

# European Association of Establishments for Veterinary Education

## European System of Evaluation of Veterinary Training

### REPORT ON THE VISIT TO THE VETSUISSE FACULTY OF VETERINARY MEDICINE WITH ITS TWO LOCATIONS ZÜRICH AND BERNE 04 – 11 NOVEMBER 2007

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### Introduction

The Vetsuisse faculty consists of two partners, formerly the faculties of veterinary medicine of the universities of Berne and Zürich; the faculty in Berne dates back until 1900, the faculty in Zürich until 1820. The merger between the two faculties was initiated in 1994 and formally completed in 2006. As a first common project, a new curriculum in veterinary medicine was established, offering the degree of a Bachelor and Master. No students have yet completed the whole curriculum. On the postgraduate level Vetsuisse at both locations offers PhD degree courses, tracks to be promoted to a Dr. med. vet. as well as national and international professional specialization courses.

## **1. Objectives and strategy**

### **1.1. Findings**

The overall objectives are clearly defined and published on the website (<http://www.vetsuisse.ch/>).

They read as follows:

Promotion of health and welfare of animals through excellent preventive and curative measures, through innovative research, and high standard university training.

Promotion of quality and safety of products of animal origin in the interest of human and animal health and protection of the natural environment.

To conduct research, to collect scientific data to be applied and distributed with the aim to improve animal health, diagnosis, treatment and prevention of diseases in humans and animals.

To provide students with the understanding of the scientific basis of veterinary medicine and with excellent training in clinical veterinary medicine.

To provide high standard veterinary services for Switzerland

### **1.2 Comments**

Undergraduate education and research have almost equal priorities. Though research is absolutely essential the team feels, that education should be at the top of the objectives listed.

The concept and strategy underlying Vetsuisse suffer from the slow merging process between the two faculties.

### **1.3 Suggestions**

Change sequence of overall objectives.

## **2. Organisation**

### **2.1 Findings**

Formation of Vetsuisse was a political issue (top down) with an apparently high reservation by many faculty members, particularly of the Zürich faculty; this position is still maintained on an apparently rather large scale.

Vetsuisse organisation is clear but complex. The decision making processes are lengthy but according to Swiss philosophy they account for minorities (minority votes). A strategic timetable and a business plan narrowing down the immediate forthcoming steps are missing.

The Vetsuisse faculty council is the body making the final decisions. The Vetsuisse dean has no right to vote but participates in the discussions and executes the decisions.

Some major goals concerning the merging or cooperation of the two faculties have not yet been achieved. Thus the envisaged Vetsuisse preclinical, para-clinical and clinical departments encompassing both campuses have not yet been established, which may be considered as indicative for difficulties in creating a common spirit and bringing the two faculties together according to the political intentions.

According to the opinion of some members of the teaching staff, formation of these departments would only mean another step in the merging process without facilitating teaching. By majority the teaching commission, however, views these departments as a basis for a better sharing of teaching resources between the two sites of Vetsuisse.

As a consequence of the reorganisations in Berne and Zürich due to the formation of Vetsuisse, some institutes or units were formed which are headed by a single professor and lack enough scientific and non scientific personnel to be competitive on a scientific basis and to further develop science-based teaching as requested for veterinary education (e.g. anatomy, pharmacology Berne).

A major step forward has been made in developing a new curriculum based on modern and new teaching strategies. This curriculum started in October 2003 and the first students have to finish it yet. However, implementation at the two sites is not yet fully coordinated and communication between the two sites, except for the members of the "Lehrkommission" (teaching committee), seems to lack the necessary intensity.

Execution of the common curriculum as a result of the new organisation stimulated the development of new teaching techniques (teleteaching) to reach students simultaneously at both sites.

In 2012 the development of Vetsuisse will be evaluated and a decision on its further development will have to be taken.

## **2.2 Comments and suggestions**

From an educational and scientific point of view, so far no advantages can be deducted from the establishment of Vetsuisse. The cooperation of the two faculties to establish a new curriculum could also otherwise have been achieved; in fact this had been started for some disciplines already prior to the formation of Vetsuisse according to the information given during the interviews.

The current duplication of all teaching activities in two campuses about 150 km apart is considered by the teaching staff of both faculties as a difficulty and in some cases as a cause of unjustified expenses.

Now that an agreement on the curriculum has been reached and that the merging process has developed to a certain stage, it is the responsibility of the Vetsuisse faculty to decide and act rapidly on the future integration of the 2 faculties in Berne and Zürich. From the comments made by some teaching staff, the process is so slow that enthusiasm is fading away.

