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Feasibility Study of a Medical School

University of Luxembourg

Expert Group's Report | 12.02.2015

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1 Executive Summary

Luxembourg University plans to develop a medical school within Luxembourg to respond to the specific needs of Luxemburgish society and to sustain and further develop the delivery of state-of-the-art medical care by first-class doctors in a changing societal and economic environment.

In conjunction with the Ministry of Higher Education & Research of the Grand Duchy of Luxemburg, the University commissioned the Swiss Center Agency of Accreditation and Quality Assurance in Higher Education (OAQ) - since 1st January 2015 the Swiss Agency of Accreditation and Quality Assurance (AAQ), www.aaq.ch. The commission was to conduct a study of the feasibility of the University's plans for a Luxembourg Medical School, and if established as planned, whether it would have the potential for accreditation to the highest international standards.

The University prepared a comprehensive Self-Assessment Report for OAQ on 19th October 2014 concerning existing activities and structures, preparations for a full-scale medical school, future pre-clinical and clinical teaching and research plans, and the views of major stakeholders from the University, the wider academic, hospital and community healthcare communities.

OAQ selected a group of experts in medical education and research and provided them with copies of the Self-Assessment Report. The expert group were briefed by the OAQ on its usual procedures, and a site visit was organised from Wednesday 19th November to Friday 21st November 2014. The expert group subsequently worked together with the OAQ to provide this report.

Based on the documents provided by OAQ and additional documents delivered to the expert group during the site visit, and on comprehensive discussions with relevant stakeholders from public representatives, academic staff, participating hospitals, and research institutions, general practitioners, medical students and patients' representatives, the expert group came unanimously to the following conclusions:

- The plans for the creation of a Luxembourg Medical School are judged to be feasible.
- A Luxembourg Medical School would ensure that the delivery of health care for the future needs of Luxembourgish society is sustained under the independent control of the Grand Duchy itself, thus best suited to national social, economic and cultural expectations.
- The realisation of a Luxembourg Medical School would appear to be essential to accelerate and synergise ongoing developments in the rapidly growing innovative fields of Biomedicine, Biotechnology and the Knowledge Economy in Luxembourg.
- The expected necessary financial investment appears to be moderate, compared with the potential monetary and non-monetary gains.
- The full report provides evidence from which these conclusions are drawn, from the Self-Assessment Report, other documents supplied, and evidence from hearings held during the site visit to Luxembourg.

The expert group wishes to acknowledge the large amount of work carried out by the University of Luxembourg in preparation for the site visit, the generous hospitality and openness shown by the stakeholders and all others they met during their brief visit, and for the support of the OAQ in furnishing the completed report.

2 Introduction

This report documents an evaluation carried out by the Swiss Center Agency of Accreditation and Quality Assurance in Higher Education (OAQ), since January 2015 the Swiss Agency of Accreditation and Quality Assurance (AAQ). The OAQ were commissioned by the University of Luxembourg to conduct a study into the feasibility of a 'Luxembourg Medical School' (LMS). The aim of the study was to investigate whether an LMS, if established as currently planned, would have the potential for accreditation to the highest international standards.

The evaluation was carried out by a group of five international experts in medical education and research who were instructed by the OAQ. The expert group considered a Self-Evaluation Report (SAR), followed by a site visit over 3 consecutive days. The group was assisted by OAQ staff members during the site visits, but carried out the study and agreed conclusions independently of the organisation. This report contains the expert judgements of the site visitors together with supporting evidence. Page references refer to the SAR if not otherwise stated.

Background to the proposals

Currently there is no medical school within the Grand Duchy. All doctors in Luxembourg are graduates of other Universities, mostly from Universities in Germany, France, Belgium and Austria.. Medical students from Luxembourg are obliged to study away from their homes, within a different culture and healthcare system.

Through collaboration with nearby Universities, Year-1 medical studies currently take place at the Luxembourg University (LU), followed by selection with approximately 50% progression rates into Medicine courses elsewhere, whilst the remainder complete other professional courses. The Government of Luxembourg negotiates a fixed number of places with Universities in France, Germany and Belgium.

Recently Belgium has changed its policy for admission of foreign students because of pressures from their own citizens. Thus the previous acceptance of up to 15 students from Luxembourg is now uncertain adversely impacting access to medical courses by applicants from the Grand Duchy. Moreover, although no risk is currently identified over the medical student places negotiated with French or German Universities, no guarantee can be provided that restrictions may also not be imposed unilaterally in the future.

Year-6 studies currently take place in Luxembourg collaboration with the University of Homburg/Saar, which accredits the Centre Hospitalier de Luxembourg Hospital. The University of Heidelberg (2nd Medical Faculty in Mannheim) similarly accredits Year-6 training in the Kirchberg Hospital. These two hospitals in Luxembourg are the only two accredited by German Universities outside of the country.

In addition to the risk of loss of medical school places for Luxembourg applicants, other drivers and consequences were presented to the expert group by Luxembourg University and stakeholder groups. These include:

- Enhancing competitiveness in the Open EU Health Market, quality assurance and
- Continuous education in Luxembourg's health care system.
- The need for quality improvement in the community and hospital based providers, against a risk of loss of local clinical care to other providers outside the Grand Duchy, and of foreign patients currently treated within the hospitals of Luxembourg. Currently patients have no choice but to travel abroad for some specialist treatments.

- Underpinning Luxembourg's strategic Bio-technology and health sciences research Initiative (including Life Sciences, Systems Biology and Neuro-degenerative diseases), thus contributing to economic growth and international visibility. The lack of a medical school is viewed as a hindrance to further development.
- Offering the opportunity of a future 'health campus Luxembourg' in conjunction with other health care providers, including the ability to mount major international congress meetings thus enhancing national prestige
- Being the first and only trilingual medical school in the world, serving young Luxembourgers and other talented students who wish to study medicine in the context of a need to preserve Luxembourg's unique language and culture amongst its medical workforce; "thinking globally, acting locally".
- Offering highly individualised top-rate medical education including a scientific (PhD) track without the necessity of a large number of classical Faculty Professors across a large number of accredited subjects. Instead, a modern 'lean' Medical School model will be adopted, with a smaller number of pre-clinical phase academic teachers and mainly hospital and general practice based teachers for the clinical phase.
- The changing future of Luxembourg with alterations to tax regulations makes investment in the 'knowledge economy' an attractive economic proposition
- The LMS would form a major part of the new University campus development at the former Belval steel production site in Esch-sur-Alzette, in the south Luxembourg.
- The catchment population for the proposed LMS of 0.5m would not be unusual, being in keeping with the broad range of catchment populations for medical schools within the EU.

The expert group was informed that some of these issues will be also addressed in a parallel study by the consulting company Deloitte. Although the DeLoitte study falls outside the remit of the expert group, they wish to caution against restricting a cost-benefit analysis solely to measurable monetary benefit. In their collective experience supported by evidence from existing studies on the economic impact of Medical Schools, positive beneficial effects can be anticipated through the attraction of highly educated tax-paying academic and healthcare staff, associated commercial opportunities, the ability to make independent healthcare policy decisions and the enhancement of international visibility. Thus mere cost-benefit analyses at this stage of planning will inevitably grossly underestimate many of the more difficult to measure yet nonetheless real benefits such as:

- Ensuring an enduring independent supply of necessary medical expertise and of healthcare labour generally;
- Raising of quality standards and morale throughout health services and the Luxembourg population as a whole;
- Positive aspects of co-branding University and healthcare organisations;
- Fostering of a powerful spirit of motivation and cooperation uniting those working in academia, healthcare and many other aspects of society;
- Essential co-operation between academics and clinical staff required to support developments in stratified and personalised medicine and 'large' data management;
- Greater ease of students to access medical courses in their own cultural setting with reduced travel and other costs.

3 Evaluation procedure

3.1 Presentation of the concept of the future Luxembourg Medical School (LMS)

The Self-Evaluation Report (SAR) was supplemented by presentations from the LMS Executive Committee of Luxembourg University made during the evaluation visit, as well as by visits to other key sites identified by the University within the Grand Duchy.

3.2 Self-evaluation report

A detailed Self-Evaluation Report (SAR) was supplied to the expert group on 19th October 2014, a month in advance of the evaluation visit together with a separately supplied document, 'Annex to OAQ document, Draft Curriculum for Luxembourg Medical School Luxembourg'.

The document was well presented and structured, and the wide range of contributing authors is acknowledged (SAR p.79). The report followed the format required by the OAQ, supplemented by additional items of information and appendices.

The SAR is written in a clear style and was felt by the expert group to be comprehensive for their needs alongside the evaluation visit. Given the nature of the LMS project, the expert group acknowledges that the assessment consists of a review of development work already undertaken, and of proposals for developing and supporting the LMS in future made by the University of Luxembourg.

The report also included letters of support from a wide range of key stakeholders. In providing this report, the expert group has necessarily assumed that the proposals are put into effect as they stand. Advisory recommendations have been made by the expert group in order to assist the University over practical aspects of their proposals, and to ensure that the desired quality standard could be achieved.

3.3 Expert Group

A group of international experts in medical education was nominated by OAQ. The group included a wide range of expertise and experience in preclinical, clinical and postgraduate medical education and research from a variety of international locations, and included two non-European members:

- Prof. Dr. Michael Larvin (peer leader)
  Head of the School of Medicine at the University of Limerick, Ireland, and a Surgeon.
- Prof. Dr. Georges Bordage, former Director of Graduate Studies at the College of Medicine, University of Illinois, USA, an international expert in medical education;
- Prof. Dr. Andrew Coats, Joint Academic Vice-President at Monash University, Australia and the University of Warwick, United Kingdom, and a Cardiologist;
- Prof. Dr. Inga Thorsdottir, Dean of the School of Health Sciences at the University of Iceland, Iceland and a Nutritionist;
- Prof. Dr. Werner Solbach, Director of the Institute for Medical Microbiology and Hygiene, former Dean of the Medical Faculty at the University of Lübeck, Germany and a Medical Microbiologist.

The expert group have the following disclosures: Prof Larvin and Prof Solbach visited Luxembourg University during 2014, responding to invitations from the LMS Executive to

present and discuss their own medical school developments. Members of the LMS Executive visited the University of Limerick as part of the programme of visits to existing medical schools.

3.4 On-site visit

The purpose of the on-site visit was to provide an external validation of the conclusions of the Self-Evaluation Report regarding potential fulfilment of the standards and, if necessary, to verify information contained within the report and to evaluate areas that required stakeholder assessment. The three day visit took place from Wednesday 19th November until Friday 21st November 2014, and consisted of daily meetings of the group with OAQ staff, presentations from the LMS Executive and hearings with key stakeholders. The stakeholder hearings involved the University's Luxembourg Medical School (LMS) Executive and Steering groups, other key stakeholders from the University, Hospitals and General Practices, Luxembourg medical students studying abroad, patient representative groups, and the State Government of the Grand Duchy of Luxembourg.

The experts worked as a single group except for site visits to hospitals on Thursday 20th November, when they were sub-divided into two groups. This was to ensure that visits could be included to all four of the main hospital sites across the Grand Duchy. The evaluation process was supported by OAQ staff throughout, and by local staff at the University and the stakeholder sites visited. The organisation of the visit by OAQ and local staff was very efficient allowing a large amount of information to be gathered during a short visit. The group noted that OAQ would normally plan an evaluation and visit over a 12 month period, but due to time pressure the expert group had been commissioned and the visit arranged within 6 months. The hospitality across all of the sites visited was superb, and the expert group agreed that all of the stakeholders they met were open to being questioned and keen to express their views. The detailed visit schedule can be seen under Annex A.

4 Compliance with the Quality Standards

This report examines a proposal for a new Medical School course which is in planning but not yet in operation.

Compliance with Quality Standards is usually assessed against evidence of actual activity, rather than by examining a proposal for new facilities and a new medical course. Therefore this report differs from the more usual OAQ evaluations in not being a process of accreditation, but instead an external advisory report.

The expert group has assessed all of the evidence made available to them against OAQ standards where appropriate. The evidence considered included paper and electronic submissions from the University, as well as group hearings with stakeholder groups as previously described.

The report is provided on the basis that it is not an accreditation or evaluation, but rather constitutes expert advice on the LMS proposal including recommendations for further improvement. It includes additional information on what would be required to attain accreditation in the future.

Page references not otherwise specified within this report refer to the LMS Self-Evaluation Report (SAR). Other reference material is cited within square parentheses.

4.1 Area 1: Mission and Objectives

4.1.1 Sub-area 1.1 : Mission and Objectives

Standards:

1.1.1. The medical school defines its mission and objectives and makes them known publicly. The mission statement and objectives describe the educational process. After completion of the programme, doctors have the ability to practice their profession as well as an appropriate basis for further training in any specialised branch of medicine. They are able to take responsibility for their role as doctors in the health care system.

1.1.2. The mission statement and the objectives take into consideration social responsibility and community involvement.

1.1.3. The mission statement and objectives are compatible with the strategic planning and the research goals.

Description

1.1.1.

Within the SAR, the mission of, and the vision for, the proposed LMS is described in detail (p.12), together with educational objectives to be achieved (p.13-14). These include the educational process, as well as the intent that LMS graduates would practice professionally, be prepared for further training in any specialty, and take responsibility for their role as doctors in the health care system.

The proposed mission and objectives are aligned with World Federation of Medical Education (WFME) guidelines [1], and include the Swiss Catalogue of Learning Objectives (SCLO) defined competencies for Undergraduate Medical Training [2] as well as the 'CanMeds' professional competency framework [3].

During hearings, the LMS Executive and Steering committees (membership listed in Annex B) and the LU President emphasised that the LMS plan was not for a classical European type of 'Faculty of Medicine', which they advised would require Professors to be appointed in up to 54 accredited subjects which is felt to be beyond current financial and structural capabilities.

Instead a modern 'lean' medical school model is proposed. The University already employs academics in many of the relevant pre-clinical disciplines, and key clinical stakeholders employed by the Luxembourg hospitals, private Consultants and General Practioners (GPs) are committed to supporting the development of a 'Medical School' on a 'non-faculty' basis. The expert group heard evidence of wide support for the LMS project from all stakeholder groups, and no views to the contrary were expressed or elicited. It was also confirmed that the proposals are known publicly, including current Luxembourg medical students and a patient representative. Evidence was identified within the public domain of significant media exposure of the proposals during the last 18 months [3].

1.1.2.

Social responsibility and community involvement are explicitly articulated in the self-assessment report (p.12).

During hearings, the expert group confirmed the intentions for the LMS with respect to its social responsibility and community involvement in hearings with relevant stakeholder groups (government ministry, LU, LMS Executive and Steering groups, LU and external Academics, healthcare professionals, medical student and the patient representative).

1.1.3.

There was evidence presented in the self-assessment report (p.13-15) that the proposed mission statement and objectives are linked to, and compatible with, strategic planning and the research goals of the LMS proposal. Subsequent sections cover this aspect in greater detail, based on Annex 2 of the SAR (p.81-94) and the separately supplied document entitled 'Draft Curriculum for Luxembourg Medical School Luxembourg'.

During the hearings, the expert group observed clear support for adequate linkage with and compatibility between the proposed mission statement and objectives with strategic planning and the research goals from relevant stakeholders.

Recommendations:

a) The mission statement describes the desired educational outcomes accurately, and proposes how they will be achieved in broad terms.

b) The student-centred approach and the involvement of a patient representative in the planning process is noted positively. As the project progresses further it would be prudent to express explicitly as to how the specific needs of patients and their carers within Luxembourg would be served by an LMS and its future graduates.

c) The expert group understands why the CanMEDS framework was included, but there may be capacity for initial confusion as it was designed for practising doctors. It would be useful to add a caveat that the framework contains *desired outcomes for practising physicians*, and that students would not be expected to attain full competency in each domain until completion of the course and graduation, or further specialist training.

d) The adoption of a modification of the Swiss Catalogue of Learning Objectives appears highly relevant to medical education in Europe and is also bilingual (French-German). It is recommended therefore that as the LMS project proceeds, greater clarity is provided as to the relative roles of the three distinct frameworks of SCLO, WFME guidelines and CanMEDS frameworks.

4.1.2 Sub-area 1.2: Participation in formulation of Mission and Objectives

Standard:

1.2 The mission statement and objectives of the medical school are defined by its principal stakeholders and other interested parties.

Description

The self-assessment report states (p.16) that that the University has liaised with its principal stakeholders and other interested parties. These are enumerated across various areas and sub-areas of the report, with 12 specific letters of support from relevant stakeholder organisations included in the SAR under Annex 11 (p.144-160).

The expert group observed evidence at hearings about the participation of stakeholders in the process of developing the mission statement and objectives and agreement with the final proposals. The intentions of the University itself were noted by the presence of the University President at the first hearing. In April 2013, The University appointed a new Vice President (VP) for Research as Chair for the development of the LMS in April 2013. The University's commitment to the LMS was also witnessed by the VP for Academic Affairs, the Dean of the

Faculty of Sciences, Technology & Communication, and the Directors of Administration and of the Centre for Systems Biomedicine, and by a full-time curriculum developer (p.12).

Consultation was led through the LMS Steering Committee which the expert group noted to include a wide range of representation (p.12), including other senior University faculty, representatives from CRP-Santé (from 1st January 2015, the 'Luxembourg Institute for Health'), executive directors of the 4 main state hospitals, legal and educational experts, GP representatives and representatives of the Association of Doctors, Nurses, Students and Patients' Organisations, as well as representatives of the key ministries of Higher Education & Research and of Health.

The expert group heard from the entire range of stakeholders, including academic and administrative staff from the University and its various faculties and departments, the CRP-Santé, Hospitals, employed and private hospital specialists, GPs and other healthcare staff, medical students studying outside Luxembourg and a public representative. Inevitably, the timing of stakeholder involvement varied according to their closeness to the University, and so some were informed in more detail than others. The rapid timescale for the OAQ review meant that a few stakeholders had only received the submission shortly before the expert visit. Nevertheless, all had clearly seen the document prior to the hearings, and all were familiar with the proposed mission and objectives.

The expert group heard widespread support and praise for the work accomplished by the University in a very short timescale, and particularly for the enthusiasm and commitment shown by the LMS Executive team. The breadth of participation and the large number of individuals consulted was confirmed during the hearings. The group heard support for the University to lead the LMS development from all stakeholders at hearings and the site visits.

The expert group asked each stakeholder group whether there were any dissenting views as to the need and feasibility of the LMS programme, and were informed that there was unanimous support for the proposal.

Virtually no dissent was heard with only a single clinician voicing a slightly negative view, which was that it may prove difficult to convince medical parents with offspring intending to study medicine to choose the newly established LMS in preference to the many well-established medical schools within a reasonable distance of the Grand Duchy. Such a view is to be expected, and emphasises the need to ensure that the LMS offers a course that is of comparable high quality, albeit identifiably different to and competitive with those provided nearby and at similar or lower cost to students and their families. Whilst the views of the medical workforce on aspirations for their children to follow them in their careers must be considered, it is also desirable to extend access to a medical career to the many good applicants to medicine who come from non-medical parents.

In the hearings with LU faculty on the third day it was pointed out that some parents could not currently afford to send their children aboard to medical school, effectively restricting access to medicine to 'privileged' students. This was seen as socially undesirable. Although there was strong consensus amongst stakeholders, it was acknowledged that the population would need to support the LMS programme.

