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de medicina
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0. Introduction

The previous full visitation took place on February 2017. The ECOVE final decision on May 2017, for the status of the establishment was one of “NON-APPROVAL”, highlighting the following seven Major Deficiencies:

- Absence of funding and available time for research activities, having a negative impact on research-based teaching and education to research.
- Absence of relevant dissection and necropsy rooms for large animals and inadequate necropsy room for small animals.
- Absence of adequate isolation boxes for large animals.
- Insufficient caseload of “real” patients.
- Insufficient cadavers from sick patients in large animals.
- Lack of clearly defined career progression pathways, especially for teaching staff.
- Insufficient number of full-time academic teachers and insufficient training of all the staff involved in teaching, including practitioners, to ensure a research-based education

Since 2017, the Universidade Lusófona de Humanidades e Tecnologias and the Faculty of Veterinary Medicine (FMV-ULHT) have committed themselves to the correction of deficiencies pointed out by the EAEVE experts, in order to be fully compliant with EAEVE standards.

Even when facing the challenges presented by the Covid-19 Pandemic, the Faculty undertook the enormous challenge of correcting the deficiencies observed in the last audit, maximizing the quality of education while respecting the mandatory lockdowns. This was done by reorganizing all the classes in order to comply with the ESEVT indicators. The FMV-ULHT prides itself on having been the only school to return to campus in the 2020 lockdown and to adjust the second semester of 2021 to accomplish hands on non-clinical and clinical training. As a result we feel that we have superseded the challenge presented by the Covid-19 Pandemic while ensuring our high quality standard of education where preserved and made better by correcting the deficiencies identified.

1. Correction of Major Deficiencies

1.1 Major Deficiency 1: Absence of funding and available time for research activities, having a negative impact on research-based teaching and education to research.

1.1.1. Factual information

To improve the absence of funding and available time for research we have followed many strategies and applied actions, as follows:

1- Concerning funding we created and improved both internal and external financing for research activities as follows: - The University enhanced internal overall funding and created for the Faculty its own research activity funding. Lusofona University created a Unit exclusively dedicated to research named ILIND-Instituto Lusófono de Investigação e Desenvolvimento¹, which aims to promote research and development (R&D) and dissemination of knowledge in all scientific areas. It further coordinates activities carried out by Universidade Lusofona's R&D units, ensuring support for preparing, submitting and managing research projects, as well as assisting the processes undertaken by individual investigators. With the purpose of fostering and rewarding activities and projects that may strengthen the capacity for research and innovation in Lusofona's educational establishments, in 2020, ILIND created the program "**FAZER +: a support program for Science and Innovation**"², comprising application calls and two prizes, respectively: "Excellence in Research", "Best innovative pedagogical practice" and "Good research practices in teaching". The call "Excellence in Research" (62.500 €) aims to fund R&D projects with an innovative and interdisciplinary nature whilst promoting collaboration between teachers and students from the involved HEIs. The prize "Best innovative pedagogical practice" (8.500 €) aims to support the development and implementation of innovative pedagogical practices that encourage experimentation and transversal group work in curricular units of any training cycle. The prize "Good research practices in teaching" (4.500 €), aims to encourage the integration of R&D activities in the contents of curricular units of any training cycle, with particular emphasis on the initial cycles, where it is important to stimulate new research practices in all the multiplicity of forms that it can and must take today. In order to stimulate the development of research and the excellence of activities between researchers from the R&D units of the Lusofona Group, financed by FCT - Foundation for Science and Technology, ILIND has also created, in 2020, the "**Seed Funding**"³ Program, that finances innovative projects, preferably with a strong interdisciplinary component, which may result in larger projects that can be submitted for funding by other entities. The maximum amount for financing purposes is € 15,000. In 2021 (June 1st- July 9th) ILIND opened the 2nd edition of this program.

¹ <https://investigacao.ulusofona.pt/>

² https://www.ulusofona.pt/noticias/fazer-mais-apoio-ciencia-inovacao?utm_campaign=fazer_-2021&utm_medium=email&utm_source=RD+Station

³ <https://investigacao.ulusofona.pt/en/news/960-programa-seed-funding-ilind>

After the EAEVE auditing recommendations, the University supported the Faculty of Veterinary Medicine, since 2018, with its own research funding. The aim was to provide students with opportunities to participate in R&D projects, namely those inherent to their curricular internship development. Rules/regulations to apply for grants were established and teachers and students were motivated to submit projects. More than 36,000 thousand euros have already been financed and for next year a budget of 50,000 euros will be allocated to motivate more applications due to an increase in students' number and a higher interest from the staff.

We also increased the number of external funding for research projects and promoted research collaborations. The Faculty fostered collaborations with institutions (both public and private) with significant research and joined Collaborative Laboratory Networks. We established novel official collaborations with institutions with well-developed and significant research in our areas of interest, opening doors to the use of infrastructures, research equipment and research funds, as well as increasing student supervision, mainly at master's degree level. The major collaborations were made with the R&D Units dedicated to scientific research and technological development with high scores in the national evaluation ranking by the National Foundation for Science and Technology (FCT): 15 of our Ph.D. academic staff are integrated in the Centre for interdisciplinary Research in Animal Health of the Faculty of Veterinary Medicine of Lisbon (CIISA); 4 of our Ph.D. academic staff are part of the CITAB: Centre for the Research and Technology of Agro-Environmental & biological Sciences of University of Trás-os-Montes e Alto Douro (UTAD); 8 Ph.D. Professors are part of the CBios: Research Centre for Biosciences & Health Technologies of The Lusofona University; 5 Ph.D. Professors are part of LEAF: Linking Landscape, Environment Agriculture and Food of the Higher Institute for Agriculture, Lisbon University; and 10 others belong to various research Centres.

Recently we became members of a strategic collaborating network, Colab4food, which aggregates nationally renowned research institutions and companies, aimed at promoting research among their partners and helping with applications to national and international projects (particularly European projects).

The academic teaching staff were also stimulated to apply for several national and international project funding opportunities. To increase the number of projects, publications and funding in the predominant area of the course, the FMV-ULHT has motivated the participation of teachers in R&D funding calls. In 2020 we applied to the top national research funding organization, the FCT, with a total of 8 projects: 7 applications that had FMV-ULHT as a proponent Institution and 1 more application with FMV-University of Lisbon. Several teachers also joined as team members in other applications with other proponent institutions, such as ISA, INIAV and INSA. We are preparing applications for European projects and establishing collaboration networks with national and international entities, with the goal of promoting and motivating students to participate in research projects and grasping the importance of applied research to their areas of work.

Currently, we are already participating in more than 100 R&D projects, 37 of which have considerable funding from European Projects in One Health, PT2020, FCT, Horizonte Europa 2020 and COST Action, and 65 projects stand out in collaboration with several national R&D Centres (UA, UC, UM, FCM-UNL, FM-UL, IST-UL, IGC, INSA) and international (EU, BR, UK, USA), in the areas of Clinical Veterinary, Public Health - One Health, Agricultural and Food

Industries. The financed volume of the projects are between 200 thousand, 600 thousand and 40 million euros, with some examples: Building integrative tools for One Health Surveillance, JRP16-R2-FBZ2.5-BeONE; Combatting anthelmintic resistance in ruminants - COST Action CA16230; Three dimensional motion analysis for monitoring of rehabilitation and high performance training of the equine athlete - PTDC/CVT-CVT/32613/2017; GEN-RES ALENTEJO Alentejo 2020; - IDEMBRU – One Health Joint Programme H2020, Grant 77383; MERINO Parasite PTDC/CVT-CVT/28798/2017; PhageSTEC POCI-01-0145-FEDER-029628; TELE-Vir, One Health EJP; TITANGEL PTDC/BIA/MIC/31561/2017 among many others.

2- In relation to the time available for research activities, we supplied more time for the academic staff to dedicate themselves to quality research and innovation by increasing the number of academic staff through increased hiring, focusing mostly on those with high research skills and scientific outputs as well as proven networking ability. FMV-ULHT has further reinforced the hiring of full-time professors/researchers, which in recent years has more than doubled, namely Ph.Ds in the scientific area of the Study Programme and others, which has allowed for a reduction of the teacher's workload as well as the improvement of the teaching quality standards whilst providing more time for research activities.

1.1.2. Comments

Through new and existing partnerships, the hiring of more researched focused staff, provision of more time to dedicate to research endeavours and more financial support by the University, we believe that the conditions have been created to continue the improvement of our research-based teaching and education to research.

1.2. Major Deficiency 2: Absence of relevant dissection and necropsy rooms for large animals and inadequate necropsy room for small animals.

1.2.1. Factual information

From the academic year 2017/2018, to correct the identified absence of relevant necropsy rooms for large animals we established a formal protocol to use, for a monthly monetary contribution, the necropsy room facilities of the National Institute of Veterinary and Agriculture Research (INIAV) around the Lisbon area, at Oeiras - a public laboratory that develops research activities in agronomic and veterinary sciences.

The necropsy room made available through this protocol with our Faculty, has 200 square meters, with high-quality standards in terms of layout and biosecurity measures. It is fully equipped to carry out large animal and small animal necropsies, with several auxiliary rooms for special procedures, proper cooling rooms, proper locker rooms for clear separation of clean and dirty areas, and contiguous laboratories for complementary analysis. The agreement signed with INIAV enables us to provide a necropsy room to perform necropsies in larger animals and all other species, in an adequate and safe environment, which led to a substantial increase in the number of necropsies performed.

We also continue to have access to ETSA, a private sector company that holds facilities to guarantee necropsy material for the national veterinary authority controls of BSE and TSE in ruminants and where students perform, large animal necropsies of animals that died on farms, and in veterinary hospitals or clinics. From the last audit and following the auditors suggestions, to increase the number of necropsies in large animal species, the number of visits to ETSA also increased.

After the INIAV protocol was established, the necropsies now performed in companion animals and exotics at Campo Grande rooms are mainly for support activities of our teaching hospital and only performed in animals that died of non-contagious diseases. Necropsies of all other animal species and companion animals from our hospital suspected of contagious diseases are now only performed at the INIAV necropsy room.

Even so, we improved conditions at our small animals' necropsy facilities by creating new procedures and biosecurity measures to guarantee that there is no cross contamination between clean and dirty circulation in the changing room. The circulation of people, as well as cadavers were clearly established and made available through a Biosecurity manual accessible to all relevant staff and students. To help improve conditions in this room we purchase two additional easily cleanable vertical freezers and new working tables.

As pointed out by the auditors, to be able to collect effluents in case of serious contamination, the Faculty acquired and put in place specialized equipment's for effluent control at Campo Grande. Due specific regulations of Municipal Services for the discharges of effluents into municipal collectors, these infected waste waters, must be separated from the normal sewer network of the building, creating a unique flow that must have a pre-treatment before introduced on municipal

collectors. The option for a Wastewater Treatment (WWTP), gives the guarantee of a reduction of organic compounds and pathogen control by disinfection and is divided in 3 separated stages: Primary treatment, a grid to remove large materials; Secondary treatment, a biological chamber to remove organic compounds; Tertiary treatment, disinfection of pathogenic germs by sodium hypochlorite; Discharged into municipal collect

To resolve the absence of relevant dissection rooms for large animals, the faculty invested in the acquisition of a property to create a Farm Animal Campus in Catapereiro, suitable for the construction of such facilities (see also the explanation under Major Deficiency 4, figs. 6 and 7 - C). The creation of a dissection room at the Catapereiro Campus, suitable for large animal and small animal species, will help us to further improve the quality of teaching in anatomy subjects.

1.2.2. Comments

To ensure the protection of students and teaching staff during the necropsy classes, some extra biosecurity measures were further taken and adjusted to the facility's needs, which led to the revision of the Biosecurity Manual as to include measures at all the facilities used, INIAV, ETSA and Campo Grande. The manual gathers information regarding biosecurity, personal protective equipment and clothing, safety routes and specific rules accordingly to the specific layout of the different facilities of INIAV, ETSA and Campo Grande and regarding the classes performed on those. All the information present in the Manual is available and highlighted to students via Moodle.

1.3. Major Deficiency 3: Absence of adequate isolation boxes for large animals.

1.3.1. Factual information

To resolve this major deficiency the isolation unit for Equidae at the Veterinary Teaching Hospital for Equine (VTH-E) is now completed and fully operational. The isolation unit, with 40 square meters, is composed by 4 areas that include a changing room, a cleaning and preparation chamber, atrium area, and a box with 13 square meters.