It is suggested to critically evaluate the situation, at the latest in 2012.

The formation of largely independent mini-units (1 professor but virtually no staff) as a result of the merging process should be avoided.

Means should be found to make the teaching staff better respect and follow the details laid down in the curriculum.

### **3. Finances**

#### **3.1 Findings**

Financially, both faculties are bound to the "kantonal" rules of their universities and cross-financing is not possible.

In Zürich in 2006 the total expenditure amounted up to about 88 Mio €, with about 56 Mio. € to be considered as public funding. The annual direct cost of training of a student was estimated to be 87,160 €

In Berne in 2006 the total revenue amounted up to about 55 Mio €, with 45.6 Mio to be considered as public funding. The annual direct cost of training of a student was estimated to be 87,734 €.

In both locations the income from clinical and diagnostic services is at least in part returned to the faculties and included in the annual revenues listed under public funding.

#### **3.2 Comments**

Both faculties are well funded with Zürich being somewhat ahead of Berne, also in respect to acquiring extramural funds.

The situation, however, is critical as financing of both faculties also depends on the income from clinical and diagnostic services, with Zürich being apparently more affected than Berne.

The formation of Vetsuisse is a demanding and still ongoing process resulting in the arising of additional cost, e.g. for teleteaching.

### **3.3 Suggestions**

In spite of the expected synergy effects no cost reduction can be expected due to the extra cost arising from the merging process. A minimum requirement therefore is to maintain the present budget.

## **4 Curriculum**

### **4.1 General aspects**

The curriculum is regulated by law. A new law has come into force since September 2007. Following this new law the Vetsuisse-faculty has reasonable flexibility in establishing the curriculum. Until 2010 the current curriculum (which is a pilot project in Switzerland) can be maintained under an exception clause of the new law. In 2010 the curriculum must be approved, and certification is required.

When developing the curriculum the upper limit of teaching hours per year was fixed to 700 hrs including all types of teaching. This translates into a workload of 45 weeks of 40 hrs per week.

The 5 year curriculum clearly meets the minimum requirements as laid down in Directive 2005/36/EC in order to be graduated to a Veterinary surgeon. This conclusion is based on the observation, that the teaching strategy developed and underlying the curriculum allows for a general qualification as a Veterinary surgeon in spite of the tracking system, which comprises 17% of the total teaching time.

The curriculum is divided in blocks. In the first year natural sciences and an introduction to anatomy, histology, embryology, physiology, animal husbandry and nutrition is offered. The second and third year are filled up with organ blocks. From the fourth year on as an elective the students have to choose a track (small animals – farm animals – horses – biomedical research – paraclinical diagnostics – veterinary public health). The fifth year contains only practical training (internal rotations and extra-mural work).

### **4.2 Basic subjects & sciences**

#### **4.2.1 Findings**

In Berne, physics, parts of biochemistry and physiology are taught by specialists of the faculty of natural sciences and the faculty of medicine. The lecture hours allotted to physics and the contents presented are considered to be more than needed at the undergraduate veterinary level; this is also the opinion of the team from the scripts distributed to the Berne students. Biochemistry and physiology teaching is restricted to the basics and in this respect judged as satisfactory; species specific aspects like ruminant physiology are given in the organ-specific block lectures.

In Zürich, physics and chemistry are taught by professors in the faculty of natural sciences. These subjects are taught simultaneously to students of the faculties of human medicine and/or natural sciences.

In Zürich the programme was prepared by agreement between the university and the veterinary faculty. From the interviews of the external professors, it is clear that the programs are not tailor-made for the veterinary students; the latter, however, appreciate these lectures, even if the rate of failure is high, especially in physics.

The professor of physics in Berne explained that due to a lack of human resources and of time available it was impossible to prepare a special programme for veterinary students, unless the faculty of Berne would make a substantial contribution.

According to the teaching staff, the basic knowledge of students before they enter the veterinary curriculum is adequate to sub-adequate as only the best students are selected by the two veterinary faculties. However, the basic content of the matura has been lowered in recent years, so that students may lack sufficiently deep knowledge of mathematics, chemistry and physics, which is also the opinion of the professor for physics in Berne. The "selective" examination at the end of the first year eliminates about 20% of students.