The patient organisation representative met with the expert group. He told us that patients felt an LMS would help to improve medical care, with a hope that it would bring innovation. Language differences between doctors and patients were felt to be an important issue, particularly in Psychiatry and in sensitive issues such as end of life care. There would be strong support from patients for students gaining proficiency in Luxemburgish. He expressed the wish that the LMS would train doctors able to treat patients 'face-to–face', for which good

communication was essential. It was emphasised that most problems between doctors and patients are based on communication problems. Research training was also felt to be important. He felt that there could be better, more visible relations between Psychiatry and Psychology and Academic Neurosciences that the LMS would foster. The patient representative said he had received the documents only a short time before the hearing, and that he would welcome the opportunity for patient and carer groups to become more involved in the LMS proposal as it develops. He suggested that it would be prudent for healthcare professionals not wholly based in the GP or hospital system also to be included in future consultation and development. The group found the public representative to be well informed and highly supportive of the LMS project.

Recommendations

a) The members of the expert group commend the breadth of stakeholder involvement as appropriate for the current stage of development of the LMS project. As the project progresses, greater public engagement should be achieved by increasing the number of representatives from patient groups.

b) Similarly, some consideration of involving further healthcare professionals and social care agencies not wholly based in the healthcare system would be advantageous in helping LMS students to prepare to interact with colleagues in their own future careers, for example, clinical and child psychologists, and counsellors.

c) Undoubtedly the University will be planning greater media coverage, which will include invitations for further public and professional involvement. In an era of political and economic changes this might be accomplished efficiently and speedily through the use of external communications expertise.

4.1.3 Sub-area 1.3: Academic autonomy

Standard:
1.3. The medical school has a policy within which it has freedom to design the curriculum and allocate the resources necessary for its implementation.

Description

As the medical school is not yet in existence, and the curriculum is currently in draft form subject to further refinement, the responses in this section are based on the proposals made in the self-evaluation report and stakeholder hearings. The Self-Evaluation Report mentions (p.17) that the LMS Executive had received sufficient budget allocation from the University in 2014 and 2015 to perform a feasibility assessment and that the current evaluation exercise was part of this process. The report also states that the illustrative curriculum has been developed independently by the LMS Executive Committee without interference from any external body. It is emphasised that key structures, policies and procedures are already in place to ensure academic autonomy within the University, with reference to the external evaluation report of March 2013 [4]. The University Law of 2003 [5] also confirms that it provides for the establishment of autonomous structures in terms of budget and curriculum development.

At hearings, the University confirmed its willingness to continue to grant autonomy to LMS over curricular and financial matters. In the future, there is said to be general agreement in the University that the required budget for LMS has to be considered as supplemental to the general allocated University budget. The expert group observed that the development work had been delegated to the VP for Research and to the LMS Executive, and saw no evidence of restriction of freedom on the design of the curriculum. Some members of the extended LMS

Steering Group had become involved in the provision of expert advice to support the curriculum, including the Luxembourg Centre for Educational Testing (LUCET) group, who demonstrated in hearings that they have well established expertise in modern, objective selection and assessment methodologies. Thus collaborative support from the University had already taken place without evidence of interference with the curriculum planning process. The expert group previously noted suggestions for top-level budgetary allocations to support delivery of the LMS curriculum, assuming approval by the government.

The expert group questioned stakeholders as to whether it would be advantageous, for reasons of cost and time, to purchase an 'off the shelf' curriculum from a similar type of medical school. They were informed that the unique requirements of the LMS curriculum as advised by local stakeholders, the focus on student involvement and the need to compete by means of a distinctive and innovative curriculum, would mean that the degree of amendments required made this unattractive. A previous offer to provide a curriculum by the University of Nancy had been rejected for these reasons, noting that the offer emanated from a closely located competitor medical school. An offer from Belgium to operate a divided BMed/MMed course was assessed to be so expensive that it actually favoured the development of an LMS programme. These offers would both necessarily have involved LMS students in a 'massification' exercise rather than the more personalised approach to students, which is an important aim of the LMS programme. The expert group enquired about why the continental 'faculty of medicine' model had been rejected. It was clear that high startup costs precluded this. The Anglo-Saxon University and Healthcare partnership medical school combined with an innovative 'lean' structure offered not only cost savings, but would also fuel much needed high-level collaboration between University and Healthcare sectors.

The expert group asked the LMS Executive and Steering group what the cost of establishing Biomedicine at the University had been, and were informed that the cost was €140m between 2008 and 2013. The group also enquired of the Ministry representative how the financial commitment to the University and LMS programme stood. It was noted that only 'new' developments would be considered for any increase in University funding, and that the LMS proposal would be considered as such.

At the feedback session at the end of the 3rd day, the Minister for Higher Education & Research, Mr Marc Hansen indicated that various reports, including this OAQ report, would be considered during the forthcoming year, and that a decision to proceed or not would be made in the second-half of 2015.

Recommendations

a) The expert group acknowledges the academic freedom and budget allocation already provided to design the curriculum be extended formally by the University, with the allocation of sufficient resources for implementation. Future academic independence is pivotal for the LMS and a contractual formalisation of this should be considered.

b) The expert group are well aware of the relatively high overall cost of delivering a medical school curriculum and notes the expectation of additional funding to the University for the LMS project in keeping with the need for the highest quality of medical graduates to work in the health system of the Grand Duchy. The group encourages a commitment to allocate the LMS sufficient capital and revenue funding to ensure an adequate physical infrastructure and staffing levels that are vital to ensure that it succeeds. The expert group recommends that the University provides a formal assurance that funding requirements are fully underwritten, benchmarking, if necessary, with the known costs of other Western European Medical Schools.

c) The expert group further recommends that, given the expectation of incremental funding in addition to the University's recurring budget, the LMS budget should ring-fenced (that is, totally protected) for a period of 5 to 10 years to ensure that funding allocated is used entirely for its intended purpose of development.

d) The expert group also suggests that, in view of the difficulty of collaborating closely with medical schools in neighbouring countries due to potential competition for places, some thought be given to the development of a partnership with other medical schools developed recently in similar circumstances. Such academic partnerships might permit LMS plans to be refined in the light of recent developmental experience, assuming a best-practice model might be found including the need for a bilingual approach and lean 'medical school' structure rather than the traditional 'faculty of medicine' approach.

4.1.4 Sub-area 1.4: Educational outcome

Standards:

1.4.1 Based on the Swiss Catalogue of Learning Objectives for Undergraduate Medical Training, the medical school defines the competencies to be achieved by students at the completion of their studies, necessary for their subsequent training and their future roles in the health care system.

1.4.2 Information concerning performance assessment and other data on the competence of the graduates is used for the further development of the educational programme.

Description

1.4.1.

The self-evaluation report makes clear (p.18) the commitment of the LMS Executive to anchor the proposed curriculum on the SCLO defined competencies for Undergraduate Medical Training [2]. The report states that the LMS Executive Committee, the Steering Committee and Student Curriculum Committee (SCC) have defined the necessary competences of future graduates based on SCLO, and therefore by inference, WFME guidelines, with appropriate modifications for Luxembourg.

The modifications are those felt to be necessary for future graduates to practice medicine under supervision and enter residency training for specialisation within Luxembourg. The desired educational outcomes described in the report (p.18-9) reflect the proposed mission and objectives, and include competencies across clinical and scientific skills; compassion; health promotion; multidisciplinary and multi-professional work along the continuum of care; understanding of health and health care systems; and the pursuance of life-long learning.

The expert group heard further supporting evidence of LMS intent to provide a state-of-the-art curriculum to meets the recommendations of the SCLO and WFME at hearings with relevant stakeholders, including potential preclinical and clinical teachers, and medical students. The expert group also noted that the requirements of the EU professional mobility directive [6], are met by the LMS proposals, both for hours of instruction as well as for years of study.

1.4.2.

The report further states that "once the LMS becomes operational; a continuous adjustment to the needs of the health system and society at large will be sought taking into account the actual performance of the LMS graduates. Information regarding the attainment of our predefined performance goals will be continuously collected, analysed and used for quality improvement". Thus a commitment to this future goal has been provided. In hearings with all key stakeholders,

the expert group heard evidence that their continuing involvement to achieving good educational outcomes is planned.

Recommendations

a) The expert group recommends that, whilst the course is developed and built up, some formal mechanism be utilised to ensure that the standard of knowledge is comparable with competitor medical schools[1].

b) The group recognises that the use of External Examiners is uncommon by mainland European Universities, but this might be considered to assess the standard of skill acquisition. This would represent ground breaking practice in comparison with competitors, could add to the credibility of the new LMS in order to recruit strong students in a highly competitive environment, and could also reassure those making decisions on the allocation of the large investment required.

4.2 Area 2: Study programme

4.2.1 Sub-area 2.1: Curriculum models and instructional methods

Standards:

2.1.1. The medical school defines the curriculum models and instructional methods.

2.1.2. The study programme and instructional methods ensure that the students have responsibility for their own learning processes and are prepared for lifelong, self-directed learning.

Description

2.1.1

The self-assessment report (p.20-21) includes reference to there being a defined curriculum, with proposals for the instructional methods required for delivery. Further details are provided in the report under sub-areas 2.2 and 2.3 (p.22, 26) and in Annex 2 (p.81-94) and in the Annex document, Draft Curriculum for Luxembourg Medical School Luxembourg. The curriculum model that the LMS intends to implement as most appropriate to its local context is hybrid. It aims to utilise elements of problem based learning (PBL) with a spiral, learner-active approach. There is reference to the inclusion of the well-accepted principles of the SPICES [7] and PRISMS [8] models, as well as the community integration approach recommended by the US Carnegie Commission [9]. There is also reference to social accountability to the community, close linkage with the Luxembourg health care system, and for the aspiration of LMS to become a seat of high learning, of academic discourse, and of scientific research. The proposed curriculum (SAR p.21) implies a blend of instructional methods, including face-to-face and e-learning modalities.

[1] This may take the form of knowledge acquisition progress tests, such as the longitudinal formative Personal Progress Index (PPI) currently used by McMaster University, Hamilton, Canada, the University of Limerick in Ireland, the University of the Algarve in Portugal, Ross University in the West Indies and the University of Western Sydney in Australia. Other examples include the PTM (Progress Test Medicine) of the Charité, University of Medicine Berlin, Berlin reformed studies, and at medical schools in Witten/Herdecke, Aachen, Bochum, LMU Munich, Cologne, Munster, Hanover, Mannheim/Heidelberg, Regensburg, Essen/Duisburg, Frankfurt, Giessen, Germany; and at Graz, Innsbruck and Vienna, Austria. The Maastricht Progress test also operates in Groningen, Leiden, Maastricht, Nijmegen, VU Amsterdam, Holland, and Ghent University in Belgium. US and UK examples also exist (US: National Board of Medical Examiners, Southern Illinois and Florida; UK Barts and the London School of Medicine and Dentistry, St. George´s University of London, University of Leeds, Queen´s University Belfast, Belfast).

The relatively small cohort size is emphasised as providing a favourable student-to-instructor ratio, and therefore a highly individualised instructional approach based on individual learning needs assessments informed by current best practice. It is proposed that teaching and learning of factual knowledge, problem solving and clinical, social and communications skills will be accomplished using the most appropriate and relevant mode of instruction. It is argued that an individual approach is affordable with the expected cohort size, and that this will be required to compete with more established medical schools as is the proposed multi-lingual delivery.

A 'scientific track' PhD route is proposed partly to meet the needs of applicants with research aspirations, and also to help to achieve higher status for the University's research programmes.

The expert group heard evidence to support intentions on curriculum development from the LMS Chair and Executive, Steering Committee, LU academic preclinical and clinical faculty, hospital and GP clinicians, other healthcare professionals and medical students.

2.1.2.

The self-assessment report (p.20) states that the study programme has been designed to develop students' ability to become responsible self-directed learners for their entire career as medical professionals. There is also reference to empowerment of the study programme by information and communication technologies (ICT), and that the best use of educational resources include students themselves as well as other stakeholders and the community. The proposed curricular outcomes are based closely on those of the SCLO, and involved participation by a Student Curriculum Committee (SCC) with appropriate professional supervision. There are proposals for further review by 'senior experts' for academic quality, content and methodological soundness', selected specialists for clinical relevance then approval by both the Executive and Steering Committees considering consensus from key stakeholders on the healthcare needs of the Grand Duchy.

In hearings, the expert group heard evidence to support this intent from the LMS Chair and Executive, Steering Committee, LU academic faculty, hospital and GP clinicians, other healthcare professionals and medical students. It was noted that three Ministries would be involved in the decision to proceed with the LMS programme: Education & Research, Health and Economy. All were closely involved, and it became clear to the expert group that affordability would be important. The group queried from the senior representative of the Ministry of Higher Education and Research as to whether non-economic drivers and benefits would be considered, and were assured that this would be the case. It was emphasised that the creation of the LMS would not be considered a short-term project, and as such would not be related to one government but approved on consensus across politics. It was stressed that if the stakeholders and the expert group agreed on feasibility and that the LMS programme could be delivered at top quality, this could change the political process. It was also pointed out the idea for LMS had only existed for just over one year. The Deloitte study was said to be concerned with establishing whether there was a need for an LMS in view of the size of the project which was large, with a big impact and budget. The expert group also heard that the attraction of students from other countries was considered a legitimate objective of a mainland European medical school. The scientific PhD track has not yet been described in detail in the report, but the expert group heard from the LMS Executive that entry and departure points are likely to be between pre-clinical Year-3 and clinical Year-4.

The expert group asked the LMS Executive and Steering group whether a 'plan B' option of commencing the programme initially with only a 3 year BMed or MMed programme, in collaboration with an existing medical school, had been examined. The same question was asked by the Ministry representative who indicated that the government may be expecting more than one option for the LMS programme, although this may have been an expectation of more

than one new funding request from LU. The response was that this option had been considered but only a full programme would provide Luxembourg with the secure long-term source of medical graduates required and a hybrid arrangement could delay or prevent the achievement of that desired outcome. It was stated that a stand-alone BMed course would mean students travelling to complete clinical training in a different country and culture without experience in the clinical use of Luxembourgish. An MMed only phase would also be very costly. Either a standalone BMed or MMed course would make vertical integration difficult, and the desired overall quality would also be difficult to guarantee. Both would perpetuate the risks of dependency on foreign medical schools, but at greater cost.

When the LMS Executive and Steering groups were asked whether there was consensus on the need for a medical school, the group was told that there was widespread agreement from the academic and healthcare sectors, but aside from media exposure the public view was not know with certainty. However, those in Luxembourg who initially expressed a view that a University was not necessary now considered LU to be a great success, and a similar change had occurred over the Biomed Systems development. There was felt to be a strong need from the healthcare system for academic branding of hospitals, because all of the surroundings competitor hospitals (for example, in Nancy) are named as 'University Hospitals'.

The expert group queried the LMS Executive and Steering committees over the proposed commitment to a multi-professional approach, as this was mentioned but not described in great detail in the self-assessment report. The LMS Executive, Steering Group and medical and other healthcare representatives all stated that they supported such an approach, where feasible, but that some would regard this as too revolutionary a change present for Luxembourg, but nevertheless a development that would be fostered over time. There was particularly strong support from nursing professional representatives, who felt that the LMS development would also strengthen their own training, particularly the case for changing from a diploma to a graduate profession in Luxembourg. There is a dropout rate of 40% from nursing diploma courses, which a graduate programme could reduce, making it a more attractive profession and avoiding the current dependency on foreign trained nurses. Currently 70 nurses are trained each year within Luxembourg and they rotate across all four main hospital groups, which they that would be important for medical students. There is a single nursing school split across 3 geographical locations with a single national examination in either German or French, but with a practical examination partly conducted in Luxemburgish to assess communication with patients. Nurses had contributed to the development of the LMS curriculum. They saw the value of medical student learning inter-professionally with nursing students, which parallels the model of real-life clinical care. They also felt that they already had a unique role in certain aspects of skills training for medical students, for example training in injection administration. Year-1 Medical students at LU are taught some basic nursing techniques at the end of their first year. We learned that there are approximately 2,200 full time nurses working in hospitals with an additional 3,500 qualified nurses employed in community and nursing home setting. Only 37% of the nurses in Luxembourg are citizens of the Grand Duchy, but all nurses are obliged to learn Luxemburgish within one year of employment. The nurses emphasised that there were cultural differences between other countries and Luxembourg which could cause difficulties with patient care, particularly with the visiting model of liberal doctor trained elsewhere. The modern concept of interprofessional teamwork was applied variably across the various hospitals, and the expert group noted that there was capacity for further development with the willingness of the nurses to work together more closely with doctors and other healthcare professionals. In turn, at site visits we heard that of the perceived advantages of early inter-professional education of LMS medical students with nursing students and Nurses.

The group queried with the LMS Executive and Steering committees whether the low number of proposed 'core' professors could affect the ability to provide a high quality of teaching and

learning, and it was pointed out that such lean models exist elsewhere in the UK, Canada and Australia, and was becoming the predominant model for the building of new medical schools. Also that additional preclinical teaching and research activity would be provided by more well-established departments of the University, and by clinical teachers in hospitals, clinics and general practice. The group asked the LMS Executive and Steering Committees whether the University might consider making 'adjunct' or 'honorary' appointments to recognise high-quality teaching and research amongst clinical teachers not employed by them, as happens in existing medical schools some of whom already grant such titles from other countries to clinicians in Luxembourg. They responded that this was recognised and would be considered. It was estimated that around 20% of all clinicians within Luxembourg would become involved in teaching.

When the stakeholder groups were asked about the risks of an LMS, one response was that the budget required was high at a time when the economy of Luxembourg would be changing, whilst another view was that that the appropriate quality might not be met if there was a failure to recruit appropriate staff. There would also be a risk of the potential loss of talent from the current immigration of qualified doctors. However the LMS only aims to provide half of the required replacement number so medical immigration would still be required. It was stressed that Luxembourg provides really good working conditions, high salaries, no private medicine market, located in the middle of Europe with a good quality of life. The same risks had been posed when Luxembourg University was being discussed, but there had been no problem in recruiting strong academic candidates. The expert group heard that risk of continuing to depend on external sources of medical graduates was far greater than any risk of pursuing the LMS programme.

Recommendations

a) The expert group recommends urgent clarification between LU and the three relevant government ministries regarding the latter's expectations of 'options' for the LMS programme, or whether the expectation was of other new funding requests from LU.

b) The expert group was conscious that LU would need to prioritise the LMS above other innovative funding applications in the context of the societal needs of the Grand-Duchy.

c) The expert group was satisfied that the delivery of a BMed or MMed programme in isolation, instead of the proposed LMS medical school, would not be viable for the particular requirements of Luxembourg.

d) The expert group supports the aims of the provision of a PhD track, but recommends that clarity be achieved on the intent of this track in parallel with a newly proposed course. Although it is proposed as a rapid means of bolstering existing biomedical research efforts as well as a means of recruiting international applicants, there is a danger that it could detract from the main focus of establishing the BMed/MMed course. Further detail on the timing of introduction of the PhD route, selection, departure and re-entry points are required, or a clear statement made that this path remained a longer-term goal such that no detail of the programme had yet been decided upon.

e) The group also recommends making the incorporation of practical interprofessional educational opportunities more explicit. Interprofessional education is about learning to practice together in the real world to optimize patient care. Such opportunities might include, for example, communication skills, joint skills labs or anatomy teaching facilities.

f) The group recommends that, as plans mature, a learning agreement is formulated and made available to applicants, in order to emphasise clearly that, if selected for the LMS

programme, they would take primary responsibility for their own learning. This would help manage expectations of applicants, some of whom may be better served by undertaking a less innovative course elsewhere.