The issue concerning the effluents of this unit has been addressed and there is no longer any communication between the equine isolation unit and the adjacent pens. The water circuit/effluents are directed towards an individual sewage for that purpose.

We created and implemented appropriate biosafety measurements and a protocol with guidelines for the isolation of equine patients and biosafety procedures. The manual includes guidelines, among others, for the appropriate conduct of staff and students and biosafety measures related with the treatment of animals, as well as cleaning and disinfection and waste triage of the facilities and equipment. The Biosecurity manual is distributed among staff and students as to guarantee compliance with all the rules.

To resolve the lack of isolation boxes for farm animals we obtained land to construct a Farm Animal Facilities at Catapereiro, in this *Campus* we programmed the construction of adequate isolation boxes for large animals in building 2 (see major deficiency 4). In this building we guarantee the construction of an area dedicated to infectious diseases treatment with adequate isolation boxes for farm animals (Fig 6 and 7- D). The infectious disease unit is around 75 m² and includes 2 isolation boxes (total area of 21 m²), an area for treatments with 37 m² and other areas such as pharmacy, washing and sterilization rooms, areas for staff. We elaborated a proper biosafety manual for farm animals and infectious diseases area / isolation boxes so as to ensure that biosafety procedures are available and distributed among staff and students guaranteeing compliance with all the rules.

1.3.2. Comments

We believe that with the measures taken we assure the creation of all the necessary isolation facilities and laydown all the biosecurity procedures adequate to the Equine and Farm animal isolation boxes.

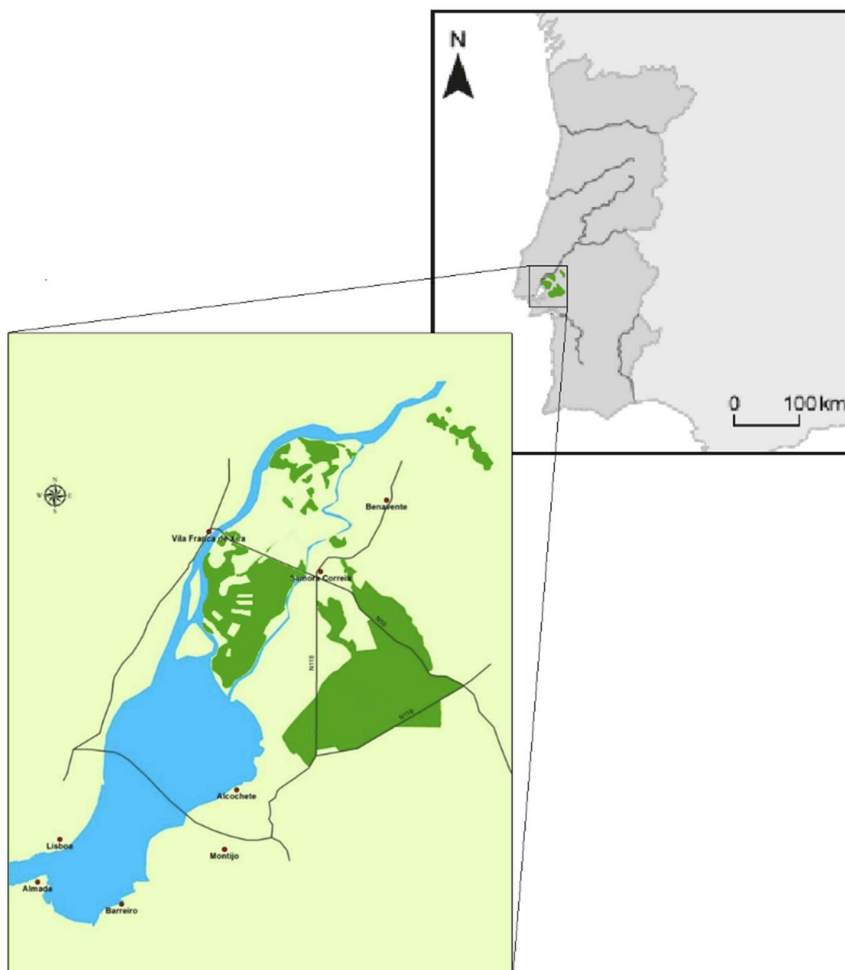
1.4. Major Deficiency 4: Insufficient caseload of “real” patients.

1.4.1. Factual information

In 2017, after the overall auditor’s recommendation concerning the deficiencies related to large animals, namely the insufficient caseload of “real” patients in larger animals, absence of relevant necropsy/dissection rooms for large animals and absence of adequate isolation boxes for large animals, we immediately started looking for an adequate land to build a *Campus* that would gather all the facilities to overcome the situations reported by the auditors, particularly the ones related to farm animals.

In 2018, with the purpose of creating the necessary Large/Farm Animal Facilities, we achieved an important contract for the acquisition of land and buildings in Catapereiro, 37 Km from the Lisbon Campo Grande Campus, through an agreement with Companhia das Lezírias, the largest agricultural, livestock and forestry operation in Portugal (<https://www.cl.pt/en/1-en> , fig.1).

Fig. 1 - Companhia das Lezírias (green) an area of about 18 000 acres were the Farm Animal Campus in Catapereiro is located.



In 2018, the contract with Companhia das Lezírias would stipulate the long-term rental of one building and surrounding land in Catapereiro, Porto Alto. Since the contract would give the possibility to build a dissection room and isolation boxes for farm animals but was insufficient to overcome the need for the creation of an Hospital/Clinics for Farm Animals, as to correct the need for “real cases” in ruminants and other farm animals, we further worked and applied for the possibility to extend it to more buildings and surrounding areas.

We expanded the agreement with Companhia das Lezírias, during 2019, for 3 more buildings, total of 2 000 square meters of construction areas and resulted in a new contract that would come into terms of stipulating the renting of a total of 4 buildings (building 1 – 811.5 m²; building 2 – 523.5 m²; building 3 – 216 m²; building 4 – 300 m²) located on a 2.4 acres area (fig 2), for a period of 25 years, with automatic renewal, as specified in the contract. This will enable us to expand our facilities and provide the possibility to create a Campus focused in Large /Farm Animals.

Fig 2- Image of the Farm Animals Campus and other facilities areas in Catapereiro



The infrastructures of the buildings 1 and 2 were used to apply for a licence and construction to overcome minor and major deficiencies identified by the auditors and the areas of buildings 3 and 4 will be used for future growth and expansion of the Campus (figs. 2 and 3).

Fig 3- Original buildings (1 and 2) of Companhia das Lezírias before reconstruction of the Farm Animal Campus



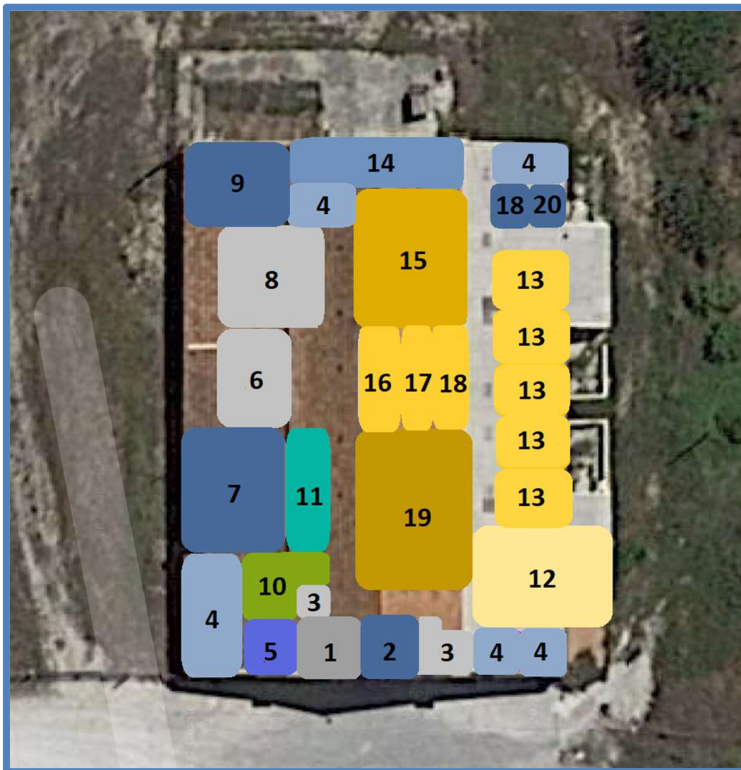
The reconstruction of buildings 1 and 2 allows us to have outstanding buildings for clinical support in teaching and research of farm animals, with emphasis on clinic and surgery rooms, diagnostic laboratories, animal boxes/areas, infectious boxes unit, farm animals' anatomy and dissection rooms, classrooms, offices, spaces for students, among many other facilities. Among other areas, in Building 1, with 811 m², there are 5 animal boxes, total area of 80 m², a surgery room with 58 m², a Multispecies clinics room with 69 m². Suitable rooms for surgeon preparation with 20.5 m²; sterilization room of 10.5 m² and material washing room of 11.5 m². There's also in the same building a laboratory with 15 m² and a pharmacy with 19 m² (fig. 4 and 5). In the Building 2, with 524 m², there are among others a cafeteria with 53 m², a laboratory and classroom with 68 m², a Dissection room with 83 m², an area dedicated to infectious diseases unit, observation; pharmacy; sterilization room and material washing room, and 2 isolation boxes make up a total of 75 m² (Fig 6 and 7).

All these new physical spaces are properly equipped to allow a high quality of teaching and research and with possibility of expansion in the future as a growing strategy for the campus.

Fig 4 – Building 1 before reconstruction



Fig 5 – Building 1 – Areas for Farm Animal Clinics.



- 1 – Reception
- 2 – Staff Room
- 3 – Entrance/ Locker rooms/ WCs
- 4 - Storage room
- 5 – Technical area
- 6 – Teachers Locker rooms/ WCs
- 7 – Teachers resting room
- 8 – Students’ Entrance/ Locker rooms/ WC
- 9 – Students resting room
- 10 – Pharmacy
- 11 – Laboratory
- 12 – Animal Entrance and evaluation
- 13 – Animal Boxes
- 14 – Storage room
- 15 – Multispecies clinic room
- 16 – Surgeon prep room
- 17 – Sterilization room
- 18 – Washing room
- 19 – Large Animal Surgery room
- 20 – Residues

Fig 6 - Building 2 before re-construction (dated from the year 1922).



Fig 7 – Building 2, General Facilities and Laboratories, Dissection Room and Farm Animals Isolation Unit



