



Eurasian Centre for Accreditation and Quality Assurance in Higher Education and Health Care

**STANDARDS FOR ACCREDITATION
PhD PROGRAMME
IN BIOMEDICAL AND HEALTH SCIENCES**



ALMATY 2017

**EURASIAN ENTRE FOR ACCREDITATION AND QUALITY
ASSURANCE IN HIGHER EDUCATION AND HEALTH CARE**

**STANDARDS FOR ACCREDITATION
PhD PROGRAMME
IN BIOMEDICAL AND HEALTH SCIENCES**

ALMATY 2017

1. **DEVELOPED** by Non-profit Entity ÷Eurasian Centre for Accreditation and Quality Assurance in Higher Education and Health careö.
2. **APPROVED AND INTRODUCED** by the Order #5 February 7, 2017 of the Director General, Eurasian Centre for Accreditation and Quality Assurance in Higher Education and Health care.
3. In this standard, the Provisions of the Law of the Republic of Kazakhstan "On Education» July 27, 2007, #319-III (with Amendments from April 9, 2016) has been introduced.

The Standards for PhD programme accreditation based on the Organisation for PhD Education in Biomedicine and Health Sciences in the European System (ORPHEUS), the Association of Medical Schools in Europe (AMSE), the World Federation for Medical Education (WFME) Standards for PhD education in Biomedicine and Health Sciences in Europe with specification according to institutional needs and national Health Care System priorities.

All rights reserved by the Eurasian Centre for Accreditation and Quality Assurance in Higher Education and Healthcare (ECAQA) and it is not be fully or partially reproduced, copied and distributed without permission.

CONTENTS

APPLICATION AND USE OF STANDARDS	4
REFERENCE TO REGULATIONS AND LAW	4
TERMS AND DEFINITIONS	4
ABBREVIATION	7
GENERAL PROVISION	8
PURPOSE OF INTRODUCTION OF STANDARDS FOR PROGRAMME ACCREDITATION	9
PRINCIPLES OF QUALITY ASSURANCE AND PROGRAMME ACCREDITATION	9
GENERAL STEPS AND MAIN ELEMENTS IN ACCREDITATION PROCESS	10
DECISION ON ACCREDITATION	11
FELLOW UP ACTIVITIES	12
DEVELOPMENT AND REVISION OF THE ACCREDITATION STANDARDS	12
STANDARDS FOR ACCREDITATION PhD PROGRAMME IN MEDICAL AND HEALTH SCIENCES	12
STANDARD 1: RESEARCH ENVIRONMENT	12
STANDARD 2: OUTCOMES	13
STANDARD 3: ADMISSION POLICY AND CRITERIA	13
STANDARD 4: PhD TRAINING PROGRAMME	13
STANDARD 5: SUPERVISION	14
STANDARD 6: PhD THESIS	15
STANDARD 7: ASSESSMENT	16
STANDARD 8: GRADUATE INSTITUTION STRUCTURE	16
REFERENCES	18

STANDARDS FOR ACCREDITATION PhD PROGRAMME IN BIOMEDICAL AND HEALTH SCIENCES

GENERAL PROVISION

1. Application and Use of Standards

1.1 The Standards define the general provisions and requirements of Standards for accreditation of PhD programme in Biomedical and Health Sciences at the HEIs for Health Professions Education

1.2 The Standards is a tool for quality assurance and improvement medical and health professions education.

1.3 The Standards should be used for programme accreditation and carrying out external evaluation of PhD programmes.

1.4 The Standards should be used for the educational programme self-evaluation and its improvement, support the development quality assurance and the quality culture.

2. Reference to Regulations and Law

The Standard references to the following Laws and Regulations:

2.1 The Law of the Republic of Kazakhstan "On Education» July 27, 2007, #319-III (with Amendments from April 9, 2016)

2.2 State Programme Education Development in the Republic of Kazakhstan 2016-2019. The President of the Republic of Kazakhstan Decree #205, March 7, 2016.

2.3 The State Programme for Healthcare System Development 2016-2020. The President of the Republic of Kazakhstan Decree #176, January 15, 2016.

2.4 The Republic of Kazakhstan State Compulsory Postgraduate Medical Education Standard (Amendments from May 13, 2016). PhD Programmes in Medical and Health Professions Education. General Provision. The Standards was approved by the Republic of Kazakhstan Government Decree #1080 from August 23, 2012. (Revision 2016).