4.2.2 Sub-area 2.2: Structure, composition and duration of the study programme

Standards:

2.2.1. The medical school describes and defines the contents, extent, and sequencing of the study programme elements, including the balance between core and optional content.

2.2.2. The study programme is based on the goals of the Swiss Catalogue of Learning Objectives.

2.2.3. Basic sciences and clinical sciences are integrated in the study programme as well as the interface with complementary therapies.

Description

The report refers (p.22) to a detailed spiral, modular, integrated curriculum based on the Swiss Catalogue of Learning Objectives, modified for local requirements. The report states that the curriculum is well-grounded in basic and clinical sciences and provides an interface with 'complementary therapies', which the expert group interprets as evidence-based therapies proven to complement traditional healthcare. Mention is also made of the need to strike a good balance between compulsory and elective subjects with a high level of content integration. The draft curriculum (Annex 2 p.81-94 and the separate 'Draft Curriculum Annex') is informed by the experience of hosting existing students in Luxembourg in Years 1 and 6, discussions with internal and external experts, current educational literature and considerable experience within the LMS Executive team (p.22).

A modular structure is proposed, achieving horizontal integration with serial focus on different organ-systems anchored on clinical relevance for diagnosis and treatment rather than the traditional system of unrelated basic science teaching. Vertical integration will be applied by coverage of longitudinal topics and themes throughout all years of the course (p.22-3, Annex 3 p.95-6). Examples include communication and clinical examination skills, increasing knowledge requirements in basic and clinical sciences, social, community, population and public health, advanced information and communication skills, law, ethics, and professionalism. This will be reinforced by a commitment to 'spiral learning', recognising that topics recur at increasingly higher levels and require to be reinforced, and longitudinally integrated clinical attachments and clerkships. This aims to promote continuity of care and building relationships with patients, tutors and clinical teachers, with the local community, wider health services and national needs and the requirement for complex clinical reasoning in a real-life context. Longitudinal 'cases' will be integrated into the educational process to help understand the complexity of health and disease in a variety of contexts, including the home, general practice, hospital, rehabilitation, long-term facility or hospice. There is full commitment to the Bologna system, that is a Bachelor preclinical and mainly non-patient clinical subjects, followed by the Masters clinical subject phase with a scientific approach including a Master's Thesis in personal primary research (p.23). A participative approach is proposed to actively involve students in the design, development, continuous feedback on and evaluation of the study programme curriculum. There is focus on social and communication skills, leadership and teamworking skills, analytical thinking and lifelong learning as key for practising doctors, as well as relevant values such as compassion. There is also emphasis on appropriate use of e-learning, with mention that the University provides modern e-learning facilities for the production of internet-based courses. E-

courses are intended to free up time for the teachers to discuss topics in tutorials, the flipped classroom with learning at home and homework in the classroom. Lecturers will also provide video-recorded topic lectures for students to view out of school.

It is proposed (p.24) that 20 to 25% of the curriculum will consist of elective options 'for the time-being', but this proportion 'might be revised in light of feedback over the years'. A modular timetable is provided for each of the 3 years of both BMed and MMed course phases (p.96).

Hearings with the LMS Executive and Steering committees, LU preclinical and clinical academic staff, hospital and GP clinicians, other healthcare professionals and medical students confirmed a commitment to defining content, extent, sequencing of study programme elements, a balance between core and optional content based on the goals of the Swiss Catalogue of Learning Objectives, including plans for the integration of basic and clinical sciences in the study programme with an interface to complementary therapies.

Recommendations

a) The expert group noted that great strides have been made to define an innovative LMS curriculum, but recommend that further work be carried out to validate existing efforts with completion of the full, detailed curriculum. This will permit, in particular, the intention for an integrated and spiral curriculum to be made explicit. Integration refers to what happens within a student's mind rather that the organization and scheduling of subject matters.

b) The expert group recommends similarly that, on completion of the full curriculum, assessment is specified in greater detail, especially in how this will test and reinforce integration.

c) The expert group recommends that, in view of the highly innovative curriculum proposed, that full details of this are made available to applicants. The chances of successful implementation of a new curriculum could be enhanced by ensuring that students accepted on to the programme are motivated to study using modern methods, rather than accepting students who may expect a more traditional programme and thereby disrupt the programme.

d) The expert group suggests that the Master's dissertation could involve clinical teachers in the hospitals and general practice, as well as LU academic staff. A co-supervisory arrangement may be beneficial.

e) The group recommends that clarity be provided on whether problem-based learning facilitators will be employed and whether they must be medically qualified.

4.2.3 Sub-area 2.3: Study programme management

Standards:

2.3.1. A curriculum committee has the responsibility and competence for the planning and implementation of the study programme.

2.3.2. The curriculum committee has appropriate resources for the choice and implementation of appropriate teaching and learning methods, evaluation of students, evaluation of programme, and innovations in the study programme. The administration, academic staff, students, and other stakeholders are represented in the curriculum committee.

Description

2.3.1.

The self-assessment report states (p.26) that at the current stage of development, the Executive Committee has responsibility for leading the curriculum development process. It is stated that appropriate budget is to be allocated to ensure flawless implementation of the programme, including evaluation, continuous quality improvement and incorporation of the latest advances. The report also emphasises that the collective and individual competence and necessary resources to create a high quality curriculum are present. The LMS Executive Committee, with input from the Steering Committee, is stated to have the authority and independence to control the curriculum within the existing rules of the University. The Executive committee includes six members with considerable experience relevant to medical curriculum development. They include experienced preclinical and clinical academics, together with members who have administrative and medical educational experience.

2.3.2

The report states that collaboration with the University's LMS Steering Committee over curriculum development has included a Student Curriculum Committee (SCC), internal and external medical and educational experts (p.24). The draft curriculum was developed by a Student Curriculum Committee (SCC), comprising of students, under the close supervision and mentorship of a professional Curriculum Developer. The drafts have been reviewed jointly by an external Medical Education specialist, the Curriculum Developer or the Chair of the Executive Committee for academic and educational content with additional input from academic chairs, lead scientists and clinicians of the relevant discipline where necessary. Once recommendations were incorporated advanced drafts are planned to be shared with selected clinical specialists, GPs or other relevant practitioners for feedback on the practical aspects. A final version is planned to consolidate input from feedback to be approved by the LMS Curriculum Committee, which will include module leads once the LMS becomes operational. A permanent Curriculum Committee is planned to develop procedural and decision-making rules in line with University policies, with full authority over the curriculum, for gathering and evaluating information on quality and practical applicability to enable the continuous improvement and renewal of content.

The expert group heard evidence of a commitment to support both standards from all of the relevant stakeholder groups, including the LMS Chair and Executive and Steering Committees, LU academic and administrative staff, clinical teachers and medical students. Specifically, the expert group was able to meet and question members of the Curriculum Committee, preclinical and clinical teachers and other supporting LU departments, and observed that an appropriate level of expertise and resource was available for the current developmental workload. Commitment to increasing expansion of resource, assuming approval of the proposed, programme was reinforced by responses from the LMS Chair and Executive, and of maintaining the current wide stakeholder involvement.

Recommendation

> The expert group recommends that a permanent Curriculum Committee be appointed as soon as possible to foster early buy-in from the faculty. In order to promote spiral integration, special attention needs to be given to student assessment and how that assessment actually promotes progressive integration.

4.2.4 Sub-area 2.4: Scientific methods

Standard:

2.4. The medical school teaches the principles of scientific methods and evidence-based medicine, including analytical and critical thinking, throughout the entire study programme.

Description

The self-assessment report (p.27) states that the proposed curriculum is based on scientific methods underpinning medicine, including an evidence-based approach and the incorporation of the principles of scientific inquiry. It is further stated that students will be encouraged, empowered and supported to apply critical thinking throughout their studies, and to develop and practice research skills by conducting their own primary research project. This is planned to form the foundation of assessment on scientific competences. Both standard and scientific tracks are proposed. The standard track is based on the principles of the SCLO, but would not immerse students as deeply in the practice of science as the scientific track. It would commence with an introductory module on integrated basic sciences, followed by a structured stream of modules arranged by organ system. In each module the relevant underlying basic and clinical science will be covered, reiterated and deepened to strengthen the scientific underpinning of learning. It is intended that relevant science will become ingrained as modules are repeated at gradually advancing levels, moving from Basic to Advanced I and Advanced II levels in a spiral fashion. The students' knowledge and understanding of the human organism will be expanded from its molecular basis to societal aspects. Parallel with organ system modules a 'longitudinal programme' flows throughout the entire programme, comprising of two major components. Firstly, Personal and Professional Development (PPD) and second, Patient Care & Procedural Skills (PCPS). The PPD programme will deepen the principles and the practice of the scientific method, including the delivery of a primary research project from each student.

The scientific track (p.27-8), which is yet to be developed, is stated to be reserved for the top 20% of the cohort assessed to have high potential to become future national research and healthcare business leaders. The need to support the future development of the national healthcare sector is said to make this proposal essential, to attract and incentivise recruitment of suitably talented individuals to the Grand Duchy. The number of 'physician scientists' has declined over the last few decades in all western countries, possibly due to social constraints and the greater workload. In many European countries and in the USA measures have been implemented to counteract this negative development. A 'Luxembourg Fellowship' is proposed as a future educational grant to support the best talent to pursue a scientific career, linked to outstanding academic performance. The trilingual study programme, highly individualised tuition and the opportunity to join a world- class research team and facility in the area of biomedical sciences with an attractive scientific environment is felt to make this an attractive option.

The expert group heard evidence to support the proposals in the report from preclinical and clinical stakeholders. The group enquired of the LMS Executive and Steering groups as to what number of academics able to assist were employed by the University, and were told that currently there are approximately 192 employed within Life Sciences alone, with 109 research grants including joint contracted clinical specialists in Neurology, Endocrine and Diabetes. It was further stated that the University would have problems attracting further scientific experts in clinically related areas of Biomedicine without the presence of an LMS programme. The group acknowledges the very large potential contribution of the CRP-Santé with over 250 staff including some sharing contracts with the hospitals, research coverage of Cardiology, Immunology, Public Health, Infections, Inflammation, Gene-environment interaction and GI tract

nutrition, and existing formal teaching responsibilities in Public Health and Statistics. The expert group also recognised the contribution of the Luxembourg University Centre for Systems Biology (LCSB), which conducts high-level research in neurodegenerative diseases such as Alzheimer´s and Parkinson diseases, metabolomics and disease networks analysis. These two partners offer firm ground for an attractive scientific environment for future clinician scientists. Some joint appointments have already been made between the LU and the hospitals.

Recommendations

a) The expert group appreciates the potential of the cross-fertilisation between the LMS and existing research institutions. However it is necessary to clarify the priorities of the programme as being primarily concerned with the graduation of newly qualified doctors better suited to the modern needs of patients in Luxembourg, but that there are important secondary considerations including collaboration between the LMS, healthcare community and other departments of the University.

b) The expert group cautions on the potential risk of diversion of scientific track students from the medical programme (if this track is implemented), and suggests that they might be engaged in some relevant clinical studies as part of their programme in order to ensure that they keep up to date with a course that will evolve during their absence on the PhD programme.

c) As previously recommended, the group recommends that applicants are provided with clarity on how the scientific track will be implemented, along with the timing of entry and exit to the track, and re-entry routes to the standard LMS programme.

d) The expert group cautions on the danger of attracting unsuitable students to the scientific track solely because of the presence of competitive selection, for example the top 20%, and a fellowship grant. A parallel system of prizes and rewards for 'standard track' students may assist in this regard.

4.2.5 Sub-area 2.5: Basic biomedical sciences

Standards:

2.5.1. The medical school identifies the contributions of the basic biomedical sciences and integrates them into the study programme.

2.5.2. The contributions of biomedical sciences are adapted to scientific, technological, and clinical developments, as well as to the health needs of society.

Description

2.5.1

The self-assessment report states (p.28) that the Steering Committee and curriculum development collaborators have identified the contributions of the basic biomedical sciences, and have described how they will be integrated into all years of the study programme. The authors list basic biomedical sciences as comprising: anatomy, biochemistry, physiology, biophysics, molecular biology, cell biology, genetics, microbiology, immunology, pharmacology, and pathology and there is agreement that all are necessary for the application of clinical science.

2.5.2

The self-assessment report outlines (p.29-31) how contributions of biomedical sciences are to be adapted to scientific, technological, and clinical developments, as well as to the health needs

of society. These were referred to under sub-area 2.4. Basic biomedical science education is stated to be an 'organic' part of the LMS curriculum. In addition to an introductory module on 'integrated biomedical sciences', the relevant aspects of related basic biomedical science will be integrated into every module throughout the course of the entire study programme. It is further stated that the curriculum will be regularly updated to incorporate the latest advances in basic biomedical, clinical, behavioural and social sciences, in order to respond to the changing health needs of Luxembourg society. To fulfil this task, the authors state that the University has the capability to cover the full spectrum of the biomedical sciences education via internal and external means. Teaching resources in core biomedical sciences are covered by a variety of means including: LU's existing teaching staff; clinical staff based at Luxembourg Healthcare providers; contracted external University and other academic staff (to be hired from co-operating universities) and with contracted external clinical and GP teaching staff. Annex 6 (p.106-111) includes a list of the names of 217 practitioners from the Zitha Klinik, Kirchberg Hospital, CHEM, CHdN, CHL, CRP-Santé, other practitioners and GPs who have committed to teaching LMS students in clinical aspects of biomedical sciences.

The self-assessment report emphasises that local teaching resources are already available in a number of areas in basic biomedical sciences, including biology, physics and biophysics, biochemistry, general and organic chemistry, biostatistics and information and communication technology (ICT) for which the University's 'Security and Trust' Centre was stated to be particularly strong. Table 2 of the report (p.29-30) recognises the need to supplement available local educational resources with external contributions for some preclinical and clinical sciences: These include Anatomy, Pathology, Microbiology with Immunology, Pharmacology with toxicology, Forensic Medicine, Physical Medicine and Rehabilitation. The authors emphasise the teaching in medicine for Year-1 students has existed in Luxembourg since the early 1980s, formerly at the 'Centre Universitaire de Luxembourg' and since 2003 at the University of Luxembourg (p.30-31). The current 60 ECTS Year-1 medicine curriculum (Annex 4, p.104-5) was developed for this purpose, with a common core teaching track with Year-1 Biology for the Bachelor in Life Sciences, to which specific medicine teaching is added. The curriculum is trilingual (French, German and English) and it is said to offer more practical teaching in biology, chemistry, physics, anatomy and histology than partner universities due to the smaller number of 100 students. An internship is organised within Luxembourg hospital structures at the end of this 1st year. A weblink is provided to the curriculum in French [10]. Currently the 100 places receive around 400 applicants annually, and the authors suggest this to provide good evidence that a full course in medicine would be even more attractive. This was reinforced by several medical students who performed their first year in LU and then moved abroad, claiming a strong wish for many students to study at home in Luxembourg, but with mandatory elective terms abroad (with the phrase "think global, act local").

At hearings the expert group noted that Biomedical Sciences at LU has, after establishment, has rapidly gained an attractive research record, with coverage of many of the subject areas within the basic, and recently clinical sciences. This development has been managed with a focus on the scientific needs of the Luxembourg population, which provides confidence that a similar direction will be taken in planning and implementing the LMS programme. At site visits clinicians suggested that if anatomical dissection were felt to be necessary, there were cadaver laboratories nearby at Mannheim, Tübingen and Heidelberg. On several occasions we heard from clinical and basic scientists the slogan "no Biomed without Med", together with a strongly expressed view that the lack of an LMS would impair further biomedical scientific development in Luxembourg. The logic of this statement is sound in that for higher level biomedical research to be clinically applicable, access to patients is vital. Clinical stakeholders expressed a wish to retain current levels of elective students, many of whom but not all were Luxembourgish. This

was felt to be an important means of securing future postgraduate trainees, and the LMS programme only aimed to fulfil 50% of current medical staff replacement needs.

Recommendations

a) The expert group acknowledges the 'lean model' proposed for the LMS. Collaboration will be needed to cover the teaching of all preclinical and clinical aspects of the curriculum. The current provision of Year-1 and Year-6 studies provides good preparation for the delivery of a full 6-year course, but this would nevertheless be a major step up from current activity. The University is encouraged to commit to budgeting for and securing additional biomedical science teachers in the areas required whether by external hires or backfill of existing preclinical or staff.

b) The expert group recommends that the current Table 2 and Annex 6 be expanded as plans progress into a formal 'gap-analysis' to ensure adequate teaching resources can be secured and staff recruited to an appropriately agreed timetable.

c) The expert group cautions that part-time teaching staff, whether locally or externally hired are not always able to make major contributions to development and quality management and tend to restrict activities to teaching delivery. Contractual terms and the allowance of time for non-teaching duties may prevent this from happening.

d) The expert group recommends that for teaching by practitioners holding hospital contracts, it is recommended to secure appropriate teaching hours at appropriate fees. The hospital would be responsible for reliable delivery and quality. Contracts with individuals should be discouraged, because this create undue administration costs and quality is more difficult to monitor.

e) The expert group noted that the current Year-1 programme may have to cease in its current 'wide' format. The implications of this realignment for current teaching and research staff should be considered explicitly. Similarly the wish to retain current elective students will need to be factored into capacity calculations.

4.2.6 Sub-area 2.6: Behavioural and social sciences, medical ethics

Standards:

2.6.1. The medical school identifies the contributions of behavioural and social sciences, medical ethics, educational sciences, and the legal and economic basis of health care that enable effective communication, clinical decision-making, and ethical practices. This is integrated into the study programme.

2.6.2. The contributions of behavioural and social sciences, medical ethics and humanities are adapted to scientific developments in medicine, to changing demographic and cultural contexts, and to the health needs of society.

Description

2.6.1.

The report (p.32) refers back to sub-area 2.4. It states that behavioural and social competences, such as interpersonal, communications, interdisciplinary team working and leadership skills development, law and medical ethics are incorporated in the proposed curriculum under the scientific method, in both the modular and longitudinal programmes. Relevant educational, legal and economic studies are to be included as part of the 'longitudinal programme'. The report states that little or no new external input will be required in cross-disciplinary skills, such as communication skills, linguistics, scientific and medical writing,

presentation skills and (medical) psychology. This is delivered by the Faculty of Languages and Literature, Humanities, Arts and Education (FLSHASE) already having the capacity to cover these subjects almost entirely.

2.6.2.

The report states (p.32-33) that the course modules are sequenced by organ system, and the curriculum provides guidance and space for module leads to discuss relevant aspects of law, ethics and other social and behavioural science subjects, to the extent deemed necessary for holistic understanding of the human health and disease in the context of society at large. As modules are repeated over the years at advancing level, from Basic to Advanced I and II levels spirally, the relevant biomedical or social science will become integrated leading to knowledge and understanding of the human organism from a molecular basis to societal aspects. The integration of such subjects in the modular curriculum was deemed important by the curriculum team, and the authors point out that this approach is well represented in Swiss and American medical curricula on which the approach was modelled. The Longitudinal Programme flows along the modular stream throughout the programme, comprises of two major components, Personal and Professional Development (PPD) Patient Care and Procedural Skills (PCPS). During the course of PPD, professionalism and ethics, interpersonal and communication skills, patient safety, health systems and economics will be taught with related subjects to emphasise future professional and societal roles. The LMS plans to provide studies in three languages: English, French and German. Due to the importance of interaction with those whose native language is Luxembourgish, language tuition will be provided to allow students to reach B2 proficiency level before reaching clinical study Years 4 to 6. Additional language tuition will be offered through the University's language department, within FLSHASE, and additional resources provided as necessary.

