



School of Medicine

**ANNUAL REPORT
2018–2019**

**ANNEX II – Response to the Report of the External Advisory
Committee (October 9 and 10, 2017)**

University of Minho

Reply to the Report of the Advisory Council of the School of Medicine (ACS) of the University of Minho – October 9 and 10, 2017

General Introduction;

The ACS visited the School of Medicine on October 9 and 10, 2017. ACS members attended the Graduation Ceremony of the School of Medicine on the morning of October 9, where the graduation of the 11th cohort of medical students and the 2nd cohort of those that follow the 4-years curriculum took place. This gave the ACS a splendid opportunity to appreciate the strength of the team spirit characteristic of this community of staff and students. It is noteworthy that the name of the institution changed (in 2016) since the last ACS visit, from the School of Health Sciences to the School of Medicine. The latter designation is very appropriate since it covers the main mission of the School and gives it a more transparent profile, both nationally and internationally. The School of Medicine has a governing body headed by Nuno de Sousa as President, and Joana Palha, Jorge Pedrosa and Pedro Morgado as vice-Presidents.

It is also important to note that the composition of the ACS changed just before this visit. Following prior consultation between the School and members of the ACS, three new members were appointed and were able to attend the visit. These members are: Claudia Schlegel¹, António Murta², and Vasco Louro³. Their appointment strengthens the ACS by broadening its areas of expertise as well as introducing new perspectives and thereby helping to position the ACS to ensure its sustainability to provide relevant advice for the future.

The ACS recognizes that the position of the School of Medicine has been strongly consolidated in the field of Medical Education and Research, not only in Portugal but also internationally. In Portugal it received the accreditation of the “Agência de Avaliação e Acreditação (A3ES)” (Assessment and Accreditation Agency), that issued a highly appreciative assessment report. This report was included in the School Annual Report 2016-2017. The School is to be congratulated on this achievement. Internationally the School strengthened the collaboration with the US National Board of Medical Examiners (NMBE-USA) and Thomas Jefferson Medical School, and established agreements for cooperation with several foreign Medical Schools.

An important and recurrent theme throughout all presentations and discussions during the visit was the engagement of the School in revising mission statements regarding its teaching and research objectives. There was a strong emphasis on creating a ‘living-learning environment’, embedding medicine in science as well as science in medicine.

The ACS endorses wholeheartedly the forward looking 3-year plan to reorganize the medical degree according to the ambitious plan “Minho 2020”. In this sense it is important to commend the School on its successful horizontal integration of the basic

¹ Claudia Schlegel is a nurse with a master of medical education from the University of Bern, Switzerland. She is the director of the Skills Centre of the Bern School for Higher Nursing Studies and is currently finishing her PhD on the impact of standardized patients in clinical practice, under the supervision of Cees Vleuten in Maastricht. She is the author of 20 peer-reviewed publications.

² António Murta has a degree in Systems Engineering from Minho University, MBA from the ISEE (University of Porto), AMP from INSEAD. Has also done post-graduate studies at ISEE and MIT. From 1991 to 1997 he was Corporate Information Officer of Sonae Distribuição. He founded and was CEO of Enabler from 1998 onwards - Enabler was a systems integrator strictly focused in Retail. He is a Managing Partner and co-founder of Pathena (a Venture Capital Company focused on IT and Healthcare). He was a Member of the General Council of University of Minho and a non-exec Director of COTEC Portugal.

³ Vasco Louro graduated from the School of Health Sciences of Minho (2001-2007), and thus belongs to the alumni of the School. He has a post-graduation in Medical Informatics from the University of Porto. He is at present Radiation oncologist at the Champalimaud Clinical Centre, Lisbon.

components of the curriculum, and that it is engaged in continued improvement of the vertical integration of basic and clinical sciences in the curriculum. The latter, however, will need substantial effort to reach the high level that the School imposes on itself.

REPLY: The School of Medicine thanks the ACS for its comments. As detailed in the 2018-19 Annual Report, in the proposal submitted to the University and Accreditation Agency (A3ES), we have progressed the preparation work of the new curriculum (MinhoMD) according to the plan established in 2016. During the October 2019 visit of the ACS, we will provide a more detailed perspective of the curriculum reform and its main highlights, as well as the plans (including contingency plans) to its implementation from September 2020.

