

European Association of Establishments for Veterinary Education
European System of Evaluation of Veterinary Training

**REPORT ON THE VISIT TO THE FACULTY OF
VETERINARY MEDICINE OF MUNICH, GERMANY**

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By the EXPERT GROUP

Werner Swannet, Ghent, Belgium

Visitor on Training in Basic Sciences

Ellen Bjerkas, Oslo, Norway

Visitor on Training in Clinical Sciences (Academic)

Olivier Glardon, Yverdon, Switzerland, *Chair*

Visitor on Training in Clinical Sciences (Practitioner)

Biagina Chiofalo, Messina, Italy

Visitor on Training in Animal Production

Birgit Norrung, Copenhagen, Denmark

Visitor on Training in Food Safety

Astrid Birch Kjærgaard, Denmark

Student Member

Gert Niebauer

EAEVE Programme Coordinator

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INTRODUCTION

The Veterinary Faculty of the Ludwig-Maximilians University (LMU) of Munich was visited and received EAEVE approval in 2002. Within the past 10 years several important developments and improvements took place. All are described in detail in the “Introduction” section of the SER; here is a brief summary of the most important changes:

Organisation: the faculty now consist of 2 departments (since 2008/2009): Department of Veterinary Sciences and the Center for Clinical Veterinary Medicine; in 2005, species-oriented clinics were established. The faculty farm that is the Livestock Centre Oberschleissheim, some 15 km outside Munich, has been thoroughly reorganised and equipped. An office of Student Affairs has been created with a new system of student registration and learning/teaching monitoring (“COREMATO”: Course Registration Management Tool). A central IT-Group has been established.

Teaching: strong emphasis is given to hands-on clinical teaching. The examination system has been revised including some new and innovative exam formats, e.g. Objective Structured Clinical Examination (OSCE). E-learning is strongly emphasised and continually developed further with positive effects on library, self-directed learning and learning outcome. A modern computer centre for students has been created on both campuses.

Equipment and facilities: the campus of Oberschleissheim has been developed strongly and is today in every aspect a state-of-the-art facility for food animals. A long-term strategic plan to eventually move the entire Faculty out to Oberschleissheim has been adopted 2 years ago. It may take many years, however (two digit numbers were mentioned), until the entire faculty has been moved to Oberschleissheim. Besides all food animal units (including “Nutrition and Dietetics, Food Hygiene and Safety), the clinical facilities for reptiles, amphibians and ornamental fish are already situated at Oberschleissheim. The institute of parasitology is the only facility located within the main LMU campus and therefore outside the 2 veterinary campuses. All other institutes and clinics, including the equine clinic are located at the Munich Schwabing campus (Englischer Garten); they have undergone continuous update and upkeep and most institutes and clinics are well equipped and situated in efficiently modernised premises. Some are outstandingly equipped such as the unit for oncologic radiotherapy with new generation imaging and irradiation technology.

In summary, the faculty seems to have successfully addressed the suggestions given as result of the 2002 EAEVE visit, and beyond that, has developed further into an up-to-date, modern, well equipped and research-oriented teaching establishment.

1 OBJECTIVES & STRATEGY

1.1 Findings

The objectives are well defined and published; a mission statement is formulated and followed: *“The mission of the Veterinary Faculty is to advance the health and well-being of animals and people through education, research and public service.”*

One of the major objectives over the past decade was to develop and enhance hands-on clinical teaching which was successfully accomplished (see clinical part of report). Implication of E-learning and researched-based teaching were other goals which were reached. Research in

general is a strategic strong point. The transfer of the entire faculty to the Oberschleissheim Campus is a long-term strategic objective.

1.2 Comment

The two Campus arrangement has disadvantages on several levels, also for students, and outweighs advantages such as case load of pets and vicinity to the central LMU and city centre.

1.2 Suggestions

Since the firm decision has been taken to move to Oberschleissheim, the faculty should try to reinforce this decision on all levels; a strategic plan with a time limit for the completed transfer should be developed and negotiated with all partners, even if financing is still unclear.

A prospective analysis of clients needs should be realised in order to avoid a strong reduction of the patient's numbers in the clinics.

2 ORGANISATION

2.1 Findings

University and the Faculty are under the jurisdiction of the Bavarian State Ministry of Sciences, Research and the Arts. The veterinary faculty is the smallest of a large number of faculties belonging to the LMU. The faculty has within the LMU sufficient autonomy on one hand and on the other is represented in University decision making boards.

The faculty is headed by a dean elected for a 2 year term; the dean can be re-elected for an unlimited number of biennia. The Faculty Council is the autonomous governing body of the Faculty. It consists of 35 members of parenthetic composition. Students and non-academic staff are represented. A variety of faculty committees is present; the most important ones are Curriculum Committee, Research Committee, Organisation and Development Committee.

The faculty is composed of 3 administrative units: Department of Veterinary Sciences; Centre for Clinical Veterinary Medicine and Livestock Centre Oberschleissheim. The 3 departments, each has considerable administrative autonomy and is governed by a Department (Centre) Council which is entitled to decide on all matters of staff as well as financial and building resources.

The structure of the veterinary clinics has been changed from a disciplinary approach to a species-oriented structure.

2.2 Comments

The move to a species-oriented structure is not fully implemented; in the small animal clinics persists to a certain degree the discipline oriented organisation. This might in part be rooted in the old building structure which divides the clinics along discipline lines.

There are two small animal emergency centres on a 24/24 hr basis, admitting patients who are sent to either the surgery or internal medicine clinics based on a rather arbitrary triage system (main entrance guard).

The traditional allocation of reproduction, anaesthesia and radiology largely under the guidance and headed by surgery should be reconsidered. In order to optimize the management of the outpatients (standardized work-up of first-opinion patients and emergencies) and the practical teaching, the final goal of a true one-headed small animal department (organisation and structure) including larger (surgery, internal medicine) and smaller units (urology, gastroenterology, cardiology), as well as interdisciplinary specialities (reproduction, oncology, dermatology, ophthalmology, anaesthesiology, diagnostic imaging) should be considered.

In the same way, the planned splitting of the equine clinic in a branch of surgery/ophthalmology/internal medicine (Englischer Garten Campus) on one hand and in Equine Reproduction at the Oberwiesefeld Campus (unused and outdated post-war campus) on the other, should also be reconsidered, with the goal to move towards a true one-headed equine department

2.3 Suggestions

Continue more consequently the species-oriented organisation in all areas including in the small animal clinics. However, and on the other hand, pay attention to the independent development of EBVS-identified interdisciplinary specialities such as anaesthesia, ophthalmology, reproduction and medical imaging. These disciplines should evolve independently and on the same level than other disciplines. This does not preclude species orientation.

Create one single Emergency Medicine Centre with central admission and specialised staff (ES and Critical Care is a recognised self-standing speciality).

When considering wishes and requests of individual full professors, and especially those negotiating new contracts, those considerations should be put in proportion with long-term objectives and strategies and be subordinated.

3 FINANCES

3.1 Findings

The Faculty has a sound financial basis. The budget is composed of governmental sources and Faculty generated income. The government through the Ministry of Science pays all salaries for planned positions directly to the individual employees. The vast majority of faculty members including technical staff is salaried through these direct channels. The faculty has however the possibility to employ additional staff, if financing can be generated through revenues; that is clinical or other services and 3rd party money (research funds). There is substantial money generated through research and by research funds (tables 3.1, 3.2). Clinics on both campuses are expected to be financially self-sustaining; in fact, services and research grant income (approx. €5 million/year) balances well the income. High revenue generating clinics have to share their income with low revenue generating units (e.g. production animal clinics) in form of a distribution model, collectively decided by the Council of The Centre for Clinical Veterinary Medicine. Above a basic and expected income for services rendered (set by the government) an overhead of 15% is paid. All running costs for the premises occupied (e.g. energy expenses) are paid by the government who is the owner of the premises lending them for free. Funds for smaller equipment upkeep and purchase are generated through clinic or laboratory income as well. Funds for larger equipment purchases may become available through university and government sources. Several important additions of equipment, research tools and even building projects have been financed through governmental channels recently with others in the planning (e.g. restructuring of the equine facilities at the Oberwiesefeld Campus).

The tuition fees are approximately €1000 per year and are largely returned to the faculty according to a key which takes teaching load and units into consideration.

3.2 Comments

The use of tuition fees returned to the faculty from the LMU for projects directly useful for the students is outstanding and allows a great flexibility in short term investments for interesting projects.

3.3 Suggestions

Tuition fee levels are in Bavaria as in many countries largely a political issue; nevertheless, government authorities and the public should be reminded that the average annual cost for training a veterinary student amounts to €20.000 throughout Europe. A proportional increase of tuition should be considered. This also in context with recent tuition increases in veterinary faculties in other member states (e.g. UK).

The distributive model of revenue sharing between higher income services (small animal and equine clinics) and low revenue generating food animal clinics should be revised. Expenses of the latter are strictly teaching oriented and should be guaranteed more independently of the services rendered by the companion animal clinics.

4 CURRICULUM

4.1 GENERAL ASPECTS

4.1.1 Findings

The actual curriculum follows the requirements of the TAppV (federal directive), that came into effect in 2007. Basically, it corresponds well with the EU directive 36/2005. The curriculum lasts 5,5 years, with the 11th semester used for the final examinations, as in other veterinary schools in Germany. It is divided in “core” subjects (3542 hours), obligatory extramural work (1170 hours) and mandatory “elective” subjects (so called “Pflichtwahlfächer - to be selected from a list of topics offered (308 hours in about 283 different topics). The curriculum consists of a total of 5020 teaching hours. Although the list of subjects doesn't always follow the scheme proposed by the EAEVE-SOP, all EU-required topics are covered, either separately or imbedded in a more general subject (see details in the next sub-chapters). Generally speaking, there is good balance between theory and practical, respectively clinical work. There is a relatively low overall number of hours (162) dedicated to self-directed learning; those hours listed are well supervised by the faculty and do entirely follow the definition of “self-directed learning” in the SOP.

Though the TAppV regulates the curriculum in detail, the Faculty has a certain amount of autonomy in the design of the undergraduate education. Up to 20% of the hours, allocated to a subject listed in the TAppV, can be transferred to other TAppV listed subjects, or the balance between the theoretical and the practical teaching. This was extensively used by the Faculty to remodel the clinical education (demonstrations, hands-on experiences, etc.) after the last EAEVE evaluation. The faculty gave also special attention to the elective courses. The number of courses offered is very high and of good quality. The extramural work is largely left to the responsibility of the students, who are well organised and help each other. There seems not a great amount of directives given by the faculty for the free extramurals (chosen and mostly organised in private practices).

The faculty has a printed study guide with basic information on the different courses. Although every course has ECTS-credits, this is for foreign students purposes only. Veterinary medicine in Germany is one of the professions that are exempted from switching to a Bachelor/Master-structure (ba-ma). The opinion of the faculty is also that the ba-ma-structure does not apply to veterinary medicine due to the specificity of the medical education. Thus, the German curriculum does not fully conform to the Bologna system of bachelor or master degree, which is not a requirement for EAEVE evaluation purposes and is not implemented in Germany, in general. The curriculum consists of a pre-clinical (1st and 2nd year) and a clinical part (3rd-5th year). The 8th and 9th semester is being reserved for clinical rotations, the 10th semester for clinical extramurals, and an 11th semester for the final exam. Although a doctor degree is not a requirement for exercising the profession (a veterinary diploma obtained by passing all exams is sufficient), about 80% of the students do continue studying for about 1-2 years, to obtain the Dr. med. vet- degree through completing a thesis.