A – 1- Cafeteria /Refectory

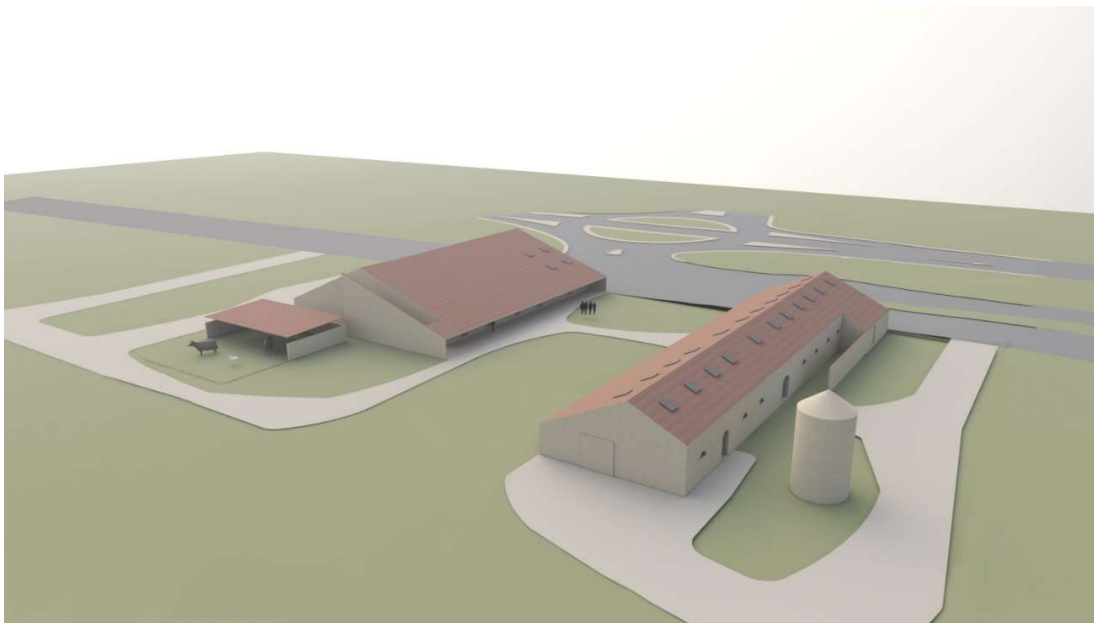
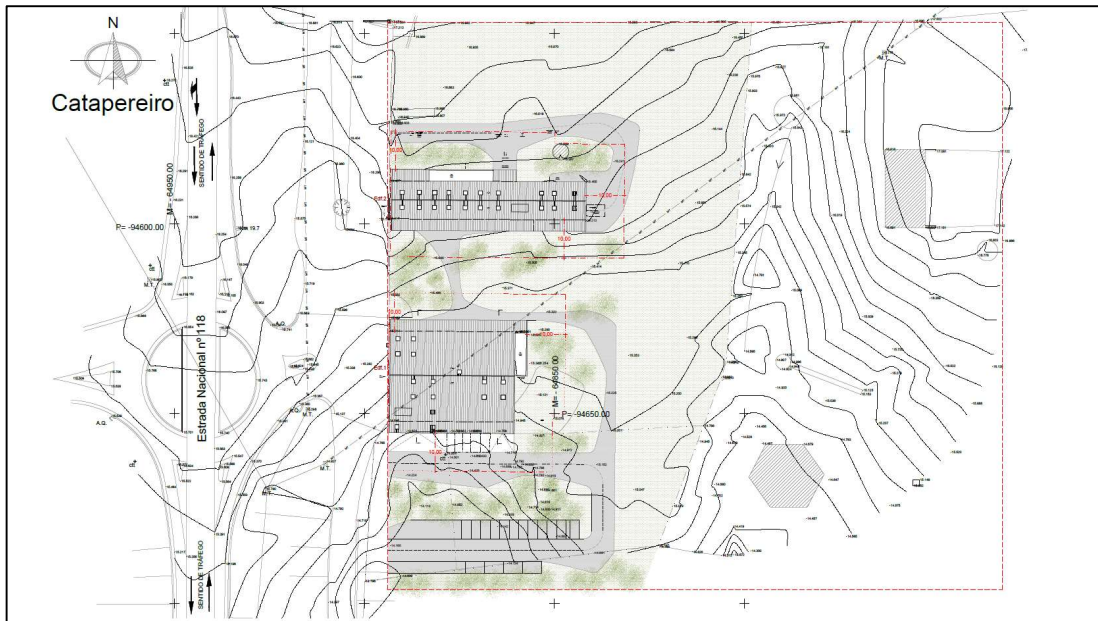
B – 2- Laboratories / Classroom

C – Anatomy/ Dissection Zone (3 - Entrance/ Locker rooms/ WCs, 4- Large animal Dissection room, 5- Cooling rooms)

D – Large Animal Isolation Facilities (6- Entrance/ Locker rooms/ WCs, 7- Clinic/ infectious diseases Room, 8- Washing room, 9- Sterilization room, 10- Pharmacy, 11- Storage room, 12- Animal Entrance, 13- Isolation rooms for large animals)

We consider that the possibility of the construction of infrastructures for Farm Animals in Catapereiro (fig. 8.) due to an important and relevant contract with Companhia das Lezírias S.A., assures us areas for the construction of teaching and research facilities in an exceptional context dedicated to farm animals and will be an important centre of interaction between teaching, research, agriculture, and veterinary services which is markedly different in the national context.

Fig. 8 – Implantation of the Farm Animals' Campus in Catapereiro area. Overview of the new buildings.



After the audit, during the last years, the extra-mural clinical cases in farm animals have seen an increase mainly due to increased collaboration protocols between FMV-ULHT and farms, the contracting of more clinical lecturers and clinical support staff, and the effort of establishing an emergency on call system. The intramural cases were mainly the result of the activity of one of the main farms the “Herdade dos Coelhos” dairy cattle farm that was considered as “intramural” and the hands-on exposure of the students on these healthy animals was considered excellent. Due to the sanitary status of the farm, with no new animal introduction coming from outside it was

considered by the auditing team as a farm, not as a bovine clinic. To overcome this situation the Construction of The Farm Animals Campus will bestow us with proper Clinical facilities, including isolation units, where the students can have contact with real cases, several different medical and surgical procedures, with adequate equipment.

With the construction of the Farm Animals Campus the students' exposure to "real" sick farm animals is expected to increase during the next and following years as well, as the corresponding medical and surgical procedures (parturition handling, obstetrics, C-section, abomasal displacement surgery and others). The areas of hospitalization/Boxes for large and small ruminants and pigs can accommodate at least 10 animals per day. Adding to the collaboration of farms already established by the course and with our Campus located in such an outstanding agricultural and animal production area, in addition to the protocol established with Companhia das Lezírias for clinical, necropsy assistance, research and educational activities, we hope to have a considerable casuistic of real cases.

Since last audit the FMV-ULHT improved student mobility to large animals' facilities by purchasing another bus with 30 seats, adding to the other buses and ambulatory vans already used by the course, and facilitate the transportation of students to the campus outside Lisbon.

For the next year we have already approved for the Farm Animal Clinics 2 for Veterinarian Internships and 2 undergraduate students training.

The Farm Clinic will allow us to have real cases, adding to the extramural cases and the fact that we have two full time academic teachers, Ph.D. and Diplomates of the European College of Bovine Health Management, makes us hopeful we can achieve all the necessary conditions to create a Residence Programme in this area.

1.4.2. Comments

Biosafety manuals that outline the rules concerning people, animals among others were elaborated. The manual assembles information regarding biosecurity, personal protective equipment and clothing, safety routes and specific rules accordingly to the specific layout of the different facilities.

We believe that we have been able to correct the deficiencies and suggestions made by the auditors, nevertheless we had major step backs caused by the lockdowns due to the Covid-19 pandemic, that markedly affected our schedule for the formalization of new and renewed contracts, licenses for construction and construction, among others, in a national and global situation that left us with no other solution then the ones we fought to achieve for the time being.

1.5. Major Deficiency 5: Insufficient cadavers from sick patients in large animals.

1.5.1. Factual information

The number of necropsies involving large animals has increased, to comply with ratios expected to guarantee the quality of teaching. Overall to ensure that this trend continues, not only for large animals but other species, improvements of facilities, planning of necropsy for various species, materials, student schedules and records have been implemented.

The availability of INIAV necropsy room with outstanding conditions allowed a better planification of the number of cadavers need for classes of 2nd and 3rd-year students, which simultaneously with an increased number of visits to necropsy room ETSA markedly increased the number of necropsies performed in farm animals, bovine, equine, swine, ovine/caprine, birds, rabbits.

The organization of practical classes has been improved to allow all students to experience classes in all the facilities. Students were split into smaller groups in a rotation scheme, a small group of students (around 10) goes to ETSA to perform necropsies of large ruminants and equines, another small group (around 10) goes to INIAV to perform necropsies in ruminants, swine, birds, rabbits and other species, and a larger group (around 25 students) stays in the necropsy room at the university to perform necropsies mainly on companion animals and exotic animals from our teaching Companion Animal Hospital and shelters.

Necropsy classes, other than those planed for pathology classes of the 1st cycle, are organized for 4th and 5th-year students. An on-call system was implemented, and one pathologist from the academic staff is available to meet the students in their extramural farms and equine hospital and field, every time a necropsy needs to be performed. All these measures markedly improved necropsy performance numbers for all species.

Also, following the suggestions made by the EAEVE visitation team, we create a better registry protocol, that includes: Every animal that is brought in for necropsy is registered on two digital platforms: online client manager software “Boommed”, where for each animal, an individual patient profile page is created, and in an excel file that is stored in an online drive shared by all Anatomical Pathology teaching staff. For every necropsy (intramural or extramural), a necropsy report is filled by the students, corrected by the teacher, and attached in the respective individual profile page in the online platform “Boommed”. A copy of the report is also stored in the online drive shared by the Anatomical Pathology staff.

To ensure a correct cadaver registration that enables retrospective studies, every cadaver receives a different registry number as follows: Companion and exotic animals arriving from the teaching hospital, or from the several shelters with whom the Faculty has a protocol, receive a number following the chronological order of the Hospital’s Laboratory registry records. A microchip reader was also acquired, specifically for the necropsy room, in order to correctly identify the animal whenever a microchip is present; Swine, Ruminant (large and small), Equine, Fish, Rabbit

and Poultry have their own registry number that is bestowed following a chronological order and accompanied by a specific letter according to the species (Swine – S; Large ruminant – B; Small Ruminant – PR; Equine – E; Fish – P; Rabbit – C; Poultry – A).

A pathologist, Diplomate by the American College of Veterinary Pathology was hired during this year to further increase the teaching quality of anatomical pathology at FMV-ULHT and to help us achieve the goal of creating residency programs.

1.5.2. Comments

Even during Covid 19 pandemic we were able to rearrange the schedule of classes for all students so that when the confinement was lifted, the students returned to practical classes and continued to perform necropsies in all animal species as to achieve the objectives proposed by the EAEVE.

With better facilities and extended protocols, we believe to be able to increase the number of necropsies on the following years.

1.6. Major Deficiency 6: Lack of clearly defined career progression pathways, especially for teaching staff.

1.6.1. Factual information

Since the last visit, the University has published and homologated the Teaching and Research Staff Career Regime of Universidade Lusofona de Humanidades e Tecnologias⁴, defined the Regulation of Performance Evaluation of Lecturers and Researchers in 2020⁵, and laid down the Regime for the Progression of Lecturers and Researchers of ULHT in 2021⁶, providing the University with an institutional and regulatory framework better suited to the fulfilment of its mission.

Concerning the teaching and research staff career regime, the University has defined 3 main categories of the career teaching staff: Full professor, Associate professor and Assistant professor and established rules for the types of regime collaboration, among others. The regulation of the evaluation of performed lecturers and researchers was published in 2020. This regulation defines the dimensions of the teaching activity that are to be subjected to evaluation and corresponding indicators, as well as the stages of the evaluation process and how to award the respective scores. The evaluation of each lecturer is carried out periodically, at every three academic years, considering the specificity of each disciplinary field, by evaluating the following dimensions of the teaching and research activity: Teaching; Scientific Research, Innovation, and Cultural Creation; University management; University Outreach, Scientific Dissemination, and Provision of services to the community.

During the present year, between January 2021 and March, the first evaluation process for the whole University took place, encompassing the academic years of 2017/2018, 2018/19 and 2019/2020. Lecturer's and researchers prepared their self-evaluation reports, highlighting their main activities during the period of evaluation and submitted it online, in the AVADOC⁷ platform.

An evaluation committee was established for The Faculty of Veterinary Medicine, composed by the Dean of the Faculty of Veterinary Medicine and two full-time professors, appointed by the Scientific Council. The Evaluation committee carried out the evaluation of the self-evaluation reports submitted by the academic and research teaching staff and the Scientific Council of the Veterinary Faculty was responsible for the validation of the proposal of the Evaluation Committee, regarding the scores to be awarded to the evaluated persons and for submitting it to the Rector for homologation. This evaluation process produces effects for the Regime for the Progression of Lecturers and Researchers both for the lecturer's/researcher's career progression as well as for the reassessment of the terms and conditions of the contractual relationship between the lecturer or researcher and the Founding Body.

We will continue our efforts towards recruiting new qualified staff for permanent positions and we believe it to be more solid and promising for the permanent and future staff now that the University

⁴ <https://www.ulusofona.pt/media/regime-teaching-research-staff-career.pdf>

⁵ <https://www.ulusofona.pt/media/regulation-of-performance-evaluation-of-lecturers-and-researchers.pdf>

⁶ <https://www.ulusofona.pt/media/regime-for-progression-of-lectures-and-researcher.pdf>

⁷ <https://www.ulusofona.pt/avadoc>

has defining an academic career, with a promotion criterion that is ensured to be paralleled to that of lecturers and researchers in public higher education, held by competition and open to lecturers and researchers internal and external.