3. Terms and Definitions

The Terms and Definitions are used to clarify, amplify expressions in the Standards and refer to the Law of the Republic of Kazakhstan «On Education» July 27, 2007, #319-III (with Amendments from April 9, 2016) and the World Federation for Medical Education Global Standards for Quality Improvement of Postgraduate Medical Education (Revision 2015):

Accrediting agencies – legal entities that develop set of Standards (Guidelines) and accredit of the HEIs that as the institutions meet predefined quality Standards (Guidelines);

Accreditation of Higher Education Institutions – recognition procedure used in higher education by accreditation agency that confirms the Education, Research and Service compliance with and meet predefined standards (guidelines) in order to

provide the evidence about their quality and improvement of the internal quality assurance mechanisms;

Institutional accreditation – external evaluation by the accrediting agency and its formal and independent decision indicating that a higher education institution meets certain predefined standards and current status as the HEI;

International accreditation – external evaluation of the higher education institutions (institutional accreditation) or educational programmes (specialized accreditation) that meet predefined standards (guidelines) and its should be carried out by the national or foreign accrediting agency recognized and listed on Register #1 of the Kazakhstan Ministry of Education and Science;

National accreditation – external evaluation of the higher education institutions (institutional accreditation) or educational programmes (specialized accreditation) that meet predefined standards (guidelines) and its should be carried out by the national accrediting agency recognized and listed on Register #1 of the Kazakhstan Ministry of Education and Science;

Educational programme accreditation – recognition procedure used in higher education by accreditation agency that confirms the educational programmes compliance with and meet predefined standards (guidelines) in order to provide the evidence about their quality and improvement of the internal quality assurance mechanisms;

Standards (Guidelines) for accreditation – external evaluation of the quality assurance of educational programmes that offered by the higher education institution

According to the ORPHEUS ó AMSE ó WFME standards for PhD Education in Biomedicine and Health Sciences in Europe (Best Practices for PhD Training, Revision 2016) following definitions related to Standards:

Measurements of the *suitability of the research environment* could be made using e.g. publication record (number of publications, impact factor, etc.), level of external funding, and numbers of qualified researchers in the group, record of department and graduate institute.

International ethical standards are e.g. Helsinki Declaration II (clinical), EU Directive 2010/63/EU (animal), and Oviedo Convention (bioethics).

Other *competences* relevant for PhD programmes would include those PhD candidates:

- have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field;
- have demonstrated the ability to conceive, design, implement and adapt a substantial process of original research with scholarly integrity at a level that merits international refereed publication;
- can communicate with their peers, the wider scholarly community and with society in general about their areas of expertise both orally and in writing;

- can be expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge based society.

Further competencies include leadership, ability to supervise work of others, project management and ability to teach.

The PhD qualification corresponds to level 8 in the European Qualifications Framework¹⁰.

Criteria for admission might include documentation of proven research competence through, for example, predoctoral research programmes and published papers, achievements in previous studies, and for medical candidates - clinical experience.

The wish for *transparency* in the admission process notwithstanding, for many institutions a PhD programme is seen as the continuation of a master's or medical programme. The admission of the institution's own candidates ought not to prevent the admission of candidates from other institutions.

The *resources* (internal or external) include: infrastructure for the project, the running costs, costs of courses, costs for participation in relevant international scientific meetings, and enrolment fees where applicable; laboratory, informatics and office facilities for the PhD candidate; stipend/salary for the PhD candidate (although the manner in which candidates are remunerated will vary).

A 3-4 year *full time* limit has several purposes: it guarantees that there is an upper limit to the amount of scientific work, which can be expected to be included in a PhD thesis, and is an effective way to avoid the requirements for a PhD degree escalating over time; it encourages the PhD candidate to devote concentrated time to the scientific problem, and to ensure that the programme is based on original research; it allows graduate schools to develop structures for handling a steady stream of PhD candidates.

The *courses* would include courses in ethics, safety, animal experimentation (if applicable), research methodology and statistics and elective discipline-specific components to support candidates in their scientific research.

Courses in *transferable skills* could include training of PhD candidates in presentation of their research (oral/poster/papers) to academic and non-academic audiences, in university teaching, in linguistic skills, in project management, in grant application, in critical evaluation of scientific literature, in supervision of technicians and research candidates, and in career development and networking.