4.1.2 Comments

The faculty pays much attention to self-directed studies. They are well organised and supported, and motivate the students to get more involved in the different topics by themselves. The faculty has also a very large offer in e-learning. The specialists of the IT-team are not only efficient and innovative (support of the teachers for the lectures and the examinations), but they also look for new and better opportunities and are developing new tools, in coordination with other German speaking faculties abroad (Berne, Wien, etc).

4.1.3 Suggestions

The Faculty should take greater advantage of the well organised and coordinated elective courses, to create a kind of tracking, and deliver at the end of the undergraduate training perhaps a Diploma supplement (which is endorsed by the Bologna agreement); this would be consistent with the elective curriculum already present.

The discussions with alumni showed, that the faculty is aware of the importance of an introduction to professional careers for the students. Starting early in the curriculum and structuring this type of information, with good lecturers, the motivation for non-clinical opportunities should be supported, and the scope of postgraduate training and professional fulfilment could be enlarged.

4.2 BASIC SUBJECTS & BASIC SCIENCES

4.2.1 Findings

The current curriculum in Germany (not only Munich) is regulated by the 'Tierärztliche Approbationsverordnung (TAppV)', part of the Federal Law. The FVM of the LMU states that the education requirements correspond well with the European Directive 2005/36/EC.

All basic subjects and basic sciences contained in the EU Directive are represented in the curriculum. They are part of the pre-clinical studies. Understanding and knowledge is essential for students to participate in subsequent semesters (p 46, § 4.1.4). Study progress is strictly regulated on the basis of successful participation in examinations of the previous part (p 116 § 9.1.3).

Due to the heterogeneous knowledge of natural sciences of incoming students, special attention is paid to basic sciences such as 'physics', 'chemistry', 'botany' and 'zoology'. These courses are considered an important foundation for later veterinary specific courses. The focus is put on the needs for medical students. The subjects 'Physics' and 'Botany', are taught by lecturers outside the faculty.

The amount of practicals and the way they are organised are above standard.

In the physiology and biochemistry department, the aim is to organise as much practicals as possible and keep the amount of animals that have to be euthanized for this as low as possible. Practicals are repeated every week. Body parts of each sacrificed animal are put to good use in different stages of the practicals.

4.2.2 Comments

Basic subjects are taught well. Students have some difficulty to identify the relevance of some of the basic subjects in their future veterinary study.

A considerable number of students felt that teaching in Biochemistry is of questionable didactic quality.

4.2.3 Suggestions

A better coordination among the teachers of basic subjects could help to pay more attention to the relevance of their course content in relation to the subsequent clinical veterinary studies.

In areas where students consistently complain of didactic weaknesses, or of serious problems in the teaching/examination system the faculty should install a peer review system to quantify and/or to substantiate such areas of possible weakness. Solutions may be found and addressed when such student-borne perceptions are substantiated by an independent review process. . In general, the EAEVE- mandatory system of teaching quality evaluation by students is only valid if enacted upon.

4.3 ANIMAL PRODUCTION

4.3.1 Findings

The TappV legislation, which closely follows the EC directive (2005/36/EC), regulates the total hours for each subject but not the distribution thereof, thereby allowing flexibility in organizing teaching and examination according to specific options and profiles of the individual faculties.

Teaching of Animal Production (AP) disciplines is allocated in the 1st, 2nd, 3rd years and in 7th semester of the curriculum.

There is an early exposure to handling of farm animals in the 2nd semester (pre-clinical part of the curriculum). Among the AP subjects, 70 hours are dedicated to practical activities and 70 hrs to the agriculture extramural work. A two-hour per week seminar (during 7 weeks) on Animal Welfare is included in the clinical rotations.

During the clinical rotation in the Clinic for Ruminants with Ambulatory and Herd Health Service (Mobile Clinic), the students together with faculty clinicians are being taught AP subjects and practicals in field classes. Students work not only on individual animals but also with staff

veterinarians on herd health issues and receive on-site information on nutrition, fertility, udder and claw health.

As far as regards the obligatory extramural work, the directive (TAppV) regulate training posts, the duration and the prerequisites for veterinarians for being allowed to act as supervisors for students. The agricultural training foresees a minimum period of 70 hours in two weeks. In order to attend agricultural training, the students must have passed the 1st pre-clinical exam. Students receive the agricultural training at the Livestock Centre Oberschleissheim.

The practical activities in agronomy teaching, that are foreseen only in the obligatory extramural work, consist of: handling and management of food animal species (that largely is housing, feeding, reproduction of cattle and pigs). The practical activities in animal nutrition teaching consist of laboratory- and desk based work (formulation of diets for small and large animals, analysis using the microscopes and recognition of feed types and poisons).

During the practical activities students are divided into small groups and are under the supervision of academic and support staff.

The Electives include topics on AP. Students pursuing these activities may do so in the facilities in Badersfeld), in the Livestock Centre (Oberschleissheim) and in the Clinics.

All aspects concerning bio-safety and bio-security issues are fully respected.

4.3.2 Comments

There is a good balance in the AP teaching between large and small animals.

There is a good integration between AP teaching and herd health management for small and large animals during the clinical rotation.

Without considering the extramural work of 70 hours,, out of a total of 322 AP teaching hours, only 70 hours are devoted to practical activities, which amounts to about 22%. The remaining 78% consists of class room teaching.

Among the AP subjects, only the feed science and animal nutrition teaching has a balanced percentage of theory versus practicals equalling to 43% versus 57% , whereas the animal breeding subjects have 25% practicals and 75% of theoretical activities. The other AP subjects have no practical activities at all.

All aspects of animal welfare are respected and well taught; moreover, issues regarding animal transportation are covered in the teaching of Animal Welfare and in Forensic Veterinary Medicine.

The practical activities on Pig and Cattle Reproduction are taught in the facilities in Badersfeld), in the Livestock Centre (Oberschleissheim) and in the Clinics; they are very interesting and innovative and offer new and valuable perspectives to the students who are electing this subject.

4.3.3 Suggestions

Overall practical work in the animal production teaching program should be increased in accordance with the SOPs (1.4.2.4). The theoretical instruction should be accompanied by more practicals and therefore, in the AP subjects the ratio of theoretical / practical work should

change in favor of the practicals in order to provide students with increased confidence when handling major domestic animal species.

4.4 CLINICAL SCIENCES

4.4.1 Findings

The current TAppV came into effect in 2007, while clinical rotation in the curriculum was introduced two years earlier, in 2005. This means that all present students, except for students that for some reason have postponed parts of their training, follow the same curriculum. A revised version of the examination procedures was introduced in March 2012.

The aim of the curriculum is to ensure that the students receive a cohesive education covering the entire veterinary field. This is in line with the “Day-one Skills” as outlined in SOP Annex IV.

Co-ordination and avoidance of overlap in teaching among the different subjects is achieved primarily through the lecturers controlling and comparing lecture notes placed on the “Studienportal” (the e-learning platform).

. In the clinical rotations electives are usually hands-on work. In total, electives should cover at least 84 hours before the 2nd preclinical exam + 224 hours before the final exams, in total 308 hours. Of this, 52 hours are self-directed learning. The students sign up for elective courses through “Coremato”, a software tool accessible to the students, where they indicate their first, second etc. choices. The sizes of the student groups vary, and it may be that the students are not allocated to the electives of their choice. The selection of student for popular elective courses varies, but is often done based on performance in the clinical rotations or in the intermediate tests.

Extramural work represents 16/38 weeks (42%) (Propaedeutics excluded) of the clinical training, and thus represents an essential part. All students do a minimum of 70 hours – 2 weeks - of extramural work in agriculture at the Livestock Centre Oberschleissheim. As part of the extramural work, the students can include an additional period of maximum 350/700 hours here in the second part of extramural training. A part of the extramural work can also be taken in a research facility. The students are responsible for putting together their extramural programme.

The criteria for the university's selection of private clinics or hospitals for extramural work are that the practicing veterinarian must have worked independently in a clinic for at least two years, must have an in-clinic pharmacy and must have had no deontological conflict.

, The supervising veterinarian signs a form stating that the student has taken part in the clinical work, validating the extramural activity. For quality assurance, the extramural period is also evaluated by the student.

Clinical education starts in the 4th semester with lectures in clinically related topics, i.e. animal husbandry and hygiene, radiology, pharmacology. During the 6th semester the students attend an obligatory propaedeutics course which is completed with an Objective Structured Clinical Examination (OSCE). Before being allowed proceeding into the propaedeutics course, the

student must pass a written exam on the theoretical aspects of pertinent topics presented in lectures.

The majority of the lectures in clinical and para-clinical subjects are scheduled during the 5th – 7th semesters. The clinical rotations take place in the 8th and 9th semesters, while extramural work is performed in the 10th semester. The 11th semester is lecture free. The final exams are held during the 11th semester.

Clinical rotations

The clinics offer year-round blocks. All students should spend 22 weeks in clinical rotation following the schedule in the table below. In addition, the students attend a 7-week practical course in pathology and food hygiene. Weekly seminars in animal welfare and manufacture and prescription of medicines are included in the clinical rotation programme.

Blocks in Clinical Rotation

Block	Weeks	Number of Students
Clinic of Small Animal Medicine	6	30 – 36
Clinic of Small Animal Surgery and Reproduction	3	18 - 20
Clinic for Ruminants	6	30 – 36
Clinic for Horses	3	15 – 18
Clinic for Swine	2	10 – 12
Clinic for Birds, Reptiles, Amphibians and Ornamental Fish	2	10 - 12

A good exposure to all domestic species and even wild and exotic animal as well fish in the clinical rotations is present. In-depth studies on specific species are possible through the extramural work.

Companion animals

Each student spends 6 weeks of the clinical rotation in small animal medicine. There are 32 students in each rotation, of which half go into the general internal medicine and half into special services. After 3 weeks the groups switch.

The training in small animal medicine is very well organised, both the general part, as well as the specialist part. In the general part, the students have their own patients and work them up with one of the veterinarians in the clinic, including performing the practical procedures. The patients' problems are discussed with the primary veterinarian and the responsible senior veterinarian on the team. The students are also responsible for client contact. If an animal is temporarily transferred to surgery, the student will follow the animal into surgery and when it is back in internal medicine again. Presence of the students is controlled, and at the end of the rotation the students are evaluated. Written procedures are available to the students both in medicine and surgery.

Each of the specialty teams take 4 rotations of 15-20 students each, thus students have to choose in which specialty team they would like to work. The advantage with this system is that the students get in-depth knowledge on the chosen specialty topic(s), for the other topics teaching material for self-studies has been developed.

The students spend three weeks in the Clinic for small animal surgery and reproduction. Included in the rotation are courses in surgical preparation (asepsis, dressing of surgical field), suturing and simple osteosynthesis on cadavers and models. Each student is responsible for his/her patients together with one staff veterinarian and will follow the patient through the whole time that the animal is in the clinic. The students write the records, which are controlled by the veterinarian. Records are at present a combination of paper and computer based, but is planned to be computer based only. This would require training of the students in using the system, including finding material attached to the records (photos, drawings, imaging results). The student together with the veterinarian writes the instruction to owners when animals are released from the clinic.

There are 42 hours of lectures in radiology. Hands-on training in radiology and imaging is an integral part of the clinical training, as the students follow their patients through the whole work-up procedure. Training in ultrasound is also part of the anatomy teaching. A lab with four Ultrasound units where students can practice on own animals is available. This supervised training is not compulsory, but is taken by a majority of the students.