1.6.2. Comments

We believe that the evaluation system and career progression is an opportunity to gain awareness of our strengths and weakness, and one aspect to be improved in the near future is the development of greater research dynamics, making colleagues aware of the importance of dedicating more time to scientific research, increasing their availability for students', involvement in research projects and enrich their scientific production, encourage the professional and academic motivation and progression and reduce turn-over.

1.7. Major Deficiency 7: Insufficient number of full-time academic teachers and insufficient training of all the staff involved in teaching including practitioners to ensure research-based education.

1.7.1. Factual information

Research is carried out mainly by full time academic teachers but also by part-time collaborators with a distinguished curriculum.

In 2016/17, the year that we were evaluated by the EAEVE Visitation Team, the FTE of the academic staff involved in veterinary training at the Faculty of Veterinary Medicine was 61.25. In 2020/21 the FTE of the academic staff involved in veterinary training was increased to 75.8 FTE. This represents a 24% increase in Academic staff FTE involved in veterinary training, keeping up with the increment of 33% undergraduate students since 2016/17. Concerning only the full-time academic staff, in 2016/17 we had a total of 50 FTE. In the last 3 years the number increased by 8 FTE.

Since the last audit we also had an increase of full-time academic staff with a Ph.D. degree from 26 to 42 FTE, which represents a 62% increment. As to comply with our objective of improving the quality of teaching and research, due to improvement of career, finishing Ph.D. degrees and new academic hiring, 42 out of the total 58 FTE full-time academic staff (72%) hold now a Ph.D. degree. In the year of the audit, we had 19 FTE veterinarian full-time academic staff with a Ph.D. In 2020/21, we have 31 FTE, which represents a 63% increase in full-time veterinarian academic staff with a Ph.D. degree.

The current number of full-time academic staff at the Faculty of Veterinary Medicine being 58 (FTE), means that there is approximately one full-time staff member with academic and research duties per student due to present their project/thesis at the end of the degree.

We have training plans for all lecturers, provided both by the university and the Faculty that include a wide range of free courses available to the staff. The courses offered include general training in a variety of skills and knowledge, from languages, computer software, technological innovation, research activities and teaching methods. The University has implemented in the period its own internal platforms for digital training based on Edex for all lectures (see also formal training in minor deficiency 12)

We consider that since the last audit and following the auditors suggestions, we introduced a broad range of training programs that improved the quality of the teaching and research activities involving the students.

1.7.2. Comments

We consider that after the last audit we made a strong effort for hiring and were able to improve the number of full-time academic teachers in a wide range of different areas of knowledge as to provide our students with a wide variety of possibilities in research skills and experience. We consider that we have improved and now have a suitable number of staff to guarantee the research-based education of our students, but we will work continuously to improve these numbers. The objective to hire full time academic staff has carried on to the next and following academic years.

For the next 2021/2022 year we have already hired 6 more FTE full-time academic staff, as well as part-time academic/research staff with strong nationally recognised research curricula in the areas of One Health, among others, to improve and strengthen a research-based education for an increased number of students.

2. Correction of Minor Deficiencies

2.1. Minor Deficiency 1: Absence of an operational plan with timeframe to adapt the facilities, staff and patients' caseload to the increasing number of students.

2.1.1. Factual information

The University 3-year Strategic Plan provides the framework for the general Strategy of the overall University and includes the major strategies of the specific former Strategic Plans elaborated by the Schools and Faculties, including the Faculty of Veterinary Medicine. The Faculty develops its own Strategic Plan, also for a time framework of 3-year's, gathering the overall proposals collected from meetings hold with the Scientific Council, Pedagogical Council, Commission of Stakeholders, Faculty Shelf-Evaluation Commission, teachers, staff, and students. The objectives of the 3-year strategic plan are further detailed in the Faculty annual plan, both plans due to the approval of the Faculty Scientific Council.

After the recommendations of the auditors, we improved the 3-year Strategic Plan and developed a Yearly Strategic Plan by introducing timelines and indicators of the objectives for facilities, equipment, staff, patient's caseload, and others, focused, and adapted to be in line with the expected number of students. In the Yearly Activities Plan, goals are listed with the planed actions and necessary improvements, the indicators expected for its implementation and the expected frame time for accomplishment. The plans are tracked both in the meetings of the Faculty Scientific Council and meetings between the Dean and Vice-Dean, with the Administration and Rector representants, and adjustments made accordingly.

Since the last audit, there has been a very significant planned investment for the Faculty, of around 20 million euros, to improve Facilities and Equipment's. In the Facilities of Campo Grande, we've improved or created infrastructures such as new clinical skills labs, clinical and research laboratories, anatomy areas. Also achieved a Protocol with INIAV for adequate necropsy facilities. There was also an expansion in the areas of the Veterinary Teaching Hospital of Companion Animals (VTH-A), Veterinary Teaching Hospital of Equine (VTH-E), and the creation of a Farm Animals Campus at Catapereiro. The increase in facilities was accompanied by a significant increase in equipment for laboratorial, pre-clinical and clinical areas in all species, including several relevant animal models, real size and others, for innovative teaching using new technologies in Clinical skills laboratories. Increase in the number of FTE academic and supportive staff was also achieved as to adapt staff to the increased number of students.

We should highlight the important investments in Clinical Infrastructures on the Farm Animals Campus (see major deficiency 4), at the VTH-E, building areas of infectious unit, improving areas of image diagnosis, the creation of a covered horse's arena, among others (see also major deficiency 3, minor deficiency 11), and improvements in the VTH-CA. The VTH-CA infrastructure has been expanded and upgraded, bettering conditions for all different types of hospitalization. A strong investment has been made in the ICU conditions for all species. This can

be seen through the increase of 22 boxes patient hospitalization, contemplating an increase in patient welfare. This improvement can be seen in the new hospitalization rooms created. The surgical sterilization circuit has been expanded and specialized equipment, such as a plasma sterilizer (Hydrogen peroxide low temperature plasma sterilizer) have been acquired. In addition, we have acquired more surgical equipment (anaesthesia towers, monitors and a tower with ventilation) and a new anaesthesia induction room to deal with the increasing case load. This operational plan is in constant evolution considering the changing needs of our patients, students, and advances in one-health medicine. A top-of-the-line CT scanner (GE Revolution ACT) and fluoroscope machine (GE oec one) along with all operating infrastructure have been acquired, providing rapid response to diagnostic imaging needs as well as minimally invasive procedures. A portable ultrasound machine was acquired (Mindray TE5 Vet) as well as other emergency monitoring equipment. Wide reaching and exclusive new protocols with more extra-mural facilities such as the largest rehabilitation hospital in Portugal, with high technology that includes a Hyperbaric Chamber, have been created, while others were maintained, such as access to MIR examinations allowing for continuing high standard of care across all areas in companion animal species.

The creation of 3 veterinary skills training laboratories, Clinical Skills Labs, with a total area of around 250 square meters provide us with important tools for student education using models and simulators to improve teaching, including emergency and critical patient care. The labs were created with the intention of improving the teaching of veterinary medicine using “Hands on” methodology in a training environment with innovative pedagogical context. There was a considerable investment in the creation of the labs with real-size animal models, cattle, equine, cats and dogs, and other models and simulators for training of fundamental practices. Among others, we highlight the Orchiectomy and ovariohysterectomy instructional tools and models, Canine spay simulators; Emergency and Critical Care dog and cat models; Breath/Heart sound simulators; Gynaecological training examinations; Canine dental technician model and surgical models; Companion animals, Equine and Bovine injection simulators and Suture training pads; Equine palpation colic simulator; Hereford dystocia simulator; Dystocia calf model; Bovine theriogenology model; Captive bolt training model. The clinical skills and competencies laboratories allow the students to acquire and practice clinical skills using validated models with the aim of promoting ethical principles and animal welfare in learning, and are a valuable tool to improve teaching, training an assessment of Day One Competences.

2.1.2. Comments

The University Lusofona 3-years Strategic Plan and Annual plan, and the 3-year Strategic Plan and Annual / Yearly Activities Plan of the FMV-ULHT, will be shared during the Visitation.

Although during the 2 last years of the Covid-19 Pandemic situation we faced many difficulties related with the scheduled accomplishment of the main objectives of our strategic and annual plans, mainly due to the delay of licences, delays in construction due to shortage of personal, shortage of construction materials and unexpected lockouts, delay of equipment’s acquisition confirmation, shipment and deliveries, among many others, we consider to have obtained important achievements that markedly affected in a positive way the quality of our teaching and research activities.

2.1.3. Suggestions of improvement

We will continue to improve facilities and equipment's and staff for the continuous improvement of a quality of teaching research-based degree adjusted to the increasing number of students.

2.2. Minor Deficiency 2: Absence of well-defined tiered structure for the organization of the Establishment.

2.2.1. Factual information

Following the EAEVE recommendations, we improved the tiered structure for the organization motivating formal meetings of the Academic Division, improving the involvement of the leaders of the academic board with transversal questions of the organization and creating the Vice-Dean position.

After the audit the Division Heads started to promote formal periodic meetings with the academic staff, with an established agenda and corresponding meeting minutes as to help the Dean and Vice Deans to undertake improvements of curricula and, when appropriated, issues to be brought before the scientific and pedagogic councils. As to formally recognise the activities assumed as informal in previous years by members of the academic staff, the Faculty created the position for Vice-Dean.

In this year, considering the increasing amount of work due to the increased number of students and the current national tasks undertaken by the Dean, the Scientific Council approved the creation of two Vice-Deans: - a Vice-Dean for Academic Management that will assist the Dean with rules and regulations for student admissions, academic staff career evaluation, coordination communication with the Divisions Heads and promoting internal quality assurance in collaboration with the relevant university staff; - a Vice Dean for Students Affairs that will assist the Dean in organising class timetables and room allocation, coordinating questions related to curricula, determining the organisational needs for the academic year with the help of the Academic Board and promoting internal quality assurance in collaboration with the relevant university staff.

2.2.2. Comments

We also improve the tiered structure for the organization of the Hospitals, Clinics, Laboratories and Research activities, as to promote a better leadership and work with the Dean for undertaking actions, follow ups and continuously improvements in those areas.

2.2.3. Suggestions of improvement

None.

2.3. Minor Deficiency 3: Insufficient involvement of staff, students and stakeholders in the decision-making process.

2.3.1. Factual information

Following the auditors' suggestions the Faculty improved the involvement of staff, students, and stakeholders in the decision-making process

Academic staff and students are represented in all the decision-making processes, accordingly to the University Regulations and specific councils created for the effect. The representation is both at the level of the University - University Council and University Scientific Council and University Pedagogical Council -, and at the Faculty level, Scientific Council and Pedagogical Councils. At the Faculty decision-making process, the academic staff are represented at the scientific and pedagogical councils. Students are represented at the pedagogical council and have also their own yearly representatives that articulate with the Dean and Vice-Dean the specific matters related to their year of degree.

To improve the above, after the EAEVE audit, the Faculty established in 2018 a formal stakeholders commission by formally invite more than 20 major partners that include representative of the Portuguese Veterinary Order/Association, Official Nacional Veterinary Services, Research Institutes, Meat Production and Industry, Animal Nutrition and Feed, Zoophytic Associations, Association of Pharmaceutical companies, Supermarkets, Food Industry Federation, Federations of Animal Producers, Agricultural an Industry Associations and Federations, among others.

The Faculty also established a Degree Self Evaluation Commission, with representatives from members of academic staff, students, alumni, and stakeholders, to gather inputs for the evaluation of the course and stablish improvements, including of the curricula.

2.3.2. Comments

Due to the pandemic situation in 2019/20, the major meetings with the self-evaluation degree commission and stakeholders were pushed towards the year 2020/21. All the meetings with the Commissions created after the audit, held during the academic year 2020/2021, proved to be of huge relevance for the Faculty as they provided, among others, important inputs for the improvement of the curricula and for the final new 3-year Faculty strategic plan (2021-2025).

List of members of the stakeholders Commission and Degree Self Evaluation Commissions of the commissions the meeting minutes will be provided during the audit.

2.3.3. Suggestions of improvement

None.

2.4. Minor Deficiency 4: Absence of correlation between the number of enrolled veterinary students and the funding allocated to the Establishment by the ULHT.

2.4.1. Factual information

The main general objective of the University is that yearly budget allocated to the establishment is proportional to the number of enrolled students to assure the correlating with the number of enrolled veterinary students, measured via financial results from tuition fees. All the positive results from each year are reinvested in the following year.