Courses in transferable skills are important both for those who may be expected to continue in research, in either public or private institutions, and for those who continue towards careers in other fields.

For the supervisor to be *scientifically qualified in the field* implies that he or she will normally have a PhD or equivalent degree, and is an *active scholar* with a steady scientific production that contributes to the peer-reviewed literature.

The term *regular consultations* will normally mean at minimum several times per month, but frequency will vary during the course of the programme according to the requirements of the individual PhD candidate. The consultations

ought to discuss progress of the PhD project and PhD programme, provide general scientific advice, help on project management, help to identify and initiate follow-up projects, thesis writing, and assistance during publication.

By *internationally recognized journals* is meant good quality journals in the field concerned that are included in PubMed, Science Citation Index, or similar biomedical and health science literature databases.

The recommendation of *English* as best practice relates to this language being the language most widely used in the biomedical and health sciences literature, and thus the language best suited to encouraging internationalisation.

Relevant stakeholders would include graduate institution heads, graduate institution administrations, research directors, supervisors, PhD candidates, faculties, universities, governments and appropriate international organisations.

Web-based supervisor courses could be arranged for all supervisors to ensure that they know the local regulations of the PhD programmes as well as their basic duties as supervisors.

4. Abbreviation

The following abbreviations are used in the Standards:

AC	Accreditation Council
AMSE	Association of Medical Schools in Europe
CPD	Continuing Professional Development
EB	Expert Board
ECAQA	the Eurasian Centre for Accreditation and Quality Assurance in Higher Education and Healthcare
EEC	External Expert Commission
ESG	Standards for accreditation the Higher Education Institutions for Health Professions Education based on the Standards and Guidelines for Quality Assurance in the European Higher Education Area
HEIs	Higher Education Institutions
MoH RK	Ministry of Health of the Republic of Kazakhstan
MoEDSc	Ministry of Education and Science of the Republic of Kazakhstan
PME	
ORPHEUS	Postgraduate Medical Education Organisation for PhD Education in Biomedicine and Health Sciences in the European System
WFME	World Federation for Medical Education
WHO	World Health Organization

5. General Provision

5.1 Accreditation of PhD programme in Biomedicine and Health Sciences is carried out according to the following Standards:

1. RESEARCH ENVIRONMENT
2. OUTCOMES
3. ADMISSION POLICY AND CRITERIA
4. PhD TRAINING PROGRAMME
5. SUPERVISION
6. PhD THESIS
7. ASSESSMENT
8. GRADUATE INSTITUTION STRUCTURE

5.2 Standards for PhD programme accreditation developed and based on the ORPHEUS-AMSE óWFME Standards for PhD education in Biomedicine and Health Sciences in Europe (Revision 2016) with national specifications of the healthcare system and health professions education.

5.3 The Standards document is a practical tool for quality assurance of PhD programmes.

The Standards are specified for each sub-area using two levels of attainment:

– **Basic Standards** are expressed by a **õmustö**, this describes standards that must be met from the outset.

– **Standards for Quality Development** are expressed by a **õshouldö**, this describes standards that are in accordance with international consensus about good practice. Fulfillment of ó or initiatives to fulfill ó some or all of such standards should be documented.

5.4 The term medical in this document includes all health related specialities such as medicine, dentistry, nursing science, pharmacy, public health.

5.5 The PhD degree described in this document differs from ~~professional doctorates~~ awarded in some countries, and which may be based on advanced educational programmes in extension of a bachelor+master~~s~~ programme to give professional competence. The PhD degree ought to also be distinguished from higher research degrees awarded in some countries for scientific achievements beyond the PhD.

5.6 In this document, institutions are the bodies responsible for awarding the PhD degree, e.g. university, faculty, research institute. HEIs will normally designate the responsibility for conducting PhD programmes to graduate institutions/schools or similar organisations.

5.7 According to the Bologna process, a PhD programme follows a 1-2 year master~~s~~ programme and a 3-4year bachelor programme.

5.8 The manner in which PhD programmes are organized will depend on the structure of the institution which offers these programmes, and will also depend on national regulations and relevant stakeholders.

5.9 Internal evaluation must be an essential part of the whole quality assurance system and regular analysis of internal evaluations is the optimal way to achieve quality improvement in PhD training.