Production animals

Groups of 30-36 students rotate through the Ruminant clinic, the students being divided into 4 group rotations: Internal Medicine, Surgery, Reproduction and Ambulatory Service (Mobile Clinic). The students spend half the time of the rotation, 3 weeks, in the section of reproduction and ambulatory service...

Every morning all staff veterinarians and a senior clinicians do rounds for 1 ½ hours. Two students from each group join the rounds, the remaining meet for theoretical discussion on cases. An elaborate timetable has been developed to ensure that the students rotate through all training posts.

All students rotate through the Clinic for swine and take part in the clinical procedures. Instruction is given in how to handle multiresistant agents. There is a shower available for the students so that they can shower in and out of the clinic; however, this is not always used by all students.

Horses

At present the teaching in the rotation in the horse clinic is somewhat less intense when compared to the activities in the small animal clinics. This could be due to the low number of staff and/or a relatively low number of cases. Nevertheless it seems sufficient to fulfil basic teaching requirements. Also, the senior lecturer in equine surgery has specialised in equine ophthalmic surgery, creating a centre of excellence in this field. Specialisation in equine soft tissue or orthopaedic surgery remains somewhat behind and awaits further development on the specialist level. Equine reproduction teaching will substantially improve shortly as negotiations with a new senior lecturer from the USA who will join the faculty have successfully been accomplished. The new Equine reproduction clinic will be housed on the old Oberwiesefeld Campus.

Fish

There is at present no detailed curriculum delivered for the training in piscine husbandry and diseases, thus it is not possible to comment on the teaching in this topic. Nevertheless, ornamental fish diseases are taught at the Oberschleissheim centre for exotic animals.

Emergency veterinary service

The faculty operates 24/24hr /365 days emergency veterinary services both for companion and for food animals. The companion animal clinics, Surgery and Internal Medicine, each independently operate an emergency veterinary service in which students participate. Those two 24 hrs emergency services with a state-of-the-art Intensive Care Unit in the Clinic for Internal Medicine collaborate but operate in different buildings. It seems that the triage of the patients at night is effectuated at the gate. Participation in the Emergency Service is compulsory for students and includes both night shifts (surgery) and weekend shifts (surgery and medicine+Intensive care). There is no technician on duty during the night shifts.

The ruminant clinic also has compulsory student participation in the emergency service, with two students on duty at a time. The Mobile Clinic is organised to operate on a 24hr basis. Students are on call in the emergency service in the horse and bird clinics; however, continuous attendance does not seem fully controlled. For instance, colic surgery on an emergency basis is not regularly feasible.

Pathology

Pathology teaching includes a total number of 182 hours. Of this, 70 hours are lectures, 56 hours are laboratory and desk based clinical work and 56 hours are non-clinical animal work. Most of this, however, is case demonstrations, while less post-mortem examination practice is provided. The average number in the Faculty of necropsies of mammals per year, regardless of species, is 1146; that is 23 cases per week, on the average. In addition, the Bavarian Authority of Health and Food Safety supply the necropsy services with about 300 cadavers of different mammals per year. Additional material includes poultry, reptiles, zoo and laboratory animals, and organs from the slaughterhouse are available as well.

4.4.2 Comments

In the preclinical teaching, one should ensure that sufficient emphasize is put on explaining to the students why certain procedures and knowledge is necessary for their later training to become veterinarians.

Each of the specialty teams in the companion animal clinics can only take 4 Students of groups consisting of 15-20 students, thus students have to choose in which specialty team they would like to work. The advantage with this system is that the students get in-depth knowledge on the chosen specialty topic(s), but they have to rely on teaching material and self-studies for the other topics.

The students' participation in emergency service and night shifts in the companion animal clinics has recently been changed to compulsory attendance during the weekends in both the small animal medicine and surgery clinics, but compulsory every night shifts are only conducted in the surgery clinic. Both weekend and night shifts are compulsory in the Clinic for ruminants.

4.4.3 Suggestions

As extramural work represents an important part of the clinical training, closer supervision and control by the faculty should be instituted. That concerns selection of practices and learning outcome during extramural rotations, in general. A quality assessment of the extramural work should be made. It is very positive that an evaluation of the extramural training sites is done by the students, but this seems insufficient. The faculty should get involved into that process. The student certificate filled in by the practice offering extramural training is too generalised and should be revised.

To help the practitioners in their teaching, a list of required competences should be available to the practice, and the veterinarian in charge should ensure in writing that the required competences have been achieved. It should be defined what is meant by regular collaboration ("regelmässige Mitarbeit") as stated in the certificate. To help the practicing veterinarian in providing the best teaching, a detailed description of procedures the students should perform during extramural work should be in place and the clinic should be sufficiently instructed and informed in order to provide the best possible practical experience.

Three weeks' rotation is a rather short time for the students in the Clinic for surgery and reproduction, and we recommend expanding this period.

Teaching in Equine medicine & surgery should be expanded and intensified.

The students' participation in night shifts in the companion animal clinics should not be further reduced. As right now only the minimum requirement of participation is fulfilled. A merger of the 2 emergency centres into one state-of-the-art ES-ICU centre should be prepared as soon as possible and be effectuated definitely when moving the small animal clinics to Oberschleissheim.

An equine clinical centre housing all disciplines under one roof is planned in Oberschleissheim; we emphasise the organisational need of a one-headed equine clinic or department again, in order to optimize the teaching (standardized work-up) as well as the care of the patients and the service to the clients. In that way, the geographic distribution of the buildings between equine surgery and equine internal medicine / reproduction should be reconsidered.

The new Chair in Fish biology and fish diseases has been organised under Department for Veterinary Sciences. Farmed fish represent industrialized husbandry, with "herd" problems and required plans for prophylactic treatment and work-up and treatment of diseases. A close collaboration with pathology is required. The Clinic for Birds, Reptiles and Ornamental fish already covers piscine diseases. It is recommended to move the section to the Centre for Clinical Veterinary Medicine.

The faculty should seek to attract a Diplomate in ophthalmology.

4.5 FOOD HYGIENE & TECHNOLOGY AND VETERINARY PUBLIC HEALTH

4.5.1 Findings

The size of the curriculum within the area is regulated according to national legislation and is according to the SER 516 Hours out of a total of 5020 meaning that this is above 10%. In these hours, however, parts of adjacent disciplines like pathology, epidemiology, bacteriology, mycology, virology and parasitology are not included although these also contribute to the

overall skills and knowledge within area of FSH. Thus we conclude that it is more correct to estimate the percentage of FSH to be around 15 of the entire curriculum.

In general there seems to be good collaboration and coordination between the chairs in Food Hygiene and chairs in adjacent areas which is beneficial for the courses and the students. The Faculty has very dedicated chairs within the area FSH (one in milk hygiene and one newly hired in food safety including meat hygiene) and also all other academic staff we met were highly dedicated.

Almost half (250 hours) of the training within the area FSH is extramural training (3 weeks meat inspection, 2 weeks Veterinary Public Health and 2 weeks in food hygiene and food examination). There are national guidelines on what should be included in the extramural training and the stay is evaluated by the students afterwards. The other part of the curriculum is given at the faculty and consists of a good balance between lectures and practical training. Thus all students have training in a slaughterhouse in Munich where they are introduced to hands-on practical meat inspection of swine and have demonstrations of cattle meat inspection. At the facilities in OSH they have practical training in examinations of foods (sensory, histological, microbiological) and the area has nice pilot plant facilities for food processing which are intended to be included in practical training of students in the future. The focus is clearly on all the important foods of animal origin (milk, meat, eggs, fish, honey) both in respect of technology, quality and safety and from a farm to fork approach. Thus meat hygiene i.e. covers everything from animal welfare, transport, pre- slaughter management, slaughtering, meat inspection, meat processing etc. for several species in the theoretical teaching while practical training in i.e. meat inspection almost only is given for pigs.

Apart from training in animal specific foods the students are introduced in lectures to general issues like food-borne diseases, control of food-borne diseases, general food hygiene, HACCP, risk-analyses etc.

Lectures in general Food hygiene will be given already at the 4th semester in order to expose the student early to the field of Veterinary Public Health with the aim of improving their interest in this field.

4.5.2 Comments

Overall the size and content of the curriculum in FSH seem to be fully in accordance with national legislation and also fulfils the EAEVE requirements. Staffs as a whole seem very competent and dedicated.

The students seems not to be very positive about having food hygiene already at the fourth semester and some skip the lectures since they find they need to concentrate on the big basic science curriculum like biochemistry. In contrast the students seem very happy with the rotations.

The FSH area is very broad and we are facing new challenges in food safety due to (amongst others) increasing global food trade etc. Thus i.e. fruits and vegetables are becoming a more and more important source of food-borne outbreaks and risk assessments of different food commodity and pathogenic microorganisms are becoming increasingly important for risk managers as national food safety authorities. In general training in methods to investigate food-borne outbreaks and training in risk assessment methodology of food incl. food in international trade seems only to be covered to a limited extent compared to its importance in the future.

4.5.3 Suggestions

Although it is a well-known dilemma to introduce new aspects in an existing curriculum without weakening the actual program, possibilities for covering in more depth risk assessment, surveillance of food borne pathogens, food borne outbreak investigations etc. are suggested, either in the obligatory curriculum or in a special programme. This could i.e. be done together with, amongst others, the institute of infectious diseases in an interdisciplinary approach covering epidemiology, microbiology (virology, bacteriology, mycology) and parasitology.

It is suggested that the faculty follows or evaluates the advantages/disadvantages of giving lectures in food hygiene in the 4th semester where the students have examinations in large basic science subject as for instance in biochemistry.

4.6 ELECTIVES, OPTIONAL DISCIPLINES & OTHER SUBJECTS

4.6.1 Findings

A minimum of 224 hours of obligatory electives must be completed by the students before the final examinations at 11th semester with 84 hours to be completed before the second preclinical vet. examination. The students seem very happy with the electronic system for choosing electives and with the offer. See also curriculum in clinical science.

4.6.2 Comments

With 283 different topics for electives it seems to be a resource demanding offer as long as it is taught as seminars with sometimes very small groups. However both students and junior faculty staff seem to be satisfied with the system.

Representatives from industry suggest that skills within business management (e.g. human relationships, innovation, entrepreneurship) should be included as part of future electives. Stakeholders agree that it is still important that all students are exposed to all areas of veterinary medicine and that early specialization shall not be offered, except in the format of electives.

4.6.3 Suggestions

Consider advantages/disadvantages of more structured electives related to future career plans (biomedicine, research, practice) with balance in self-directed learning and practical teaching/case-histories and seminars.

5 TEACHING QUALITY & EVALUATION

5.1.1 Findings

The main learning objective is to comply with the EU Directive 2005/36/EC. Hands-on clinical teaching is another strong objective. The need to revise the overall objectives is infrequent (1.1 p. 10)

The requirements for knowledge necessary to pass the exams in the different subjects are outlined in TAppV. As TAppV is regulated for all public veterinary teaching institutions, making substantial changes – if they were needed- in one establishment only, would not be compatible with the law. At the beginning of the study all students receive a handbook where the contents (learning objectives) for the different subjects established by the Faculty are outlined, together with suggestions for relevant literature. All courses are provided with ECTS-credits, which however are only used by foreign students. The faculty has no ECTS-label.

The curriculum consists of "core" subjects taken by all students (3542 hours), "elective" subjects, to be selected from a list of available course subjects (308 hours) and obligatory extramural work (1170 hours). Supervised practical training consists of laboratory and desk based work, non-clinical animal work and clinical work.

The teaching programme is based on a strictly systematic approach and on the traditional paradigm of medical education, i.e. stepwise introduction of subjects, rather than problem-oriented education in most areas, especially pre-clinical.