To comply with the improvements suggested by EAEVE, the funding allocated to the Establishment by the ULHT has increased every year to support the investments in buildings, equipment, and research. The budget of nearly 20 million euros investment in the last years and following year as to achieve the objectives of an operational plan to adapt the facilities, staff, and patients' caseload to the increasing number of students was put into action and markedly improved the quality of our teaching and research.

2.4.2. Comments

During the last years and the following the University allocates in the strategic plan both own and Faculty funds to continuously improve the quality of infrastructures and equipment's, new contracts and increasing hiring of academic and support staff among other measures with the goal to achieve better academic and research results.

2.4.3. Suggestions of improvement

None.

2.5. Minor Deficiency 5: Insufficient autonomy of the Establishment to use the funding allocated by ULHT.

2.5.1. Factual information

The budget of the Faculty is part of the overall University budget approved by the Board of the entity legally responsible for the institution.

Each academic year the budget specific for the Faculty of Veterinary Medicine is produced in articulation with the Dean accordingly to the needs identified, considering the human and material resources to assure the appropriate quality of teaching, research-based education.

Budget administration services are common to the whole university, with monthly monitoring. When unforeseen circumstances occur, the Dean requests modifications to the budget, as needed.

The Office of the Finances Managing Director of the University must approve these budget modifications.

Investment decisions are based on year activity plans and recommendations made by the Dean. It is the Dean who is responsible for drawing up and implementing the Faculty budget.

2.5.2. Comments

None.

2.5.3. Suggestions of improvement

None.

2.6. Minor Deficiency 6: Lack of continuity in subjects' oversight due to continual changes of staff.

2.6.1. Factual information

Although we had some changes of staff, the overall number of academic teachers involved in each subject has been kept constant. The actual changes in staff are mainly due to the hiring of more qualified academic staff for teaching and research activities which has had a positive impact on the organization, improvement of the curriculum and quality of teaching and research.

Over the last years staff changes due to turnover was residual and the major changes in staff are where due to the increased number, mainly Ph.D. and Ph.D. qualified veterinarians, hired to improve teaching and research, as well as increasing the number of practitioners and supportive staff at our Hospitals and Laboratories.

2.6.2. Comments

Recently, in 2020, the Portuguese authorities for education approved 2 more private degrees in Veterinary Medicine, one in Oporto area and another in Lisbon area. Although the approval of these is dedicated to international students, English and French are spoken, and do not compete with us for students as our focus is Portuguese language students, these degrees compete for the hiring of qualified staff. We plan to continue to maintain our current staff and the increase hiring more qualified academic staff, by focusing on providing good contractual and working conditions, for higher quality teaching and research activities, with high investments in facilities and equipment as to achieve the goal of the recognition by EAEVE, that all together will help to support the goals and face the actual threatening's in the Portuguese veterinary education system.

2.6.3. Suggestions of improvement

None.

2.7. Minor Deficiency 7: Lack of identified subjects' leaders and formal exchanges between them in order to harmonize the curriculum.

2.7.1. Factual information

We have identified leaders for all the subjects of the curricula that are responsible for completing the subject/curricular unit form (FUC), with the subject's curriculum/programme, evaluation, and assessment rules, as well as other information relevant to the subject's organization. The FUC is submitted by the subject leader for validation by the Dean. The subject leader is also responsible for the curricular unit report (RUC), submitted at the end of the semester and validated by the Dean and academic services. The purpose of the RUC is to promote, in a summarized fashion, the overall assessment of the functioning of the subject curricula as well as allowing for a critical analysis that permit the identification of critical factors that require intervention and correction, as well as the definition of a plan for improvement.

All the subjects are organized in the Academic Divisions, with subject leaders and other academic staff of the subject participating in meetings held by the Academic Divisions. The heads of each division are appointed by the Scientific Council and are responsible for organizing meetings, a minimum of one per year, as to promote formal exchanges between subjects, coordinators, and staff, with the aim of harmonizing and improving of the curriculum. Information related with the organisation of the subjects (FUC and RUC) are discussed as needed in the meetings of Academic Divisions as to improve situations and harmonize the curriculum. To help carry out the necessary improvement actions the written agenda and the meeting minutes are sent to the Dean

2.7.2. Comments

None.

2.7.3. Suggestions of improvement

None.

2.8. Minor Deficiency 8: Insufficient practical dissection of large animals.

2.8.1. Factual information

Following the auditors' comments, we immediately initiated diligences and introduce the practical dissection of whole large animals. We also and took due diligence to acquire a property suitable for the expansion of our Campo Grande Campus that allow construction of facilities in a new Farm Animals Campus, with adequate rooms for handling dissection of whole large farm animal species (see major 4, fig 6 and 7-C).

During the academic year 2017/18, immediately after the EAEVE Team Visitation, measures were taken for the 2^o semester and the number of dissections in whole farm animals introduced ovine

carcasses. In the next academic year, 2018/2019, we introduced whole animal dissections of all species of farm animals, dissection of ruminants, bovine and ovine, and Equidae, as well as maintaining the whole-body dissection in other species as in previous years, namely swine and companion animals including exotics, rabbits, rodents, birds, and fish.

While consolidation of contracts and other legal requirements for the new physical facilities in Catapereiro were carried out, to increase the practical dissection classes of the whole small ruminants we bought whole ovine carcasses in slaughterhouses, with special approved conditions granted by veterinary inspection services, with the dissection classes of whole small ruminant animals and other small species mainly performed at our Campo Grande facilities. The anatomical dissections of whole large animals, bovine, and equine have been organized at extramural facilities, ETSA - a private company that guarantees facilities for the veterinary official controls on BSE and TSE.

In addition, following auditors' recommendations, the anatomical specimen and model collection has also been expanded substantially, as follows:

Anatomical models of different species have been acquired, including whole body models of larger species (equine, bovine, caprine and swine) and small species (domestic hen, rabbit, and bony fish), as well as joints, individual organs, and body parts. Our bone collection has also significantly increased (239%) in the past 3 years. We have purchased and macerated a variety of bones from different species to expand the existing collection, including full disarticulated skeletons of horse, cow, and pig. Plasticated organs of various species were acquired to enhance the quality of our practical classes. We have also increased our permanently fixed specimens (FineFIX[®]) collection by more than 60% over the last 3 years and are continuously increasing the collection. Freshly prosected specimens of various species have been regularly used during practical classes, as we encourage students to practice their dissection skills.

There are now several anatomical posters of different species exhibited in the Osteology room, including dental charts of dog, cat, and horse. To expose students to dental charts and dental eruption sequence in different species, e-learning materials containing quality images and detailed information on tooth eruption, dental development, and dental chart numbers are shown during classes and written in a white board during practical lessons. For further dental anatomy teaching, dog, and cat anatomical models, which include carnivore dental chart, have also been used in practical classes and in 2021/22 students will be exposed to an advanced and true-to-life model and simulator of canine dental surgery.

A variety of virtual software relating to different species (54 licenses of veterinary anatomy software Biosphera[®]) were acquired. Other open access virtual software and atlases are suggested at the beginning of practical classes as supplemental teaching material. These virtual models are interactive educational resources that show the anatomy of the various systems and allow the study of nomenclature, structures, and anatomical topography in different species, being a highly valued improvement for students.

The anatomy academic staff has increased since 2018 with 2 more Ph.D. qualified veterinarians in the field to improve teaching and research. Anatomy lecturers have developed a custom-made a

scale anatomical muscle model of a dog's forelimb and hindlimb. This work was granted 3rd place in an innovative teaching award (Fazer+) supported by the University Research - ILIND.

2.8.2. Comments

Concerning the whole carcass dissection of farm animal species, during the Covid pandemic, in 2019/2020 and 2020/2021, due to the limitation of the authorization for transport of carcasses, the periods of closure of ETSA to extramural activities, even with the reorganization of practical classes after pandemic confinement, whole carcass dissection of farm animals were mainly performed on bovine carcasses and punctual in ovine and equine. Whole body dissections practical work was maintained with a reasonable number of carcasses of other species, namely companion animals including exotics, rabbits, birds, and fish.

2.8.3. Suggestions of improvement

We consider that the teaching in anatomy subjects both by the introducing of dissection of whole large animals and small ruminants as well as expanded the anatomical specimen and model collection markedly increased the quality of teaching, but we will continue the acquisition of more teaching material. We also believe that the building of the Catapereiro Campus with special facilities for anatomical dissection of large animals will markedly increase the overall conditions for a higher quality of teaching research-based education in anatomy.

2.9. Minor Deficiency 9: Insufficient exposure of students to emergency cases in all species.

2.9.1. Factual information

The Veterinary Equine Hospital (VTH-E's) caseload has continuously increased over the last years to meet the needs of an expanding number of students and the number of emergency cases has accompanied this trend. After the last audit, and a direct result of measures undertaken, the emergency cases in equine medicine has been increasing every year, the number of emergencies in the Academic Year 2020/21 is almost 6-fold the number of emergencies in the Academic Year 2017/18, the caseload data also shows an increase of almost 190% since the previous year, 2019/20.

This increase has been ensured mainly through the establishment of several measures to stimulate cooperation and protocols which have led to an increase in the emergency caseload at the VTH-E. The cooperation protocols established with the National Republican Guard Horse Hospital (GNR's hospital), Abrantes Professional School of Rural Development (EPDRA), the Equine Hospital of Mata de Santa Iria in Torres-Vedras and various local chambers and associations involved in the official rescue of equine animals, helped to increase the caseload at VTH-E, including emergency cases. The investment and improvements made in facilities and equipment's and the increase of

the equine academic and support staff, with a regular part-time collaboration with 2 European Diplomates from Spain, allowed for an increase in the quality of teaching and clinical services.

To improve the exposure to students on teaching in equine emergencies, all 4th and 5th year students must attend one mandatory night rotation per semester at the VTH-E, thus ensuring continuous care to hospitalised patients while aiding the veterinary staff should an emergency case arrive. Additionally, students are also required to sign up for an on-call emergency shift and must respond to emergencies either at the VTH-E equine hospital, Mata de Sta. Iria Equine Hospital, the National GNR's Equine Hospital, or other locations according to each situation. To ensure that students are notified an "on call" group via WhatsApp has been created where information about impending emergencies is posted. This group is moderated by the academic staff and serves as an information channel, and students that are not on the mandatory rotation may also volunteer to assist in the emergency cases. Exceptionally, during the last year 2020/2021, due to Covid-19 imposed restrictions, students were unable to spend the night at the VTH-E, and thus, to compensate two mandatories on call dates were created for each student, as to increase the exposure to emergency cases. Further contributing to student's education in emergencies, a new optional subject in Equine Emergencies has been added to the curriculum. We believe that the creation of our Clinical Labs Skills with Equidae models also improve the quality of teaching of emergency situations.

To increase exposure of students to emergency cases in Farm Animals, from 2018, an emergency on-call group for the 4th and 5th year students was created. Students that are scheduled for on-call service are required to attend; all others may also attend on a voluntarily bases. Students are called to assist and help in emergencies in a variety of clinical cases and academic staff as well clinical staff are integrated in this group to maximise the number of emergency cases experienced by students. Since this emergency call system has been created, care has been taken to expose every student to at least one emergency case. This has been achieved, not only through this on call group, but also during ambulatory classes, where veterinarians are very often called to attend emergency cases. Students assisted these cases in groups of 5 and although Covid 19 has affected clinical case exposure to emergencies, our concern is to increase these numbers and to teach students different approaches in emergency cases. This preoccupation has also been addressed by a new optional subject that was created for the 5th year students – "Emergency in Farm Animals". We also believe that the creation of our Clinical Labs Skills with bovine species models also improves teaching of emergencies and the completion of construction of our teaching facilities at the Farm Animals Hospital in Catapereiro, will provided us with cutting edge facilities and equipment to improve teaching and increase the caseload in all farm animal species, including emergencies. The increase of the farm animal academic and support staff with 2 full time Diplomates from ECBHM and part-time collaboration 2 other European Diplomates, improved the quality in teaching.