Medical degree course: undergraduate teaching;

Both the written report and the information that was presented during the visit testify to the high level that the School has achieved. Both the 6-year and the 4-year curricula are well consolidated. Nonetheless the School pursues a continuous effort of renewal and improvement, which is highly commended.

In broad terms, there are two main issues that deserve specific attention:

1. vertical integration
2. feedback between faculty and students.

With respect to vertical integration, it appeared to the ACS that students felt an uneasy discontinuity between the first 3 and the last 3 years of the course. The efforts that the School has made in incorporating patient simulation tools in the clinical curriculum (Clinical Skills Laboratory, CSL) is praiseworthy and effective. This is recognized by the students themselves, who said: "Without the CSL, we wouldn't be as comfortable in the hospital during our rotations which also give us more liberty to focus on the patient rather than being concerned about these particular skills". *However the ACS recommends integration of these Clinical Skills laboratory sessions earlier in the curriculum*⁴.

The School continues to be confronted with a number of challenges presented by the clinical part of the curriculum. It is clear that clinical teaching is well anchored in three main hospitals (Braga, Guimarães and Viana do Castelo), and several Health Centers. This variety of exposure to different environments, and to an heterogeneity of clinical cases, can be considered a positive asset as it helps to prepare the students for the variations they are likely to experience after graduation. However, it also gives rise to a considerable amount of heterogeneity regarding the level of guidance offered to the students in residence; this shortcoming was vividly emphasized in the meetings with students and alumni. The ACS recognizes that there is a difficult balance to be drawn here, but also that the balance is not quite right at present. In any case it is important that the students keep a portfolio of all the patients that they had the opportunity to examine, and to make the respective clinical report. They should get guidance in how to create an adequate clinical report.

The Medical School is clearly committed to life-long learning and has as an important objective to enhance the prestige of the role of research, both basic and clinical, in the curriculum. The number of students participating in research projects was not explicitly

⁴ Interestingly staff members of the School (José Miguel Pêgo, João José Cerqueira, João Bessa, Vitor Hugo Pereira, Sara Gomes, José Mariz, Rita Sousa, Pedro Morgado, Nuno Sousa) published a paper where they give an account of their "Fifteen years of experience from a Medical School' Clinical Skills Laboratory" in Acta Med. Port, February 2017. 30(2): 85-92. It merits being mentioned that Vitor Hugo Pereira was then the president of the Alumni Medicina, and Rita Sousa is a member of the Medical Students Association of the University of Minho.

considered during the site-visit, but Annex II indicates that this number is “less than hoped for”. The reasons for such deficit should be analyzed carefully so that appropriate action can be taken. *The ACS considers it important to encourage students to choose research options and engage in the research activities of ICVS.*

The students pointed out that they felt a marked contrast between the proximity of their contact with the teaching staff in the first 3 years, and the rather variable relationship with clinical tutors in the clinical phase. In particular students pointed out that frequently they did not receive sufficient feedback with respect to their performance in the wards. Given the large number of tutors engaged in clinical teaching and their spread over several institutions, it is important that the School develops measures to improve the training of the tutors, monitor their performance in order to ensure consistency of the student experience. The School has appointed a *Clinical Coordination Group* that has the task of organizing and monitoring pedagogic activities both in the Medical School and in the associated Health Institutions, which is a positive step. Clearly these issues are getting the attention of the staff.

The “objective standard clinical examination” (OSCE) is being improved and used systematically.

The ACS was very pleased to hear that the School is preparing to enhance its feedback provision and then to apply for a new component of the Aspire Certificates of Excellence from the European Association of Medical Education, namely in “Assessment of students”, after it had been granted the Aspire Certificate of Excellence in the domain of student’s engagement previously.

REPLY: All the above comments are very important for the development of the project. As for the Vertical Integration, we agree that there is a discontinuity between the first 3 and the last 3 years of the student’s pedagogical experience; that results from a much more expanded exposure to clinics in the second component, which is common to all medical schools with a similar curricular design. However, there is an effort in our current program to mitigate part of such discontinuity (as recognized by the students), in part driven by the introduction of clinical skills early in their formation. This early exposure to clinical learning is a major highlight of the new curriculum and, thus, is to be largely expanded. In addition, learning in the first 2 years of the new curriculum will be case-based, with a significant proportion of clinical and health systems sciences content; this will blend smoothly with the symptom oriented approach of the 2 clinical years. Finally, with the introduction of 60 ECTS for electives (that may convert in Major/minors), we believe that the mentioned dissociation will be significantly attenuated.