However, through the clinical training the students are introduced to a problem-oriented approach to the patients through the SOAP (subjective-objective-assessment-plan) as well applied in the small animal clinical training.

The didactic approach consists mainly of didactic lectures supplemented by practical courses. The balance between theoretical and practical teaching is within the limits of the main indicators established by the EAEVE. A wide variety of elective courses are seen as a first possibility to specialize.

Theoretical training is given through lectures (whole class), seminars (groups) and self-directed learning. Due to the high number of students, lectures on the topics taught at the main campus have to be given twice. Seminars often have to be repeated 2-3 times to teach the whole class. Two lecture halls provide equipment for interactive lectures and courses. For the self-directed learning, the students use teaching material provided by the Faculty, the e-learning system (Learning Management System) that can be accessed through the "Studienportal".

All clinics have published syllabi of examination topics.

The library is responsible for providing textbooks for students, with, where needed, more than 100 copies of a particular textbook available. A mailbox is installed in the library where students can post suggestions for additional textbooks.

Coordination of teaching is mainly the responsibility of the chairs of different disciplines through comparison of teaching material on the e-learning platform "Studienportal". Lectures can be accessed and downloaded through this "Studienportal", which is password protected and can be accessed through the internet. In addition, teachers can post additional information, including self-assessment tests and literature. The e-learning platform is under development, with human and monetary resources allocated, and will have increasing importance as a complimentary learning tool for the students. Future access to other veterinary faculties through the platform is planned. (Kompetenzzentrum für E-Learning, Didaktik und Ausbildungsforschung der Tiermedizin (KELDAT).

A virtual microscopy service is under construction and partly available already.

The concept of evaluation of the teaching process is rather new. It was started in 2007-2008. The system that is used is 'EVASYS'. Participation to the evaluation is on a strictly voluntary basis. The lectures, as well as all obligatory courses are evaluated by the students once a year. Students get a questionnaire of about 12 questions. Additional comments can be written. Due to very strong privacy regulations and protective laws for government employees, actions following evaluation results are very limited, or factually absent. Results of evaluations are handed over to the section head and the vice-dean, but the results are kept confidential. And remain largely inconsequential. Evaluation is planned to be integrated in the "Studienportal". However, to ensure participation from the students in the process, it is important to ensure that the evaluator cannot be traced.

There is no formal quality assurance office within the faculty.

In addition to the central organised evaluations, in the clinics, on the other hand and after each part of the clinical rotation, evaluations are organised by the responsible clinician. Remarks of the students are taken into consideration as far as possible. Based on the evaluations, the professors are encouraged to discuss critical points with the students, however this is not required.

Broadly, lectures and seminars cover 46% of the total curriculum. Practical training includes 3,2 % supervised lab work, 5 % non-clinical animal work (propaedeutics training, dissection, etc.) and 37,5 % clinical work. 3,2 % of the time is allocated to self-studies.

Using Table 4.1 in the SER, and excluding extramural work, the ratio of theoretical training to practical and clinical training is about 1:0.81 (2476:2014). If extramural work is included, the ratio is 1:1,29 (2476:3184). Since lectures, seminars, etc. will also be used during the clinical rotations, the actual ratio will be somewhat inferior to the numerical one given here.

Using the same table, the ratio of clinical training to theoretical and practical training is about 0.22:1 (716:3134). If extramural work is included, the ratio is 0.60:1 (1888:3134). Since lectures, seminars, etc. will also be used during the clinical rotations, the actual ratio will be somewhat inferior to the numerical one given here.

The ratio of clinical work (extramural training included) to laboratory and desk based work+ non clinical animal work is 1:2,87 (1888:658).

Real-life clinical experience is offered through the clinical rotations, including the 24-h emergency clinics. The students are responsible for the follow-up of "their" patients. This includes planning of further work-up and treatment. The students keep daily contact with the owners, and thus achieve important training in client contact. Clinical relevant data, as well as records of the communications with the owners are documented in the computer programme (Vetera) by the students. However, the Vetera system has not been fully developed, and at present patient recording occurs through a combination of paper records and electronic records.

Evaluation of students' skills in clinical rotations is done through the final examinations. However, after the rotations the teachers and students in some of the clinics have an informal discussion on the course of the rotation, in some of the clinics the students fill in evaluation forms, and evaluation sheets are filled in for each student. In some topics, e.g. radiology, the students have to deliver a certain number of paper records at the end of the rotation to have the rotation approved.

5.1.2 Comments

The maintenance of a webpage where teaching material changes annually, or more frequently seems to be well taken care of in the Faculty. In addition, new funding has been allocated to further develop the teaching material. There seems to be some variety in to what extent the teachers have implemented the possibilities in the "Studienportal", although instruction is offered by the IT group.

The faculty does not have a teaching quality assurance policy. Evaluation of the teaching process is not fully exploited and to a minimum centrally organised. Because of the permanent position of the teachers it seems that not much attention is given to less good evaluations. In an EAEVE stage 2 evaluation this would certainly be an issue. Still the dean of student affairs is doing a good job in, depending on the evaluations' results, advising young staff to participate in didactic courses offered by the university.

5.1.3 Suggestions

According to the listed "Day one skills" (Annex IV) a curriculum should include teaching in organization and management of a veterinary practice. This may be difficult to fit into an already busy curriculum, but it should be done..

The evaluation of teaching should be transformed or modified into a system where it is no longer possible that problems regarding teaching remain unsolved because of the fact that the teacher has a permanent position and therefore puts aside the evaluation results and no consequences are linked to his or her insufficiencies in teaching. The establishment of a formal quality assurance system, with incentives system, could be the solution to this problem .

In addition to the above it came to the attention of the evaluation team that there is a serious problem with the biochemistry teaching. Not only does it seem that the examination method during retakes poses some problems but also that some students felt offended by personal remarks. We advice the faculty to look into such problems and solve them before more serious damage or legal action may arise. If existing, internal procedures should be strictly followed, or adapted at faculty level..

5.2 EXAMINATIONS

5.2.1 Findings

The framework for examinations is regulated in detail by the TAppV, whereas the format of the examinations is regulated in the Teaching and Examination Rules by the Faculty which are published on the website. Moreover, the Faculty has developed guidelines for oral examinations which are also published on the website.

The examinations are held during the lecture-free time between two semesters. The final exams are scheduled during the 11th semester, which is lecture free in order to provide time for studying. Some subjects (Physics, Botany, part of the Veterinary professional legislation) are taught and then also examined by external professors. Examinations on basic subjects are being held after the 1st and 2nd semester. The subjects of the preclinical exam (anatomy, physiology, physiological chemistry etc.) cannot be completed in the 3rd semester therefore the

final examinations, covering the entire fields of anatomy-embryology-histology, physiological chemistry and physiology, can be taken after the 4th semester.

According to the TAppV, a maximum of two retakes of each examination in a subject is allowed. A retake is allowed 3 weeks after an exam. During the 2nd retake an additional member of the Board of Examiners must be present in order to ensure the quality and impartiality of examinations and, if possible, the examiner should be changed for repeated exams. If an examination subject is not passed when it has been repeated twice, the Chairman shall declare that the examination has definitively not been passed. Another repeat is not possible which consequently terminates the studies. .

Different types of examinations are defined by the Faculty: written, oral, Objective Structured Clinical Examinations (OSCE), single or multiple choice, or a combination of these.

Students must have passed all the exams of the 1st and a minimum of three out of five exams of the 2nd Preclinical Veterinary Examinations in order to be admitted to the clinical part of studies. Students have to pass all examinations of a period (Preclinical Veterinary Examination and Veterinary Examination) including retakes within one year after admittance to the examination period. This period may only be extended in case of illness upon medical certificate. In case of composite exams, each part of the exam must be passed.

The examinations in veterinary medicine are public state examinations and thus are under the supervision of the District Government of Upper Bavaria and not of the University or the Faculty itself. The examinations are carried out by members of the Board of Examiners, who are chosen by the University and then confirmed by the District Government of Upper Bavaria.

5.2.2 Comments

The Faculty has introduced quite a number of written examinations which seem to provide for more objectivity in examinations. Certainly, the use in two subjects of the OSCE (Objective Structured Clinical Examination) system improves examination of clinical skills. Nevertheless, the continuation of some oral examinations should permit the students to develop adequate communication skills which are an essential element of subsequent professional careers.

The examinations are held during the lecture-free time between two semesters. Some courses (or modules) are so long that they do not finish at the end of the 3rd or 5th semesters (e.g. the final examinations of anatomy-embryology-histology, physiological chemistry and physiology are taken after the 4th semester). Nevertheless, short tests covering isolated topics of these disciplines are taken throughout the 3rd and 4th semester, in order to ensure continuing efforts in learning and understanding, avoid an examination load too high as well as to reduce the need to compress the examination of a large quantity and range of course material into a short space of time.

Tests are oral 'exams' that are not required by law; however tests are held during the semester to encourage students to read continuously. These put stress on the students especially in the 3rd and 4th Semester (anatomy, physiology, biochemistry). The exam load after the 6th and 7th Semester is considered hard by the students as there are many exams during a short time period.

The 7 rules that the students must follow to attend the examinations ensure a logical progression of studies and permit that students have adequate skills before starting their practical training.

After the EAEVE visit in 2002, the faculty has increased the number of written examinations and has introduced split exams. Moreover, in the Suggestions of SER, the Faculty wants to continue in developing number of written examinations. Nevertheless, some students prefer the oral to the written examination and do not want the continuous assessment and the split exams.

For some subjects (e.g. Agronomy and Rural economics) there are no examinations; whereas for others (e.g. Biometrics, which is an obligatory course) there is a test at the end of the lessons.

5.2.3 Suggestions

To consider a reduction in written examinations and in the number of short tests in the 3rd and 4th semester in order to increase the students possibilities to follow lectures and not only focus on examinations.

6 PHYSICAL FACILITIES & EQUIPMENT

6.1 GENERAL ASPECTS

6.1.1 Findings

The Veterinary Faculty is located in different sites, some of which are within walking distance from each other, while others can be reached by public transport.

The Main Campus is located in Schwabing (centre city - Englischer Garten) The Main campus has 8 lecture rooms each with 90 to 230 places. All lecture rooms are well equipped with didactic material and are in good condition. Attention to cleanliness and order is apparent in all areas. Group work by students can be organised in 47 different rooms.

28 premises are used for electives each with 5 to 40 places equipped with beamer and computers, some of these with microscopes and one of these is used to demonstrate digital x-rays (Radiology) during electives and Clinical rotation. 19 premises are used for obligatory practical work with a capacity from 8 to 250 places.

Students have several places where they can study, have computer access, either on faculty computers or on their own laptops, and can log-in into the faculty's 'Studienportal' where lots of (additional) study material can be found.

The faculty's library provides in study books and has an 'on demand' ordering service. When a certain book is wanted by the students, it is ordered in several copies. Online subscription on thousands of journals is present.

In relation to the capacity of the lecture rooms, students are split in sub groups. Video streaming of a lecture to the next lecture room is also possible. Each teaching room is adequately equipped with good technical infrastructure.

In the physiology and biochemistry department, the aim is to organise as much practicals as possible and keep as low as possible the number of animals that are sacrificed for teaching purposes. Practicals are repeated every week. Body parts of each euthanized animal are used in different stages of practical. The facilities are old but they satisfy educational purposes.

The team was very satisfied with the good equipment available for students. Especially a large number of high quality microscopes in the Institute of Infectious diseases, Anatomy and in that of Veterinary Pathology were noticed. Although a virtual microscopy is being elaborated, there is a strong belief that hands on microscopy is indispensable.