5.10 The decision on accreditation is awarded by ECAQA's Accreditation Council according to the External Evaluation Report of the EEC containing recommendations regarding the decision on accreditation and including the evidence about the higher education institution meets certain predefined Standards.

5.11 The ECAQA's Accreditation Council includes all main groups of stakeholders and based on recommendations of the WHO/WFME Guidelines for Accreditation of Basic Medical Education. The Members of the Accreditation Council are represented by the Directors of Departments of the MoED.Sci. RK and MoH RK, Members of Kazakhstan Parliament, Senior Academic Staff of the HEIs for Health Professions Education, National Research Centres, Societies of the Employers, International and National Professional Association, Students.

6. Purpose of introduction of Standards for PhD Programme accreditation

6. The main purposes for implementation of the PhD programme accreditation are following:

6.1.1 to implement internal quality assurance within institution and develop the national external quality assurance system that harmonized with principles of good international practice for quality assurance in higher education and research;

6.1.2 to support and encourage the development of a quality culture that is embraced by students, academic staff/faculty, institutional leadership and management.

6.1.3 to evaluate educational programmes, to ensure that a higher education institution meets certain predefined standards.

6.1.4 to promote the quality improvement of health professions education to meet the needs of the changing environment and achieve competitiveness of the national system of higher professional education;

6.1.5 to ensure that the competencies of PhD candidates are globally applicable and transferable and readily accessible and transparent documentation of the levels of quality of educational institutions and their programmes is essential.

6.1.6 to publish and provide reliable information for society and authorities concerned in higher education and healthcare regarding PhD programme external evaluation outcomes and submit the summary report and formal decision on accreditation.

7. Principles of Quality Assurance and Accreditation

7.1 Quality assurance and accreditation system based on the following principles:

7.1.1 Voluntariness/Freedom ó the accreditation is voluntary process and accrediting agency recognizes the freedom and autonomy of the HEIs and their programmes.

7.1.2 Responsibility ó the accreditation process clear defines the responsibility of both accrediting agency and higher education institution; accrediting agency has

strong relationship with main stakeholders: the Public, HEIs, Students, the Professions, Professional Organizations, Government; provides the Standards and Guidelines, appropriate resources of innovation and training reviewers/experts.

7.1.3 Transparency ó internal and external evaluation are carried out fairly and transparently providing access to relevant information regarding the accreditation process and procedures, accreditation standards, guidelines for self-study, guidelines for external evaluation that are available for all stakeholders.

7.1.4 Independence - external evaluation, decision making process based on the published standards and procedures taking into consideration the outcomes both the institutional self-study and external review, the reliable information and data, accrediting agency is independent of the third parties (MoH, MoEDSci., HEIø Leadership and Public).

7.1.5 Confidentiality ó institutional self-study reportø information and other information provided by HEIs and data gained in external review are confidential.

7.1.6 Efficiency ó external evaluation focus on content and outcomes that allowed improving internal quality assurance mechanisms, support the development of a quality culture and ensure the link between internal and external quality assurance.

7.1.7 Public information- the decisions on accreditation must be announced and made public, publication of the reports providing the basis for the decisions, or a summary of the reports, should also be considered and posted on the accrediting agencyø web-site.

8. General steps and main elements in accreditation process

8.1 Accreditation process includes the following main elements:

8.1.1 Submission of the application and the summary and education database of the higher education institution/programme provider to the accrediting agency;

8.1.2 Signing the Agreement between higher educational institution/programme provider and accrediting agency that included terms of payment and conditions for performance, training of staff/faculty on conducting the institutional self-study;

8.1.3 Planning and conducting the Educational Programme self-evaluation; submitting Educational Programme Self-evaluation Report (in Kazakh, Russian and English) to the accrediting agency;

8.1.4 Consideration the Educational Programme Self-evaluation Report by the Members of EECø accrediting agency before the site-visit;

8.1.5 The external expert commission carries out the external evaluation and develops the draft of the Report and conclusions that is presented to the administrative and academic staff.

8.1.6 Submission of the final External Evaluation Report with recommendations for improvement to the accrediting agency and the Accreditation Council;

8.1.7 Decision on accreditation consideration of the final Report and recommendations of the external expert commission by Accreditation Council

8.1.8 Publication of a summary of the External Evaluation Report and decision on accreditation and post them on accrediting agency's web-site.