Recommendations

a) The expert group wishes to emphasise the need to motivate modern medical students to consider subjects such as behavioural and social sciences, medical ethics, educational sciences, law and economics, as vital to modern medical practice in competition with the demands on study time of other more traditional sciences. The use of clinically qualified teaching staff to 'champion' these subjects can be helpful, as can prizes and awards. As previously suggested, a formal 'gap-analysis' would be appropriate.

b) The expert group suggests that the requirement for proficiency in Luxembourgish is logical, but in the context of a trilingual programme this may be too demanding for some students, in effect making it a quadrilingual programme. The problem of curriculum 'crowding' is already well described in medical education, so the group asks whether it might be considered whether it would be better to pre-qualify students in Luxembourgish before admission. This could be applied to Luxembourg applicants and to foreign applicants by the provision of a pre-medical course, rather than between preclinical and clinical course phases.

4.2.7 Sub-area 2.7: Clinical knowledge and skills

Standard:

2.7 The medical school assures that the students have patient contact appropriate to their level of education and have acquired sufficient clinical knowledge and skills, so that after graduation they can assume appropriate clinical responsibility.

Description

The report states (p.34-5) that LMS students will experience patient contact in real life settings from the onset of the course, including access to patients in inpatient and outpatient settings, including primary care. Patient access will be ensured through formalized collaboration with the major Luxembourg hospitals and with GP teaching practices. In the first semester, students will be able to observe and practice patient consultations, history taking and physical examination, in a safe, nonthreatening, simulated environment. Later, they will be able to observe and participate in real life consultations with the GP as well as in the specialist's office, under supervision. This will include history taking, physical and additional clinical examination. More than 200 GPs and hospital consultants in Luxembourg have committed to receiving students in their clinical practice (Annex 6). The four major hospitals in Luxembourg have indicated their interest in clinical teaching. By the end of Year-1 further inpatient exposure will be guaranteed as a Student Selected Component (SSC) of the curriculum, where they will be practice basic care normally assigned to nurses in an inpatient facility of their choice abroad. This is to ensure that students appreciate the work of ward nurses and other allied health professionals, and to improve their understanding of the functioning of a hospital ward. Early exposure to community based activities such as participation in patient education, health promotion, screening and prevention programmes or campaigns, and exploration of the interface between social and health care outside the doctors' office will also be open to students. Documented attainment of these skills and competences is to be appropriately assessed and rewarded. Students in their last three years (Master Study) will have ample opportunity to practice and develop clinical skills in teaching hospitals, with the aim that on graduation they will have a firm foundation for specialisation in any branch of medicine and a basis on which to pursue lifelong learning and professional development. The Longitudinal Integrated Clinical attachment/Clerkship (LIC) described previously (sub-area 2.2) aims to enable students to engage patients in all necessary care contexts.

The group heard supporting evidence from existing clinical educators at the major proposed teaching sites, GPs and other healthcare professionals. Some facilities already exist in the University for Year-1 students and in the hospitals for elective students and formally hosted Year-6 students, and there was consensus that these facilities would need to be scaled up and updated for a full course. There was considerable enthusiasm from clinical staff for becoming more involved with clinical teaching and simulation. The LMS Chair and Executive suggested that clinical teachers could be paid, or if employed, the employer reimbursed to the value of €100 to €150 per hour, and this expectation was confirmed by many clinicians at the clinical sites visited. The clinicians felt this would enable them to substitute current clinical duties for education and training activities, but it was not viewed by any of this stakeholder group as providing a higher earning opportunity. The managerial and clinical stakeholders present at hearings and the site visits felt that their new teaching and research responsibilities should be governed by a contract that clearly defines their role and responsibilities, consistent with the hospitals' first mission is to deliver high-quality medical care.

Recommendations

a) The expert group noted enthusiasm for teaching from all stakeholders, with a commitment to integration across the various phases of the curriculum.

b) The expert group suggests that the scale of skills simulation needs to be made clear, including that it may need to be provided across multiple sites and kept updated. Sharing equipment with the other healthcare students and professionals is encouraged.

c) As previously suggested, a formal 'gap-analysis' of teaching staff and other resource requirements would be appropriate. Contractual cooperation should be administered

between LU and the participating institutions rather than with individuals. Preliminary estimates provided to the expert group showed that, whilst there would be enough placements for the first LMS incoming class, the number of placements will need to expand as time progresses. A detailed placement plan of GP and hospital placements will be required for accreditation.

d) Students of foreign medical schools currently placed at Luxembourgish hospitals will be affected by new LMS placements. A plan for managing the potential problems this may cause would be valuable in maintaining good long-term relationships with the foreign medical schools.

4.2.8 Sub-area 2.8: Linkage with medical practice and the health care system

Standards:

2.8.1. An operational link between the study programme, postgraduate medical education, and the independent professional practice of medicine is assured.

2.8.2. The curriculum committee uses information from the professional field, the health care system, and society to improve the study programme.

Description

Reference is made in the self-assessment report to the detailed description of the participating clinical facilities provided under Area 6 (p.46-61).

2.8.1.

The report (p.36) states that the University currently operates specialty training in General Medicine, a potential direct operational link between undergraduate and postgraduate students. Such as link is said to be capable of providing access to specialisation in this speciality, and would aid the development of access to other specialties to be developed in the future. This will also serve as a functional basis for early career guidance and advice to students regarding the choice of specialisation they are best suited following graduation. The proposed programme, through access to 'real-life' medical practice and the health system through collaboration with the full range of stakeholders and the LMS Steering Committee, includes various levels and elements of the medical education and professional medical practice spectrum. The Steering Committee itself includes several heads of clinical academic departments responsible for high quality residency programmes and the oversight of CME/CPD programmes which LMS graduates will be able to access seamlessly. It is stated that a lively and ongoing interaction has already been established between the University and all key stakeholders.

2.8.2.

The report also states (p.36-7) that there is active and ongoing participation by representatives of the Ministry of Higher Education, Ministry of Health and Ministry of Economics), with regional and local policymakers, professional associations of doctors, nurses and students, and patients' associations. All have aided in the development of the study programme and it is expected that this collaboration would contribute context-specific input to continuous quality improvement of the study programme. This is said to be a unique advantage of Luxembourg being a smaller state, with good access to all levels of society including government. A functional LMS and established Curriculum Committee aims to continually collect and evaluate information from the professional field, the healthcare system and the community, and will ensure translation of this information into appropriate course content as the curriculum evolves in a changing healthcare landscape. There is mention of studying medicine at 'micro' (e.g. hospital wards), 'meso' (hospital or clinical centres) and 'macro' (health system) levels. This aims to provide an

understanding of the broader contexts, including regional, national and European healthcare dimensions. The report states (p.37) that the future composition of teaching staff will include clinicians and department heads (micro) hospital directors (meso), whilst ministry officials and international academics, policy makers and experts will bring regional, national and international viewpoints (macro).

The expert group also heard supporting oral evidence from relevant stakeholders as to the present linkages between the University, postgraduate medical education and professional leads across the healthcare system and wider society which, if maintained, should serve to make future improvements to the proposed study programme.

Recommendation

> The expert group recommends that those supervising preclinical Year-1 to Year-3 students who are not already involved in Year-6 and elective student hosting receive training to ensure that patients in initial student encounters are suitable and not so complicated or unwell as to hinder early clinical learning.

4.3 Area 3: Students

4.3.1 Sub-area 3.1: Admission policy and selection process

Standards:

3.1.1. The governing body and the medical school have formulated admission conditions that clearly explain the student selection process.

3.1.2. Gender equality is guaranteed.

Description

The report states (p.38) that a strong University admission policy and process is already in place for the selection of Year-1 medical students. Following national debate on the desired attributes of future doctors of Luxembourg, the University will further refine a number of tests, as well as interview criteria, to generate a practical selection procedure for the new LMS course. The traditional selection process for medicine has largely relied on academic performance in the sciences, but the authors emphasise that in the last 2 to 3 decades sole reliance on this criterion has been criticised because a good doctor requires more than the practise of good analytical science. A more balanced set of criteria to reflect preparedness of the applicants is proposed, to include both curricular (school related) and cross-curricular (attitude and creativity related) items. Criteria will be designed to be gender neutral, and will ensure equal opportunities for applicants.

A 3-step selection process is envisioned, with Step-1 being a standard admission test for students based on Swiss, German, Austrian or Oxbridge admission tests. A different test will be developed for the scientific track. The tests are to be administered by the Luxembourg Centre for Educational Testing (LUCET), a recently established structure at the University. In Step-2, following current practice for Year-1 students, a language proficiency test will require C1 level proficiency in French and German. A required level of proficiency in English is intended but not yet developed. There will be no assessment of proficiency in Luxembourgish, but further tuition may be offered in this during the course. The authors state that exact language requirements will be reviewed over time. In Step 3, a standardised ‘behavioural interview’ will assess cross-curricular attributes including attitudes, empathy, creativity, emotional resilience and communications skills.

It is intended (p.39) to reserve Luxembourg residents up to 70% of places available in line with recent developments in Belgium and the EU Court of Justice decision of 13 February 2010 [11]. *Ex gratia* reconsideration or appeals are proposed to be lodged with the relevant bodies from the Universities, adapted to the requirements of the LMS. The report clarifies that the proposed Scientific (PhD) track will be open to all residents of the European community, and potentially beyond, with requisite high school matriculation, with outstanding academic performance meriting financial support through a future 'Luxembourg Excellence Fellowship'.

The expert group met with expert staff from the Department of Psychology and LUCET, who were committed to assisting in developing fair and transparent means of assessment of LMS applicants. Both are already involved in research into selection and assessment, and operate on best-evidence based guidelines. They emphasised to the group the importance of linking the behavioural sciences with healthcare and medicine, and that a career in medicine require high levels of intelligence as well as good emotional and communication skills including multi-lingual abilities. They proposed the development of specific novel profiles for selection rather than traditional academic selection. Training would have to be provided for those involved in the selection process. They suggested a need for assessment of work experience, perhaps even and internship before studies began.

The expert group questioned the LMS Executive and clinical stakeholders about the current number of medical staff in Luxembourg in hospital and general practice settings, and the estimated annual number of replacements required. The response was that there are around 2,000 Doctors active in practice, of whom approximately 50% are GPs and 50% in hospital and community based specialties. A view was expressed that in future more GPs may be required and less hospital specialists. The LMS programme was designed to ensure that students were fully exposed to GP medicine, and to view it as a strong career option after qualification. This is not the case with nearby medical schools where General Practice is not as valued. It was estimated that around 100 newly qualified doctors would be needed each year for medical workforce replacement plans, and the LMS program aimed to supply around 50% with 50 graduates per year when fully established. This would be scaled up from the first cohort of up to 25 graduates after the 6th year of operation completes, rising to the total of 50 after a further 5 years of operation.

Recommendations

a) The expert group commends the development of new admissions tools, but suggests that consideration be also given to existing selection tools, some of which are referred to and have already been validated elsewhere, such as the more objective, structured interviewing techniques like the Multi-Mini Interviews that have become routine for most UK medical schools.

b) The expert group suggest that the reservation of 70% of places for Luxembourg resident applicants might best be met by a language proficiency requirement for Luxembourgish. Such requirements are permitted under EU law.

c) The expert group commends the intention to improve recruitment into General Practice, as increasing the number of GPs and raising the quality and extent of coverage of General Practice in the community is a feature of all modern healthcare systems, and investment in this sector is known to reduce healthcare costs in the long-term. Experience elsewhere has already shown that when students are more fully exposed to General Practice, they see the benefits of General Practice and are more likely to make this their career choice. The proposed high level of exposure to GP should assist with the aim to boost General Practice. Thought may be given to the provision of prizes and rewards for student contributions to General Practice. This could boost ultimate GP

recruitment of the strongest students, whom in more traditional medical schools are encouraged to compete mainly for limited places on hospital specialty training schemes.

4.3.2 Sub-area 3.2: Number of students

Standard:

3.2 In all phases of the study programme, the number of students is defined and in accordance with the capacity of the medical school.

Description

The report states (p.40) that the LMS would define the number of students to match capacity based on actual resources and capabilities. Some 400 to 500 applicants are expected from EU and affiliated countries for an initially proposed 25 places, and the entry cohort will be increased to 50 over a five-year period.

The expert group was reassured by stakeholders concerned with clinical and preclinical course delivery that the planned capacity was feasible, subject to the plans for provision of additional teaching and learning resources.

Recommendations

a) The expert group commends the proposed step-up approach to admissions, commencing with only half of the final proposed admission cohort, with an appropriate time scale. Initial experience with limited cohorts will allow plans to be adjusted to ensure the planned high level of educational quality.

b) As indicated earlier, preliminary estimates provided to the expert group showed that there would be enough placements for the first LMS class. For future accreditation, the number of GP and hospital placements would need to to be carefully detailed for each year of the rising intake.

4.3.3 Sub-area 3.3: Student support and counselling

Standards:

3.3.1. The [medical faculty] offers support and counselling services for the students.

3.3.2. The counselling programme is based on monitoring the learning progress of the students and takes their social and personal needs into account.

3.3.3. Students have access to a gender equality commission.

Description

The report states (p.40) that the University already has appropriate provision of ongoing student support services, including counselling and gender equality services. Due to the small size of LMS learning groups it is felt possible to be able tailor such services to the individual needs of students in terms of learning progress, social and personal needs. The University's Student Services Centre (Service des Etudes et de la Vie étudiante) http://wwwen.uni.lu/students/welcome_office) acts as a single point of contact for all administrative matters including queries on finance, immigration and student cards. The university provides consultation services and support, aiming to help students identify and address problem issues with in an individual and personalised, confidential and free service. Campus carrières, as a career service, also provides opportunities to identify career

opportunities in any field and to establish necessary contacts. Practical skills-development courses and workshops are also proposed to boost students' résumés.

The expert group understood from hearings that such services were available from University based stakeholders, and that current Year-1 students are currently supported.

Recommendations

a) The expert group stresses the commitment to student support. A medical course is intensive and includes repeated high-stakes assessments. Medical courses place greater demands on student support services, and we wish to reiterate the emphasis in this respect.

b) The expert group emphasises the competitive nature of the entry of newly qualified doctors into specialty and GP training requires that graduates will have better than average résumés, including items of merit and of extra-curricular achievements. Appropriate advice will be needed to match career aspirations to attainments and future potential. The specific circumstances of medical employment in Luxembourg will require additional advice from established medical professionals. A professional mentoring or career guidance system should be considered to supplement the Campus carrières service.

4.3.4 Sub-area 3.4: Student representation

Standards:

3.4.1. The [medical faculty] has a policy on the representation and appropriate participation of the students in the design, implementation, and evaluation of the study programme, as well as in other matters relevant to the students.

3.4.2. Student organisations are promoted.

Description

The report states (p.41) that student participation at LU already occurs at the level of the University Council. Student representatives will become members of the LMS Steering Committee, and it is stated that they will have full involvement in further curriculum development. A positive experience of very active student participation in the Steering Committee, and in the process of the curriculum development with a strong student led component of the design of the draft curriculum was said to be intended to be continued and further strengthened.

The expert group were impressed by the contributions made by the medical students they met, particularly in their ability to articulate their own requirements for a medical school in Luxembourg. They confirmed their active and welcome participation without dissent. The Association of Medical Students of Luxembourg is already engaged. Students stressed the additional difficulties that Luxembourg applicants faced in applying to foreign medical schools. When asked how many applicants would apply to an LMS, they reported that a survey had suggested that as many as 66% of high-school students would do so, and quoted mostly financial advantages and vicinity to the social environment. Although all were supportive of the LMS proposal, they recognised that some applicants from Luxembourg may have good reasons for study abroad, such as a wish to attendance a prestigious institution, and they supported the provision of 50% of required places in the LMS. Students reported that multilingualism would be very important, and they felt that they needed specific “medical language skills in Luxemburgish” which is not being provided abroad. The majority of student aim to return to Luxembourg if they are given the chance. They explained what they intended by spiral

integration and had ideas on how to improve this, regarding the curriculum as a 'work in progress'. They were aware of 'Maastricht system' and saw some advantages within it. Students stressed the more personal approach that the LMS proposals would offer to Luxembourg students. They expressed a wish to remain involved in the LMS programme development beyond their current contribution to curricular development.

Recommendation

> The expert group commends the University for the early involvement of students in the curriculum planning that will undoubtedly help in the buy-in process for a new LMS. Similar initiatives are also beneficial with prospective faculty.

4.3.5 Sub-area 3.5: Multilingualism (Not an OAQ requirement)

3.5.1 The medical school has a language policy that includes the representation of the main languages spoken by the local community among students and staff

3.5.2 Language tuition is available to students to facilitate their communication with patients during their clinical years.

The reports states (p.41) that University has an established policy on multilingualism, and provides a detailed description of the proposed LMS approach in the detailed curriculum. The official languages of Luxembourg are French, German and Luxembourgish. Language requirements for LMS students in French and German were discussed under sub-area 3.1 'Admission Policy'. Due to the importance of students' interaction with patients whose native language is Luxembourgish, LMS will offer language tuition to support students in developing their understanding of Luxembourgish by the end of Year-1, aiming to achieve a minimum B2 proficiency level by the start of clinical year studies. Details of the language programme will be developed by the University's language centre in the Faculty of Language and Literature, Humanities, Arts and Education (FLSHASE).

Recommendation

This domain as not an OAQ requirement, but is commented upon in Area 2.6.

4.4 Area 4: Assessment of students

4.4.1 Sub-area 4.1: Assessment methods

Standards:

4.1.1. The medical school defines and communicates the methods and criteria for the assessment of students.

4.1.2. The reliability and validity of the assessment methods are documented and evaluated and new assessment methods developed.

Description

The report states (p.42) that a thorough assessment system is already in place for first-year medical students within the University. Assessment at the University is governed by Internal Regulations [12] and the Grand-Ducal regulation of 22 May 2006 [13]. A commitment was given in the report to expansion and adaption according to the needs of the LMS. It is planned to avail of the services of the University of Luxembourg's Centre for Educational Testing (LUCET), together with expert advice from the LMS Medical Education team. It is the intent to gather information as to how students progress, so that LMS teaching staffs are able to judge their suitability for the next educational stage or clinical practice. A balance of formative and

summative assessments is planned, with tools to ensure that both key functions of assessment, to facilitate learning and to inform pass/fail decisions are utilised to their full potential. Examination sessions will be organised twice annually, at the end of each semester. Additional examinations, mostly formative, will be offered during semesters. Assessment methods will include written, oral and observational tests, including: multiple choice questions (MCQ), modified essay questions (MEQ), essays, oral tests, independent course work, projects, team assignments, computer assisted tests, mini-clinical evaluation exercises (mini-CEX), direct observations of procedural skills (DOPS), objective structured clinical examinations (OSCE) and integrated clinical examinations (ICE). All examinations will be carried out in the official language of the course or module. Criteria against which examination value judgements will be set transparently, with a clear description of the assessment process made available to teachers and students. Wherever possible, assessments will be anonymised at the point of marking. According to regulations, students shall be entitled to inspect their corrected examination papers for written exams.

According to the Grand-Ducal regulations (p.43), the Dean will nominate an examination board or jury at the start of each semester, consisting of lecturers from across the different disciplines offered in the programme. The board will be responsible for all aspects of a transparent, fair and valid examination process, including appeal procedures.