As for the heterogeneity created by the multiple learning sites, we also agree with the ACS and students that it represents an important problem. The main drivers for the use of multiple sites are: i) maintenance of a low ratio between students/tutors that promotes the best learning; ii) exposure to distinct working environments, which is of relevance for student’s clinical development. In addition, the heterogeneity is not an exclusive consequence of multiple learning sites, as there is heterogeneity within the same training sites, too. Our strategy to reduce that is multiple: i) creation of common log-books and milestones; ii) common learning and assessment tools; iii) faculty development and, also, iv) a single and common exposure to cognitive learning activities (this drives another problem related to the need of a once-a-week day at the Medical school, with commuting needs for the students located at more distant learning sites). Finally, it is important to highlight that the time of exposure of each student to the 3 Hospitals is similar. That being said, we recognize the problem and continuously try to mitigate its impact.

As for the clinical portfolio, students have a common log-book for every clerkship and that is monitored to ensure consistency in students’ experience; however, we recognize that exposure to distinct pathologies might be distinct in different sites. As

for the clinical report, students learn early in their clinical curricular units how to provide reports. However, we believe that there is room for significant improvement in this regard, and the use of the portfolio as a learning and assessment tool will be introduced in the new curriculum MinhoMD. Moreover, we will also introduce several tools to promote clinical feedback during clerkships.

As for the engagement of students in research, we share the aspiration of the ACS to have more students involved in biomedical and clinical research; that has been a flagship of our program and still is recognized as a strength of EM (actually stated by some students as the reason for choosing our program). While we agree that this number may be higher, we have also to admit that it is quite impressive when contrasted with numbers from other medical schools. Hopefully, the new curriculum and the involvement of the clinical academic center and the P5 medical center will also help us in achieving our aim of involving more students in research.

In the pursuit of the continuous enhancement of educational objectives;

The School has a strong commitment to continuously improve its educational programs at a high international level. This reflects the dynamism and commitment of the staff.

In this context a number of aspects were the object of particular attention during this site-visit.:

- Implementation of new pedagogic methods; particularly worth emphasizing are the efforts to promote active learning methodologies, as case-based, team-based and flipped learning approaches. These are valuable, but in the meeting, students pointed out that some lectures in the clinical years do not come up to the expectations with respect to the interactive methodology characteristic of the first 3 years.
- Further development of the vertical domain Medical Humanities and increasing its visibility in the curriculum; the program is already very well structured and appealing. It offers the possibility of the student being confronted with a wide scope of relevant ethical questions, indeed alumni recognized they were often better prepared in this area than graduates from other Medical Schools. When questioned if some features of the “Humanities” curriculum might have impact in the way they will perform as physicians, one student said: “Not only as a physician, also as a human being”. *The ACS considers this program highly commendable.*
- Continuous search for improving the assessment of medical training; in this context the ACS suggests to create an *explicit assessment system that promotes active acknowledgement of the feedback received by the students and its use in their future studies.*
- In the meeting with the students, as already mentioned above, they pointed out the less successful feedback that they get in the last clinical years (see further below); furthermore it is advisable that the School *implements a system where each student keeps a portfolio with the information about each patient that they examined in the course of time;*
- Innovating methodologies to improve the training and assessment of clinical and laboratory skills. Particularly in the curricular unit “Community Health” it appears that the assessment made by some tutors has shortcomings.
- Improving the organization of medical residence training programs; it is important also *to strengthen the inter-professional dimension by educating the students to collaborate in teams with other health professionals, namely nurses, pharmacists, physiotherapists, psychologists, data analysts, and also to train them in methods of communication in general, and especially in improving the communication with patients in all aspects of life and disease, from birth to the end of life.*

- In this context the fact that the School gave to the term “COMMUNICATOR” a prominent place in the list of qualities that an excellent physician should have by 2030”, is an auspicious sign. The ACP may only advise, however, to move the date 10 years earlier, at least.
- Graduates face the challenge that their medical final degree grade is, in general, lower than that of other medical schools, since the latter appear to inflate the marks given to their students. This causes a handicap because these marks are taken into consideration in the national competition to enter residencies. This means that a process of normalization has to be developed and agreed upon to ensure fairness for students from Minho.
- Enhancing the internationalization of the School by attracting students from abroad, although we understand that, at present, the government hinders the enrollment of foreign students. Furthermore it is very important to expand the staff with visiting foreign lecturers.