9. Decision on accreditation

9.1 Decisions on accreditation based on the fulfillment or lack of fulfillment of the Standards.

Categories of accreditation decisions:

- 1) Full accreditation- the duration of full accreditation is 5 years;
- 2) Conditional accreditation- will be reviewed after 1 year to check fulfillment of the conditions;
- 3) Denial or withdrawal of accreditation.

9.2 Full accreditation for the maximum period must be conferred if all Standards are fulfilled.

9.3 Conditional accreditation, meaning that accreditation is conferred for the entire period stated but with conditions, to be reviewed after 1 year to check fulfillment of the conditions. Conditional accreditation can be used in cases where a few Standards are only partly fulfilled or in cases where more Standards are not fulfilled. The seriousness of the problem is to be reflected in the specification of conditions.

9.4 Denial or withdrawal of accreditation must be the decision, if many Standards are not fulfilled, signifying severe deficiency in the quality of the programme that cannot be remedied within a few years.

9.5 If the decision on accreditation will be denial or withdrawal of accreditation the higher education institution will be excluded or not listed at the National Register #3 (accredited HEIs) of the Ministry of Education and Science of the Republic of Kazakhstan.

9.6 Accrediting agency issues the Certificate for awarding the full accreditation for 5 years.

9.7 According to the Kazakhstan Ministry of Education and Sciences (MoEd.Sci.) Order of #629/Article4./ p.16-17, from November 1, 2016 the accrediting agency's decision on accreditation of HEI and its educational programmes should be posted on the MoEd.Sci.'s web-site.

In addition to that the summary of external evaluation report of HEIs and programmes should be submitted to the MoEd.Sci. in order to be listed on the National Register #2,3 of the Ministry of Education and Science of the Republic of Kazakhstan.

9.8 Accrediting agency has published procedure for appeals related to its external evaluation and decision making process and the following action by accrediting agency affecting accreditation are the subject to appeal: Denial or Withdrawal of accreditation.

9.9. Higher education institution should submit the application for re-accreditation after 5 years to confirm its accredited status.

10. Fellow up activities

10.1 Accredited HEIs are monitored by the accrediting agency throughout the duration of the accreditation term.

10.2 The HEIs should submit the brief progress report annually to shed light on how the institution has addressed the recommendations for improvement that made by the External Evaluation Commission.

10.3 The HEIs must inform accrediting agency of any substantive changes in scope of activities of the institution, including the educational programmes changes.

10.4 The accrediting agency will consider complaints about the quality of accredited HEIs and the accrediting agency will conduct initial evaluation and it would be arranged the site-visit.

11. Development and revision of the accreditation standards

11.1 Amendments for accreditation standard are addressed for its further improvement.

11.2 Amendments to accreditation standard are proposed by the accrediting agency.

11.3 In case of amendments initiation to the standard by main stakeholders, they address their suggestions and remarks to the accreditation agency.

11.4 Accrediting agency consider all suggestions and remarks related to accreditation standards for their validity and appropriateness.

11.5 Revised Standards adopted by the accrediting agency, approved by the Experts Board and signed by Director General will be issued as a new version of Standards and published on its web-site.

12. Standards for accreditation PhD Programme in Biomedicine and Health Sciences

1. RESEARCH ENVIRONMENT

1.1 The success of individual PhD programmes **must** be ensured by being performed in a suitable research environment that would reflect the research strength of the supervisor's research group, of the department, and of the graduate institution, as well as possibilities for national and international networking with strong research institutions.

1.2 The facilities available to the PhD candidates **must** be compatible with the requirements of completing their PhD.

1.3 Research **must** be consistent with international ethical standards and approved by appropriate and competent ethics committees.

1.4 There **must** be arrangements to allow PhD candidates, if relevant, to perform part of their PhD programme at another institution, including those in other countries.

1.5 Institutions lacking facilities or expertise in particular fields **should** collaborate with stronger institutions to ensure that the graduate school can offer these.

2. OUTCOMES

2.1 The PhD programme leading to the PhD degree **must** provide students with competences that enable them to become a qualified researcher; that is a scientist able to conduct responsible, independent research, according to principles of good research practice.

2.2 Completion of a PhD programme **must** also be of potential benefit for those who pursue careers outside of academic or clinical research, by use of competences achieved during the PhD programme, including solution of complex problems by critical analysis and evaluation, appropriate transfer of new technology and synthesis of new ideas.