The expert group made their assessment principally on the submitted report, and the hearing with representatives from the Department of Psychology and LUCET. They supported the assessment and admission selection proposals made within the self-assessment report. They emphasised to the expert group the importance of linking the behavioural sciences with healthcare and medicine, and that a career in medicine require high levels of intelligence as well as good emotional and communication skills including multi-lingual abilities. They proposed the development of specific novel profiles for selection rather than traditional academic selection. Training would have to be provided for those involved in the selection process. They suggested a need for assessment of work experience, perhaps even and internship before studies began. Both LUCET and the Psychology Department are already involved in research into selection and assessment, and operate on best-evidence based guidelines.

Recommendation

The assessment methods listed are in keeping with best medical educational practice.

4.4.2 Sub-area 4.2 : Relationship between assessment and learning

Standards:

4.2.1. Assessment principles, methods and practices correspond to teaching objectives and promote learning.

4.2.2. The number and type of examinations encourage integrated and interdisciplinary learning.

Description

4.2.1.

The report states (p.44) that principles, methods and practices for assessment are in line with LMS's ambition to promote learning and develop competent, compassionate and responsible professionals. The University is stated to have a thorough system for assessing student which conforms to this principle, but this will be appropriately modified for the LMS. The structure, content, methods and means of assessment will aim to facilitate learning and guide teachers'

decisions about educational attainment. Assessment will promote the development of academic values and habits typical of the lifelong independent learner, and will help determine needs for further learning by filling gaps in knowledge and skills or competences uncovered by assessments.

4.2.2

The proposed curriculum includes assessment methods that aim to facilitate integrated, interdisciplinary learning. The authors state that passing an exam does not necessarily lead the student to becoming a good doctor, so it is proposed that the curriculum team seeks to apply best evidence practice to involve students, patients and policy makers in the design of assessments. It is stated that such a system will require the correct combination of tools and approaches to reliably detect learning attainment, contribute to quality improvement, and foster deep learning as opposed to memorisation. It is also aimed to avoid potentially negative effects on students that may be detrimental to learning.

The advice of qualified and experienced medical educationists will be sought from the onset to ensure assessment architecture and instrumentation is suitable to detect educational alignment to agreed educational objectives. A senior and one to two junior medical educationists will be employed, interacting with the University's Centre for Educational Testing (LUCET) to adapt tools, technologies and techniques available there to LMS student needs. This will help LMS teaching staff to analyse results and suggest appropriate modifications for improvement, with instrumentation providing multi-dimensional assessments that promote integration of knowledge, skills and competences.

The group heard from with the LMS Chair and Executive, Steering Group and LUCET members, all of whom were in accord with the commitments provided in the self-assessment report. It is appreciated that assessment activities will follow completion of the full curriculum preparation process, and is not fully assessable by OAQ criteria at this stage.

Recommendations

The expert group prefaces its recommendations on assessment and learning by emphasising that this sub-area can only be determined and assessed once the proposed curriculum has been completed.

a) The expert group emphasises a requirement to see individual examples of what would be assessed and by which methodology. For example, emphasis now would be expected on assessing the understanding of complex concepts that are more difficult to assess than the measurement of simple recall.

b) The expert group could not achieve clarity on how assessment and learning will be integrated. The documents provide a list of assessment methods, but need to state how these methods best serve the goals of the LMS curriculum, such as spiral integration and the students' ability to justify their actions and decisions. Again this can only be accomplished after the proposed curriculum is completed.

c) The expert group cautions that without proper consideration of the goals and object of assessment (what to assess), the methods (how to assess), learning that is counter to the goals of the curriculum may be fostered. For example, single, end-of-semester, discipline or system-based exams are known to foster cramming rather than integration.

d) The group could not achieve clarity on how assessment standards will be referenced, whether by cohort norms or by criteria or a combination.

e) The expert group was similarly unclear on how interprofessional learning will be accomplished, specifically how learning from, with, and about each other's profession to maximize patient care will be effected.

f) The expert group advises that a large number of markers (raters) and assessors will need to be recruited for some assessment methodologies proposed, especially MEQs, essays, oral tests, independent course work, projects, team assignments, mini-CEX, DOPS, OSCE and ICE. More detail on assessor recruitment and training would be expected before the course commences.

g) As mentioned previously, the use of external examiners within the actual assessments might offer great benefit to the external credibility of a new LMS programme.

4.5 Area 5: Academic staff/faculty

4.5.1 Sub-area 5.1: Recruitment policy

Standards:

5.1.1. The medical school has a staff recruitment policy, which defines the academic staff required for the adequate implementation of the programme. It describes the type and composition of the academic personnel, the balance between medical and non-medical staff, as well as between full and part-time employees. Responsibilities are clearly defined and periodically examined.

5.1.2. The medical school has formulated staff selection criteria, which take into account performance in science, teaching and clinical activities, as well as the demands of the mission statement of the institution, economic considerations, and further issues.

5.1.3. The recruitment policy for academic, administrative, and technical personnel is published.

Description

The report states (p.45) University has in place appropriate and transparent policies and procedures on staff recruitment. These will be appropriately adapted and modified to the future needs of the LMS.

The expert group heard no dissenting views from University stakeholders to the commitments in this sub-area provided in the self-assessment report.

Recommendations

a) For the recruitment of future academic staff serving the LMS, the expert group recommends that before advertisement, joint commissions with clinicians and/or researchers from the cooperating institutions are constituted, who define the specific requirements of the position along the strategic plans of the University and/or the hospitals or extramural research institutions. This should include strategic budget planning. A procedural plan should also be made on the rights and duties of the various stakeholders in the appointment process.

b) Whilst LU has policies in place for gender equality, the expert group noted the presence of relatively few women in senior leadership positions or on leading committees. It is therefore recommended that this be addressed in the future.

4.5.2 Sub-area 5.2: Staff policy and development

Standards:

5.2.1. With its staff policy, the medical school strives for a balance in teaching, research, and service functions, and ensures recognition of meritorious academic activities with appropriate emphasis on both, research attainment and teaching qualifications.

5.2.2. The staff policy includes training, development, and assessment of the teaching staff. It considers teacher-student ratios appropriate to the various components of the study programme, and assures that teaching staff is represented on relevant committees and bodies.

5.2.3. The staff has access to a gender equality commission.

5.2.4. The medical school supports a long-term promotion of young academic staff.

5.2.5. The staff has access to continuing education, career development opportunities, and appropriate counselling.

Description

The report states (p.45) that the University has in place appropriate and transparent policies and procedures on staff policy, gender equality and personal development.

Again the expert group heard no dissenting views to the commitments provided in the self-assessment report from University stakeholders, which included a wide range of staff.

Recommendations – none

4.6 Area 6: Educational resources

4.6.1 Sub-area 6.1: Infrastructure

Standards:

6.1.1. The medical school provides an appropriate infrastructure to ensure that the study programme can be adequately implemented.

6.1.2. The learning environment for the students is regularly adapted to developments in medical education.

Description

The report states (p.46-7) that from 2015, the University will move to its new purpose-built facilities at the Belval campus, which will suitably cater for the needs of Bachelor students. Master students will mostly be located in the hospitals, with some block courses in Belval. Possibilities for accommodating LMS students include:

a) The 'Maison du Savoir' of the Belval Campus. The LMS Executive and organising committee overseeing relocation has assessed there to be ample space and facilities to accommodate a comparatively small number of additional students.

b) Renting part of the 4th and 5th floors of the so-called 'blue building' in the DEXIA complex in the north-west corner of the first major square of Esch-Belval, and adjacent to the University in Belval. Initially approximately 500-1,000 m^2 is required at a cost in the order of €100- 250k per year, which is available in the budget (Annex 4).

c) Practical sessions for science are planned to occur either in the present Campus Limpertsberg facility, or in Belval following completion in 2017 to 2018.

Beyond 2020, possibilities for housing LMS are stated to include the present 'Technoconsult' building on campus, once LCSB have moved into their definitive building in 2018-2020. This building would be suitable for administration, seminars and practicals. Alternatively the present hospital 'Emil Mayrisch' (CHEM, Centre Hospitalier Emil Mayrisch) adjacent to the University site in Belval may be refurbished. The authors recognise that building projects may be delayed and that this will require flexibility. The numbers of LMS Bachelor students would be small compared to other groups, so it is felt that delays would impact less on the quality of medical teaching rooms particularly as the move of general students is to be staged from 2015 to 2022. For Masters phase clinical students, additional teaching facilities and infrastructure are planned to include an appropriately equipped skills lab, lecture and seminar rooms, tutorial rooms in the teaching hospitals for clinical teaching, research laboratories, ICT facilities and a state of the art library. Facilities and infrastructure will be adapted to the needs of students to provide a learning environment to the highest European standards.

In visits and hearings, the expert group found evidence to support site specific proposals and the commitment to LMS resources. They heard in the Belval hearings that inclusion of the proposed LMS in the University campus relocation would boost the activities of the nearby Centre Hospitalier Emile Mayrisch d'Esch-sur-Alzette base, thus providing improved healthcare resources to southern Luxembourg. In turn, expansion of this hospital close to the new principal University campus would facilitate research exchange between the University and Healthcare system. Manager and staff at all of the clinical teaching sites visited acknowledged that, as proposed in the report, accommodation study rooms would need to be scaled up, or provided if not currently available. Other responses to queries from the expert group included that the LU "Centre for Systems Biomedicine" facilities had been built during 2007-8, and that the CRP-Santé includes Healthcare Sciences within its remit.

Recommendations

a) The expert group acknowledges the large investments already made and that the planned infrastructures should meet the needs of future medical students.

b) The expert group suggests that the scaling up of educational facilities on campus and at the clinical teaching sites be complemented by investment in facilities in General Practice.

4.6.2 Sub-area 6.2 : Practical clinical training resources

Standard:

6.2 The medical school provides the necessary resources for adequate clinical education, including a sufficient number of patients and clinical training facilities.

Description

The report states (p.48-53) that the LMS will provide the necessary resources for high quality clinical training, and that appropriate clinical training facilities will be made available together with access to sufficient numbers of patients. Overall, 4 major hospitals in Luxembourg are felt able to provide first rate undergraduate teaching and training for 25 to 50 medical students in each year group. A balanced mix of services and facilities is stated to be capable of provide exposure to all levels of care and all types of patient encounter. Details of academic activity at the 4 hospitals are provided in tabular format (p.50). Two teaching hospitals, the Centre Hospitalier de Luxembourg (CHL) and the Centre Hospitalier du Kirchberg already teach

medical students from Germany (Homburg/Saarland and Mannheim- Heidelberg) and are the only foreign hospitals accredited for this purpose by German institutions. Training includes 4 months each in surgery and medicine as well as in a subject of the student's choice. CHL also trains 40 to 50 students per year from the UCL (Université Catholique de Louvain) in their 4th to 6th year of studies, as well as students from other French, Belgian or German Universities. During the academic Year 2013, CHL welcomed 140 students overall (3rd to 6th year of medical studies). CHL also actively collaborates in research with the CRP-Santé especially through contributions of physicians at CHL, with some working 20 to 30% for them.

Since 2010 the Centre Hospitalier du Kirchberg has been accredited to train up to 8 students in their final year by the second Medical Faculty of the University of Heidelberg at Mannheim. Training includes 3 months in Surgery (General, Visceral, Vascular and Traumatology) and 3 months in Internal Medicine (including Cardiology, Nephrology, Gastroenterology and others). Other members of the hospital 'Hôpitaux Robert Schuman' members include the Zitha Klinik and Clinique Sainte Marie each of which trains students from France, Germany, Austria and Switzerland). Two other hospitals, Centre Hospitalier Emile Mayrisch (CHEM) and Centre Hospitalier du Nord (CHdN), are stated to meet the highest medical standards, and already accommodate many elective summer placement students and thus would meet standards required for LMS students. Many GPs have also demonstrated a commitment to education through the success of the 'formation spécifique en médecine générale', with 42 postgraduate students registered in the 3 year GP residency training programme. A dialogue has been effected with all major hospital providers and GP representatives across Luxembourg.

In Luxembourg specialisation in general practice has existed since 2004 in a 3 year programme consisting of theoretical teaching, blocks of seminars and practical training (p.53). A minimum of one year has to be completed in general practice, with the rest chosen by the trainee and their tutor. The programme includes a scientific component, which is evaluated by annual presentation of the scientific work and defence of thesis submitted on completion. In 2014 there are 58 doctors in training and 12 are expected to graduate in November 2014. There is a high number of internationally and nationally trained specialists in virtually all disciplines relevant to undergraduate teaching training. Postgraduate specialist training is already offered in a large variety of disciplines and accredited by the national bodies in France, Germany and Belgium. There are physicians and surgeons in virtually every specialty who are interested, motivated and experienced in teaching (referred to in Annex 4, p.97-103).

The expert group heard support from a large number of relevant stakeholders during site visits across the four major hospitals of Luxembourg, and as represented at the hearings at Belval campus. On specific enquiry from the group, we heard support for the ability of the main hospitals and General Practice to support preclinical students undertaking early clinical contact as well as the 150 medical students across the three clinical years. There was no dissent to the consensus that there would be sufficient numbers of patients and facilities available. Information provided to the expert group showed that there would be sufficient places for the first intake of 25 students. Stakeholders at one site pointed out that there had been recent mergers within the four hospital groups, and that some specialities would be rationalised to ensure population coverage without unnecessary duplication of services. Several site groups emphasised that having more medical students would help to invigorate and rejuvenate the profession. The expert group noted that the clinical facilities at all four sites visited were very up to date, and gained a strong opinion as to the high level of investment in healthcare facilities in Luxembourg.

Recommendation

> The expert group suggests that each student rotates around each of the four main hospital facilities, and in General Practice, in order to experience the full range of

healthcare provided across Luxembourg. This would also have the additional benefit of exposing students to all specialities and to all major employers, facilitating well informed choices about their own post-graduate employment in the Grand Duchy.

4.6.3 Sub-area 6.3: Information Technology

Standard:

6.3 The medical school has a policy for the efficient use of information and communication technologies in its study programme. Teachers and students are enabled to use information and communication technology for self learning, accessing information, managing patients and working in health care systems.

Description

The report states (p.54) that the University has a policy for the safe and efficient use of its ICT system and first class expertise in and facilities for e-learning. These include a central ICT lab and related services, identical PC /iPads equipped with the necessary software for each student, to include: 1) web-based evaluation of courses, seminars and clinical teaching; 2) student assessment; 3) e-learning library (LU was said to have been ranked 3rd best European University for e-journal availability). The needs of LMS will be further supported with a focus on medicine and a state of the art library is planned for the Belval campus. The University's ICT infrastructure will be used to assist LMS student learning, aiming to save important teacher resources for valuable face-to-face time in small group settings to complements independent e-learning. The IT environment will also support communication within LMS, the development and provision of systems to support management and administration, the development and provision of printing and audio-visual services, and support and training for these services.

Medical education around the world is supported by online learning and virtual learning environments. LMS will provide PC clusters with access restricted to their staff and students. The beneficial diversity of clinical sites might impair communication between students and their teaching and learning resources, but to alleviate this risk video conferencing suites will be offered between the LMS and the clinical sites. This is intended to allow permanent interaction between distant students and centrally located teaching staff. Internet access is already available in virtually all areas earmarked for LMS students, and where it is not available wireless points will be installed. Uniquely, through the University network and partners in Luxembourg, wireless access to the international educational roaming networt 'Eduroam' is available across the City of Luxembourg, in the City of Esch-sur-Alzette and on site in Belval. Eduroam permits secure, world-wide internet roaming for students, researchers and staff from participating institutions. This will provide internet connectivity across the main campus and when visiting other participating institutions by simply opening a laptop or tablet.

The expert group witnessed existing commitments to ICT connectivity and access in Luxembourg during the site visits, and the wide access to Eduroam in Luxembourg City was also noted. Clinical stakeholders emphasised the widespread access of medical and other healthcare staff provided by the Luxembourg hospitals, including individual access to expensive resources such as 'Up to Date', was already extended to medical students on site. The cost of extending this to the proposed LMS cohort would be only a minimal increment. The group noted that each hospital already provides access to some electronic journals which would be available to LMS students. Broadening the number of electronic updates should be envisaged with some additional cost.

Recommendation

The expert group acknowledges state-of-the-art ICT availability, and recommends careful planning over data protection, for example the crossover of sensitive patient data between institutions. The issue of data ownership should also be clarified in advance.

4.6.4 Sub-area 6.4: Research

Standards:

6.4.1. The medical school has a policy describing the research facilities and areas of research priorities at the institution, as well as the relationship between research and teaching.

6.4.2. The interrelationship between research and teaching is reflected in the study programme and in the current course offerings. The students are encouraged and prepared to participate in medical research and development.

Description

The report states (p.56) that the University has a strong commitment to research excellence, and biomedical research is among the main strategic pillars underpinning the scientific work of the LU and the future LMS. It is further stated that outstanding research resources are already available with excellent results (reference to Annex 7, p.112-6). The authors recognise that the practice of medicine will undergo dramatic changes primarily driven by ICT, advanced genome and imaging based molecular diagnostic tools and new generations of patients requiring accurate personal guidance. They plan to embed the LMS programme in a strong medical research landscape, leading the way to new treatments and better understanding of causal factors, genetic and environmental. The goal will be to ensure that graduates are aware of not only their clinical domain, but also modern research methods and to be able to critically evaluate research results and understand their contribution to clinical evidence and best medical practice. LMS students will have early exposure to preclinical and clinical research and to researchers, so that they will become involved in research projects and learn about its importance in the healthcare. The programme will also offer a career as a clinical scientist, with a study programme strong in integrated biomedical, behavioural, social and clinical sciences education as described under sub-areas 2.4 and 2.6. Appropriate time and teaching resources will be dedicated to introducing students to the scientific method, scientific inquiry, critical thinking and the application of evidence based medicine.

The report notes (p.57) that over the last five years major investments have been made in Luxembourg to create an internationally competitive biomedical research enterprise. Most of the personnel and infrastructure needed for biomedical research are already working in Luxembourg, e.g. at the Luxembourg Centre for Systems Biomedicine (LCSB), the Life Science Research Unit (LSRU) at the Faculty of Sciences and Technology of the University of Luxembourg, and at the Centre de Recherche Publique Santé. The LCSB was established in 2009, as one of two University Interdisciplinary Centres and combines experimental and computational approaches to analyse complex biological systems and disease processes. The research focus is on neurodegenerative diseases; particularly Parkinson's disease with major emphasis is placed on the integration of experimental biology and medicine with bioinformatics, computational biology and systems analysis. The research focus is planned to be extended to Alzheimer's disease. Whole genome sequencing, as well as detailed transcriptome, proteome and metabolome studies will serve to identify new drug targets and personalised prevention and treatment strategies. The LSRU carries out fundamental biomedical research, seeking to unveil the biological process underlying human disease. The CRP-Santé created in 1988, aims to

translate basic research into medical translation, oncology and population health. One focus is on preclinical and clinical research in public health with epidemiological surveillance of diseases and related health determinants. CRP-Santé has research departments in cardiovascular disease, immunology, oncology, public health, and infection and immunity, and they are supported by animal facilities, statistics and clinical and epidemiological expertise. Within the medical research landscape of the University of Luxembourg a critical mass of highly qualified academic researchers and teachers are already available for teaching at a future LMS in many disciplines (with reference to Annex 7): Neurology and neuroscience; Endocrinology and diabetes; Cardiology; Dermatology, Immunology and Allergology; Oncology; medical microbiology; Medical biochemistry; Medical bioinformatics and computational science; Epidemiology and medical statistics. Infrastructure support includes including the following core facilities: Bioinformatics; Animal facility; metabolomics platform; clinical proteomics; imaging and flow cytometrics.