In the Institute of Veterinary Pathology there is a large necropsy room with 80 visitor places and a cold storage room for the carcasses of the Faculty. The necropsy room is well equipped, ventilated, and has good light conditions. All safety measures concerning bio-security are followed. Every room complies with safety measures in relation to the intended use.

The clinics for companion animals are state-of-the-art, equipped with RX-infrastructure, MRI, CAT-scan, isolation boxes, separate entrances for dogs and cats, ICU, radiotherapy and rooms where students can work on their SOAP's, etc.

The horse clinic has 12 boxes for hospitalisation, a recovery box, well equipped surgical suite, x-ray unit and all other features of an adequate clinical teaching facility. An additional clinical facility will be constructed in Oberwiesenfeld which is supposed to house internal medicine and reproduction cases. However how the collaboration with the horse clinic at the downtown campus will develop remains to be seen

The Faculty has an excellent farm and teaching facility at the Campus Oberschleissheim used for practical activity in food animals and in agricultural and field medicine training which is compulsory to be carried out in the Livestock Centre Oberschleissheim. Also a clinic for birds and reptiles is located in Oberschleissheim which is state of the art. The Faculty does not provide transport to the farm for students and the students cannot stay at farm overnight except in small numbers when on emergency service duty.

On the farm 296 heads of cattle and 882 of pigs are kept under different housing conditions. The facilities for cattle, pigs and small ruminants are a good example for the students concerning the animal management for the Hygienic conditions and animal welfare.

Different animal species are kept in Clinics (Oberschleissheim) for teaching purposes: pigs, sheep, bovine, reptiles and birds. At the Oberwiesenfeld (ca. 30 min. by public transportation from the main campus) pets, equines, birds, chinchillas and European minks are available for teaching purposes in different disciplines. At the experimental farm in Badersfeld, pigs and cattle are used for practical activities. Also on the Oberschleissheim campus, the Institute of Food Science is located. It is equipped with lecture rooms and practical rooms for students and it even has a small-scale meat processing facility where students can see all stages of the meat processing.

There is a slaughterhouse facility in Munich and the distance from the main campus is about 5 km. Students can reach it by public transportation in about 25 min..

6.1.2 Comments

The Faculty is divided in two campuses. There is no availability of vehicles for the transfer of students, but public transport is available.

Considering the number of students attending classes, there are not enough lecture halls which can accommodate an entire class. On the other hand, as lecture attendance is not mandatory, the whole class is rarely attending lectures, and if then only in the very first semesters. We did neither notice nor were we told by students of shortage in lecture room space. Nevertheless,

the use of video transmission does not allow students to be an active part of a teaching session, even if it is an option to alleviate this problem.

The Faculty has no centralized diagnostic laboratory that can be used by all clinics and institutes. Diagnostic Labs are located in different sites and under the administration of different clinics..

There are 5 labs for central diagnostic imaging: 2 in the main campus (for small animals and horse) and 3 in Oberschleissheim (1 for ruminants, 1 in the for pig, 1 for birds and reptiles).

Although the decision has been made to move the whole faculty to Oberschleissheim, an investment of €700.000,00 is currently made to relocate parts of the horse clinic to Oberwiesenfeld, thereby creating another satellite...

6.1.3 Suggestions

It is considered necessary to minimize the movement of students from one site to another in order to avoid unnecessary loss of time and difficulty for students to move among sites.

Oberschleissheim should become as soon as possible the one and sole campus of the faculty.

Attention should be paid to the division of and relocation of parts of the equine clinic in terms of communication, transversality and common objectives.

6.2 CLINICAL FACILITIES & ORGANISATION

6.2.1. Findings

The clinics are largely species-oriented, at least from the standpoint of organisation and not based on their location and built at the Centre city site. The clinics are located on two sites, the old campus in the city of Munich and the new campus in Obeschleissheim 13 km north of the city centre. In December 2010 it was decided to eventually establish the entire Faculty on the Oberschleissheim Campus. However, no date has been set for this, but at present a decision has been made to build a lecture hall with 300 places, a cafeteria (2014) and facilities for the Institute of infectious diseases and zoonoses (2016). At present, Oberschleissheim hosts the Livestock centre, the Clinical facilities for ruminants and pigs, the Clinical facilities for birds, reptiles, amphibians and ornamental fish, plus the Institute of food science, chair for animal nutrition and dietetics. Campus Oberschleissheim can be reached by car or through suburban train and a 15-minutes' walk or by bus

The main campus is situated in the centre of Munich (Englischer Garten site) and houses the preclinical sciences and the clinical facilities for companion animals and horses.

In addition, other activities within short distance from the Faculty are Comparative tropical medicine and parasitology (walking distance 10 minutes from main campus) and Palaeoanatomy, domestication research and history of veterinary medicine and Fish biology and fish diseases (walking distance 1 minute from main campus).

.Experimental animals are also held in Oberwiesenfeld (30 minutes by public transport from main campus). The experimental beagles in the Oberwiesenfeld satellite are also used for teaching propaedeutics, and there is a flock of sheep for caesarean section training. There are

also some cattle available with permanent rumen fistulae for teaching purposes. Due to building plans on the main campus it has been decided to move the internal medicine part of the horse clinic to Oberwiesefeld in connection with the appointment of a new Chair of horse internal medicine that is expected in a short time (see below).

The Faculty of Veterinary Medicine is formed by three administrative bodies; Department of veterinary science, Centre for clinical veterinary medicine and Livestock centre Oberschleissheim.

The Centre for Clinical Veterinary Medicine comprises the following clinics:

Clinic of small animal medicine; Clinic of small animal surgery and reproduction;

Clinic for ruminants with ambulatory and health herd services; Clinic for birds, reptiles, amphibians and ornamental fish; Clinic for swine; Clinic for horses; Institute of veterinary pathology Each clinic is directed by a full professor (Chair).

There is an emergency service in place for all the clinics. The service is on-site 24/24 for the companion animal and ruminant clinics, on-call for the horse, swine, plus the birds, reptiles, amphibians and ornamental fish clinics. Participation of students is obligatory in surgery and ruminant clinics

The relatively new and spacious Clinic for ruminants in Oberschleissheim has the capacity for hospitalising cows and calves, small ruminants and camelids; Reproduction in ruminants has been incorporated into the clinic 7 years ago, creating a true species clinic. The caseload is good. The clinic for ruminants has excellent isolation stalls for handling infectious diseases. Only authorised personnel have access to the isolated area, and specific SOP's have been worked out. The students will take part in the initial work-up of the animals suspected to suffer from a contagious disease.

The ambulatory clinic is run from the Clinic for ruminants with a good caseload for the teaching of students. The clinic for ruminants also provides service to individual cases. The students participate in the ambulatory services, with 2-4 students in each of 3 specially equipped vehicles. All three clinics in Oberschleissheim provide ambulatory herd health services.

On average, around 8200 large and small ruminants are reported to be seen annually by the Clinic for ruminants and the Ambulatory service. In addition, a small number of about 80 other animals are seen by the same services. Herd/flock visits include on average 44 cattle farms, 42 swine farms and 19 poultry farms of different sizes per year. Of the poultry farms, 8 are visited with students. The Herd health problems are worked up in collaboration with the referring veterinarians.

The Clinic for swine has five regular stalls and a good caseload. There are isolation facilities in place with special handling procedures for contagious diseases. Regardless of disease, all swine admitted into the Clinic for swine for diagnostic work-up are euthanized in the end without exception. Special procedures have been developed to bio-security, nevertheless, multiresistant bacteria are a concern.

The former Clinic for Birds has recently established new facilities for reptiles, amphibians and ornamental fish. The clinic is modern and well equipped, and handles both surgical and medical cases. Isolation facilities and routines for these are in place. With a high caseload of regular

patients and an additional number of wild birds brought into the clinics, the students get an excellent exposure to these groups of animals.

The Livestock centre Oberschleissheim is a spacious and modern teaching and research facility for food animals with good case load. All students are obliged to have 2 weeks (70 hours) of their extra-mural training at the Livestock centre.

The clinics at the downtown campus are run on a year-round basis.

The clinics in the main campus include the horse clinic, the small animal internal medicine clinic and the clinic for small animal surgery and reproduction.

The Horse clinic is housed in old buildings on the Munich city campus. Access to the clinic for equine patients is somewhat hampered by its downtown location and may affect the caseload. Until a new Chair is in place in the internal medicine/reproduction section, the activities in the internal medicine and reproduction parts of the horse clinic are reduced and, subsequently, teaching is of marginal standards. Due to a restricted number of staff, 24-hour service is difficult to maintain. The horse clinic has a sufficient number of boxes. There is an isolation facility for one horse, in addition other horse barns can be used for isolation. Improved protocols for handling contagious equine diseases are reported to being planned and are in the process of being established.

Work-up of lameness can be done on a dedicated area outdoors. Case demonstrations of horses can be done in one of the large lecturing halls. There is no protective barrier between the demonstration area and the seats for the students as it is traditionally the case in older European veterinary schools. There is one well equipped surgical theatre with video transfer from the operation site to a nearby seminar room. The recovery room features video surveillance.

The horse facilities in Oberwiesenfeld that are to be used for internal medicine are old and at present unusable, but there are plans and funding for refurbishing them into a modern equine internal medicine/reproduction clinic.

The small animal clinics are divided into medicine and surgery/reproduction sections. Roughly 80% of the cases in the Clinic of small animal medicine are first opinion cases, while 20% are reported to be referrals. In the Clinic of small animal surgery and reproduction 30% of the patients are primary and 70% are referrals. The current proportion is reported to be adequate for teaching purposes at present.

The Clinic of small animal medicine is newly refurbished and presents as an excellent well-equipped university clinic that is able to handle a high number of students. Cages for hospitalized patients are elevated from the floor, facilitating the handling of the patients. Each of the dog cages has a separate drainage system, helping in preventing spread of microbials throughout the clinic. The isolation facilities of both dogs and cats have a high standard, likewise the intensive care unit (ICU). The ICU runs a 24-hour on-site surveillance. Rotation through the emergency clinics is compulsory for the students.

The facilities for the Clinic for small animal surgery and reproduction at present seem somewhat old-fashioned. An exception is the client waiting area and the primary consultation rooms, which have recently been refurbished. There is an ongoing renovation of the whole clinic, expected to be finished in March 2013. The renovated clinic will be of modern standard. It will have a new

ventilation system, as well as new operating theatres and isolation facilities. This will improve asepsis

All equipment expected of a modern university clinic is available. The diagnostic imaging equipment in the Small animal clinics is excellent, and includes both CT, MRI (both in the main campus and in the Livestock centre), scintigraphy, mobile C-arm and computerised gait analysis. Radiology is at present not at separate unit, but is allocated within surgery under the guidance of the head of Surgery. The internal medicine clinic also runs its own x-ray and ultrasound unit. The X-ray machine in the internal medicine clinic does not run on the same system as the one in the surgery clinic (pacs-system).

Recently, the Centre for clinical veterinary medicine has installed a radiation oncology unit, including a linear accelerator with multi-leaf-collimator (MLC) and intensity-modifying radiation therapy (IMRT). Oncology treatment on a high level is offered to animals referred from a wide area.