REPLY: We thank for these comments and suggestions. We have tried to incorporate these suggestions in the MinhoMD, as we believe they are of great value. As for the marks, we are happy to share with ACS, the decision of the Ministry of Health to normalize the marks for residency entrance.

Master and PhD programs

Several activities at the post-graduate level are being pursued with success.

At the Master level the School offers a 2-year Master in Health Sciences that has been receiving many more applications than could be accepted. This course has a broad scope and covers a diversity of specializations. *This represents a strong asset of the School.*

At the PhD level the School offers several routes: a classic PhD in Medicine, a MD/PhD track in which medical students start the PhD before finishing the graduation in Medicine (sometimes called an intercalated rote), a PhD in Health Sciences (Applied) affiliated with companies and spin-offs, and a PhD in Aging and Chronic Diseases (ACD). The latter is organized in collaboration with the University of Coimbra and the Faculty of Medical Sciences of the “Universidade Nova “of Lisbon.

The number of graduate students enrolled in the academic year 2016/17 is very adequate taking the capacity of the School into account: 9 in the classic PhD in Medicine, 4 in the MD/PhD track, 30 in the PhD in Health Sciences. At July 31st 2017, the School had 29 Master and 91 PhD graduate students: 38 enrolled in Health Sciences, 33 in the Medicine degrees, 20 of which in the MD/PhD degree, and 20 in the ACD track. Fourteen PhD students completed their theses in 2016: 11 in the Health Science and 3 in the Medicine programs. It would be convenient to indicate in the list of PhD theses completed, which articles correspond to the respective theses. This information is, in most cases, not easy to retrieve

It is also noteworthy that currently a considerable number (21) of medical students participate in the laboratory rotation component, which is necessary to be admitted in the MD/PhD program.

These graduate programs cover a diversity of topics, which is considered by the School a strength; it should be noted, however, that the reduced ability of attracting students outside Minho is a weakness. One point for discussion is whether the graduate program would be able to attract more students if it would be less diverse and more focused on areas where the research activities of the School are the strongest? Reducing the diversity of routes by focusing on School strengths could also make the delivery more efficient. *The ACS does not give an advice on this question but encourages the School to ponder seriously about this dilemma.*

A related challenge facing the School is how to promote more effectively the identity and the scope of the graduate programs. *The ambition of being recognized as a leading Graduate School in Medicine in Portugal should be actively pursued.* Successful alumni who are in prominent positions in the Health Service could be 'case studies' with their stories showcased on the Medical School website and elsewhere.

To enhance the international visibility of the scientific results obtained while working for a PhD degree it is important that the students develop collaborations with research teams abroad, and that they spend appreciable periods of working abroad and realizing joint publications with foreign colleagues. *The ACS encourages the School to stimulate these collaborations very actively.*

REPLY: Again we thank the ACS for these valuable comments. Two of them deserve further analysis:

We made an effort in the last 2 years to improve the quality (and easiness to access) the data of our post-graduation activities (please see Annex V).

A note to confirm that the EM has been discussing the dilemma of the focus of our Master and PhD programs and, as a preliminary conclusion, the concept of having more focused programs has been gaining momentum. However, we do not want to make any poorly-thought move, especially now that there is a restructuring of these programs at the national level.

We agree with the relevance to foster international collaborations, and to have PhD students experience other research environments. We have recently reviewed the data of the past students (graduating until 2016); most students spend at least 3 months in collaborating laboratories. Also of notice, 25% of the PhD graduates until 2016 are now working abroad.

The School has been revising its PhD programs in the last two years, and has made relevant improvements with respect to transferable skills and student's feedback and monitoring. This process led to the recent recognition by the ORPHEUS (<https://www.orpheus-med.org>), with the award of the ORPHEUS label for compliance with the best international practices in PhD education (the only in Portugal).