The expert group heard from a wide range of University and clinical stakeholders who are already involved in research and teaching. This reflected the interrelationship between research and teaching in the proposed study programme and in the current course offerings. The students we met agreed that they should be encouraged and prepared to participate in medical research and development. In hearings it was acknowledged by academic and clinical stakeholders that it was currently hard to pursue clinical research in the Luxembourg hospitals and that the base had been historically low. Current clinical research activity levels would not have happened without the support of the CRP-Santé and the LCSB and other collaborating University departments. The lack of an LMS would prove a barrier in continuing to attract gifted, highly qualified clinicians, and some recent appointees were recruited on the basis of the LMS proposals. One academic stakeholder stated that the investment already made into Biomedicine in Luxembourg was felt to be providing an impressive return. It was felt by academic and clinical stakeholders that the National Centre for Excellence concept, such as that already developed for Neurodegenerative Diseases, should be expanded in areas felt to be most relevant to the needs of the Luxembourg population. For Biomedical research to thrive in the long-term, the LMS was felt by all to be necessary to efficiently translate biomedicine research into clinical practise. It was also felt to be needed to attract PhD and Postdoctoral students. The group asked why there were major differences in research activity across the four main hospital sites. The response was that some hospitals were based mainly around the services provided by independent practitioners paid on a fee-for-service basis which worked against allocating unremunerated time for research. The LMS Executive felt that a medical school could improve this situation along with the existing collaboration with CRP-Santé. It was pointed out that none of the main hospitals were formally named as teaching hospitals. Even at the Centre Hospitalier de Luxembourg, clinicians were not currently permitted to conduct research studies themselves, but only in collaboration with the CRP-Santé which was sited conveniently close by. We heard from the CRP-Santé director that the organisation aims to create value for Luxembourg with clinically oriented biomedical research and public health, a role it undertakes on behalf of the government. The director and staff of the CRP-Santé supported the LMS development, and believe in the 'homegrown' training principle. There is an expectation that the LMS would facilitate and fund research at CRP-Santé and vice versa. Staff felt that an LMS would have a beneficial effect on the hospitals in terms of increase of quality of healthcare, and that there was goodwill towards it. The expert group heard about strong governance arrangements including 4 yearly performance reviews and external audit.

Recommendations

a) The expert group emphasise that additional research capacity can be grown and scaled up as the LMS programme is implemented, that is, it does not have to be grown 'immediately'. Thus the planned targeting of specific areas was felt to be a sensible

approach and it was agreed that no modern University could cover all possible research fields. It is recommended for the LU and their partners further refine their common research profile.

b) The expert group wishes to remind the University that research on the topic of medical education itself would be a highly appropriate use of research resources, particularly given the opportunities afforded by the advent of a new programme.

c) The expert group recommends that the University of Luxembourg becomes the catalysing institution for research in Luxembourg.

4.6.5 Sub-area 6.5 : Educational expertise

Standard:

6.5 The medical school includes educational expertise when planning basic medical education and developing teaching, learning and assessment methods.

Description

The report (p.59) states that the LMS will have access to first-rate, relevant medical and educational expertise. The authors refer back to sub-areas 2.1 and 2.3, noting that the curriculum development process includes a thorough review of the draft prepared by the Student Curriculum Committee, by a team that includes the Chair of the LMS Executive who is a Clinical Professor of Cardiology with 30 years of teaching experience; a medically qualified Curriculum Developer with a Master's in Public Health; an external medical education expert with a background in educational research, teaching and learning psychology and methodology, social policy and andragogy with extensive international experience in designing, developing and implementing medical and healthcare professional education curricula, e-learning programmes, learning needs assessments, and educational audit and evaluation. She is charged with ensuring that the curriculum is consistent with the principles of medical education theory and practice, taking advantage of (i) evidence from medical education research; (ii) learning psychology and the relationship between educational goal setting and the applied teaching and learning strategies and methods, and (iii) the methods, instrumentation and role of assessment strategy in facilitating learning. Additional pedagogical expertise is available from the Faculty of Language and Literature, Humanities, Arts and Education (FLHASE) within the University.

The self-evaluation report states that of the 207 hospital doctors and GPs who have volunteered to teach LMS students, many have a formal teaching qualification from a European, US or Canadian University, and that most others have personal experience of 'teaching by apprenticeship'. Staff at Kirchberg Hospital who teach Year-6 students attended a 2 week long teaching course at Mannheim, which has obtained a top five ranking out of 34 in German national examinations for 2012-13, as well top position in the student national ranking by the Center for Higher Education development.

Plans for the future LMS programme are detailed (p.60), with the intent to employ a senior and 1-2 junior full-time medical education specialists and the necessary support staff, and to develop a course in modern medical pedagogy mandatory for all remunerated (contracted) teaching staff. Visits have taken place to Medical Schools across Europe and the duration of their courses was found to vary widely, from 4 to 14 full days. For the LMS, a course of approximately 4 to 6 days, or 2 to 3 weekends for clinical teachers, and about 8 to 12 days, or 4 to 6 weekends for study directors in the four main hospitals. The likely plan will be for a locally operated 'teaching of the teacher' weekends as the most more cost effective and least time-

consuming solution for busy clinicians and the necessary budget has been set aside (reference made to Annex 4). Assurance has been given from the Medical Schools visited that their educational staff would be ready and available to teach these remunerated modules in Luxembourg.

The Faculty of Science, Technology and Communication (FSTC) already has an 'e-learning' group engaged in science teaching using the 'flipped classroom' principle allowing students to use 'face-to-face' session to discuss prior e-learning. This group will support LMS staff to devise or adapt medical e-learning courses, perhaps with a pioneering role in developing multilingual programmes in conjunction with the University research group on multilingualism. This could include German, French and potentially Portuguese, which approximately 16 to 30% of Luxembourg residents speak.

The expert group met educational experts during the hearings with the LMS Executive, Steering Group and from several relevant LU Departments including LUCET, and noted the commitment to increasing current levels of support for this standard.

Recommendations

a) The expert group acknowledges the careful attention to faculty training, and suggest that thought also be given to at an 'evening class' model to accommodate the schedules of potential clinical teachers.

b) The expert group emphasises again that a plan for research program in medical education would help bolster the new LMS's reputation as a state-of-the-art academic institution.

4.6.6 Sub-area 6.6 : Cooperation

Standards:

6.6.1. The medical school has formulated a policy for cooperation with other educational institutions and the transfer of educational credit points.

6.6.2. Regional and international exchange of academic staff and students is facilitated by the provision of appropriate resources.

Description

The report states (p.61) that there is already ongoing excellent collaboration between LU and neighbouring medical schools at Homburg/Saar, Nancy, Liège and Namur with exchange of academic staff, students and transfer of academic credits taking place, which it is intended to continue and expand. Teaching staff for the current first year of medicine has in part been recruited from Nancy, Homburg/Saarland and Kaiserslautern. The authors emphasise that the University of Heidelberg (2nd Medical Faculty in Mannheim) as well as the University Hospitals of Louvain/Belgium, Saarland (Homburg)/Germany and Nancy/France have been sending students to the CHL (Centre Hospitalier de Luxembourg), Centre Hospitalier du Kirchberg and other hospitals for clinical placements for many years. The university has a history and policy of participating in regional and international student and faculty exchange programmes, and on the transfer of academic credit points through active coordination of study programmes between faculties of medicine. In particular, the 'University of the Greater Region' is an existing legal structure encompassing the Universities of Saarland, Trier, Kaiserslautern, Nancy, Liège, Luxembourg and in future probably Namur. The report anticipates no problems in recruiting sufficient staff from these and other international universities in subject areas which are not currently represented in Luxembourg. Teaching at LU is said to be popular because of its well-

organised courses and competitive remuneration (€100-150/hour for consultant or professorial level staff). In line with the present policy, staff will be remunerated on a per hour basis if a small number of hours are being taught; for more extensive commitments, agreements will be concluded with partner faculties allowing for payments for backfill.

A unique structure, the "Greater Region" already offers common bachelor level courses between Saarbrücken, Nancy and Luxembourg which are trilingual in French, German and English and highly popular. An example of a contract with the University of Strasbourg on issuing a joint diploma in Life Sciences is provided in Annex 10. As the most international university in Europe, with 60% of students from abroad, LU has considerable experience with the European Credit Transfer System (ECTS) which will be harnessed by LMS. The number of credit points assigned to each LMS module and to activities students perform abroad will be awarded to ensure transferability.

The expert group met many individuals already cooperating with other educational institutions, and noted the University's full compliance with the European Credit Transfer and Accumulation System (ECTS) regarding the transfer of educational credit. It was also noted that arrangements for regional and international exchange of academic staff and students is currently facilitated and resourced. A query to the LMS Executive on the scope of international collaborations yielded the response that international student exchange agreements for electives in Europe, the UK and more widely would be sought, faculty exchanges were already occurring, and new international research collaborations could be generated including joint applications for the Horizon 2020 framework. The group heard from clinical stakeholders that strong alliances with other universities should be continued after the LMS was initiated, and that the LMS and Luxembourg hospitals would still operate some specialities in collaboration with nearby regional centres.

Recommendations – none.

4.7 Area 7: Programme evaluation

4.7.1 Sub-area 7.1 : Study programme evaluation

Standards:

7.1.1. The medical school has quality assurance mechanisms (i.e. evaluations) that monitor the study programme and student progress, and ensure that weaknesses are identified and addressed.

7.1.2. Study programme evaluation includes the context of the educational process, the specific components of the study programme, and the general outcome.

Description

The report states (p.62) that the University already has in place a comprehensive policy and system for the evaluation of its study programmes. The LMS evaluation system intends to fit seamlessly in this broader conceptual framework and structure, using similar structures referred to earlier in area 4. Two types of evaluation will be conducted: 1) External evaluation from the outset by OAQ, e.g. pre-programme assessment and periodic snapshots very 2-3 years initially then every five years; 2) Continuous internal evaluation will be conducted throughout, guided by the goals and objectives of the educational programme as well as the desired outcomes. A participatory, stakeholder driven, systematic evaluation of the education process, outputs and outcomes is intended for both quality improvement and social accountability purposes. Quantitative (output numbers, grades, employment data, etc.) and qualitative data (including student and employee satisfaction, postgraduate performance, career choices/progress) will be

collected in formative and summative evaluation, with a combination of instruments suitable for informing quality improvement decisions and feedback on how the educational programme performs against objectives and expected outcomes. Programme staff appraisal will be guided and staff development needs identified based on feedback gathered continuously from students and stakeholders.

The expert group heard oral evidence form LU staff to support the proposed arrangements for quality assurance. No recommendations for this sub-area are possible in advance of the course commencing, but the commitment to support these standards was noted.

Recommendations – none.

4.7.2 Sub-area 7.2: Teacher and student feedback

Standards:

7.2.1. Feedback from both teachers and students is systematically collected, analysed, and used to continually improve the study programme.

7.2.2. Teachers and students are to be actively involved in planning the study programme evaluation and using its results for programme development.

Description

The report states (p.63) that it is within existing LU policy to systematically collect, analyse and evaluate feedback from teachers and students for the purpose of continuous quality improvement (CQI). Consequently, it is felt that the relevant policies and practices are in place and need minimal modifications to fit the purposes of the future LMS. The University collects feedback via web-based surveys completed by students, faculty/teacher reports, participant and external observation, individual and group interviews. The statistics unit provides regular reports on the data gathered through these means. The analysis of this data is the main source of recommendations for improvement. The LMS will put in place a participative process for the inclusion of teacher and student feedback in the analysis of the feedback via a variety of means, and results will be incorporated in recommendations for improvements for the next iteration of the study cycle.

The expert group heard oral evidence from university and clinical teachers, and medical students, to support the LMS plans for the collection, analysis and responses to feedback.

Recommendation

> The expert group recommends that staff feedback from evaluations is not only utilised generally to make improvements to the course, but that specific feedback, anonymised as the student source, is directed towards individual teaching staff to improve performance.

4.7.3 Sub-area 7.3 : Student performance

Standard:

7.3 Student performance is analysed in relation to the mission, objectives, and study programme of the medical school, and brought to the attention of the curriculum committee.

Description

The report states (p.64) that systematic collection of data on student performance already constitutes an integral part of the University's study programme. The following measures are

proposed: average length of studies; scores; pass and fail rates at examinations; success rates of graduates; dropout rates; time spent on areas of special interest; transition to employment. Data will be analysed and the results will form the basis of recommendations for improvement.

The expert group heard of the commitment of the University, particularly its Statistics Department, towards supporting this standard.

Recommendation

> The expert group recommends that the LMS put in place a tracking system of its graduates from the start of the programme, to document progression of their graduates through specialization, practice settings and continuing education.

4.7.4 Sub-area 7.4: Involvement of stakeholders

Standard:

7.4 The processes and outcome of study programme evaluation involve the governance and administration of the medical school, academic staff and students and take into consideration feedback from additional stakeholders.

Description

The report (p.65) states that, as described in detail under sub-areas 1.2, 2.8 (and area 8 below), the involvement of stakeholders in the design of the entire study programme is felt to be have been a major success of the initial approach, and this will be seamlessly continued on implementation of the LMS. Educational and health authorities, representatives of the profession, and the public are already involved in the design of the programme along with students and clients of the University, its curriculum committee, academic staff and external experts as necessary. Stakeholders will be regularly and systematically briefed on feedback gained throughout the evaluation process, and will be consulted for their recommendations and input.

The expert group heard from a large range of stakeholders including academic, administrative and clinicians, supporting involvement of governance and administration of the medical school, academic staff and students and that feedback from additional stakeholders be taken into consideration.

Recommendation

> The expert group would like to reiterate the request by managerial and clinical stakeholders that teaching and research responsibilities should be governed by a formal contract, as well as for more broad involvement of patient groups.

4.8 Area 8: Governance and administration

4.8.1 Sub-area 8.1: Governance structures and functions

Standards:

8.1.1. Governance structures of the medical school and their functions are defined, including their relationship within the university and to the university hospital.

8.1.2. The medical school has a strategic plan.

8.1.3. The academic staff participates in decision-making processes concerning teaching and research.

8.1.4. Decision-making processes, competencies, and responsibilities are communicated to all participants.

Description

8.1.1

The report (p.71) acknowledges that there is an interim governance model of the LMS Executive Committee, with a more broadly based LMS Steering Committee including all stakeholders (University and Hospitals). It is stated that this could evolve into a full–fledged governance structure in an established LMS within a revision of the University Law. The present curricular and financial autonomy would be carried over into LMS governance arrangements. The Executive Committee, nominated by the University consists of the Vice President for Academic Affairs with over 10 years of experience at the University; and Administrative Director with financial and administrative competence, the Dean of the Faculty of Science, Technology and Communication (FSTC), Director of the Luxembourg Centre for Systems Biomedicine (LCSB), a Curriculum Developer, the Chair being the Vice President for Research (with a medical background and international experience with the UK 'Medical School' model). The Steering Committee (Comité de Pilotage) consists of representatives of all major stakeholders including the General Directors of the affiliated teaching hospitals, Chair of the General Practitioners' training programme (Formation spécifique en Médecine Générale), Medical students (ALEM = Association Luxembourgeoise des Etudiants en Médecine), Nurses (ANIL, 'Association Nationale des Infirmiers et Infirmières Luxembourgeoises), the Director of the public research centre CRP-Santé, representatives from the National Patients' Association ('Patientenvertretung'), the Luxembourg Ministries of Higher Education and Health. This committee has advised and will continue to advise the Executive Committee and the University on all matters related to LMS. Virtually unanimous consensus has been achieved regarding the present concept and submission process. It is stated (p.67) that the LMS will be provided with an efficient, stable and transparent decision-making structure to orchestrate the wide variety of stakeholders and staff, whilst at the same time continuing the present consensus culture. It is stated that a revision might be necessary after an initial period of 5 years.

It is stated that a large number of operational decisions will have to be taken rapidly and on a daily basis necessitating an appropriate decision making structure, particularly in the initial years. Initially, there will be only few academic staff on full-time University contracts; most will be part-time teachers, some from outside Universities, others from the national hospitals; a strong Executive Committee needs to integrate these people. Integration of the hospitals/CRP-Santé into the course will require frequent visits of the major decision makers to the hospitals/CRP. Overall, efficient coordination between the multiple parties is a major determinant of success. Perhaps most importantly, identification of a suitable person to lead LMS in the critical initial years.

The University Law currently provides three potential solutions to the governance structure. Other solutions might be integrated into the revision of the University Law (foreseen for 2015 or 2016). The final decision will be taken once the new University president is in office (Jan. 1st, 2015), finance is secured and the revision of the Law is finalised.

Model 1 'Faculty' (p.68) is technically excluded for LMS because the relevant University bodies and the government have determined that LMS should not constitute a Faculty in its own right. Full integration into the Faculty of Science, Technology and Communication (FSTC) was stated not allow the budgetary and curricular independence required by the World Federation for Medical Education and OAQ (see boxed blue text under 8.4. below) because of the large

majority of votes from unrelated disciplines in the Faculty Council (e.g. on budget, election of the Dean, curriculum etc.).

Model 2 'University Interdisciplinary Centre' (p.68). Two Interdisciplinary Centres from several disciplines have an appointed director directly responsible to the University rectorate (Rector = President/Vice Chancellor) permitting rapid and efficient decision making processes. Research is closely coordinated with the relevant Faculty (i.e. FSTC). Existing centres provide mostly research and relatively less teaching than the Faculties, but LMS would mostly be concerned with teaching. Therefore, it was stated that it might be judicious to give it a similar structure to the Centres, i.e. direct responsibility of the director to the University president and participation of the director in the senior management team, but under a different label. Such a structure was felt to be fully in line with the budgetary, personnel and curricular autonomy required by WFME and OAQ. This is stated to be emerging as the preferred model.

Model 3 is akin to the 'Luxembourg School of Finance (LSF)' (p.69). In LSF, an independent foundation contributes to the budget, but staff are members of the Faculty of Finance, Economics and Law (FDEF). A legal study would have to be undertaken to examine whether public funds for LMS can be paid into such a foundation to guarantee the required financial autonomy (unlikely). Furthermore, the curricular and organisational independence would have to be examined in a legal study.

Assuming that model 2 (or 3) is selected, the SAR stated that four committees would allow participation of academic staff. Firstly, the LMS Steering Committee which will deliberate on teaching and assessment, staff matters, financing, interaction with the hospitals etc. It will meet on a monthly (or more frequent) basis, at least in the initial phase of LMS. Its members will be: the President of the University, Director of LMS (Chair), Vice President for Academic Affairs, University Administrative Director, Dean of FSTC (Faculty of Science, Technology and Communication), Director of LCSB (Luxembourg Centre for Systems Biomedicine, the major University scientific structure in the field), the Curriculum Developer, Chief Executives of the 4 affiliated hospitals plus the CRP-Santé, one representative of the non-hospital doctors (either GPs or AMMD), 2 members of academic staff, 2 students and 1 member of non-academic staff (sub-area 8.1.2.). Second, the National Medical School Board (NMSB) which will deliberate on the wider national implications of the developments in LMS and its strategy, long-term curriculum development, external communication etc. It will consist of representatives of all major stakeholders in addition to the stakeholders on the 'Steering Committee': Chief executives of teaching of the 4 affiliated hospitals, one representative from the General Practitioners, one representative from AMMD (National Association of Physicians and Surgeons), one representative each of: a.) LMS students, b.) Luxembourg Nurses' Association (ANIL), c.) patient representatives ('Patientenvertretung'), d.) Ministry of Higher Education, e.) Ministry of Health. Third, the External Advisory Board (EAB). The EAB will play a key role in aligning the curriculum, teaching, learning and assessment methods, student selection etc with best practice in comparable international Medical Schools. It will be appointed by the Steering Committee in conjunction with NMSB and consist of 5-7 members (Deans/Scientists from a variety of Medical Schools plus at least 2 ALEM (Association of Luxembourgish Medical Students) who are not registered at LMS. Finally, there will be 'General Assemblies' of all interested medical and nursing staff in the participating hospitals as their consent is naturally key to success; Public discussion, as it is also key to inform the population of Luxembourg about the developments at the Medical School and take into account their views.