Following the suggestions presented by the auditors', measures have been taken by the Companion Animals Hospital (VTH-CA) that resulted in a marked increase in number of emergency cases seen within the last years. To increase exposure of students to emergency cases in companion animals and exotic species the Faculty expanded protocols with the largest animal shelters, small animal associations and local and national government animal protection agencies for wildlife and of exotic animals, as to receive injured and emergency animals overnight and on weekends. We further increase the exposure due to the increase in cases seen regularly in the Hospital. The

caseload improvement seen from the increase of services to the public and from protocols assumed, resulted in an average increase in emergency cases since 2018/19 of 260% and an approximately 5.5-fold increase when comparing 2020/21 with the year of the last audit (730 versus 133 cases).

Students complete a compulsory 2-week hospital rotation including day, night, and weekend shifts, permitting complete exposure to the hospital circadian cycle. Students are required to rotate through the various departments, including the ICU and after-hours emergency service. Student group sizes vary from 3 to 5 individuals, depending on cases being seen in each department during any given rotation, with priority given to emergency cases. Great care is taken to guarantee that they undertake duties attending to companion animal and exotics species in emergencies and performing first aid. During 5th year rotations alone, more than 70 hours are of training focusing on CPR, triage, shock, SIRS and sepsis monitoring in the ICU is provided. In future planned clinical lab skills, created this year, one day will be dedicated solely to the simulation of cardiac arrest, basic and advanced first aid training.

We created two optional curricular subjects in Emergencies and Critical Care to allow for common emergency scenarios to be addressed both through theoretical and practical classes. We believe that the creation of our Clinical Labs Skills with companion animals species models will improve the teaching of emergency situations. Although various members of the academic staff have significant experience in emergency medicine, FMV-ULHT makes it a priority to collaborate routinely with internationally renowned Specialists/Diplomates, as invited teachers in companion animals, when training our students in emergency situations. In this way, we intend to provide a solid, well-rounded, and certified education in this all-important speciality.

2.9.2. Comments

The enhanced quality of teaching in clinical subjects due to the improvement of facilities and equipment, accompanied by an increase in protocols for all animal species, and keeping up the reorganization of student class schedules during 2019/20 and 2020/21, which allowed the students to return in safety, on a rotational basis, to practical classes during the Covid Pandemic resulted in a significant increase exposure to students in caseload in emergency cases, across all species. Even facing the difficult times that we all experienced in the last 2 years, and although we are aware that the increases in cases could have been better facing a regular situation, especially in farm animal species, we are confident that our graduates in the time being met all the requirements to comply with the necessary exposure in emergency cases in all species. We believe that measures taken will contribute to a sustainable future increase in terms of overall patients and emergency care caseload.

2.9.3. Suggestions of improvement

We believe we will markedly improve emergencies in farm animals, following the conclusion of the construction of infrastructures of our Farm Animals Campus, in Catapereiro, that had the major delays due to the Covid Pandemic Situation.

2.10. Minor Deficiency 10: Lack of prerequisites for accessing the courses at the master level.

2.10.1. Factual information

Following the recommendations of the European Association of Establishments for Veterinary Education (EAEVE) the Functioning Regulation of FMV-ULHT was reviewed and approved by the Scientific and Pedagogical Councils as to create prerequisites for accessing the courses at the master level. The Regulation with these alterations was approved by the ULHT Rectory in 2018 and is available at the University website⁸.

With the improvements made on Article 16^o “Admission and Enrolment”, namely on points 3, 4 and 5, it was adopted a prerequisite system that guaranties that the students are not permitted to enter a subject in following year’s degree without having completed or assure enrolment on previous years subjects and, demarcate the Bachelor program from the Master’s degree guaranteeing that students complete the 1^o cycle, 180 ECTS, before beginning the 2^o cycle.

Application of the rules are constantly reminded to students and due to the need to reinforce the application of the Regulation, the Academic Services further create filters on the online enrolment that obligates the enrolment of the students in a way that complies with regulations.

The Faculty’s secretariats also carry out a manual check of every new academic year enrolments.

2.10.2. Comments

The changes suggested by the auditors markedly improved the general organization of the course and the quality of teaching.

2.10.3. Suggestions of improvement

None.

2.11. Minor Deficiency 11: Insufficient equipment in the equine teaching hospital.

2.11.1. Factual information

Strong investment has been made with the purpose of expanding the facilities and equipment allocated to the Equine Veterinary Teaching Hospital (VTH-E). This investment focus on interdisciplinary teaching and research in equine veterinary medicine, biomechanics, and diagnostic imaging, resulting in the establishment of a renewed and modern unit equipped with vanguard technology for the practice and teaching of equine sports medicine. As such, significant improvements have been made in surgery, general anaesthesia, diagnostic imaging, including ultrasound and radiology, and outdoor support areas.

⁸ https://www.ulusofona.pt/media/dreitoral-n.-20-2018_regulamento-funcionamento-da-fmv.pdf

The equipment improvement within the equine surgical area includes upgrading of the operating theatre, installation of new surgical lamps, and acquisition of new surgical instruments. Besides that, a surgical drill (Conmed) and an osteosynthesis set (B.Braun - 3.5mm and 4.5mm), will enhance the capacity for fracture reduction surgery. An electrical scalpel (emed) and a surgical vacuum drain (HERSILL, S.L) are also part of the most recent acquisitions. For anaesthesia, a ventilator LAV-3000 and a vital signs monitor (CYGNUS 1500 VET) were acquired. These have allowed for a substantial increase of range and quality of surgical procedures performed at the VTH-E. To assist in post-anaesthetic recovery and aid horses with neurological or severe orthopaedic pathologies, an Anderson Sling system was acquired. A new hemogram machine, an electronic stethoscope, weight scale, and a FLIR thermographic camera for research purposes were also acquired. Also, new podiatry material to be used in the orthopaedic shoeing unity is now available.

To improve diagnostic and teaching quality for endoscopic examinations, we purchased the newest endoscopy technology STORZ video endoscopy set, including gastroscope (60332 PKSK) and bronchoscope (60814 PKS) equipment. A STORZ® laparoscope and two arthroscopes (4.2mm and 2.7mm, for smaller fragments), including HD recording and display, respective STORZ® high-quality instrumentation, a CO2 endo-retroreflector and a vascular sealer (ENSEAL®) were also purchased.

In the realm the latest technology of diagnostic imaging we now also acquired an ultrasound scanner by General Electronics LOGIQS8, which includes 3 regular probes (liner, convex, cardiac) and 2 additional volumetric probes (linear and convex) which allow the acquisition of 4D images. The elastography and shear wave modules are part of ultrasound scanner technology, which will be useful for research purposes as well as patient follow-up consults.

For radiological imaging, a portable X-ray generator (Medical Econet meX+20BT lite) is part of the investment and is currently being used in diagnostic imaging for clinical practice and classes.

We acquired a standing CT-Scanner Edamis Robotic System which consists of a dual-arm multi-modality imaging system for equine scanning. This advanced diagnostic imaging equipment allows digital radiography, Cone Beam CT, Fluoroscopy, Tomosynthesis and Circular Tomosynthesis making it possible to assess orthopaedic and musculoskeletal pathologies of horses without the need of general anaesthesia (see technical information also at <https://www.orimtech.com/edamis>). This innovative technology has already been installed in the United States (see example at <https://youtu.be/Hi0313j3nEc>) but is the first equipment to be installed at a Veterinary Faculty in Europe, being the second in Europe to be installed after a Private Equine Clinics, Equitom, in Belgian. Regarding outdoor areas, an indoor arena for biomechanical research and lameness assessment is now under construction at EVTH were a biomechanical model to be used is three-dimensional and is an output of VICON® system. Equimoves, a tool for objective lameness assessment and follow up was acquire and will be used as a complement to the previous one.

2.11.2. Comments

We have the goal of consolidate a teaching component and research, already highly active and with a strong potential namely in the field of equine sports medicine.

2.11.3. Suggestions of improvement

For the near future and consider the high investment in equipment, mainly imaging, we hope to improve and increase partnerships with both private and public institutions, namely with faculties and research institutes of Veterinary Medicine in Europe, and due to better working conditions we hope to attract more researchers and diplomates in the area and continuously improve the quality of teaching and research.

2.12. Minor Deficiency 12: Insufficient formal training in modern pedagogical methods for all staff involved with teaching.

2.12.1. Factual information

Considering the suggestions made by the Visitation Team the Faculty has organized, since 2018, regular formal training on modern pedagogical methods for all staff involved in teaching.

The Faculty offers annually a range of free courses covering pedagogical/teaching methods, languages, computer software, technological innovation, socio-professional skills, and research activities. It is compulsory for staff to undertake in every year a minimum of one training course covering pedagogical methods. The university also offers a wide range of free training courses available at the sites^{9,10}.

Through the university, since 2019, the Faculty is a member of the OCDE Project: “Fostering and assessing creative and critical thinking skills in higher education and teacher education”. This project at the OCDE Centre for Educational Research and Innovation (CERI) aims to support higher education institutions to innovate in their teaching and nurture students’ creative and critical thinking. It seeks to identify the key contextual factors and effective approaches to foster these skills in higher education settings, develop and implement exemplary instructional practices and assess the effects of innovative pedagogies on students and Faculty members. The project builds an international community of focusing on teaching, learning and assessing creativity and critical thinking¹¹. The OCDE pilot project, with the participating of academic staff from the Faculty, which included a broad range of subject leaders of the curricula, allowed to learn new and innovative teaching strategies to directly apply in the classroom. Not only do we aim to foster creative and critical thinking in our students, but we also apply innovative assessment tools. Students were/are invited to participate and give their feedback throughout the whole process.

⁹ <https://cursos.lusofona-x.pt/>

¹⁰ <https://www.ulusofona.pt/formacao-docentes-e-investigadores>

¹¹ <https://www.oecd.org/education/ceri/innovation-strategy-for-education-and-training-call-for-participation.htm>

Since 2020, more emphasis was given by the University on the formal training of academic and research staff (see joint order 26/2020¹²).

The university considers that, to continue to foster top quality teaching and research it is imperative to make training processes that ensure constant refreshing of lecturers and researchers in their respective fields of professional performance a matter of routine. Thus, conscious of this need, the Rector and the Administration have decided that all personnel of the academic and research staff of Lusofona University shall demonstrably attend at least 30 hours of yearly professional training, comprehending the components of pedagogic practices, research management, and academic management.

The Lusofona Institute of Education is responsible for the training contents on pedagogic practices for all the academic and research staff, corresponding to a minimum of twelve (12) hours of training and the Lusophone Institute for Research and Development is responsible for the training contents on research management for all the academic and research staff, corresponding to a minimum of ten (10) hours of training. The Directors of the Schools and Faculties are responsible for the contents on the specifics of their unit, corresponding to a minimum of eight (8) hours of training.

2.12.2. Comments

The participation in the OCDE project has proven to be very valuable in helping us to design better innovative training programmes offered on modern pedagogical methods throughout the introducing of creative and critical thinking skills that we wish to develop better in the following years and offer broad training on these to all the teaching staff.

2.12.3. Suggestions of improvement

The Faculty is preparing the pedagogical plan for next year which includes a special course compulsory for the beginning of new admissions that includes pedagogical methods in teaching and assessment with emphasis on the ones applied to the practical training of students. All new Lectures will be also informed and stimulated to participate in those and also in the range of free training offered by the University and the by the Faculty.

2.13. Minor Deficiency 13: Overload of staff with teaching and administrative duties, with as a result not enough time for research and continuous professional development activities.

2.13.1. Factual information

Research is carried out by both full-time and part-time academic staff, but mostly by the former. So, to improve time for research in the last years, we have hired more qualified full-time Ph.D.

¹² <https://www.ulusofona.pt/media/continuous-training-teaching-research.pdf>

teachers with an outstanding research curriculum. The hiring of lectures with a wide range of specializations, encompassing varying areas of knowledge, has allowed for students to branch out in their final year project/thesis, stimulating further research.

FMV-ULHT has reinforced the hiring of full-time professors/researchers, by increasing the total of FTE Full-Time Academic Staff involved in veterinary training by 16% and FTE Veterinarians involved in veterinary training by 20% since last audit. We also increased by 56% qualified Academic Staff FTE with a Ph.D. degree in Veterinary Sciences, when comparing with the last EAEVE audit.

The increase in academic staff as allowed a better distribution of workload with reduction of teaching hours and management activities, improving teaching quality standards and allowing more time for research activities. Furthermore, the hiring of assessors to the Dean and the nomination of Vice-Deans has allowed for better distribution of administrative duties, which further reduces the time dedicated to them by academic staff.

