can be a useful tool in the enhancement of educational quality. When it is introduced, an appropriate mechanism is necessary to address any teaching deficiencies in a positive manner through the usual system of staff appraisal, training and development.
5. Using appropriate benchmarks, the external validation of the academic content of proposed new programmes is useful before their implementation.
6. A structured process should be agreed with providers of 'Outreach', 'Extra-mural', 'Satellite' or 'Placement' dental education and clinical training – for example, in clinics/hospitals remote from the main teaching institution. The QA processes should always 'mirror' those in the central Dental School or Hospital. This is particularly important with regard to the access, by students, to appropriate library and IT facilities and also student welfare support. There should also be co-ordinated management of the assessment procedures between the centre and the satellite.

Conclusions

The matters discussed in this document should not, to any large extent, be seen as being contentious. To have a process of Quality Assurance and Improvement in place is a fundamental requirement in any modern organisation. Of course, dental education cannot be an exception to this necessity. In any event, comparable QA measures are deemed to be necessary in all areas of higher education as a requirement of the European Union as first defined by Ministers of the member states in Prague in 2001 (17). Progress against this

requirement will be further reviewed at their next meeting in London in 2007.

In order to achieve a continuous improvement in dental education, a proper Quality Management system needs to be in place that includes both internal assessment and review, different evaluation/accreditation systems with the university and, where applicable, the Medical Faculty. There also needs to be, in place, a method by which responsive change and improvement in the educational process can be achieved. QA does not just apply to the teaching programme/curriculum, rather it must apply to every activity of a dental school and hospital including, for example, the suitability of clinical and ICT facilities. QA linked to some system of benchmarking and external review is fundamental to achieving the equalisation of teaching standards across the European Union and the wider EHEA. The 14 requirements in this document may not be achieved by all dental schools in Europe immediately and some of the 'requirements' may be more of an aspiration than others. However, the 'toolkit' in the Appendices (14), which will develop further in time, is available to provide good examples of 'how to do it'. The text of this paper is also available on the DentEd III and ADEE websites (18).

The authors of Task Force III, DentEd III and ADEE are confident that all of these 'requirements' can be achieved, in a realistic timescale, within the supportive environment of the ADEE.

Acknowledgements

The authors wish to acknowledge the financial support of the DentEd III Thematic Network Project through the European Union Directorate for Education and Culture. We would like to acknowledge other members of Task Force III who were unable to attend the meetings of the group but, nonetheless, were able to make helpful comments and contributions to this document: Heikki Murtomaa – President of ADEE (Finland); Jacinta McLoughlin, Project Co-ordinator, DentEd III (Ireland); Kevin Murphy, EDSA (Ireland); June Nunn (Ireland); Jessica Keogh (DentEd III Project Administration); Gill Jones (Representing the 'Dental Team' view). We especially would like to thank Dr. A.I. Vroeyenstijn who, as an acknowledged external expert in this area of expertise, made many valuable contributions. Finally, we would like to thank the many respondents/schools from 24 countries that contacted us following the circulation of the draft document. We were able to

include many of the suggestions and amendments received via the consultation process and this helped to improve, strengthen and achieve unanimous support for this document at the ADEE 2006 General Assembly.

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Other useful sources of related information on the ‘web’

1. Quality in education – <http://www.qa.ac.uk>; <http://www.enqa.net>; <http://www.europeunit.ac.uk>; <http://www.nokut.no>; <http://www.hefce.ac.uk>; <http://www.qanu.nl>; <http://www.cne-evaluation.fr>; <http://www.skvc.lt>; <http://www.inqahe.org>.
2. ENQA Guidelines & ECA Good Practices – <http://www.eaconsortium.net>
3. Professional Bodies interested in QA – <http://www.gdc-uk.org>; <http://www.odontologija.lt>
4. Staff Development – <http://www.medev.heacademy.ac.uk>; <http://www.seda.ac.uk>
5. Students – <http://www.thestudentsurvey.com>, <http://www.tqi.ac.uk>

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