The report states (p.70) that the present document acts the strategic plan for the years 2017-25. Initially, annual intermediate reviews are suggested then a full review (by OAQ or similar experts) after 3 years (once the first students have reached the Bachelor's degree). LMS itself will mostly be a teaching structure, at least in the initial phase. Students will acquire the

principles of research through teaching/projects in LCSB and LSRU (University). In addition, the entire University will be open to medical students who wish to carry out projects in other fields (medical- economy, psychology etc). The hospitals and the CRP-Santé will be contracted by the University to provide research teaching and training, as well as projects. Naturally, the exact nature and hence financial volume of these contracts can only be defined once funding is secured. As described elsewhere (sub-areas 2.4, 2.5, 6.4 and 8.2), Luxembourg has an exceptionally strong biomedical research sector for a country of its limited size and it is felt that Luxembourg has a sufficient research base and strategy for the development of LMS. All of these institutions have a clearly defined research strategy as outlined in the links and Annexes under sub-area 6.4. above.

The expert group heard oral evidence from University staff which supported a commitment to establishing appropriate governance structures as outlined in the self-assessment report. The existing commitment to formulating the LMS strategic plan had involved academic staff participation in decision-making processes concerning teaching and research, whilst competencies and responsibilities have been communicated to all participants.

Recommendations

a) The expert group recommends that the decision on governance arrangements be taken as speedily as feasible so that uncertainty does not hinder further planning, as this will need to be resolved for accreditation.

b) The expert group recommends that the 'lean' LMS model is mirrored by a 'lean' but effective governance structure.

4.8.2 Sub-area 8.2: Academic leadership

Standards:

8.2.1. The responsibilities of the academic leadership of the medical school for the medical study programme are clearly stated.

8.2.2. The academic leadership is periodically assessed with regard to the fulfilment of the mission and objectives of the medical school.

Description

The report (p.72) refers to the leadership strategy set out under sub-area 8.1 above. Periodical evaluations will take place in line with the rules of the University, where all senior appointments are for 5 years only, there is an external evaluation every 4 years as well as a mid-term intermediate evaluation. For initial years, sub-area 8.1.3 covers this.

The expert group noted the University's commitment to leadership review and periodical assessment of compliance with LMS mission and objectives.

Recommendations – none.

4.8.3 Sub-area 8.3: Administrative staff

Standard:

8.3 The medical school has sufficient administrative staff. This ensures the organisational implementation of the study programme and other activities, and guarantees efficient resource management.

Description

The report (p.72) states that administrative staff members have been included in the budget outline provided. The number of posts will be in line with defined staff policies. For the Master's programme (largely clinical years), one secretary plus half of a librarian post have been added for each hospital and the CRP-Santé, with the reservation that depending on the number of students eventually assigned to each hospital, the distribution between the hospitals might need to change.

The expert group was aware from site visits that administrative support arrangements had been discussed.

Recommendation

> The expert group cautions that the University understands that the intensive nature of a medical course, particularly the part-time commitment of the majority of clinical teachers will call for far greater administrative support than for more traditional courses and departments.

4.8.4 Sub-area 8.4: Educational budget and resource management

Standards:

8.4.1. The medical school has clear authority and responsibility for the study programme and its financing. This includes a dedicated educational budget.

8.4.2. The medical school has sufficient autonomy to direct resources, including the remuneration of teaching staff, in order to achieve the overall objectives of the faculty.

8.4.3. The financial sources and all conditions linked to financing are transparent, and do not hinder the autonomy of the medical school to make decisions concerning teaching and research.

Description

The report states (p.73) that the LMS will have full budget authority, transparency and responsibility as outlined under sub-area 8.1 above. The tentative budget estimate can be viewed in Annex 4. For the creation of LMS an estimate of the total cost of its development has been proposed by the Executive Committee, based on available information about the cost of similar efforts elsewhere and current rates in Luxembourg, as follows: Teaching costs for one medical student in Western Europe in 2014 are € 300.000 over 6 years. This sum is composed of € 30.000/year for 3 preclinical (Bachelor) years (total of € 90.000) plus € 70.000/year for the 3 clinical (Master's) years (total of € 210.000 for Master's). Costs for teaching, infrastructure etc. usually increase above inflation, hence, a 3.8% annual increase has to be assumed by way of prudent calculation. 3.8% is standard in Luxembourg. The overall cost assuming the annual increase of 3.8% for 300 students by the year 2026 would be ~ € 35 million. This figure includes costs for the MD track, total annual costs for the scientific track for the 20% most talented students, and the Luxembourg talent fellowships for the latter group.

As an illustration only, a calculation of expenditures based on today's cost for 300 students means that, if no inflation existed (that is, at 2013 cost) in the year 2026 LMS would cost ~ € 23 million. This is composed of € 300.000/student over 6 years for 50 students, i.e. €15 million for the standard teaching track plus 8 million for scientific quality, notably the PhD track with the Luxembourg talent fellowship and research for the master's thesis.

The expert group heard a clear commitment from the University's senior academic and administrative staff over authority and responsibility, financing including a dedicated educational budget, and autonomy to direct resources including the remuneration of teaching staff to

achieve overall objectives. The budgetary proposals presented in the report (p.94-103) are also noted as being supported by the University and are transparent.

Recommendation

The expert group recognises that indicative budgets have been carefully calculated. Once the LMS commences operation, actual committed budgets would be analysed for accreditation purposes.

4.8.5 Sub-area 8.5: Interactions with the health sector

Standard:

8.5 The medical faculty collaborates with the health and health related sectors of society and government.

Description

The report refers (p.74) to prior discussion under sub-areas 7.4 and 8.1. Relationship between the University over the proposed LMS with the health sector already exists. It is intended that this will be nurtured, deepened and expanded over time. As in all other medical schools, this relationship will be one of the key aspects for success of LMS. Historically, there was no University until 2003. However, the CRP-Santé has had a direct relationship with the CHL (Centre Hospitalier du Luxembourg) over many years. The institutions are legally completely independent from each other and the contractual relationships have to be shaped accordingly. The University recently employed its first physician-scientist, Prof. Rejko Krueger, a specialist in Parkinson's disease whose research group is located in LCSB, and a PEARL grantee of the Fonds National de la Recherche (FNR - National Research Fund) (€ 5 million over 5 years for internationally leading scientists).

The progress of this arrangement will be monitored but there is confidence that it is an appropriate solution because it has been working well in the initial critical phase. Essentially, it governs payments between the institutions. Prof. Krueger works 80% for the University and 20% for CHL. The CHL pays 20%. If he generates higher clinical revenues, the difference is paid into a clinical research fund (after a flat deduction of 35% for the hospital administration and infrastructure). If he generates revenues inferior to 20% of his salary, the University has to reimburse the difference to the CHL. There are two contracts: a standard work contract between the CHL and Prof. Krueger for 20% (1 working day) of clinical work (outpatients). The CHL pays a 20% salary plus oncosts (social security); this is accompanied by a second standard 80% work contract between the University and Prof. Krueger. These arrangements have been developed with the help of the hospital and University lawyers, as well as an outside expert in Luxembourg labour law. They currently are felt to represent the optimal solution.

Possible alternatives include a 'British' solution where the University is the sole employer and the (independent) National Health Service Hospital Trust reimburses the University for the clinical part of the salary. This solution is not readily feasible in Luxembourg, because the University has no accreditation to be a medical service provider, i.e. to second staff to medical services. The proposed solution is stated to be more research-friendly as all financial benefits from clinical work will be used for clinical research. A 'German' solution where the professorial chairs (mostly, though not always) are directors of the clinical services in their area is not desirable for historical and practical reasons because it is predicated on a structural link between the institutions.

The CHL predominantly employs salaried doctors. The remuneration of these employees for their teaching activities will need to be discussed, but the currently favoured model is one in which the hospital gives permission for supplementary work for the University which is then remunerated on a 'per hour' basis. Naturally, this model is only practicable for staff that provide a limited number of teaching hours, e.g. a 1 week block course per semester or 2 hours of tutorials per week over 2 semesters. There are a number of teaching staff ('principal clinical instructors') who are employed on a 50/50% (or similar basis) in an arrangement that is analogous to the one outlined above for our physician-scientists, though without a strong scientific component. These individuals will be responsible for teaching the core subjects, the organisation of tutorials, OSCE and other assessments etc.

Three affiliated hospitals (CHEM in Esch-sur-Alzette; Kirchberg/Zitha in Luxembourg City; the hospital of Ettelbruck in the north of the country) have no or few salaried doctors, but mostly free-practising physicians and surgeons who have individual contracts with the hospital for admission rights. These doctors will be contracted for teaching on an individual 'fee for service' basis. Initial concerns that this group of doctors might not be interested in teaching have been dispelled by the overwhelming response to a questionnaire; with over 200 doctors replying positively to the opportunity of teaching for the University. Equally, they have declared their readiness to take part in modern medical pedagogy courses (Annex 6).

The expert group noted during hearings and site visits the growing effective collaboration over the LMS proposals between LU and the health and health related sectors of society and government. The commitment of academic and clinical staff to undergo instruction in modern medical pedagogy was also noted. The group enquired about the concept of fractional University contracts with the LMS Executive committee and directly with the hospital managers, Consultants, GPs and CRP-Santé, and were informed that these options would be practical and feasible.

Recommendations

a) The expert group noted the existence of fractional contracts and an aspiration to create more posts along these lines. In the past this has sometimes led to disputes between two employers and employees as to whose regulations pertain and to whom expenses are reclaimable. Clear lines need to be drawn as to where employer responsibilities and employee duties lie, as there is considerable room for overlap.

b) The expert group recommend professional employment legal advice if this has not already been availed of.

8.5.2 (Not an OAQ criterion)

The question has been posed, will high-quality instruction of LMS students be possible in hospitals that operate with 'liberal' (self-employed) doctors? This system means that teaching by 'liberal' doctors cannot be enforced, but the authors state that there should enough volunteers for teaching. Since the 6th year teaching for students from Mannheim/Heidelberg was introduced at Kirchberg Hospital in 2010, which is a 'liberal' hospital, these concerns have been dispelled. There is now a sufficient number of teaching staff who have taken part in the extensive 2 week medical pedagogy course that is mandatory at the Faculty of Mannheim. A query to hospital doctors has also shown that out of 207 spontaneous volunteers, 132 came from the 'liberal' sector. It is stated that the vast majority of these doctors have large experience in their discipline, but there was some concern that only a minority performs e.g. too few medical interventions or operations in their discipline to be safe teachers. It is stated that there will be careful selection of LMS teaching staff as outlined previously. The vast majority of the specialists in Luxembourg have trained in top hospitals in neighbouring or other Western

countries and perform sufficient numbers of interventions in their field. In addition, undergraduate students are not taught to perform any complex interventions or operations - the most 'interventional' acts they perform is taking venous blood and urinary bladder catheterisation and then only under the supervision of a legally qualified doctor. Hence, the number of interventions/operations a teacher does per year is said to bear no direct relevance to the undergraduate student, it only has relevance for postgraduate specialist training in which the trainee has to perform a defined number of interventions and operations. It was proposed that staff would be selected extremely carefully, including external experts, and physicians or surgeons performing too few interventions/operations per year will have to provide evidence of their aptitude to be selected as teaching staff. However it is not intended that LMS medical students will perform medical intervention, examinations, treatment, or other acts having preventive, diagnostic therapeutic or rehabilitative aims. This accords with the 'Declaration on the Promotion of Rights of Patients in Europe, WHO, Amsterdam 1994' [14]. The arrangements described under 'Area 8' above (Internal Advisory Board, National Medical School Board as well as the contracts with all hospitals and individual liberally practising doctors) cover the vast majority of the health sector in Luxembourg and are in our view exemplary in terms of interaction between the University/LMS and the health sector. Further links will be established as the need arises (with nursing homes, rehabilitation centres, etc). While the majority of doctors are 'independent practitioners', it should be noted that there is no private health sector in Luxembourg, all patients are insured through the 'Caisse National de la Santé (CNS, public health insurance)' and optionally through a complementary private insurance to cover the (limited) cost that the CNS does not reimburse. This structure also increases the number of patients for teaching as 'private patients' in other countries are often not included in teaching rounds etc. "Independent practitioners" are remunerated either by the patient (who is then reimbursed by CNS and complementary insurance, as appropriate) or directly by the insurance(s) for higher expenses. There are no private patients excluded from being involved in medical student education.

The expert group met groups of 'liberal' doctors during the Belval hearings and at site visits, and were met with the same levels of commitment and enthusiasm as elicited from 'employed' doctors. They noted that the proposed hourly remuneration levels of €100 to €150 for teaching provides a mechanism for the regulation of teaching and for maintaining quality. It was also clear that 'liberal' doctors did not work truly 'solo' but in small teams who would share teaching, ensuring that all clinically available specialties would be covered by at least one member of each group. Medical students already accompany 'liberal' doctors to their private consulting rooms outside of the hospital, which would not always be the case in other European countries. Well-developed close relations with GPs also seemed to be a feature of the 'liberal' doctor model, which offers opportunities for students to follow the patient journey from the community to hospital and back. One hospital regularly hosted Professional Development events for GPs, attracting attendances of up to 80. Despite overall low levels of research output from most 'liberal' doctors, the group heard that they would be keen to facilitate access to patients for researchers, and a few individual had prior high-level research activities which they would like to reactivate if provided with sufficient support. The group also noted that patients from neighbouring countries were frequently seen at all four hospital sites, either for particular specialities or because of local geography which made the Luxembourg hospital close than equivalent units in their own location. The presence of an LMS with University Teaching Hospital status extending across all four main hospital groups may boost such additional patient flows, and therefore could become income generating over time. The organisation of Trauma services, with rapid helicopter evacuation to specialist units, was felt by the group to be exemplary, and this may also be developed into a trans-national specialty in the same way as certain units in Switzerland had.

Recommendations – none.

4.9 Area 9: Continuous renewal/quality assurance

Standard:

9. As a dynamic institution, the medical school implements procedures for the periodic reviewing and updating of its structure and functions, and rectifies documented deficiencies.

Description

The report states (p.78) that the Quality Assurance (QA) process of LMS will be seamlessly fitted into the overall QA system of the University. Transparent processes and procedures will be followed and regularly updated for quality improvement purposes to detect deficiencies and identify opportunities for improvement. The LMS team aims to work closely with the university leadership and its Quality Management team to integrate student selection, admission, assessment, staff recruitment, development and performance management, as well as study programme evaluation processes, standards and procedures into the University–wide system of QA. Specific approaches taken are described in more depth under sub-area 7.1. Crucially, external input to QA will be provided by regular OAQ reviews. By applying the concept and practice of QA to its study programme, the LMS is committed to reduce/eliminate inappropriate variations in teaching quality. It strives to build and nurture the culture of openness to constructive feedback and establish an overall quality culture. This includes embracing self-reflection, fostering the creation of an ecosystem and the practice of innovation and a willingness to collaborate with local authorities, international organisations and peers in setting standards and benchmarks to guide its efforts towards educational excellence in its everyday practice.

The expert group heard oral evidence to support LMS plans for periodic reviewing and updating of its structure and functions, and a commitment to the rectification of any deficiencies documented.

Recommendations - none

5 Conclusions, Commendations and Quality Improvement Recommendations

5.1 Conclusions

Based on the evidence provided by OAQ and additional documents delivered during the site visit, and on comprehensive discussions with relevant stakeholders from public representatives, academic staff, participating hospitals and research institutions, general practitioners, medical students and patients' representatives, the expert group came unanimously to the following conclusions:

- The plans for the creation of a Luxembourg Medical School are judged to be feasible.
- A Luxembourg Medical School would ensure that the delivery of health care for the future needs of Luxembourgish society is sustained under the independent control of the Grand Duchy itself, and so best suited to national social, economic and cultural expectations.
- The realisation of a Luxembourg Medical School would appear to be essential to accelerate and synergise ongoing developments in the rapidly growing innovative fields of Biomedicine, Biotechnology and the Knowledge Economy in Luxembourg.
- The expected necessary financial investment appears to be moderate, compared with the potential monetary and non-monetary gains.

5.2 Summary of Commendations

The expert group wishes to acknowledge the large amount of work carried out by the University of Luxembourg in preparation for the site visit, the generous hospitality and openness shown by the stakeholders and all others they met during their brief visit, and for the support of the OAQ in furnishing the completed report.

The expert group commended the following:

Area 1: Mission and Objectives

1.1 Mission and Objectives:

- mission statement describing the coherence of desired educational outcomes with the proposed mission and objectives, strategic plan, research goals and professional practice;
- inclusion of competencies across clinical and scientific skills along the continuum of care and the pursuance of life-long learning;
- descriptions of how desired educational outcomes will be achieved;
- the student-centred approach, involvement of a patient representative in planning and the strong intentions to link the programme to the needs of patients and society;
- anchoring the proposed curriculum on SCLO defined competencies for Undergraduate Medical Training with appropriate modifications for future graduates to practice medicine under supervision and to enter specialist training within Luxembourg;
- continuous adjustment to the needs of the health system and society taking into account the attainment of predefined performance goals with data continuously collected, analysed and used for quality improvement;
- commitment to continuing to involve all key stakeholders to achieving good educational outcomes;
- development of detailed plans over a rapid timescale.

1.2 Participation in the formulation of Mission and Objectives:

- intense engagement with a wide range of relevant stakeholders appropriate to the current stage of development;
- widespread enthusiasm generated across all stakeholder groups.

1.3 Academic autonomy:

- commitment of the University to developing the LMS programme;
- academic freedom and budget allocation provided by the University to design the curriculum.

Area 2: Study programme

2.1 Curriculum models and instructional methods:

- strides taken to define and develop an innovative curriculum;
- decision to develop the proposed 6 year LMS course to meet the particular requirements of Luxembourg rather than a 3 year BMed or MMed programme in isolation;
- the provision of a PhD track.

2.2 Structure, composition, duration of the study:

- meeting EU professional mobility directive requirements over hours of instruction and the years of study.

2.4 Scientific methods

- recognising the potential for the cross-fertilisation between the LMS and existing research institutions and the necessity to provide synergies in Biomedical and Health Service research.

2.5 Basic biomedical sciences:

- the modern 'lean model' structure proposed;
- recognition of the need for linkage of state-of-the-art teaching with research active teachers
- clinical teaching by practitioners holding hospital contracts to secure appropriate teaching hours at appropriate fees;
- hospital responsibility for reliable delivery and quality, with contracts for individuals discouraged.

2.6 Behavioral and social sciences, medical ethics:

- recognition of a need to motivate modern medical students to consider these subjects as vital to modern medical practice equal to other more traditional sciences;
- a logical requirement for linguistic proficiency in Luxembourgish.