Teaching of the other basic science subjects (e.g. pharmacology/toxicology, microbiology, parasitology, immunology) and of pathology as part of the clinical sciences is on a very high level. However, there are certain complaints by the faculty, e.g. that the structure of the new curriculum does not allow teaching meeting the standards of a high class university in certain subjects like immunology (Berne, Zurich) or virology (Zurich) and physiology (Zurich).

#### **4.2.2 Comments**

There are distinct site (Berne, Zurich) specific problems in relation to the teaching of basic subjects and sciences.

Basic subjects and sciences are mostly part of the internal curriculum. At both locations teaching of the basic subjects (e.g. physics, chemistry) is imported from other faculties, which has resulted in a situation that the two veterinary faculties consider as not optimal for the training of students. In Berne this also relates to the teaching of basic physiology and biochemistry, while the respective subjects are taught by veterinary professors in Zurich. However, parts of veterinary focussed physics, chemistry and physiology are taught later in other courses such as veterinary physiology in Berne, or the organ centred modules, or diagnostic imaging. It is now the responsibility of the faculty to decide if they are satisfied with these situations, or if they would prefer tailor-made teaching programs.

During years 2-3 in the eight integrated modules, basic sciences are taught with pre-clinical and clinical subjects. Students reported that they greatly appreciate these modules. Teaching staff reported that students were more motivated to learn basic

sciences in this context and that their knowledge of basic sciences was very satisfactory.

In Zürich, organisation of anatomy is currently under review with the recruitment of a new professor after a long period of vacancy. At both places in anatomy the number of dissections has been reduced; they have been replaced by demonstrations with plastinated organs or with parts taken fresh from the slaughterhouse. In histology and pathology, great importance is given to e-learning with programs which can be used by the students from anywhere at anytime through the internet.

The balance is greatly in favour of theoretical work, which is not abnormal at this stage. Efforts are made to have more practicals related to clinical/applied activities from the very beginning, for instance blood analyses in physiology. Moreover, students informed the team that they could always ask for demonstrations and that teaching staff was usually very effective in providing this.

### **4.2.3 Suggestions**

In basic sciences, there should be a moderate allocation of practical and theoretical lectures in favour of increased practical teaching. This would likely require that more human resources be allocated for teaching these disciplines.

For the disciplines that are currently taught by external teaching staff, a more end-product oriented approach could be used, thus allowing the teaching committee to elaborate a specific program corresponding to the specific needs of veterinary training. Then the Vetsuisse faculty must decide to have these programs either taught by external teaching staff or to recruit specific professors.

Shortcomings in the curriculum and site specific problems should be corrected with the intention to further adjust the details of the curriculum in Berne and Zurich.

## **4.3. Animal production**

### **4.3.1 Findings**

Animal production is not taught as a subject by itself but is covered as part of the teaching of other subjects, primarily animal nutrition, animal protection and welfare, genetics/animal breeding and animal reproduction.

The findings at both locations are generally as in the SER. However, there were some inconsistencies in terms of the specific timing of modules between Berne and Zürich relative to that in the SER.

The subjects of animal nutrition and reproduction appear to be taught to an appropriate standard with most of the strengths in reproduction primarily being located in Zürich. The other animal production subjects (agronomy, rural economics and animal behaviour) are taught as part of other subject modules.

In Zürich, the farm that is available to the veterinary faculty is small (about 25 cows, 20 sheep, 10 goats and 5/6 horses). It is used for collection of blood samples, e.g. for virology analyses and also for rectal examination of the reproductive tract in mares and cattle. Additionally a course of basic clinical procedures such as taking the pulse, temperature, respiration rate, blood samples etc. are taught to the second year students by the equine clinic. Some swine are also held on the Strickhof close to the veterinary campus.

While no farm is directly owned by the Berne University, Berne has a contract with and access to a large federal farm in Posieux (in addition to 4 other farms) that meets the requirement. However, there is insufficient use made of the farms by the faculty in the training of the practical aspects of animal husbandry/management.

Bee diseases are not taught in the core curriculum or as an elective; the respective lectures offered are optional.

#### **4.3.2 Comments and suggestions**

*Zürich:* The Strickhof premises and the small farm that is available to the veterinary faculty have only limited capacity and are unsuitable for practical work on animal production. The project to gain access to new and adequate (Agrovet) facilities should be pursued as a priority.

The balance between lectures and practical teaching in some of the animal production subjects is in some cases inadequate.