The Pathology unit is housed on the main campus. Activities are divided in general pathology, neuropathology and experimental pathology. The lecture hall can take 146 students, thus, all lectures have to be given twice. Microscopy room has 60 microscopes, and the courses in histology must therefore be given four times per class. The e-learning system (Studienportal) includes histology slides with explanations for further training. The necropsy room can take 80 students for demonstrations. The necropsy room is small with only four tables, but with equipment in place to take in both large and small cadavers. The room lacks equipment for transferring images of demonstrations of pathological changes to large screens within the room, thus it is often not possible for the students in the back half of the room to see the changes being demonstrated.

A central clinical laboratory service for small animals and horses is available on the main campus. The Campus Oberschleissheim runs a diagnostic laboratory for the ruminant and swine clinics. The Infectious diseases and zoonoses lab and the Tropical medicine and parasitology lab serve the clinics, as well as external institutions and practitioners.

6.2.2 Comments and 6.2.3 Suggestions

Merging all Faculty activities into one single campus in Oberschleissheim seems important and might facilitate certain activities. However, moving the companion animal clinics outside the city centre may most probably lead to a decrease in case load for the first opinion consultations. Sufficient speciality services are necessary to maintain a high degree of referrals. The faculty should carefully evaluate, when moving the small animal clinics to Oberschleissheim, whether it would be possible to maintain a relatively small but fully functional small animal clinic at the present downtown location. Such hospital, run not unlikely a private clinic, would serve to maintain a good and diversified case load, would serve as referral clinic for the Oberschleissheim site, would most likely generate good income, would satisfy requirements for 24hr ES participation for students and residents and last but not least would be an excellent public relations tool for the faculty.

The percentage of referrals to the Medicine clinic seems somewhat low, despite a relatively high number of Diplomates and Residents (40 respective 36 within the whole faculty). In a future transfer of the small animal clinics outside the city, this fact should be taken into consideration. It is not likely that the number of primary cases will be maintained, and one may have to rely more on referrals to ensure the same number of case load through the clinics.

The organisation of the different units might be worth reconsidering. With the development of European Colleges, it would be recommended to change the present organisation and establish additional units within the Centre for Clinical Veterinary Medicine. These would include a Radiology unit, an Anaesthesiology unit, an Oncology unit and an Ophthalmology unit. In all those disciplines the appointment of Diplomates and the institution of residency programs should be a priority

The Chair for fish biology and diseases is organised under the Department of veterinary sciences with teaching of fish diseases in the 4th semester, the amount and teaching methodology not yet being established. This organisation is difficult to understand, as fish may be considered a production animal with health herd problems related to fish farming. In addition, the comparative aspect and relation to disease mechanisms in other animals may be lost with the present organisation, and it may be difficult to establish experimental aquariums in downtown Munich. Besides, ornamental fish is taught as part of the Clinical sciences, and it may be beneficial to look into possible synergy effects. A suggestion would be to move the Chair for fish biology and fish diseases to the Clinical sciences.

Protocols for handling infectious diseases in the horse clinic should be established and implemented. It should be emphasised that dividing the horse clinic onto two distant sites may affect teaching, coherence and synergism. The Faculty is strongly encouraged to quickly and permanently moving the whole horse clinic into new facilities in Oberschleissheim. This also in the spirit of consistently following the principle of species-specific organisation of the clinics.

7 ANIMALS & TEACHING MATERIALS OF ANIMAL ORIGIN

All clinics, except the small animal clinics, keep clinic-owned animals for teaching purposes. Small animals (beagles) for teaching can be obtained from the Oberwiesenfeld satellite of experimental animals.

Animals for practical teaching as reported in the SER

Clinic for ruminants	80-100 sheep, 20 cows, 2 bulls
Clinic for swine	11 sows and litter
Clinic for birds, reptiles, amphibians and ornamental fish	800 birds
Clinic for horses	5 mares, 1 stallion
Livestock centre Oberschleissheim	300-350 cattle, 900-950 pigs, alpacas
Molecular animal breeding and biotechnology Badersfeld	82 cattle, 250 pigs (300 pigs, 70 cows and 12 bulls)*
Oberwiesenfeld satellite	50 dogs, 31 cats, 4 ponies, 200 chicken and quails

*Numbers differ in two lists, pp 81 and 92, Oberwiesenfeld also has sheep for caesarean section training.

The availability of healthy animals for propaedeutics training is good, especially in production animals and dogs. The beagle dogs in the Oberwiesenfeld satellite can be used for training and

are transported to the main campus when required. In addition, student-owned dogs are used both for ultrasound practice as well as for anatomy palpation training. Clinic-owned horses are used for palpation and ultrasound practice.

The number of cadavers available for training in dissection anatomy is not high, about ½ an animal and ½ a limb per student per year. The animals are euthanized animals collected from general practitioners and in-house died or euthanized animals; they are stored in a freezer until used. Elective courses, not available to all students, include the use of about 30 small rodents. To alleviate the rather low number of dissection animals, the anatomy department has a very good collection of teaching material, including a large collection of plasticized specimens. Plasticization is a specific field of expertise in anatomy and anatomic specimen are even sent to other faculties.

Pathological training is given in the Institute of veterinary pathology. A separate post-mortem room in the Clinic for Ruminants is available. Students attending the clinical rotation in food animals can also attend post-mortems in the adjacent Bavarian Authority for Health and Food Safety. Obtaining sufficient material for necropsy training is a constant challenge. The number is kept at an acceptable level by offering necropsies of animals submitted by practicing veterinarians at a very low fee, and by offering separate cremation of animals after necropsies.

For the course in meat inspection, swine carcasses are available as rented carcasses, about two halves per group of 10-12 students. In addition, each student group is provided with one pluck set and one gastrointestinal tract. In the course in food hygiene, the students will examine 10-20 samples of different meat products, fish products etc.

The caseload in the ruminant clinic is good. However, there has been an overall decrease by about 25% from 2009 to 2011. Likewise, there has been a small decrease in the swine caseload. All students get training in caesarean sections on ewes held for this purpose in Oberwiesenfeld. Groups of ewes are synchronized to give birth simultaneously. The use of animals for teaching purposes is controlled, and each ewe can have a maximum of two caesarean sections performed.

The caseload in the Clinic for birds, reptiles and ornamental fish is excellent. The students spend two weeks in the rotation, the first with basic teaching, the second with specialized teaching in any of the species. Poultry farm visit is also included in the rotation, based on a contract that allows regular herd visit with students. Electives include visits to the Munich Zoo.

The patient flow in the companion animal clinics is steady in regard to dogs, but with a marked increase in consultations of pet animals. Surgical training is obtained on cadavers for soft tissue and bone models for orthopaedic training. In addition, a few model “puppet” animals are used for training in certain procedures, like intubation and resuscitation.

The curriculum does not state how teaching in fish biology and fish diseases will be done, as this is a new part of the curriculum.

7.2 Comments and 7.3 Suggestions

The number of cadavers available for training in dissection anatomy is low. Good audiovisual teaching material may alleviate the lack of animals and organs and is in place.

During the last years there has been a decrease in caseload in the ruminant clinic. This situation should be monitored closely and measures taken if necessary to maintain the level of animals for teaching.

The increase in feline patients and small mammals, and the general shift from the ownership of one animal species to another one should be anticipated and reflected in the lectures.

One should seek to expand the possibility of demonstrating and practicing procedures on model animals.

The teaching program in farmed fish should include site visits to fish farms.

8 LIBRARY & EDUCATIONAL RESOURCES

8.1 Findings:

The library is relatively small but well equipped and fulfils fully its purpose. For instance, there are up to 100 titles of the same book, especially textbooks used in courses. Round the clock access to e-books and periodicals in almost unlimited numbers is present for all student. Most material can also be accessed through the internet from home. There is wifi-coverage on the entire campus. The students are happy with the IT-facilities on campus, but many bring their own laptops and iPads to classes. The IT-helpdesk assists students with setting up wifi on their smart phones and other electronic devices. However, most auditoriums do not have power plugs for laptops.

8.1.2 Comments:

The Faculty is very aware of the new possibilities in e-learning and provide the infrastructure and personal support for students to use this option in addition to more traditional learning methods. They provide learning material in all forms possible hereby offering and fostering different and innovative ways of learning.

8.1.3 Suggestions:

When constructing new auditoriums and labs in Oberschleissheim power plugs for laptops should be added.

9 ADMISSION & ENROLMENT

9.1 Findings

There is centrally regulated and restricted admission for students (“numerous clauses”) in Munich, as in all veterinary faculties in Germany. Currently (following the Kapazitätsverordnung by the Bavarian Government), 281 students are admitted and around 230 graduate every year. There is a complex national system for calculating the number of study places, primarily based on the number of staff members. The admission procedure does, however, not take into account the numbers of new and future graduates needed as of recommendations and field studies by the veterinary profession; also not all resources of the Faculty and their limitations are considered.

Admission candidates apply at a national Central Office, which distributes the places (20% of students are accepted based on GPA, which is about 1,3-1,4, whereas 1 is the best result), 20% of students are accepted from a list of applicants who have applied several times (current waiting time about 6 years, GPA about 2,6). The university can set its own criteria for the remaining 60%. For the veterinary faculty the GPA is the main criterion, with 0,3 bonus to applicants with previous professional education as agricultural engineers, agricultural technical assistant, veterinary technician, animal keeper, veterinary lab technician. Some foreign students (eastern EU member states) who have already passed their second pre-clinical veterinary examination can apply directly to the University (and receive the places left by early drop-out students, for instance about 20 out of the 75 dropouts in 2005).

The majority of students graduate in due time, which is 5,5 years. The students are considered highly skilled and motivated. However, the preliminary knowledge in natural sciences is variable in the same cohort of students, due to different standards for the Abitur (Matura, Baccalaureate) in the different German regions (Länder). Students that pass the pre-clinical examinations generally complete their studies. However, the Faculty plans to install a tutoring system, where students from the 3rd year will be helping and advising freshmen..

The relationship between the number of students and the budget / funding is not direct and straightforward, but does exist for the funding of the Department of Veterinary Sciences, less for the Center for Clinical Veterinary Medicine and the Dean's office. On the other side, 80% of the tuition fees are paid back to the Faculty (about €750.000 in 2011). These funds are exclusively used to support projects related to teaching and students affairs. Tuition fee is lowered for students from lower income families, and about 40% are exempted from tuition fee payment.

Around 8-13 Erasmus students come from other countries, whereas about 13-16 students from Munich spend their 5th semester abroad, mainly in France (Toulouse) and Spain (Zaragoza). Most German students speak and understand English, but there seem no lectures be given in English.

9.2 Comments

The Faculty considers the teaching capacity being within acceptable range, and feels comfortable with the facilities (with exception of the lack of one large lecture room, where all students of one class could be seated). Moreover, most questions related to the overall number of admitted students are political decisions and cannot be influenced much by the Faculty.

The necessity and desire for passing through the dense curriculum within the prescribed time are by some students mentioned as reason for not choosing to study some time abroad. They feel that even a short international stay or externship would cause a 1-year delay in studies. The main window of opportunity for international travel is the 5. Semester as there are no exams after this semester. The Faculty participates in the Erasmus program and sends students to other EU countries but has a low amount of incoming students.

9.3 Suggestions

- The team members appreciated the tutoring system as a good way to overcome legal and program constraints, and help students to start and to continue studying in the best possible way.
- In the opinion of the team, the international experience of the students is an important for fostering excellence in the undergraduate and the postgraduate studies. Erasmus

supported studies both for domestic and incoming students should find stronger support by the faculty. The ECTS system should be applied throughout the curriculum and study time (ECTS) should fully be counted as curriculum time.

- Considerations on establishing other criteria than mainly the highest high school final exam mark for admission should be made by the faculty, in order to have students with more diverse interests as career profile (pharmaceutical industry, or food safety, production animals, etc.).