2.3 The outcomes expected from PhD candidates with a background in medicine or other professional training are the same as for any other PhD.

3. ADMISSION POLICY AND CRITERIA

3.1 To ensure quality of PhD programmes, PhD candidates **must** be selected on the basis of a competitive and transparent process.

3.2 Applicants for a PhD programme **must** have an educational level corresponding to a master's degree, or to a medical degree.

3.3 Before enrolling a PhD candidate, or at a clearly defined time point in the programme, the institution **must** evaluate and approve the following:

- the scientific quality and feasibility of the research project to be performed by the PhD candidate;
- whether the project is suitable and may reasonably be expected to result in a thesis;
- the degree to which the project encourages innovation and creativity;
- the qualifications of the nominated supervisors (see Standard 5).

3.4 A PhD programme **should** not be initiated unless the resources for completion of the PhD research project are available or predicted not to be a risk.

3.5 In choosing PhD candidates, the potential of the applicant for research ought to be considered, and not just past academic performance.

3.6 Projects ought to be assessed either by an external assessment of the written project description or else by presentation of the project to a panel of independent scientists. Where the candidate is obliged to obtain extra income, it ought to be ensured that the candidate has the necessary time to complete the programme.

4. PhD TRAINING PROGRAMME

4.1 PhD training programmes **must** be based on original research, courses and other activities which include analytical and critical thinking.

4.2 PhD programmes should be performed under structured supervision.

4.3 PhD programmes **must** ensure that candidates have appropriate training in the rules concerning ethics and responsible conduct in research.

4.4 PhD programmes **must** be structured with a clear time limit, a length equivalent to 3-4 years full time. Extension of the time frame ought to be possible, but be limited and exceptional rather than typical. The time frame should be extended in connection with parental leave or sick leave.

4.5 The training programme must include documented activities not directly related to the project (e.g. courses, journal clubs, participation in conferences, seminars and workshops, including preparation time) totalling about 15% of the programme parallel with conduct of the PhD project. A substantial part of these training activities should be concerned with transferable skills.

4.6 PhD programmes that are performed in parallel with clinical or other professional training **must** have the same time for research and course work as any other PhD.

4.7 There **must** be continuous, structured assessment of the progress of PhD candidates throughout their PhD programme.

4.8 For PhDs performed by clinicians, leave-of absence from clinical duties **should** be provided for the PhD part of such programmes unless these are coincident.

4.9 PhD programmes **should** where relevant have an element of interdisciplinary.

5. SUPERVISION

5.1 Each PhD candidate **must** have a principal supervisor and normally at least one co-supervisor to cover all aspects of the defined programme.

5.2 The number of PhD candidates per supervisor **must** be compatible with the supervisor's cumulative workload.

5.3 Supervisors **must** be scientifically qualified and active scholars in the field concerned.

5.4 Supervisors **must** have regular consultations with their candidates.

5.5 The institution **must** ensure that training in supervision is available for all supervisors and potential supervisors.

5.6 The supervisor-candidate relationship is the key to a successful PhD programme. There **must** be mutual respect, planned and agreed shared responsibility, and a contribution from both parties.

5.7 Institutional assistance **must** be provided for career development. This should be continuous, starting from the time of enrolment.

5.8 The responsibility of each supervisor **ought to/should** be explicit and documented.

5.9 Supervisors **ought to/should** have broad local and international scientific networks to be able to introduce the PhD candidate into the scientific community.

5.10 Supervisors **ought to/should** in co-operation with the institution assist with career development.

5.11 Institutions **should** consider having documented agreements describing the supervision process that are signed by supervisor, PhD candidate and head of graduate school.

5.12 The principal supervisor, at least, **ought to/should** have some formal training as a supervisor.

5.13 Supervisors **should** where possible also act as co-supervisors for PhD candidates at other graduate institution within the country but also internationally.

5.14 Graduate schools **ought to** consider appointing a mentor or equivalent for each PhD candidate, in addition to the supervisor team, to discuss programmes from another aspect than the science topic alone.

6. PhD THESIS

6.1 The PhD thesis **must** be the basis for evaluating if the PhD candidate has acquired the skills to carry out independent, original and scientifically significant research and to critically evaluate work done by others.