Postgraduate programs:

The School continues to offer an impressive and successful program of short postgraduate courses, that attract a large number of participants, not only with a medical background, but also with degrees in Pharmacy, Psychology, Biology, Biotechnology, Nursing, Food technology, Chemical Engineering.

Furthermore the School organizes special course for residents in various medical specializations in collaboration with the Alumni association.

A large proportion of the participants of these postgraduate courses come from outside Minho, and even from abroad. *The ACS acknowledges these praiseworthy activities of the School that constitute an important asset and contribute to enhance its national and international prestige.*

REPLY: Besides thanking the comment, we would like to state that we keep investing in these programs because they align with your mission and vision, but also because they expand our sustainability.

Alumni;

The School maintains a most valuable relation with the Alumni organization. In this respect the ACS recommends that the School should keep track of all alumni, and their careers, and entertain a close collaboration with this important community. The Alumni can be of invaluable help in shaping the evolution of the School programs. The meeting with the alumni led to animated discussions particularly in respect to which should be considered the special features of this School graduates, in comparison with those of other Schools; *in this way a list of features about what distinguishes this School graduates emerged:*

- a lot of contact with patients; prevalence of the “hands-on” approach;
- experience obtained in the Clinical Aptitude Lab;
- ethics prevalence in the course is perceived as extremely positive;
- emphasis on “self-learning” what promotes self-confidence;
- better results in the Harrison exam;
- choice between many optional projects; opportunity to participate, as student, in scientific research;
- development of communication skills;

The School could produce a short statement summarizing these points, along the lines of “Characteristics and attributes of the Minho medical graduate’ Regarding the question what Alumni can do for the School, the latter mentioned mainly two aspects: collaborating with the School by coaching students in their practical work and giving lectures; and, contributing financially to a social fund to help fellow students in need.

Replying to the question of the President of the “Ordem dos Médicos” (Dr. Miguel Guimarães) “Do you feel prepared to do Medicine when you graduate?”; the reply was unanimously “Yes”.

In the meeting with the representatives of the students, the ASC was surprised that some have difficulty in expressing themselves in English. It appears that the students have free classes on “English spoken” but apparently do not attend these regularly. Thus *the School should highlight the importance of English spoken fluently in the medical profession.*

REPLY: We feel extremely happy to hear that our graduates recognize that they feel prepared for practicing when they graduate and they have highlighted those characteristics and attributes.

The collaboration with Alumni and the involvement of our graduates has been instrumental for the development of our project and we hope it will stay like this in the future, as it represents such an amazing asset of the project. As a proof of this, Alumni Medicina has partnered with the EM in two of its most recent and relevant initiatives: the P5 digital medical center and B.ACIS.

Research – ICVS

The ICVS pursues 3 main interdisciplinary research lines: Microbiology and infection; neurosciences; surgical sciences. Two pilot research lines were launched, one in Community Health, and another one on Education on Life and Health Sciences. Furthermore two important research activities take place: one in collaboration with the Braga Clinical Academic Center: 2CA – Braga (see below); and another one in a consortium with the research group 3B’s - Biomaterials, Biodegradables and Biomimetics – of the School of Engineering focusing on Technologies applied to Regenerative Medicine (Biomaterials, Stem Cells, Tissue Engineering and Nanomedicine). An active partnership with the recently created International Nanotechnology a Laboratory in Braga is developing.

The ICVS has acquired a strong reputation in a wide range field of research in the Health sciences. The infrastructure is adequate; the animal facility (Biotério) is now fully operational.

REPLY: This comment of the ACS, which we thank, represents an important stimulus for us to pursue of efforts in the research domain.

Clinical research;

Through the 2CA –Braga and the Eurotrials a considerable number of clinical trials (70 ongoing in 2016) are being carried out. This represents a big share of the clinical trials run in Portugal (about 35%). Furthermore the 2CA-Braga developed several clinical studies in partnership with ICVS and other institutions of Minho University. These activities are being funded by national (FCT) and European grants. These developments have already led to the submission of a number of patents, and launching spin-offs. *The ACS commends these achievements that represent a valuable contribution to the task of disseminating knowledge and promoting Health research applications in a wide sense.*

REPLY: We share the view of the ACS in that the activities of the 2CA are critical for the success of the project. It impacts on the quality of care, which is our main mission. While significant developments have occurred in this period (as detailed in the EM's Report) that may expand our clinical research activities, there are currently some administrative/bureaucratic changes that also need our attention.