- Animal breeding in the 3<sup>rd</sup> year contains 28 hrs of lecture teaching only. It is recommended to include a practical on linear assessment of animals in the teaching of animal breeding and genetics.
- The animal protection and welfare course (zootechnic 1) of 10 hrs of lectures and 24 hrs of self learning covers the topics of animal behaviour/motivation, abnormal behaviour and its prevention, breeds and breeding for performance in relation to behaviour. However 10 hrs of theoretical teaching without practical teaching of behaviour is less than adequate.
- The course on “housing environment of intensively farmed and zoo species” (Allg. Ethologie und Tierhaltung II) with 25 hrs of lectures and 35 hrs self study should also contain some practical teaching to allow real evaluations of housing environments and animals in their environment as part of an approach to an animal welfare audit.

Some areas of animal production appear well integrated with related subjects, for example reproduction which is taught by the same unit as herd health management. On the other side nutrition, behaviour/welfare and genetics/animal breeding are not integrated well with the other animal production subjects and herd health. The curriculum should be rearranged accordingly.

*Berne:* The only substantial comment relates again to the balance between lectures and practical teaching in some of the animal production subjects which is in some cases inadequate.

- Animal breeding in the 3<sup>rd</sup> year contains 28 h of lecture teaching only. There are aspects of animal breeding which would benefit by the inclusion of practical teaching (all students) such as linear assessment of dairy cows and practical interpretation of breeding indices used in animal selection.
- The animal protection and welfare course of 26 hrs of lectures and 4 hrs of self learning covers the topics of general animal behaviour/husbandry. However complete theoretical teaching without practical teaching of behaviour is less than adequate.
- The course in Animal Protection and welfare in the 2<sup>nd</sup> year (35 hrs of lectures) should also contain some practical teaching to allow real evaluations of housing environments and the animals in their environment as part of an approach to an animal welfare audit.

General: Teaching of animal production should be better coordinated between the faculties. In both locations teaching of reproduction and animal nutrition would further benefit from being better integrated with each other and other animal production subjects and herd health (where this is not already occurring).

In both locations the earliest exposure to handling of farm animals for city students is in the 3<sup>rd</sup> year. This ideally should start earlier in the curriculum

Honey in general is considered a nutrient (food) of highest biological value, free of any residues. Bee diseases are part of the official epidemiologic monitoring system. An effort should be made to give all students a minimum exposure to this subject.

## **4.4 Clinical sciences**

### **4.4.1 Findings**

Exposure to clinical training throughout the curriculum is well balanced, students seem to appreciate it, in spite of the high workload which is considered acceptable.

Clinical training starts in the first year of the curriculum but is heavily intensified in years 4 and 5 when tracking begins (small animals, farm animals, horses). Tracks may be changed until the end of year 4. However, it is the responsibility of the student to catch up with his fellow students in the new track he has chosen.

The 5<sup>th</sup> year is devoted to clinical rotations, consisting of hands on training and associated theoretical learning and extramural training. No official lectures are given any more.

Because the number of students is low, hands on training supervised by the teaching staff in all clinical fields happens in most cases individually, training in groups seems to be the exception.

Clinical training is during the daily working hours. At night and at weekends all clinics operate an emergency service. In all clinics there is a sufficiently high patient load to allow continuous training and an exposure to virtually all relevant clinical cases (indications). For Zürich but not for Berne this includes the exposure to pet-birds, reptiles and zoo animals.

In Zürich within the clinical department (Tierspital) a discipline orientated reproduction unit has been established, which also provides services and teaching in modern animal reproduction techniques, also in respect to animal production. Such a unit is missing in Berne where reproduction is part of the horse, small-animal and food-animal clinic.

Training in a mobile clinic treating individual patients is restricted to Zürich where a mobile clinic is in operation on a 24 hrs basis; about two to three students get trained daily.

In Berne exposure of students to animals held on a farm is restricted to visits within the herd-health management program.

At any time interested students have access to the clinics and extra clinical training. There is quite a number of students in years 2 to 4 that make use of this opportunity.

#### **4.4.2 Comments**

At both locations most parts of the clinical training can be considered excellent and well integrated with other teaching blocks. However, reproduction is not taught in depth in Berne and clinical training on the field of pet-birds, reptiles and zoo animals is largely restricted to Zürich.

Though statistically not yet proven, it can be concluded that the clinical education during the core curriculum which is compulsory for all students provides first day clinical competences. Track students have inherently more experiences and a slightly advanced knowledge in a given area.