6.2 The benchmark for the PhD thesis **must** be the outcome to be expected from 3-4 years research at international level. In biomedicine and health sciences this benchmark should be the equivalent of at least three *in extenso* papers published/ submitted/in preparation in internationally recognized, peer-reviewed journals.

6.3 In defining the benchmark for a PhD thesis, the assessment committee **must** take account of the provisos listed in the Annotations, for example the annotation indicating that fewer than three papers may be accepted if published in highly rated journals.

6.4 In addition to the papers presented, the PhD thesis **must** include a full review of the literature relevant to the themes in the papers, a full account of the research aims, methodological considerations, results, discussion, conclusions, and further perspectives of the PhD project.

6.5 Where the PhD thesis is presented in other formats, such as a single monograph, the assessment committee **must** ensure that the contribution is at least equivalent to the above benchmark.

6.6 A PhD thesis in clinical medicine **must** meet the same standards as other PhD theses.

6.7 To encourage international recognition the thesis **ought to/should** be written, and optimally also examined in English, unless local regulations stipulate otherwise, or where this is not possible or desirable. An abstract of the PhD thesis ought to be published in English.

6.8 Where the articles or manuscripts are joint publications, co-author statements **ought to/should** document that the PhD candidate has made a significant contribution to these. Ownership of results from PhD studies **ought to/should** be clearly stated.

6.9 PhD theses **ought to** be published on the graduate school's homepage, preferably *in extenso*. If patent or copyright legislation or other reasons prevent this, at least abstracts of the theses ought to be publicly accessible.

6.10 There **should** be a lay summary of the thesis in the local language.

7. ASSESSMENT

7.1 Acceptance of a PhD thesis **must** include acceptance of both the written thesis and a subsequent oral defence.

7.2 PhD degrees **must** be awarded by the institution on the basis of a recommendation from an assessment committee that has evaluated the thesis and the oral defence with respect to the recommendations described in Standard 6.

7.3 The assessment committee **must** consist of established and active scientists who are without direct connection to the milieu where the PhD was performed, and without any conflict of interest, and including individuals from another institution.

7.4 To avoid conflict of interest the supervisor **must** not be a member of the assessment committee. However, local regulations might include the supervisor as a member of the assessment committee. In these cases it is suggested that the supervisor can take part in the discussions but not have a formal role in making the final decision.

7.5 In the case of a negative assessment of the written PhD thesis, the PhD candidate **must** normally be given the opportunity to rewrite the thesis. Where there is a negative assessment of the oral defence, the candidate should normally be allowed an additional possibility for defence. In exceptional cases the assessment committee can reject a thesis without offer to reconsider.

7.6 The oral examination **must** be detailed enough to ensure that the thesis is the candidate's own work, that the intended training goals have been achieved, and that the candidate is able to put the results into scientific context.

7.7 The oral defence **ought to/should** be open to the public, or at least to the faculty.

7.8 To promote internationalisation, the institution **should** where economically and practically possible ensure that the assessment committee includes at least one member from another country.

7.9 Apart from the thesis, the institution **ought to/ should** ensure that sufficient transferable skills have been acquired during the PhD programme.

7.10 The competences developed during the PhD programme **should** be documented in a portfolio. This documentation **should** be evaluated by the assessment committee and form part of their decision concerning the award of the PhD degree.

8. GRADUATE INSTITUTION STRUCTURE

8.1 The graduate school **must** have sufficient resources for proper conduct of PhD programmes. This includes the resources appropriate to support the admission of PhD candidates, implementation of the PhD programmes of the PhD candidates enrolled, assessment of PhD theses, and awarding of PhD degrees.

8.2 The graduate school **must** have a website, in the national language and in English, including transparent information about policies concerning:

- the responsibilities of the head of graduate school and the administration;
- quality assurance and regular review to achieve quality improvement;

- admission policy including a clear statement on the process of selection of candidates;
- the structure, duration and content of the PhD programme;
- the methods used for assessment of PhD candidates;
- the formal framework for following the progress of the individual candidate;
- supervisor appointment policy outlining the type, responsibilities and qualifications of supervisors;
- Effective use of information and communication technology.

8.3 Merit **must** be given for relevant courses taken elsewhere or other relevant experience.

8.4 There ought to/**should** be procedures for regular review and updating of the structure, function and quality of PhD programmes. This will normally include both supervisor and candidate feedback.