Human resources;

The School developed a transparent system for the recruitment, career promotion, supervision and monitoring of the staff. The ACS is appreciative of this system and that is very comprehensive. A number of young staff members could be appointed, which is a very positive development. Nonetheless the ACS got the impression that the applicability of a *system of staff monitoring with similar quality to the large and diverse population of clinical supervisors and tutors* (about 600 names listed in Annex VI) appears to continue to pose problems.

The School has a relatively low students/tutors ratio. This is an important asset of the School that should be cherished, and kept stable.

REPLY: The monitoring system of performance of the faculty and staff is operating and provides relevant information to guide our decisions. We are currently trying to expand that to the researchers that collaborate in the project. As for the tutors, we are only able to monitor their pedagogical performance and, obviously, that is a difficult task as a result of the limitations of the tools, the diversity of the population being monitored and also the population providing feedback. It is, however, important to note that there is a stability in clinical supervisors/tutors that helps in such a process.

Productivity;

The ACS did not make a specific evaluation of the scientific productivity of the School and ICVS. Nonetheless in several occasions this issue was mentioned; the growth of the number of scientific publications and of their impact was clearly put forward. These are positive developments. Nonetheless the *ACS advises that the School should monitor more*

critically its scientific performance activities using robust bibliometric measures of performance⁵.

REPLY: The scientific performance is reported in the ICVS and 2CA reports. In those reports, we used the standard bibliometric measures, as these are also used for the assessment exercises that research units must do in Portugal.

Financial resources

The lack of growth perspective regarding the financial input from the Ministry of Higher Education continues to be a major matter of concern. In contrast, the School has achieved to increase competitive funding from research grants at both national and international levels, which the ACS considers very positively. The ACS emphasizes that the School *should be pro-active in preparing researchers to apply to prestigious and financially attractive European Research Council (ERC) grants.*

REPLY: The EM keeps making all the possible efforts to support researchers in applying to grants. This is certainly critical for their individual success, as well as for the EM because it expands and broadens the portfolio of financial resources. In this respect, we may state that the amount of competitive funding for research in 2018 has substantially increased, to a total portfolio of 22,3 million € in ongoing projects (3 years of accumulated value), corresponding to a 22% increase as compared to 2017.

Outreach activities

The outreach of the School was expanded by creating the spin-off company *ICognitus* to promote the assessment software *medQuizz*, which is used not only in Medical Schools in Portugal, but also abroad. *The ACS acknowledges the important impact of these activities in enhancing the outreach of the School and in promoting financial support.*

An important aspect of the outreach of the School is the organization of a multitude of advanced training courses that are followed by large number of students, medical doctors and other professionals, and which have attained a prominent place in Portugal and abroad.

Also in the clinical field the School has been actively engaged in the development of the activities of the Clinical Academic Center-Braga Association (2CA-Braga) *promoting the relationship between research and clinical applications, leading to the creation of the B-MedTech Park that plays the role of incubator of medical technologies and spin-offs.*

REPLY: We thank for these comments as they stimulate us to support those actions.

⁵ In this context the ACS called the attention of the School to the analyses published by the CWTS (Centre for Science and Technology Studies) Leiden Ranking system (www.leidenranking.com/ranking/2017/list). This system offers robust quantitative indicators of scientific impact and collaborations and uses a transparent methodology. It does not rely on highly subjective data obtained from reputational surveys or on data provided by universities themselves, as done by other ranking systems. Moreover the Leiden system uses a normalized system that takes into account the diversity of publishing practices among scientific fields, and refrains from aggregating different scientific fields of university performance into a single overall indicator.

Concluding, the ACS is very positive regarding the achievements of the School in the previous years, and puts forward here a number of comments, with the main objective to stimulate the discussion within the School and, thus, to promote its further successful development.

REPLY: The EM would like to deeply thank the continuous input of the ACS. We also would like to take this opportunity to thank Prof. Fernando Lopes da Silva for his insights and guidance, that have been of the utmost importance for our strategic development. He will always be remembered as a member of the EM-UMinho. Thanks Fernando for your support and friendship.