2.13.2. Comments

To increase the number of projects and publications in the predominant area of the course, the FMV-ULHT has motivated the participation of academic staff in Research and Development (R&D) calls, aiming to increase the funding available. It has promoted the hiring of academic staff that pursue actions in the field of R&D with the goal of creating a 3rd cycle to streamline the areas of research in Veterinary Science.

2.13.3. Suggestions of improvement

We will continue to hire full and part time academic staff to allow more time for research activities of the academic staff and to improve the quality of teaching based-research education of our students.

2.14. Minor Deficiency 14: Insufficient operational plan for the recruitment of recognized clinical specialists and the development of residency programmes.

2.14.1. Factual information

In 2017 SER, the number of FTE provided for the specialized veterinarians involved in veterinary training in the Year-1 (2015/16) was 24. This number included the sum of National Specialists and European /American Diplomates when it should have considered the last. Making up for such correction in year of the Audit, there were 4 specialized veterinarians involved in veterinary training, 2 full-time and 2 part-time, in a total of 2.9 FTE.

Since 2018, following the suggestions of the EAEVE Visitation Team, we have increased recruitment of veterinary diplomates. Invitations to collaborate with the FMV-ULHT have been sent to Portuguese diplomates working abroad via collaboration with a Portuguese veterinary

specialized magazine and this has resulted in an increase in both full and part-time diplomates as members of our academic staff.

At moment we have 9 specialized veterinarians involved in veterinary training, total of 5.2 FTE, which reflects an increase of 79% since the last audit evaluation. We also have another 2 academic staff undertaking residence programmes.

As the result of our efforts, full and part-time academic staff, include Specialists of the following the Colleges: 4 full-time teachers, 2 diplomates of the European College of Bovine Health Management (ECBHM), 1 diplomate of the American College of Veterinary Pathologists (ACVP) and 1 diplomate of the European College of Veterinary Dermatology (ECVD); 5 part-time teachers, 1 diplomate of the European College of Veterinary Clinical Pathology (ECVCP), 1 diplomate of the European College of Veterinary Surgeons (ECVS-LA), 1 diplomate of the European College of Veterinary Internal Medicine – Companion Animals (ECVIM-CA), 1 diplomate of the European College of Equine Internal Medicine (ECEIM) and 1 diplomates of the European College of Veterinary Dermatology (ECVD); 2 collaborators in residence programmes of the European College of Animal Welfare and Behavioural Medicine and European College of Veterinary Internal Medicine - Companion Animals (Oncology).

In addition, we continue to invite diplomates to collaborate with us as guest lectures on a regular basis, with a minimum of 16 hours in each semester, both for theoretical and practical classes helping us to markedly improve the quality of our teaching program. We are currently one of the veterinary teaching institutions in Portugal with more collaborating guest diplomates. They are diplomates of the colleges: European College of Bovine Health Management (ECBHM); European College of Veterinary Surgeons (ECVS); European College of Animal Welfare and Behavioural Medicine (ECAWBM); European College of Veterinary Diagnostic Imaging (ECVDI); European College of Veterinary Anaesthesia and Analgesia (ECVAA).

In concordance with our operational plan, a selection process for diplomates, specifically within the diagnostic imaging and cardiology specialities, has begun.

As part of a larger strategy to develop residency programs we started in 2019 an internship program. The current program approved provides an admission training of 5 Companion Animal Internships and 2 Large animals Internships. For next academic year, 2021/22, we increase these number to 6 internships in Companion Animals, and 4 in Large Animals, 2 Equine and 2 Farm Animals, which has been already publicized for applicants to start next September

2.14.2. Comments

We believe that hiring of more qualified staff, infrastructure improvements and equipment acquisitions, across all our hospitals and laboratories, allow us with better conditions improving internship programmes and develop residency programs.

2.14.3. Suggestions of improvement

Achieving the approval of EAEVE will improve our recognition among other institutions and can be a major factor to help us to attract more specialized veterinarians and be accepted in residency programs.

3. ESEVT Indicators

3.1. Factual information

The ESEVT Indicators tables were filled based on the Academic Years 2020/21 (Year-1), 2019/20 (Year-2) and 2018/19 (Year-3). All the ratios were above the minimum values, while half are above Median values. The fundamental aspects are approached in the Comments section.

Table 1. Raw data from the last three full academic years.

Raw data from the last 3 full academic years		2020/21	2019/20	2018/19	Mean
		Year -1	Year -2	Year -3	
1	n° of FTE academic staff involved in veterinary training	75.80	72.20	66.95	71.65
2	n° of undergraduate students	608	528	503	546.33
3	n° of FTE veterinarians involved in veterinary training	62.45	59.85	54.60	58.97
4	n° of students graduating annually	44	50	57	50.33
5	n° of FTE support staff involved in veterinary training	51.05	34.60	32.60	39.42
6	n° of hours of practical (non-clinical) training	1678.5	1853	1853	1794.83
7	n° of hours of clinical training	1209	1224	1224	1219
8	n° of hours of FSQ & VPH training	420	472.5	472.5	455.0
9	n° of hours of extra-mural practical training in FSQ & VPH	0	51.33	110	53.78
10	n° of companion animal patients seen intra-murally	3900	4203	5000	4367.67
11	n° of ruminant and pig patients seen intra-murally	0	0	171	57
12	n° of equine patients seen intra-murally	270	253	203	242
13	n° of rabbit, rodent, bird and exotic patients seen intra-murally	102	124	98	108.00
14	n° of companion animal patients seen extra-murally	78	112	83	91
15	n° of individual ruminants and pig patients seen extra-murally	6017	4372	3537	4642
16	n° of equine patients seen extra-murally	43	54	54	50.33
17	n° of visits to ruminant and pig herds	133	86	110	109.67
18	n° of visits of poultry and farmed rabbit units	6	7	5	6
19	n° of companion animal necropsies	217	200	201	206
20	n° of ruminant and pig necropsies	116	144	184	148
21	n° of equine necropsies	10	10	20	13.33
22	n° of rabbit, rodent, bird and exotic pet necropsies	79	102	230	137
23	n° of FTE specialised veterinarians involved in veterinary training	5.20	5.10	5.10	5.13
24	n° of PhD graduating annually	0	0	0	0

Table 2. Indicators calculated from the raw data.

Calculated Indicators from raw data		Establishment values	Median values¹	Minimal values²	Balance³
I1	n° of FTE academic staff involved in veterinary training / n° of undergraduate students	0.131	0.16	0.13	0.005
I2	n° of FTE veterinarians involved in veterinary training / n° of students graduating annually	1.172	0.87	0.59	0.582
I3	n° of FTE support staff involved in veterinary training / n° of students graduating annually	0.783	0.94	0.57	0.217
I4	n° of hours of practical (non-clinical) training	1794.833	905.67	595.00	1199.833
I5	n° of hours of clinical training	1219.000	932.92	670.00	549.000
I6	n° of hours of FSQ & VPH training	455.000	287.00	174.40	280.600
I7	n° of hours of extra-mural practical training in FSQ & VPH	53.778	68.00	28.80	24.978
I8	n° of companion animal patients seen intra-murally / n° of students graduating annually	86.775	70.48	42.01	44.766
I9	n° of ruminant and pig patients seen intra-murally / n° of students graduating annually	1.132	2.69	0.46	0.669
I10	n° of equine patients seen intra-murally / n° of students graduating annually	4.808	5.05	1.30	3.510
I11	n° of rabbit, rodent, bird and exotic seen intra-murally / n° of students graduating annually	2.146	3.35	1.55	0.601
I12	n° of companion animal patients seen extra-murally / n° of students graduating annually	1.808	6.80	0.22	1.585
I13	n° of individual ruminants and pig patients seen extra-murally / n° of students graduating annually	92.225	15.95	6.29	85.930
I14	n° of equine patients seen extra-murally / n° of students graduating annually	1.000	2.11	0.60	0.405
I15	n° of visits to ruminant and pig herds / n° of students graduating annually	2.179	1.33	0.55	1.632
I16	n° of visits of poultry and farmed rabbit units / n° of students graduating annually	0.119	0.12	0.04	0.075
I17	n° of companion animal necropsies / n° of students graduating annually	4.093	2.07	1.40	2.693
I18	n° of ruminant and pig necropsies / n° of students graduating annually	2.940	2.32	0.97	1.970
I19	n° of equine necropsies / n° of students graduating annually	0.265	0.30	0.09	0.172
I20	n° of rabbit, rodent, bird and exotic pet necropsies / n° of students graduating annually	2.722	2.05	0.69	2.029
I21*	n° of FTE specialised veterinarians involved in veterinary training / n° of students graduating annually	0.102	0.20	0.06	0.039
I22*	n° of PhD graduating annually / n° of students graduating annually	0.000	0.15	0.09	-0.088

3.2. Comments

In general, even facing the Covid crisis, due the effort of staff and students to comply as much as possible with practical non clinical and clinical “hands on” classes, the ratios of I2, I4, I5, I6, I8, I13, I15, I17, I18, I20 were all above median values and the ratios of I1, I3, I7, I9, I11; I12, I14, I19, I21 all above minimum values (table2). The Ratios of I22 are below the expected values as we do not hold yet a 3rd cycle of studies. We added below specific comments regarding individual indicators and, when appropriate, the major impacts of Covid-19 during the last two years on the various indicators and ratios:

- **Calculated indicators of FTE academic and support staff related with increased number of students**

Keeping pace with improving the quality of teaching and research and the growth of undergraduate students, we increased the number FTE of academic staff, of veterinarians, and supportive staff involved in veterinary training. All the calculated indicators 1, 2 and 3 in table 2 are above the minimum values but our main goal is to increase those to near median values or above as suggested by the ESEVT indicators.

- **Calculated indicators for n° hours practical, clinical, and FSQ & VPH training.**

Raw data of the indicators 6, 7, and 8 slightly decreased in 2020/2021 due to the adaptations made after recommendations of the Portuguese Ministry of Science, Technology and Higher Education. Without changing the total hours of the study plan, this resulted in a reduction of 13% in students total contact hours, 9% reduction in the practical (non-clinical) training and 1% reduction in clinical training hours, that were converted to students self learning. These measures, besides improving the student’s quality of study and assessments, did not significantly affect the calculated indicators on Table 2 as the n° of hours of practical non-clinical training (I 4), n° of hours of clinical training (I 5), n° of hours of FSQ & VPH training (I 6) are all above the median values for those indicators.

The raw data from Table 1: 9, concerning the n° of hours extra-mural practical training in FSQ & VPH reflects the cancelling of slaughterhouses and food premises activities due to the Covid 19 crisis. The values reported are mainly due to the previous activities of the academic years of 2018/2019 and 1st semester of 2019, which results in a value above the minimal and closer to the median (table 2)

- **Calculated indicators from raw data related to companion animals and exotics.**

The indicator 8 (table 2, n° of companion animal patients seen intra-murally / n° of students graduating annually) is above the median value. The data provided reflects the number of animals seen by students in the last 2 years of the Covid -19 crisis although the caseload seen at the VTH-CA nearly doubled since we continued to provide services to the community even during the Covid lockdowns. As such, in a year without mandatory lockdowns, student exposure to actual cases will be even better.

The indicator 11, n° of rabbit, rodent, bird and exotic seen intra-murally / n° of students graduating annually, is above the minimum value, it is by far superior to the ratio presented in the previous audit and follows the improvements in this area as suggested by the auditors. As mentioned above the VTH-CA continued to provide services to exotic species resulting in close to double the caseload seen in these species, and in a regular year (without pandemic), student exposure to actual cases is expected to be higher.

The indicator 12 of n° of companion animal patients seen extra-murally / n° of students graduating annually is above the minimum value, while in the previous audit was zero.

- **Calculated indicators from raw data related to farm animals.**

Indicator 9, table 2, n° of ruminant and pig patients seen intramurally although showing a positive balance this was mainly due to values of 2018/2019 as in the last years values were zero as the intramural classes were affected by the discontinuation of services at the intramural farm Herdade dos Coelhos and seriously by the delays in licences and construction of our Farm Animals Campus in Catapereiro.

The balance of Indicator 13, table 2, n° of ruminant and pig patients seen extra-murally is much above the median values, this reflects the increased number of ruminants and swine clinical cases, during the last years, even during the Covid-19 crises, as shown in the raw data provided in table 1, 15.