8.5 Representatives of the PhD candidates ought to/**should** interact with the leadership of the graduate institution regarding the design, management and evaluation of PhD programmes. Candidate involvement and candidate organizations working to enhance PhD programmes at the institution ought to/**should** be encouraged and facilitated.

8.6 PhD candidates ought to/ **should** have rights and duties commensurate with the value to the institution of the research work performed by the PhD candidate.

8.7 There ought to/ **should** be an appeal mechanism allowing candidates to dispute decisions concerning their programmes and assessment of their theses.

8.8 Confidential candidate counselling concerning e.g. the PhD programme, supervision, as well as personal matters ought to/ **should** be offered by the graduate institution (by some referred to as an ombudsmanø).

8.9 Graduate schools **should** consider having a thesis committee for each PhD candidate that monitors the progress of the PhD candidate through meetings with the PhD candidate and the supervisors.

REFERENCES

1. Standards for PhD education in Biomedicine and Health Sciences in Europe. Organisation for PhD Education in Biomedicine and Health Sciences in the European System (ORPHEUS), Association of Medical Schools in Europe (AMSE), World Federation for Medical Education (WFME); 2011. (<http://wfme.org/standards/phd/57-standards-for-phd-education-in-biomedicine-and-health-sciences-in-europe/file>)
2. Best Practices for PhD Training Based on the ORPHEUS ó AMSE ó WFME Standards for PhD Education in Biomedicine and Health Sciences in Europe, First published 2016 by ORPHEUS/AMSE (<http://orpheus-med.org/images/stories/documents/ORPHEUS Best Practices DOCUMENT 2016.pdf>)
3. Bologna Process: framework of qualifications of the European Higher Education Area. (www.bologna-bergen-2005.no/EN/BASIC/050520_Framework_qualifications.pdf.)
4. Postgraduate Medical Education. WFME Global Standards for Quality Improvement. World Federation for Medical Education (WFME); New edition. 2015. (<http://wfme.org/standards/pgme/97-final-2015-revision-of-postgraduate-medical-education-standards/file>, accessed 19 December 2016).
5. WFME Standards for Master's Degrees in Medical and Health Professions Education (revision 2016) WFME Office 2016 (<http://wfme.org/standards/standards-for-master-s-degrees-in-medical-and-health-professions-education>, accessed 29 December 2016)
6. WFME Global Standards for Quality Improvement in Medical Education. European Specifications. The World Federation for Medical Education (WFME) and The Association of Medical Schools in Europe (AMSE); 2007 (<http://wfme.org/standards/european-specifications/21-europeanspecifications-english/file>, accessed 19 December 2016).
7. WHO-WFME Guidelines for Accreditation of basic medical education. Geneva/Copenhagen: WFME, 2005 (<http://wfme.org/accreditation/whowfme-policy/28-2-who-wfme-guidelines-for-accreditation-of-basic-medical-education-english/file>, accessed 20 November 2016).
8. Promotion of Accreditation of Basic Medical Education. A Programme within the Framework of the WHO/WFME Strategic Partnership to Improve Medical Education. WFME Office: The Panum Institute, Faculty of Health Sciences University of Copenhagen; November 2005 (<http://wfme.org/accreditation/whowfme-policy/30-1-promotion-of-accreditation-of-basic-medical-education-who-wfme-strategic-partnership/file>, accessed 20 November 2016).
9. Lindgren S, Karle H. Social accountability of medical education: Aspects on global accreditation. Med Teach. 2011; 33:667-72.
10. Global Standards for Quality Improvement of Medical Education. Status of the WFME Programme Initiated In 1997, WFME Office:University of Copenhagen;2011;Modified on August 2014 (<http://wfme.org/standards/world-standards-programme>, accessed 20 November 2016).
11. The WFME Programme for Recognition of Accrediting Agencies for Medical Education. Introduction; March2013, revised June 2016 (<http://wfme.org/documents/accreditation/accreditation-agencies/background/70-1-recognition-of-accreditation-agencies-introduction/file>, accessed 20 November 2016).
12. ORPHEUS PhD Quality Indicators: The Izmir 2011 Consensus Document. Consensus document from the sixth ORPHEUS Conference, Dokuz Eylül University, Izmir, 27-30 April 2011 (<http://www.orpheus-med.org/index.php/izmir-consensus-document>)