#### **4.4.3 Suggestions**

Cooperation concerning clinical education in the field of pet-bird-, reptile- and zoo animal diseases as well as in the field of reproduction, where there is a distinct shortcoming in Berne, should be intensified.

As it will not be possible to develop all clinical sub-disciplines to the same level in both locations, special centres, i.e. for cardiology, ophthalmology, neurology or dermatology, should be developed at either site, Berne or Zürich.

## 4.5 Food hygiene and technology and veterinary public health

### 4.5.1 Findings

The Vetsuisse faculty has excellent facilities for practical training of students in different areas of meat inspection, food processing and quality of food of animal origin at the Institute of Food Safety and Hygiene located at Zürich. Both sites, Berne and Zürich, have small slaughterhouses next to the associated, well equipped post-mortem theatres.

The Zürich faculty also runs a pilot plant of food technology associated with adequate and certified laboratory facilities dealing with aspects of food safety and food quality. It is also the only location where students are instructed in the inspection of food of animal origin. In addition, there seem to be opportunities to have access to slaughterhouses of different animal species around the Zürich area.

The staff involved in the teaching and training of food hygiene and food safety integrates one professor, two assistants and one technician, all posted at Zürich.

As indicated in Table 4.1.2 of the SER, each student of 3<sup>rd</sup> year performing the core module of Food Safety attends a 47 hrs block integrating 31 hrs of lectures, 4hrs of supervised work and a 1 day (12hrs) slaughterhouse visit.

The students other than those in the 'Farm Animal' and 'Veterinary Public Health' tracks receive no practical training in veterinary public health/food hygiene. In contrast, those taking the "Farm Animal" or "Veterinary Public Health (VPH)" tracks receive a module of 70 hrs or 3 modules corresponding to 27 weeks, respectively, of practical training in various segments of the food chain.

Training in the VPH track is partly performed at Berne and at Zürich and complemented in external premises (commercial slaughterhouses, fish enterprises). Students and the teaching staff commute between the two locations as necessary. In this track extramural work corresponds to 7 weeks (5 weeks at slaughterhouses and 2 weeks at a cantonal veterinary office) which are part of the rotations held at the final year (5<sup>th</sup> year).

There are distinct links between food hygiene, animal production and other subjects. VPH is taught under an umbrella with other subjects and sums up to 23 hrs of applied (clinical) epidemiology and 47 hrs of food hygiene and food quality discipline (VPH 1 in the 3<sup>rd</sup> year); In the 4<sup>th</sup> year a block on animal disease control, risk analysis and legislation matters is allocated with 57 hrs and named VPH 2.

The staff involved in the teaching and training of epidemiology, risk assessment, animal disease control and legislation integrates two professors from Zurich, one professor and one resident from Berne and two specialists from the Federal Veterinary Office at Berne.

The VPH track is at present operating with four students (one 4<sup>th</sup> year, three 5<sup>th</sup> year) corresponding to the intake of the last two years.

#### **4.5.2 Comments and suggestions**

Unless more students will select this track in future years, alternatives have to be found to improve student's interest in this area which is of great importance for the veterinary profession.

Exposure of students to well selected practical activities related to food safety issues in the 3<sup>rd</sup> year during the VPH/Food Safety core module might improve the situation. Basic food safety and food quality hands-on activities could be taught at Zürich, using the excellent facilities available such as the post-mortem theatre or the pilot plant of food technology.

Another measure might be to offer attractive optional subjects and more information to undergraduates concerning professional opportunities in the area of food safety/ VPH.

The concept of teaching VPH and food safety matters under one umbrella looks attractive and might further stimulate student interest.

An adequate exposure of all Vetsuisse students to the subject of VPH can only be expected if there is a rigid program to secure cooperation of the two faculties on this field.

#### **4.6 Electives, optional disciplines and other subjects**

##### **4.6.1 Findings**

As stated above from the fourth year on the students must decide on a specialized track. As a track they can either choose Small Animals, Farm Animals, Horses, Veterinary Public Health, Paraclinical Diagnostics or Biomedical Research. The tracks are well structured offering the students a good guidance.

Preference is given to the Small Animal, Food Animal and Horses, with the Small Animal track showing the highest enrolment in Zürich while it is the Food Animal track in Berne. The number of students enrolled for the other three tracks is low and varies, depending on the year, between 0 and 8.

The curriculum offers also 14 optional courses at either location as a complement to the core - and track - curriculum.