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ACADEMIC TEACHING & SUPPORT STAFF

10.1 Findings

The Faculty is organised into three administrative bodies: the Department of Veterinary Sciences, incorporating 15 Institutes; the Centre for Clinical Veterinary Medicine, including 6 Clinics and 1 Institute, and the Livestock Centre Oberschleissheim.

There are two main groups of academic teaching staff: those on budgeted posts (FTE=166.3) (governmental salaries), required to do teaching and research, and those paid by faculty revenues (services income, tuition fees etc.), required to do teaching only (total FTE=74.1). The total FTE of support staff (of budgeted posts and of non-budgeted posts) is equal to 284.5. In addition, a smaller number of academic staff paid from grants participates sporadically in teaching (included in FTE=166,3). Salaries for those on budgeted posts are paid directly by the state. This is an advantage, as the annual rise in salaries, if paid by the Faculty, would have had a major impact on the Faculty's annual budget.

In the Centre for Clinical Veterinary Medicine, 31 senior lecturers with a European or American Diplomate degree or a national board specialisation (Fachtierarzt/-in) or with the academic degree of *Habilitation (PhD-equivalent)* are employed. In the Department of Veterinary Sciences there are 25 senior lecturers. These persons, having expertise and quite often a high academic degree (e.g. Habilitation), have permanent positions. The allocation of staff to the Faculty is by tradition based on structural decisions made by the University and the Bavarian State Ministry of Sciences, Research and the Arts. The department Chairs are responsible for allocating personnel according to performance and teaching load.

In total, there are 40 Diplomates of European or American colleges in the Faculty. The number of Residents is 36. While this is a high number of residents, one should strive for each Diplomate to have at least one resident. It is noted that there are some Diplomates who are currently not train residents and there are some disciplines, ophthalmology, for instance, where employment of a Diplomate is very desirable.

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Table 10.3 Ratios students/staff

Ratio		Number	Denominator
R1	no. total academic FTE in veterinary training	240.4	6.67
	no. undergraduate veterinary students	1604*	
R2	no. total FTE at Faculty	524.9	3.05
	no. undergraduate veterinary students	1604*	
R3	no. VS FTE in veterinary training	200.4	8.00
	no. undergraduate veterinary students	1604*	
R4	no. VS FTE in veterinary training	200.4	1.15
	no. students graduating annually	230	
R5	no. total FTE academic staff in veterinary training	240.4	1.18
	no. total FTE support staff in veterinary training	284.5	

* Numbers of students during winter term 2011/2012

Teaching often relies on collaboration of young academic staff who work on non-permanent positions; the maximum period of employment for them is being 6 years. A recent change in employment laws is that specialists in different fields (both Diplomates and Fachtierärzte) can now find easier permanent employment. Still, recruiting specialists can be challenging, as salaries are usually lower in universities than in private practices.

Sabbatical leaves are allowed only for professors, with the possibility of release from duties up to one semester and provided the duties are taken care of by a replacement. This requirement for replacement makes it difficult for professors to enjoy a sabbatical leave of absence.

Senior academic staff members are allowed to have a secondary job outside the Faculty after notification and according to special rules, while Full professors in clinics and para-clinical institutions may derive additional income by treating private patients within the respective services.

10.2 Comments

The number of academic staff is closely linked to the annual intake of students. Indeed, according to the federal legislation on higher education, an increase of teaching staff is related to an increase of student numbers and vice-versa. Any additional academic staff will lead to an increase in the student number, as laid down in the Rules of the Capacity Regulation, which is mandatory for all veterinary schools in Germany (rules of admission and enrolment). The exception is staff paid by the tuition fee or by clinical income. However, the hiring of the junior clinicians does not rely too heavily on tuition fee, so if this procedure is to be stopped, it would not affect the number of junior staff significantly. The situation that teaching in the clinical rotations relies on clinical income is not uncommon, but is not optimal, as it makes the Faculty vulnerable to decrease in income. Such decrease could for instance occur when clinics have to be closed temporarily due to outbreak of contagious diseases, a general decrease in the dairy

and pig industry with less demand for services, and a decrease in the number of primary companion animal patients when eventually all the Faculty's activities are moved to the Oberschleissheim Campus. The Faculty will have to meet these challenges, which may result in a lowered number of academic staff because of reduced income.

In the Suggestions of the SER (pg. 124), the Faculty reported the difficulty to increase the number of the teaching staff (in consequence of the result of the Ratio R1) because this number is related to an increase of student numbers and vice-versa, according to the federal legislation. Nevertheless, in the comments and suggestions in chapter 9 of the SER (pg. 116), the Faculty states to prefer having a lower number of students.

The number of full-time academic positions is well above the minimum 'critical mass' for a veterinary teaching establishment. The ratio of academic teaching staff versus students, and the ratio of teaching staff versus support staff are satisfactory

Recently, the Faculty was able to turn a number of positions with a limited-time contract into permanent positions. This applied to European and American Diplomates and Fachtierärzte.

It is not easy to recruit or retain candidates for professorships because the salary structure of academic staff is not very attractive especially for Diplomates compared to practice. It should be noted that salaries for Associate professors have been reduced, making it more difficult in some fields to find qualified persons within this group. The limitation of a maximum of 10-year employment for academic staff on non-permanent positions (except professors and tenure track) at a University is another lack of incentive.

The use of students as tutors, on an experimental basis, although it might work well in some instances (e.g. anatomy), should not be seen as a valid alternative.

For the academic staff, the University offers various courses in didactic and personnel management; the program PROFIL is meant for young lecturers to improve their skill in teaching.

R1 - Ratio of teaching staff versus students is 6.67, is satisfactory

R5 – Ratio of teaching staff versus support staff is 1.18, and is within recommended.

SER reported a ratio of 86:14 for staff veterinarians (VS) and non-veterinarians (NVS) within the academic staff (professors and assistants); but, if the FTE for VS is 200.4 and for NVS is 40, the percentage seems to be 83% for VS and 17% for NVS.

The possibilities for the academic staff to attend scientific meetings are generally good.

All professor positions are advertised internationally.

Full professors are allowed to generate private income within limits within the faculty. (e.g. "private patients" at the clinics).

10.3 Suggestions

Increasing the number of Diplomates and residency programs throughout the spectrum of specialisation should be a priority.

Promotion criteria should be adapted for staff of all grades, and should aim to take into account teaching (undergraduate, postgraduate and continuing veterinary education), research, service and administrative activities in a balanced way.

All the academic staff in the clinics consists of veterinarians. The number of technical support staff ("animal care", nursing staff) is rather low, about equal to the number of veterinarians in the small animal clinics and the horse clinic, lower in the production animal clinics. The qualifications of this technical support staff seems to differ, from persons with formal training to persons trained on site. Increased or preferential employment of nursing staff trained in ACOVENE (accreditation committee for veterinary nurse education) accredited teaching institution would be an asset both for the quality of clinical work, as well as in teaching the students specific procedures. We also recommended to review and to improve the continuing education requirements and procedures for all technical support staff, especially those caring for animals.

11 CONTINUING EDUCATION

11.1 Findings

In Germany, although the establishments for veterinary education play an active role in the Continuing Professional Development (CPD), organisation of CPD is largely based on the initiative of the industry and the professional organisations. Teaching staff of the faculty is involved in CPD teaching, but on an individual basis.

Since 2010, about 110 courses have been organised by the faculty alone or in cooperation with partners. Moreover, the teaching staff of the faculty participated at some 600 courses / lectures on a national or international basis. The most important CPD event is the biannual "Bayerische Tierärztetage", at which about 1500 participants are attending.

The clinic of small animal medicine runs four times yearly Internet seminar organised by a private company. A topic is presented and discussed during each web conference (90 minutes).

11.2 Comments

The faculty staff members organise and participate in CPD at the LMU. CE is also a good opportunity to enhance the professional network of the faculty. In such case, CE specially designed for the needs of specific groups of practitioners or professionals could be useful in terms of increasing referrals, for instance. An extension of CE to other stakeholders other than veterinary practitioners is also mostly welcomed (farmers, breeders, etc.) and enhances public relations.

Besides the fact, that CE generates funds, that can be returned to the providers CE is also a good opportunity for residents and young researchers to present their work, to improve didactic skills, and learn how to communicate with the professional world outside of the faculty.

11.3 Suggestions

The faculty should take more advantage of CPD to enhance the collaboration between the institution colleagues and other stakeholders. It is also important to allow practitioners and other veterinarians (state officers, researchers, vets in industry) to stay informed about latest developments within the respective disciplines as well as on the pertinent activities of the

faculty. The innovative approach to CPD of the clinic for small animal medicine should be taken as an example of modern e-learning for practitioners

12. POSTGRADUATE EDUCATION

12.1 Findings

At graduation the academic title (diploma) of “Tierarzt” is awarded. This allows registration with the licensing agency (Tierärztekammer) and full exercise of the profession; this diploma is equivalent to a second stage Masters degree (Bologna) In German veterinary faculties, the 2 step (3+2 years) bachelor-master system in the sense of the Bologna declaration has not been instituted.

In addition doctor degree course is offered (Dr.med.vet.); by tradition about 60%- 70% of graduates pursue such degree. It takes about 4 semesters of part-time study and research which can be initiated already in the last semesters of the core curriculum. The research paper (a monograph, in general) is being presented to a committee. This Dr. thesis is comparable to a master’s thesis of 2nd stage and is not an equivalent of a PhD.

The Faculty also offers doctoral course called “Doctorate of Veterinary Biology” (Dr. rer. biol. vet.) to postgraduate students of other faculties (e.g. Biology) in order to attract postgraduate students with special expertise in specific research topics.

Habilitation (Dozent – Dr.med.vet.habil.) on the other hand is considered at least equivalent to a PhD as it requires a solid background in research, as proven by numerous quality publications over time.(several years, in general); most full professors at LMU are currently “habilitated”.The Habilitation is still an important qualification for an appointment as full professor, although it is no longer an absolute prerequisite. Faculty wide, between 2 to 4 candidates receive the Habilitation per year.

Specialisation:

The title of Diplomate of an European (or American) College is highly valued at the Faculty and, in fact, is in clinical disciplines a prerequisite for obtaining a senior teaching position at LMU. On the other hand, the salary-providing Ministry does not officially recognize this qualification and only recognizes the National specialization qualification (Fachtierarzt) and the “habilitation”; therefore, salaries of European/American Diplomates do not include the usual bonus for this higher qualification as being done for the National specialists (which qualification is below Diplomates, in general)..

The Faculty supports residency programs in all fields where a Diplomate is employed. Nevertheless, in some areas, such as in Pathology, residency programs have not been developed.

In the academic year 2011/2012, there were 40 members of the academic staff holding Diplomate status and therefore entitled to act as supervisors in residency programs (from European and American Colleges); nevertheless, only thirty-six residents were involved in training programs., (see Table 12.1 of the SER). The reason for not employing and training more residents, however, is also related to the lack of positions and salaries and the still unclear definition of a residency ship within the governmental employment structure.

The Faculty also offers the “Fachtierarzt” courses (National specialists) in many disciplines and knowledge areas. The qualification as “Fachtierarzt” is the most frequent type of specialization for veterinarians in Germany. In Bavaria, the title “Fachtierarzt” can be obtained in about 40 main disciplines (pre-, para- and clinical subjects). The Regional Veterinary Chamber (veterinary licensing authority) defines the training programme and the time requirements for each discipline. In 2012, the Faculty offers such specialisation in 27 disciplines and knowledge areas to postgraduate students.