2.7 Clinical knowledge and skills

- enthusiasm for teaching from all stakeholders that were encountered;
- commitment to integration across the various phases of the curriculum.

2.8 Linkage with medical practice and health system

- consideration of faculty training.

Area 3: Students

3.1 Admission policy and selection process:

- development of new admissions tools;
- reservation of 70% of places for Luxembourg resident applicants;
- intentions to improve recruitment into General Practice.

3.2 Number of students:

- proposed step-up approach, commencing with only half of the final proposed admission cohort, with an appropriate time scale to ensure the planned high level of educational quality;
- preliminary estimates provided showing that there would be enough placements for the first LMS class.

3.3 Student support and counselling:

- commitment to student support through existing specialist University services.

3.4 Student Representation:

- early involvement of students in curriculum planning that will undoubtedly help the buy-in process for a new LMS.

Area 4: Assessment of students

4.1 Assessment methods:

- the assessment methods listed reflect best medical educational practice.

Area 5: Academic staff and faculty

5.1 Recruitment policy

- LU policies for gender equality.

Area 6: Educational resources

6.1 Infrastructure

- large investments already made and planned infrastructures to meet the needs of future medical students;
- scaling up of educational facilities on campus and at clinical teaching sites.

6.2 Practical clinical training resources

- plans for the provision of adequate physical infrastructure at Belval;
- use of four main hospital facilities and General Practice to provide clinical experience of the full range of healthcare provision across Luxembourg.

6.3 Information technology

- availability of state-of-the-art ICT to supplement and complement traditional teaching and learning.

6.4 Research

- the planned targeting of specific areas was felt to be sensible.

6.5 Educational expertise

- careful attention to faculty training

Area 8: Governance and administration

8.4 Educational budget and resource management

- indicative budgets have been carefully calculated.

8.5 Interaction with the health sector

- the existence of fractional contracts and an aspiration to create more such posts

5.3 Summary of Quality Improvement recommendations

Area 1: Mission and Objectives

1.1 Mission and Objectives. The expert group recommended that: as the project progresses further it would be prudent to express explicitly how the specific needs of patients and their carers within Luxembourg would be served by an LMS and its future graduates; it be made clear that the CanMEDS framework is designed for practising doctors, and that LMS graduates could only attain full competency in each domain after further training; that greater clarity be provided on the relative roles of the three distinct frameworks of SCLO, WFME guidelines and CanMEDS frameworks.

1.2 Participation in the formulation of Mission and Objectives. The expert group recommended that: as the project progresses, greater public engagement should be achieved by increasing the number of patient representatives; engagement with other healthcare professionals and social care agencies not wholly based in the healthcare system that LMS graduates will interact with as future colleagues in future; media coverage including invitations for further public and professional involvement, which might be accomplished efficiently and speedily using use of external communications expertise.

1.3 Academic autonomy. The expert group recommended that: the academic freedom and budget allocation already provided to design the curriculum be extended formally by the University, with the allocation of sufficient resources for implementation; to ensure success, a commitment be made by the University to allocate sufficient capital and revenue funding to ensure adequate physical infrastructure and staffing levels, fully underwritten and benchmarked, if necessary, with known costs of other Western European Medical Schools; given the expectation of incremental additional funding, the Medical School budget should ring-fenced (that is, totally protected) for a period of 5 to 10 years to ensure that all development funding allocated is used entirely for its intended purpose; some thought be given to partnering with other similar Medical Schools developed recently, seeking a best-practice model including the needs for a bilingual approach and lean ‘medical school’ structure.

1.4 Educational outcomes. The expert group recommended that: as the course develops a formal mechanism is developed to ensure that the standard of knowledge is comparable with competitor schools, in the form of knowledge acquisition progress tests; the use of External Examiners be considered to ensure that the standard of skill acquisition is also comparable with competitor schools; academic credibility will be vital to attract strong students in a highly competitive environment, and would reassure those making decisions on the allocation of the large investment required.

Area 2: Study programme

2.1 Curriculum models and instructional methods. The expert group recommended that: urgent clarification be reached between LU and the three relevant government ministries as to the latter's expectations of 'options' for the LMS programme and other new LU funding requests; LU should prioritise the LMS above other innovative funding applications in the context of societal needs; the delivery of a BMed or MMed programme in isolation is not recommended as it would not meet the particular requirements of Luxembourg; increased clarity of intent be provided for the proposed PhD track as it is a departure from best available medical educational practice and should not detract from focus on establishing the BMed/MMed course, and further detail is needed on the timing of introduction, selection, departure and re-entry points and whether this path should be a longer-term aim; practical inter-professional educational opportunities should be made more explicit, so that LMS students emerge better able to practice together with healthcare colleagues in the real world and thus optimize patient care together; a learning agreement be formulated and made available to applicants, to emphasise clearly that, if selected for the programme, LMS students would take primary responsibility for their own learning.

2.2 Structure, composition, duration of the study. The expert group noted that recommended that: further work be encouraged to validate existing efforts by completion of the full, detailed curriculum, making explicit the intention for an integrated, spiral curriculum; on completion of the curriculum, assessment be specified in greater detail, especially as to how this will test and reinforce integration; full details of the highly innovative curriculum are made available to applicants to ensure that students are motivated to study using modern methods, rather than a more traditional programme; the Master's dissertation might involve clinical teachers as well as LU academic staff, with a co-supervisory arrangement if required; clarity be provided on whether problem based learning facilitators will be employed, and whether they must be medically qualified.

2.3 Study programme management. The expert group recommended that: a permanent Curriculum Committee be appointed as soon as possible to foster early buy-in from Faculty; to promote spiral integration, special attention needs to be given to student assessment to ensure that it promotes this.

2.4 Scientific methods. The expert group recommended that: the priorities of the programme be primarily concerned with the graduation of newly-qualified doctors better suited to the modern needs of patients in Luxembourg; it be acknowledged that important secondary considerations include collaboration by the LMS with LU scientists and the healthcare community; caution is advised over the potential risk of diversion of scientific track students from the medical programme, perhaps engaging in relevant clinical studies to keep up to date with a course that will evolve during their absence; applicants should be provided with clarity on how the scientific track will be implemented, and on the timing of entry, exit and re-entry to the standard LMS programme; caution should be exercised over the danger of attracting unsuitable students to the scientific track solely through competitive selection, perhaps with a parallel system of prizes and rewards for 'standard track' students.

2.5 Basic biomedical sciences. The expert group recommended that: the modern 'lean model' structure proposed for the LMS be adopted; collaboration over the teaching of preclinical and clinical aspects of the curriculum as a major step on current provision of Year-1 and Year-6 studies; LU is encouraged to commit to budgeting for and securing additional biomedical science teachers in the areas required, whether by external hire or backfill of existing preclinical or staff; the current Table 2 and Annex 6 should expanded as plans progress into a formal 'gap-analysis' to ensure adequate teaching resources can be secured to an appropriate timetable; caution be exercised in that part-time teaching staff, whether locally or externally hired do not usually make major contributions to development and quality management, but contractual terms and the allowance of time for non-teaching duties may facilitate this; for teaching practitioners holding hospital contracts, appropriate teaching hours are secured at appropriate fees; the hospital would be responsible for reliable delivery and quality and contracts with individuals should be discouraged due to increased costs and the difficulty in monitoring quality; explicit consideration be given to the current Year-1 programme possibly ceasing in its current 'wide' format and the implications of this for current teaching and research staff; similarly a wish to retain current elective students will need to be factored into capacity calculations.

2.6 Behavioural and social sciences, medical ethics. The expert group recommended that: to motivate students to consider these subjects as vital to modern medical practice bearing in mind the competing demands of other more traditional sciences; consideration be given to the use of clinically qualified teaching staff to 'champion' these subjects as well as prizes and awards; these subject should be included in the formal 'gap-analysis' of teaching resources; the requirement for proficiency in Luxembourgish is logical, but in the context of a trilingual programme this may be too demanding for some students and it should be considered whether it would be better to pre-qualify students in Luxembourgish before admission; this could be accomplished by the provision of a pre-medical course as well as between preclinical and clinical course phases.

2.7 Clinical knowledge and skills. The expert group recommended that: the scale of skills simulation is made clear, including the need for provision across multiple sites and a need to kept this updated; the sharing of equipment with other healthcare students and professionals be encouraged; a formal 'gap-analysis' of teaching staff and other resource requirements leads to contractual cooperation between LU and the participating institutions, rather than with individuals; preliminary estimates provided showed that whilst there would be enough placements for the first LMS incoming class, a detailed placement plan of GP and hospital placements as student numbers build up would be required for accreditation; a plan be devised to manage the potential effect on students of foreign medical schools currently placed at Luxembourgish hospitals by new LMS placements, so that good long-term relationships maintained with foreign medical schools.

2.8 Linkage with medical practice and health system. The expert group recommended that: those supervising preclinical Year-1 to Year-3 students who are not already involved in Year-6 and elective student hosting receive training to ensure that patients in initial student encounters are suitable.

Area 3: Students

3.1 Admission policy and selection process. The expert group recommended that: consideration is given to existing selection tools that have already been validated elsewhere, such as the more objective, structured interviewing techniques like the Multi-Mini Interview; the reservation of 70% of places for Luxembourg resident applicants might best be met by a language proficiency requirement for Luxembourgish as permitted under EU law; the intention to improve recruitment into General Practice be realised by ensuring that students are more

fully exposed to Family Medicine and that prizes and rewards be provided for student contributions in this speciality.

3.2 Number of students. The expert group recommended that: preliminary estimates on GP and hospital placements for the first LMS class should be carefully detailed for each year of the planned rising intake to ensure adequate provision.

3.3 Student support and counselling. The expert group recommended that: as a medical course is intensive, and includes repeated high-stakes assessments, there will be greater demands on student support services and we reiterate the author's emphasis; the competitive nature of entry into specialty and GP training requires that graduates have 'better than average' résumés, so specific advice from established medical professionals will be needed for graduates to achieve their full potential; a professional mentoring or career guidance system be considered to supplement existing services.

3.4 Student Representation. None.

3.5 Multilingualism. None, although some relevant recommendations are made under sub-area 2.6.

Area 4: Assessment of students

4.1 Assessment methods. None.

4.2 Relationship between assessment and learning. The expert group recommends that, once the proposed curriculum has been completed: individual examples of what will be assessed and by which methodology are required for accreditation, with emphasis on assessing the understanding of complex concepts which is more difficult than measuring simple recall; clarity will be needed on the integration of assessment and learning, stating how assessments best serve the curricular goals such as spiral integration and an ability to justify actions and decisions; consideration of assessment goals ensures that the selected methods do not encourage learning counter to them; clarity is required on how assessment standards will be referenced, whether by cohort norms or by criteria or a combination; clarity is also required on how inter-professional learning will be accomplished, specifically how learning together will maximize patient care; there is recognition of the large number of markers and assessors required for some assessments, especially MEQs, essays, oral tests, independent course work, projects, team assignments, mini-CEX, DOPS, OSCE and ICE; detailed plans for assessor recruitment and training would be expected before the course commences according to best medical educational practice; as previously suggested, the use of external examiners might enhance the credibility of the new LMS programme.

Area 5: Academic staff and faculty

5.1 Recruitment policy. The expert group recommended that: before advertisement, joint commissions with clinicians and/or researchers from the cooperating institutions are constituted to define specific requirements aligned with the strategic plans of the University, and/or the hospitals and extramural research institutions; strategic budget plans are made for recruitment; clarity is provided on the rights and duties of various stakeholders in the appointment process; LU policies for gender equality should be implemented to ensure an increasing presence of women in senior positions and on leading committees.

5.2 Staff policy and development. None.

Area 6: Educational resources

6.1 Infrastructure. The expert group recommends that: the planned scaling up of educational facilities on campus and at the clinical teaching sites should be complemented by investment in facilities for General Practice.

6.2 Practical clinical training resources. The expert group recommended that: all students should rotate around each of the four main hospital facilities and in General Practice to experience the full range of healthcare across Luxembourg exposing students to all specialities and all major employers to facilitate well-informed career choices.

6.3 Information technology. The expert group recommended that: the state-of-the-art ICT plans ensure data protection, given the crossover of sensitive patient data between institutions; data ownership should be clarified.

6.4 Research. The expert group recommended that: additional research capacity be grown and scaled up as the LMS programme is implemented rather than being grown 'immediately'; LU and their research partners should aim to further sharpen common research profiles; research into medical education is a highly appropriate use of research resources, particularly given the advent of a new programme; the University becomes the catalysing institution for research in Luxembourg.

6.5 Educational expertise. The expert group recommended that: careful attention be paid to faculty training, also giving thought to an 'evening class' model to accommodate the schedules of potential clinical teachers; again, a medical educational research programme would establish the LMS' reputation as a state-of-the-art academic institution.

6.6 Cooperation. None.

Area 7: Programme evaluation

7.1 Study programme evaluation. None.

7.2 Teacher and student feedback. The expert group recommended that: staff feedback is not only utilised generally to make course improvements, but is specifically directed towards individual teaching staff to improve their performance and anonymised as to the student source.

7.3 Student performance. The expert group recommended that: a graduate tracking system is put in place from the start of the programme to document progression through specialization, practice settings and continuing education.

7.4 Involvement of stakeholders. The expert group recommends that: managerial and clinical stakeholders ensure that teaching and research responsibilities are governed by formal contracts; again, broader involvement of patient groups as the programme develops.

Area 8: Governance and administration

8.1 Governance structure. The expert group recommended that: governance arrangements are agreed speedily so that uncertainty does not hinder further planning; the 'lean' LMS model should be mirrored by a 'lean' but effective governance structure.

8.2 Academic leadership. None.

8.3 Administrative staff. The expert group recommends that: the University understands that the intensive nature of a medical course and the part-time commitment of most clinical teachers, calls for far greater administrative support than for traditional courses.

8.4 Educational budget and resource management. The expert group recommended that: once the LMS into operation, actual commited budgets would be analysed for accreditation purposes.

8.5 Interaction with the health sector. The expert group recommended that: the aspired fractional contracts carry a capacity to lead to disputes as to whose regulations and expense policies pertain; clear lines need to be drawn as to where employer responsibilities and employee duties lie as there is considerable room for overlap; professional employment law advice is considered.

Area 9: Continuous renewal/Quality assurance. None.

6 Statement of the University of Luxembourg to the expert report

The University of Luxembourg received the expert report on 29th January 2015. The report was judged to be very thorough and insightful. Some amendments were requested to improve clarity and correct factual errors or misunderstandings. The AAQ has considered these, and has incorporated all amendments that could be confirmed from the evidence available to the expert group.

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8 Annexes

Annex A: Visit schedule, November 2014 (with indicative timings)

19th Nov 09:00: 30m Presentation by Prof Neyses on LMS context

09:30 Expert group planning meeting with OAQ staff

Afternoon visit to Belval campus and stakeholder meetings:

13:50 L Diederich (Ministry of Higher Education & Research)

14:00 R Klump (President of the University)

14:10 LMS Executive committee

16:15 LMS Executive and Steering committees

17:15 Stakeholders: Hospital Directors, Federation of Hospitals, CRP-Santé

18:00 Stakeholders: Nursing Schools and Association of Nurses in Luxembourg

20th Nov **Parallel Visits to hospital sites and further stakeholder meetings:**

Group 1: Larvin, Solbach, Thorsdottir

10:00 CHdN (Centre Hospitalier du Nord), director and staff

14:00 Transfer to CHL (Centre Hospitalier de Luxembourg)

13:00 Meeting with President of the Association of Doctors and Dentists of Luxembourg (AMMD)

Group 2: Bordage, Coates, Hering

10:00 Centre Hospitalier Emile Mayrisch (CHEM)

13:00 Centre Hospitalier Kirchberg

Both Groups:

16:30 Centre de Recherche Publique de la Santé (CRP-Santé)

21st Nov **Visit to Limpertsberg Campus for further stakeholder meetings:**

08:45 Current LU and extended teaching faculty

10:00 Patient representative, R Kolber

11:30 Luxembourg University Centre for Educational Testing (LUCET)

11:45 Medical students, Association of Luxembourg Medical Students

13:45 Expert group discussion

16:45 Debriefing, including Minister for HE & Research, M Hansen

Annex B: Membership of LMS Executive and Steering Committees

Executive Committee

- Ludwig Neyses, (Chair) Vice President for Research , University of Luxembourg, (Internist, Cardiologist)
- Eric Tschirhart, Vice President for Academic Affairs University of Luxembourg (Physiologist)
- Paul Heuschling, Dean of the Faculty of Sciences, Technology and Communications, University of Luxembourg (Neurobiologist)
- Alfred Funk, Director of Administration, University of Luxembourg
- Rudi Balling, Director of the Luxembourg Centre for Systems Biomedicine, University of Luxembourg (Systems biologist)
- Tatjana Makovski, Curriculum developer

Steering Committee

- Senior University faculty
- Directors of the four main hospitals of Luxembourg
- Legal and didactic experts
- GP representatives
- Representatives of the Association of Doctors, Nurses and Students, Patients' Organisations
- Representatives of the key ministries

Annex C: Amendments suggested by the LMS Steering Committee and AAQ responses

Page (paragraph)	Current text	Proposed text
2(3)	All doctors in Luxembourg are graduates of other Universities, mostly from nearby Universities in Belgium, France and Luxembourg.	All doctors in Luxembourg are graduates of other Universities, mostly from Universities in Germany, France, Belgium and Austria.
2(4)	The Government of Luxembourg negotiates a fixed number of places with Universities in France and Germany.	The Government of Luxembourg negotiates a fixed number of places with Universities in France, Germany and Belgium.
2(6)	The University of Mannheim similarly accredits Year-6 training in the Kirchberg Hospital.	The University of Heidelberg (2nd Medical Faculty in Mannheim) similarly accredits Year-6 training in the Kirchberg Hospital.
10(3)	The expert group asked the LMS Executive and Steering group what the cost of establishing Biomedical Systems at the University had been, and were informed that the cost was €140m during 2006-7.	The expert group asked the LMS Executive and Steering group what the cost of establishing Biomedicine at the University had been, and were informed that the cost was €140m between 2008 and 2013 (split between LCSB and roughly 50/50 IBS and Hutchinson Centre in Seattle.) *AAQ/Experts response:* *The experts welcome the correction to the dates in the first part of this sentence. The information within parentheses on the split of funding with Seattle is acknowledged. It is additional to that provided in the SAR or recorded in the site visit notes, but would not have influenced the assessment and so has not been included.*
14(1)	The BMed Phase of any medical course is far more expensive to resource than the MMed phase'.	I think you probably mean the reverse, i.e. the Master's is more expensive as these are the clinical years. Plus in the subsequent sentence, an MMed alone has never been an option, only a stand-alone BMed (a Bachelor's alone would be less costly as these are the (largely) preclinical years).
36(1)	CHL also trains 5 students from Louvain in their 5th year as well as students from other Universities. During academic Year 2013 CHL welcomed 140 students overall (Bachelor 3 to Master 4).	CHL also trains 40 to 50 students per year from the UCL (Université Catholique de Louvain) in their 4th to 6th year of studies, as well as students from other French, Belgian or German Universities. During the academic Year 2013, CHL welcomed 140 students overall (3rd to 6th year of medical studies).
37(4)	The group noted that each hospital already provides access to a wide range of electronic journals, which would be available at no additional costs for LMS students.	The group noted that each hospital already provides access to some electronic journals which would be available to LMS students. Broadening the number of electronic updates should be envisaged with some additional cost.

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