##### **4.6.2 Comments and suggestions**

As the first undergraduates going to finish the new curriculum are now in their 5<sup>th</sup> year, no final conclusions in respect to student qualification and the degree of "specialization" and day 1 competences can be drawn. However, the team is of the im-

pression that day one competences will in general be met by all student graduating and that the tracking system allows for a limited degree of specialization.

In view of the general need for veterinarians in the area of VPH, students should get encouraged to enroll in this track by getting more familiar with the matters of VPH during the first 3 years of the curriculum.

## **5. Teaching quality and evaluation**

### **5.1 Teaching**

#### **5.1.1 Findings**

Teaching of veterinary medicine in Zürich and Berne is based on a common curriculum which was approved by the faculties in Berne and Zürich in June/July 2003 (see chapter 4).

The curriculum is laid down in detail and gives an exact schedule for each semester, also considering the hours of self-learning. The curriculum consists of blocks (modules) which appear on the homepage of both faculties and which clearly describe the underlying learning objectives, make reference to teaching material and also indicate the respective instructors.

Students in general benefit from an excellent teaching environment. Lecture halls are well equipped and spacious. As far as observed, rooms for practical training are also well equipped and of adequate size. This statement, however, does not apply to the hall for practical anatomical training in Berne, which does not meet present requirements, particularly if students are to study on formaline fixed organs and cadavers.

To allow for a simultaneous teaching of students in Berne and Zürich, the system of tele-teaching was installed. The instructor is present on one side only, but views the students at the other place on a big screen; similarly the students follow the instructor on a screen. Through the electronic system students may draw attention to themselves, for example to ask questions.

Students are provided with learning resources and teaching material for all modules. Electronic teaching is an important issue and students can download the course notes from the internet. Particularly the Zürich faculty provides excellent and apparently enough access to computers while in Berne students are asked to rely on their own laptops.

Student access to the library during working hours is good and there is a sufficient stock of up to date text books. If not available as hard copy, students have access to most veterinary journals via the electronic library. However, according to the information provided by the students, there seems to be only partial interconnectivity between the information platforms of the two faculties.

The ratio between theoretical training and practical and clinical training is 1:0.83 and hence falls into the category of unsatisfactory (*satisfactory 1:>1*) while the ratio of clinical training to theoretical and practical training meets the category satisfactory with 1:2.55.

Clinical training seems to provide ample exposure to a hands-on training and is highly appreciated by the students, they can follow individual patients and all data obtained at other clinics or previously are available via electronic files. In clinical teaching residents, also seeking to get the required clinical experience, play an important role.

### **5.1.2 Comments and recommendations**

In general the teaching and learning environment is excellent. Students seem to be well guided except for the time allotted to self-learning, according to their comments. It is suggested to give self-learning a better structure including specific and detailed learning objectives

The team views tele-teaching as a good approach to overcome the distance between the 2 faculties. However, there is limited application and it does not fully replace personal interaction with the instructor which often is prior or after a lecture. It is thus recommended to restrict the use of tele-teaching to the real needs.

The fact that the ratio for Theoretical training/Practical and clinical training does not fall into the category satisfactory results from the lack of sufficient practical training during the first 3 years of the curriculum. Apart from adding practicals in the field of animal production and VPH/Food Hygiene it is also suggested to increase practical anatomical training and to include a practical element in the anatomical examination.

It is strongly suggested to improve the interconnectivity between the information platform of the faculties in Berne and Zürich.

Though teaching by residents is generally considered as very good, the faculty should watch out that residents do not compete with students for patients, particularly for polyclinical patients.

## **5.2 Examinations**

### **5.2.1 Findings**

Though the Vetsuisse curriculum may lead to the degree of a Bachelor and Master in Veterinary Medicine, it does not completely conform with the Bologna process as the examinations are not after the modules but at the end of each semester/year of the five year curriculum. Furtheron and other than requested by the Bologna process, no professional qualification is obtained when reaching the degree of a Bachelor.

Examinations after year one may only be repeated once and lead to a drop out of about 20 – 30% of the students. All other examinations may be repeated twice. Stu-

dents are only admitted to the next year if they have successfully completed all modules of the previous year, with the exception of year 3, which forms an integrated "whole" with year 2.

Examinations are under the control of the teaching commission and are centralized for both faculties in Berne and Zürich.

Examinations are mainly based on multiple choice and short essay questions. Where appropriate they are supplemented by clinical examinations and case reports. Oral examinations are the exception. In all oral examinations an independent co-examiner as well as an external, independent supervisor are present.