Concerning the number of visits to ruminants and pig herds, although the number of visits foreseen to farms were reduced when related with our planned work even, so we accomplished a value of visits per student above de median values, table 2 - I 15.

Visits related to poultry and farmed rabbit units were affected by the biosecurity measures on farms due to Covid-19 pandemic and the indicator 18 at table 1, visits to poultry and farmed rabbit units were less then as planned. Although facing these constraints, the ratio n° of visits of poultry and farmed rabbit units / n° of students graduating annually is above the median value, I16, table 2.

- **Calculated indicators from raw data related to equine.**

The balance of indicators in table 2, I 10, n° of equine patients seen intramurally/n° of students and I 14, number of equine patients seen extramurally/ n° of students, are both above minimum values. The indicators of extra-mural reflect the cancellation of extra-mural activities planned as in the 2nd semester of 2019/2020 visits to Naturasin, an extra-mural donkey milk farm, were suspended due to biosecurity measures, similarly, classes at the GNR's hospital were suspended during the 2nd semester of 2019/2020 and during the 1st semester 2020/2021. All these situations affected the number of animals seen extramurally that we were not able to improve considering last audit results (indicator 16, table 1), even though we guarantee the exposure of extramural equine work to our students during the Covid situation.

The intramural cases in Equine improved since last audit, going from an average of 2,8 cases per student graduating annually to 4,8 in average of the last 3 years (between 2018/2021). The case

load of VHT-E increased during the last 3 years, not being affected by the Covid crisis which granted our students a good exposition to cases when returning to classes during Covid-19 crisis.

- **Calculated indicators from raw data in Necropsies**

Table 1: 19, 20, 21, and 22 – Due to the limitations caused by Covid situation we were able only to reorganize after the first lockdown in 2019/2020, half of the programmed classes. In 2020/2021 after the lockdown the second semester in 20/21 we were able to recover 2/3 of practical classes programmed. This affected our performance to achieve higher numbers of necropsies committed to the correction of all our deficiencies although we fully comply with the necropsy's indicators:

Indicator 19 - Companion Animals Necropsies

The Mean number of Companion Animals necropsies in the last 3 Academic Years is almost 3-fold superior then the Mean number registered in the SER 2017. The ratio n° of Companion Animals necropsies / n° of students graduating annually is way above the Median value, doubling it.

Indicator 20- Ruminant and Pig Necropsies

The Mean number Ruminant and Pig necropsies in the last 3 Academic Years is more than 4-fold superior to the Mean number registered in the SER 2017. The ratio n° of Ruminant and Pig necropsies / n° of students graduating annually is above the Median value.

Indicator 21 - Equine Necropsies

The Mean number of equine necropsies in the last 3 Academic Years is 4-fold superior to the Mean number registered in the SER 2017. The ratio n° of equine necropsies / n° of students graduating annually is above the Minimum value while very close to the Median value (difference of 0.038).

Indicator 22 - Rabbit, Rodent, Bird and Exotic Pet Necropsies

The Mean number Rabbit, Rodent, Bird and Exotic Pet necropsies in the last 3 Academic Years is similar to the Mean number registered in the SER 2017. The ratio n° of Rabbit, Rodent, Bird and Exotic Pet necropsies / n° of students graduating annually is above the Median value.

- **Raw data and indicators related with Specialized veterinarians**

The number of FTE specialized veterinarians in table 1 - 23, was corrected to consider only the Specialized veterinarians Diplomates and not National specialists as in the previous audit. The adjusted correct number of FTE would be 2.9 in the academic year 2016/17 with an actual mean value 5.2, which represents an increase of 85%.

Indicator 24 - PhD graduating annually n° of PhD graduating annually / n° of students graduating annually we don't provide data as we are still in a process for submission of a 3rd Cycle in Veterinary Sciences.

3.3. Suggestions of improvement

We plan immediately for the academic year 2021/2022 to continuing the increase in the hire of FTE of academic staff, number of FTE of veterinarians, and number of FTE supportive staff involved in veterinary training as to keep up with the increased number of students and the quality of the degree. With the completion of all the buildings and equipment improvement, and the hope that the Covid-19 situation will improve in Portugal and worldwide, we believe we have met the conditions to better our results and markedly improve the ESEVT indicators in the future in line with the objectives of continuous improvement of the quality of our teaching and research activities keeping up with the increased student enrolment.

ADDENDUM

Explanation of how academic years 2019/21 and 2020/21 were affected by the Covid-19 crisis

During the **2nd semester of 2019/2020 Portugal was subjected to its first mandatory lock down due to the COVID-19** and classes, already in full swing since the 24th February, had to be suspended for 2 months, between the 18th of March and the 18th of May.

To ensure the maintenance of our high-quality education and to achieve the planned compliance with ESEVET indicators, all while guaranteeing student and staff safety, the Faculty decided to reorganize the calendar and class schedules with the aim of returning to Campus as soon as possible on the dates authorised by the Portuguese government.

The previous class schedules were therefore carefully reorganized, resulting in the concentration of theoretical and theoretical-practical classes being taught during the mandatory lockdown, through the use of Zoom and other software provided by the University, in virtual classrooms. This allowed for practical and clinical classes to be concentrated in a 2-to-3-week period, in special intra and extra-mural rotations created for that purpose.

From the very beginning of the pandemic the University implemented a COVID-19 contingency plan that the faculty strictly adhered to. Bio-security measures were implemented to ensure social distancing and guarantee student safety. The practical classes were staggered in the following manner: 1st and 3rd year students returned 2 weeks, between the 15th of June and the 27th of July; 2nd and 4th year students returned to campus 3 weeks, and 5th year students 5 weeks, between the 15th of June and the 18th of July in rotations of 2 weeks in large animals 2 weeks in companion animals and 1-week elective subjects. The practical classes were also organized, when needed, by improving the professor to student ratio: increasing the number of groups per class, while reducing the number of students per group. This was accomplished through both the increased hiring and redistribution of academic staff and increasing the number of available laboratories and other facilities. To guarantee the quality of student's evaluation final exam schedules were maintained on Campus from the 20th of July to the 19th of September. The FMV-ULHT was the only Portuguese Institution of Veterinary Medicine to return to on Campus classes in **the 2nd semester of 2019/2020** and, in this way, we were mostly able to comply with our planned objectives for the academic year while guaranteeing the quality of teaching, assessments and safety of staff and students.

For the academic year 2020/2021, the University followed the government guidelines and recommendations and adapted our pedagogical practices to methodology using online platforms, Zoom and others. An essential part of this adaptation were adherence to guidelines that advised institutions to provide more hours for autonomous student work ("*Skills 4 pós-Covid, Competences for the future*" from High Directorate for Higher Education (DGES), Ministry of Science, Technology and Higher Education). In this way the student gains the opportunity to manage his own time and explore their individual interests through solitary and group work, completed on their own time while always having an teacher available to guide and support their learning. This without changing the expected total workload of the subjects or the objectives of the study plan. As it was expected that the COVID-19 pandemic would continue to be of serious concern for the 2020/2021 academic year, the Faculty followed all the Government and Universities' guidelines for decisions regarding organization and contingency plans (Internal Joint Order

25/2020 and Hight Directorate for Higher Education resulting in Dispatch no 8686/2020, <https://dre.pt/home/-/dre/142338672/details/maximized>).

In this context of profound transformation of teaching and learning environments, new pedagogical practices and approaches were essential to encourage experimentation and facilitate the use of innovative methodologies. Adapting contact hours of classes, mainly theoretical and theoretical-practical with some staggered practical classes, by increasing the hours of supervised self-learning, without changing the expected total workload of the subjects or the objectives of the study plan, proved to be highly important for student's education, promoting more the self-directed supervised work and self-management of autonomous time by students. The conversion focused on the theoretical (T) and theoretical-practical (TP) component of the classes. Adjustments in practical (non-clinical courses) required the adaptation of laboratory and desk-based work, to supervised self learning. Adjustments to practical clinical classes were only made in subjects where the number of contact hours was already higher than in other degrees, mainly Anatomy and Reproduction and Obstetrics. This benefited students by allowing for more hours of practice using digital platforms, anatomical model laboratories, and Clinical Skills laboratories, among other resources that we have created and improved over the years. After these adjustments in our practical classes, when compared with the most relevant degrees of Veterinary Medicine in our country, we still have 115% more practical contact hours in Anatomy subjects (I-IV), 50% more in Reproduction and Obstetrics I and II, and 44% more in Practical Sanitary Inspection I e II. The results of these adjustments are provided in point 3 - ESEVT Indicators, and we must highlight two main improvements that resulted directly from the above adaption: 1) improvement of the scheduling of T and TP classes, avoiding the usual time breaks in between each hour of class and the next, without changing the "real" time and the quality of the contact hours of teaching, 2) we improved the students supervised work time to keep up with the activities required by teachers in the context of continuous learning education and evaluation/assessment. By providing students with hours needed to complete work related to the theoretical and theoretical-practical training, report write-ups and essays requested by the teachers, time for literature search/review in writing up work requested in seminars and supervised practical training, as well as practical work that we expect to markedly improve in the future due to digital platforms and clinical skills labs with models and simulators.

For the 1st semester of 2020/2021 our planned schedule was to keep students schedules between on virtual Zoom theoretical classes and on campus practical classes which we did accomplish. **It was during January of 2021, that the COVID situation in Portugal dictated the need for a second mandatory lock down between the 15th of January and the 17th of April.** This forced the faculty to delay students return to campus for practical and laboratory classes during the 2nd semester of 2021, initially expected to start on the 1st march, by rearranging the schedule as to minimize the lack of practical nonclinical and clinical work, intra and extra-mural. During the second semester the theoretical and theoretical-practical classes were concentrated from the 1st of March until the 17th of April, at which time, similarly to what happened in 2019/2020, on campus return for hands on practical work were staggered. First year students returned to campus for 4 weeks, from the 19th to the 1st of May and from the 31st of May to the 12th of June; 2nd year students returned for 4 weeks from 17th to the 29th of May and from 14th to 26th of June; 3rd years returned for 4 weeks, from the 26th of April to the 8th of May and from the 7th to the 19th of June; 4th years for 4 weeks, from the 19th to the 24th of April, 24th of May to the 5th of June and 21st to the 26th of June; 5th year students returned to campus for 6 weeks from the 26th of April to the 15th of May, from the 7th to the 19th of June and from the 5th to the 10th of July. On campus final exams were maintained from the 28th of June to the 31st of July in order to guarantee the quality of each student evaluation.

Throughout the return to practical classes in both periods during 2019/2020 and 2020/2021, students participated in anatomy and necropsy practical classes, laboratory classes and clinical class in intramural and extramural facilities of companion animal, equine, and farm animals. During the last two years of the Covid crisis the practical classes that we were not fully able to be organized in the 2nd semester of 2019/2020 and all of 2020/2021, were related to Food Safety and Technology and Sanitary Inspection as all the visits/classes of extramural work in slaughterhouses, food companies and other private enterprises were cancelled by those companies, to avoid additional risks to their activity as they continued to work during the Covid crisis guaranteeing the provision of food and other goods, to general population. Also, not all extra-mural facilities for companion and exotic animals, equine and farm animals were available for the return of students to practical nonclinical and clinical subjects, mainly due to biosecurity concerns, but the constant effort in the reorganization of the practical work in other facilities compensated, in most situations, for this. During the academic years of 2019/2020 and 2020/2021, marked by the Covid-19 crises, the VTH-CA and VTH-E continued to work at full capacity and case load markedly increased when compared with previous years, which allowed for important hands-on work when students returned to activities on campus. The crisis caused by the pandemic impeded the expected progression of our established schedule for the construction of the Farm Animal Campus and the expected real work caseload increase of intramural cases on Bovine and other farm animals. Additional information of the impact of class organization that affected indicators are highlighted in the comments of the R-SER and on point 3 - ESEVT Indicators.

In conclusion, the COVID-19 pandemic changed, overnight, the educational paradigm at all levels of formal learning requiring a rapid, coordinated, and thought-out response to keep up with our goals of a providing a high-quality education. The FMV-ULHT prides itself on having been the only school to return to campus in 2020 and to have adjusted all its 2021 second semester to accomplish hands on non-clinical and clinical work. The pandemic has proven that our academic staff can adapt to a changing educational landscape, while still maintaining the quality of training and education.