Among the staff of the Faculty, there are about one hundred Veterinary Specialists authorized to act as supervisors for training “Fachtierarzt” candidates.

12.2 Comments

It is far more difficult to obtain the title of Diplomate than the qualification of “Fachtierarzt”. The title of “Fachtierarzt”, has no recognition outside Germany, whilst the title of Diplomate is widely recognized throughout Europe.

The German government does not recognize EBVS-residency programmes and does therefore not provide the same favourable economic treatments to Diplomates as they do for National specialists; nevertheless, the Faculty promotes the College residency programmes.

It should be considered to design and institute optional master programmes in form of post graduate courses, as recommended by the Bologna system.

The habilitation in Germany may take longer than of obtaining a PhD in some other countries; “Habilitation” in Germany formally determines whether a person is suited as academic scholar and a teacher (research and didactic abilities). It therefore is proof of the capacity of being a university professor in a specific field. The veterinary doctorate, on the other hand, serves to demonstrate the ability of the doctoral student to conduct successfully an assigned single research project (as reported in the website <http://www.en.uni-muenchen.de/scholars/postdocs/index.html>).

12.3 Suggestions

All possible pressure should be exerted on the German Government (that is the competent authorities) and the Veterinary Profession to fully recognize the title of European (American) Diplomate, especially concerning the economic treatment in faculty employment.

Alongside “Habilitation”, a Diplomate title should equally be considered an important prerequisite for academic careers.

13 RESEARCH

13.1 Findings

The LMU has a tradition of high scientific output. Proof thereof are the wide variety of research areas, and the high ranking of the university in national and international university rankings.

The LMU focuses on four defined research areas for which they succeed in gathering national and international grants.

Apart from research-based delivery of lectures, electives and clinical instruction, in general, there is no structured research component in the undergraduate curriculum. Students are

insufficiently confronted with the theory of research and science, are rarely asked to perform bibliographic researches, draft a hypothesis, outline a methodology, gather data and subsequently process it and finally write down their results and come to a conclusion. There is no master's thesis required for the Veterinary Diploma "Tierarzt degree". Only doctoral candidates (~70% of each class) learn and apply the basics of science and research during their assigned study projects and when generating of a doctoral thesis.

In the framework of the compulsory 16 week extramural clinical training, students can choose to spend a maximum of 8 weeks in a research facility. Only approximately 5 % of the students are choosing this opportunity.

13.2 Comments

In an institution like the vet faculty of LMU, with such high scientific ranking it is somewhat strange to note that the undergraduate students are not more and better introduced to research, in general. Perhaps, however, the faculty believes that the dr. vet. med. Curriculum, followed by the majority of the graduates, makes up for this relative lack.

13.3 Suggestions

Undergraduate students should be earlier on in the curriculum and stronger exposed to the principles of research by requiring them to conduct small projects and writing reports in preparation for thesis, for instance, and/or a future research career.

EXECUTIVE SUMMARY

The Veterinary Faculty of the Ludwig-Maximilians University (LMU) of Munich was visited and received EAEVE approval in 2002. Since then, the following major changes and improvements took place:

The division into two campuses: Englischer Garten (down town) and Oberschleissheim, some 15 km apart; more, but not complete, species-specific organisation; strong emphasis on hands-on clinical teaching; E-learning; new exam formats; general strong focus on research, state-of-the-art facilities and equipment in most areas.

In summary the following was found and suggested:

Objectives: overall, the two Campus arrangement seems to have disadvantages especially for students and since the decision of the faculty to move the entire School to Oberschleissheim was made, the move should be completed as soon as possible.

Organisation: Faculty decisions taken such as species-oriented organisation still face some organisational and functional problems: the relative lack of resources sharing between small animal clinics, 2 parallel emergency services for pets, the state-of-the art ICU in Internal medicine (limited use for all services); the planned division of the equine clinic with adaptation of a satellite site (Oberwiesenfeld) is another issue seen as having potential negative effects, as it slows down the realisation of true one-headed species oriented clinics. Some specialities are allocated under the umbrella of traditional discipline-oriented clinics (e.g. anaesthesia and SA ophthalmology, parts of radiology, SA reproduction). Those disciplines should find more support to develop freely with all administrative and research-related consequences.

Finances: The Faculty has a sound financial basis for teaching and research; however, larger funds to finance the anticipated move to the Oberschleissheim Campus are neither available nor do they reflect in the business plans for the foreseeable future.

Curriculum: The 5.5 year curriculum has been enacted 2007, is governmental regulated and allows sufficient freedom for modifications and adaptations by the faculty; it is fully in accordance with Directive 36/2005 and the EAEVE-SOP. All EU-listed subjects including the 5 basic subjects are covered satisfactorily. A two step Bachelor-Masters curriculum (Bologna) is not enacted (nor is it in any German Veterinary School). The ECTS is available but not consistently applied. Evidence based teaching, modules, electives and a good balance between theoretical and practical teaching is present. Increasingly outcome-based curriculum evaluation is recommended, however (first-day competencies). Teaching in Equine medicine & surgery should be intensified

Teaching Quality and Evaluation: There is no formal quality assurance office within the faculty. Evaluation of teaching by the students is carried out regularly but remains inconsequential due to regulations and protection by law. In single areas (e.g. biochemistry), this led to student reported long-term problems; the faculty is encouraged to act upon them in accordance with known quality assurance and management procedures. Overall, the examination system is appropriate and innovative.

Physical facilities and Equipment: Excellent nearly throughout on both campuses. An adequate lecture hall (for 300) should be built as soon as possible. Facilities and equipment sharing among the clinics at the down-town location should be enhanced.

Animals & teaching materials of animal origin: Adequate in all areas.

Library & educational resources: the library is small but electronic access to all bibliographic material and e-learning is well developed.

Admission & enrolment: legislation largely regulates both; alternative criteria for admission should be evaluated (e.g. interviews); internationality should be improved

Academic teaching & support staff: Although there is always a shortage of technical support staff, ratios are within range. In the clinics employment of qualified nursing staff should have priority.

Continuing Education: is not sufficiently faculty driven and deserves centralised and organised development.

Postgraduate education: The College Diplomate system and its principles should be continued together with residency training and internship programs. Government authorities must recognise the qualification of Diplomates for employment purposes and must tailor and recognise “resident” and “Intern” as salaried short-term positions within the faculty. On the other hand, the national specialist training system (Fachtierarzt) needs no enforcement on the faculty level.

Research: is a point of excellence in many areas throughout the faculty, Nevertheless, undergraduate students should be exposed to the principles of research earlier on in the curriculum (well before conducting thesis-related research).

The team did not identify any major deficiency and recommends the veterinary faculty of LMU to be listed as “approved”.

We commend the faculty for being an overall excellent teaching and research establishment, providing high standard services to all stakeholders.

Annex 1 SUMMARY OF RATIOS Munich 2012

Ratio		Number	Denominator
R1	no. total academic FTE in veterinary training	240.4	6.67
	no. undergraduate veterinary students	1604	
R2	no. total FTE at Faculty	524.9	3.05
	no. undergraduate veterinary students	1604	
R3	no. VS FTE in veterinary training	200.4	8.00
	no. undergraduate veterinary students	1604	
R4	no. VS FTE in veterinary training	200.4	1.15
	no. students graduating annually	230	
R5	no. total FTE academic staff in veterinary training	240.4	1.18
	no. total FTE support staff in veterinary training	284.5	
R6	Theoretical training	2476	0.51
	Supervised Practical Training	1276	
R7	Clinical Work	716	0.92
	Laboratory work and non-clinical work	658	
R8	Self directed learning	162	30.99
	Teaching load	5020	
R9	Food Hygiene/Public Health	516	9.73
	Total No. Curriculum Hours	5020	
R10	Food Hygiene/Public Health	516	0.48
	Hours obligatory extramural work in veterinary meet inspection	250	
R11	no. of students graduating annually	230	9.65
	no. of food producing animals seen at the Faculty	2220	
R12	no. of students graduating annually	230	35.93
	no. of individual food animal consultations outside the Faculty	8265	
R13	no. of students graduating annually	230	0.45
	no. of heard health visits	104.6	
R14	no. of students graduating annually	230	5.22
	no. of equine cases	1201	

Ratio		Number	Denominator
R15	no. of students graduating annually		Not applicable
	no. of poultry/rabbit cases		
R16	no. of students graduating annually	230	63.37
	no. of companion animals seen at the Faculty	14567	
R17	no. of students graduating annually	230	0.08
	poultry(flocks)/rabbits(production units) seen	19.3	
R17	no. of students graduating annually	230	0.08
	poultry(flocks)/rabbits(production units) seen	19.3	
R18	no. of students graduating annually	230	2.15
	no. of necropsies food producing animals + equine	494	
R19	no. of students graduating annually	230	5.22
	no. of necropsies poultry	1200	
R20	no. of students graduating annually	230	2.83
	no. of necropsies companion animals	652	

EAEVE reference values for Ratios, last updated September 2012

R1	8,83	UL
R2	9,62	UL
R3	11,4	UL
R4	2,20	UL
R5	0,47-1,94	Range
R6	0,58	LL
R7	1,95	UL
R8	?	Wide range
R9	?	Wide range
R10	0,06-0,88	Range
R11	0,96	LL
R12	7,34	LL
R13	0,30	LL
R14	0,26	LL
R15	0,50	LL
R16	43,5	LL
R17	0,04	LL
R18	1,00	LL

R19	0,55	LL
R20	1,50	LL

Annex 2 Listing of Major Deficiencies

None

Annex 3 Student`s Report

The students at the Faculty of Veterinary Medicine at LMU are all very content, proud and enthusiastic about the institution and the education provided.

They appreciate the broad veterinary education they receive and enjoy both the beautiful location near the English Garden as well as the new clinical facilities in Oberschleissheim.

A number of students participate actively in student politics. 4 Students are full members of the Faculty Council. These four students are selected by and amongst the 8 students of the Student Council.

The 8 students of the Student Council are elected by all other veterinary students at the faculty, though the voting percentage is only 15-20%. The Student Council host meetings for all students once a week on matters of teaching and also arrange social activities. They also arrange a 3 day introduction program for new veterinary students. The Faculty has provided them with a room in the D-building for free and supports them financially.

Each semester a semester speaker (semester stretcher) is chosen by and amongst the students of each semester. This student facilitates communication between teachers and students.

The students constitute 50% of the members of The Tuition Fee Rules that decide how to spend the tuition fee money. These students are often other students than the members of the Student Council.

All students can email the Dean of Student Affairs with questions or requests. The students of the Student Council can request meetings with the Dean of Student Affairs when they think this is necessary. No formal meetings take place. The students feel this is an adequate and direct way of making their opinion heard. In general they are very satisfied with their teachers and teaching as well as the Faculty in general.

The veterinary students of the LMU also actively participate in the BVVD (for al veterinary students in Germany) and IVSA (International Veterinary Student Association). They also participate in Erasmus programs and generally have an extrovert and international perspective.

Chapter 10:

The library of the faculty is used very much by the students. There has been a shift from scientific literature to literature relevant to courses, and this is appreciated by the students. The available literature, journals and opening hours are sufficient.

The library is staffed with a librarian who helps students retrieve literature.

The library index, e-books and search engines are available though the LMU web page.

The e-learning especially the Studienportal, is very innovative and is helpful for the students.

FINAL REPORT AS ACCEPTED BY ECOVE

The faculty has collaboration with the University Library and the State Library and literature not present at the faculty library can be retrieved from here.

The LMU offer courses on literature search, Endnote and similar, Endnote, office package

DECISION BY ECOVE: FULL APPROVAL