## **5.2.2 Comments and suggestions**

The examinations are well structured and the times of examination at the end of each semester/year, with a delay to revise before sitting the examinations, are highly appreciated by the students.

Students value the oral exams as also getting an extra training in communication skills and hence should be maintained to some extent.

The teaching environment allows students to adequately prepare for the exams.

## **6 Physical facilities and equipment**

### **6.1 General aspects**

#### **6.1.2 Findings**

In general the equipment available at both locations and at all preclinical, paraclinical and clinical units is of latest technical development and allows for a broad spectrum of applications; it includes CT and MRI and can be classified as excellent.

Also the facilities located on the campus in Berne and Zürich in general meet modern standards. A new small animal hospital is under construction in Zürich and the shortcomings of the present clinic (not enough room for patients and to work in, important diagnostic units located in the basement with lack of access, hygienic problems) will be overcome soon. In Berne the horse clinic would either need a thorough renovation or should be newly built as at present it is virtually impossible or at least very difficult to meet modern hygienic requirements and to house all the animals properly.

As stated under 5.1.1 the hall for practical instructions in anatomy in Berne is inadequate to work with formaline fixed specimens.

### 6.1.3 Comments and suggestions

Apart from a few exceptions the team found the facilities in good to excellent conditions, all equipment needed to provide modern diagnostic, therapeutic and laboratory services in veterinary medicine is available. Weak spots had already been identified by the faculty and it is suggested to speed up reconstruction of the horse clinic in Berne. Also in Berne the facilities for practical anatomical training must be updated.

## 6.2 Clinical facilities and organization

### 6.2.1 Findings

Organization of the clinics – though named differently – is similar in Berne and Zürich. The small animal - and horse clinic are clearly subdivided into internal medicine and surgery, each division being headed by a full professor. Such a subdivision was less distinct for the food animal clinic at the time of the visitation as the former head of food animal surgery had recently left the clinic; it does not apply to the clinic for pet birds, reptiles and zoo animals in Zürich.

Zürich runs a combined ambulatory and herd health service while in Berne only a herd health program is run.

Integrated into the clinics are special units, e. g. ophthalmology, dermatology, neurology (especially in Berne) or diagnostic imaging. In focus are small animals, however, adequate service is also provided for food animals and horses, particular in respect to diagnostic imaging. There specialists are available on a 24 hrs basis, however, in general the clinical staff being on duty can make use of the instruments after official working hours.

Clinical laboratory services are centralized at both locations, with Zürich offering a wider analytical spectrum than Berne. In addition to the central services each clinic maintains some case-side analysis.

In *Berne* a new, modern, up to date small animal clinic is operating. As stated above the horse clinic needs renovation and extension. Also the food animal clinic at certain times seems to be overrun with patients.

No farm is directly owned by the Berne University. However, the faculty has a contract with a large experimental farm of the Federal Ministry of Agriculture in Posieux that meets the requirements.

In *Zürich* a new small animal clinic is being built, thus all the problems originating in the old small animal clinic (see above) should be solved. The horse and food animal clinic meet all modern standards; in case of the horse clinic even the extremes are met.

Some of the pig medicine facilities for the breeding herd are in urgent need for renovation and are outdated.

The farm that is available to the faculty is small (about 25 cows, 20 sheep, 10 goats and 5 to 6 horses). It is used for collection of blood samples for virology analyses, but

is really limited and unsuitable for practical work on animal production. It is not sufficient to support in-vivo activities in reproduction or also animal nutrition.

### 6.2.2 Comments and suggestions

Even when not accounting for the ongoing reconstructions, the clinical institutions in Berne and Zürich meet all requirements in respect to a modern animal hospital. Only few non university veterinary clinics will come up to a similar standard.

While in *Zürich* a new small animal clinic is under construction, no final decision in respect to the horse clinic in Berne, which needs renovation or reconstruction, has been made. It is strongly advised to pursue the plans for reconstruction

Also in *Berne* the food animal clinic seems to act at its limits. However, the present management system might not persist as for hygienic reasons it will become increasingly difficult to bring farm animals to a clinic and to take them back home. The future of clinical teaching in the area of food animals might therefore lie in an extended ambulatory service and herd health management. These options must be taken into account when reconsidering the food animal clinical services. It is suggested to combine the present herd health system with an ambulatory service.

The clinics seem to be well organized, showing the necessary interactions and patient referrals. The only suggestion relates to the incoming policlinical patients in the small animal clinic in Zürich, where not the secretary but a clinician, accompanied by a student, should decide on the in-house referral.

Also in view of the fact, that the interview with practitioners gave the impression that there is a need for large animal practitioners in Switzerland, adequate student access to farms and farm management should be provided. This particularly applies to the Zürich faculty. It was mentioned that the faculty may close the farm and negotiate access to the university farm used in the agriculture program. This development would be highly desirable and should proceed immediately. This farm should then be used as part of a revised integrated curriculum for animal production subjects. It could be used for practical teaching of reproduction, genetics/breeding, behavior and welfare assessments in addition to practical aspects of animal husbandry and management of farm species. Unless otherwise achieved this farm could also serve as a place where students get professional work experience. Such a placement should be early in the curriculum and strengthen the interest of students in potentially entering the food animal track.

The farm should also aim to provide research facilities for ruminant and swine nutrition and reproduction in farm animal species as well as for equine studies.

It is recommended that the pig medicine facilities in Zürich be renovated and updated.

## 7. Animals and teaching materials of animal origin

### 7.1 Findings

The animals and teaching materials of animal origin appear to be as described in the SER. The sources of animals and animal materials include

- i) Anatomy  
 Cadavers are obtained from commercial sources, organs for organ-centred teaching are sourced from local abattoirs. There is adequate availability of fresh chilled/prepared materials for anatomy.
  
- ii) Animal Production  
 In Zürich, the farm that is available to the veterinary faculty is small (about 25 cows, 20 sheep, 10 goats and 5/6 horses). It is used for collection of blood samples, e.g. for virology analyses and also for rectal examination of the reproductive tract in mares and cattle and for preclinical exercises for students. Rectal palpation of cattle is also carried out at the abattoir. Some swine are also held on the Strickhof close to the veterinary campus.  
  
 Berne has a contract with and access to a large federal farm in Posieux (in addition to 4 other farms) that meets this requirement. However, there is insufficient use made of the farms by the Faculty in the training of the practical aspects of animal husbandry/management.
  
- iii) Food hygiene  
 Animal material can be provided from various sources: from the faculty owned slaughterhouses, and from Zürich and Hinwill communal slaughterhouses.  
 Only students choosing Farm Animals or VPH tracks have adequate exposure to slaughtering of different species. Exposure to poultry slaughterhouses was mentioned to be available at Zell poultry slaughterhouse in the Zürich area. It consists of a one day's program, including inspection of two different poultry flocks, inspection of slaughter process and inspection of the meat cutting plant.  
 Inspection and control of other animal food products such as meat products, raw milk and milk products, eggs, honey are provided to students taking the VPH track. The same happens with fish and crustaceans inspection is provided at least at Zürich during a 3-day-excursion to northern Germany or France organized every year.
  
- iv) Clinics  
 There is a high case load that exceeds the required ratios. In Zürich the ratios of students graduating to livestock is 1:100, and students graduating to pets is 1:247. The equivalent ratios for Berne are 1:122 (livestock) and 1:157 (pets). There are sufficient clinical cases and materials for staff to maintain and develop their skills and indeed there is an excellent range of diplomats and residency programmes available at both locations. There is a good balance between small and large animal cases.

Post-mortem ratios are 1:29 and 1:34 for Berne and Zürich, respectively.

## **7.2 Comments and Suggestions**

*Zürich:* The Strickhof premises and the small farm that is available to the veterinary faculty have only limited capacity and are unsuitable for practical work on animal production. The project to gain access to new and adequate (Agrovet) facilities should be pursued as a priority. This should then be used to increase the exposure of students to animal husbandry/management as part of the relevant animal production modules (see also 4.3).

*Berne:* Increased exposure of students to animal husbandry/management on the Federal farm is desirable as part of the animal husbandry teaching.

Only students choosing Farm Animals or VPH tracks have adequate exposure to slaughtering of different species. Exposure to poultry slaughterhouses is available only at Zell poultry slaughterhouse in the Zürich area, offered within a two-day program, where the first day deals with poultry-farming and – diseases and the second day with integrated production, including the process of slaughtering. This is a good attempt but it does not meet the rising importance of poultry products safety issues.

## **8. Library and educational resources**

### **8.1 Findings**

Information about the libraries are as indicated in the SER.

In Zürich and Berne there are very modern medium sized libraries with textbooks and veterinary journals in free access; students can access the on-line journals from anywhere, even at home through the internet. There are also photocopiers and scanners available for student use.

Students also have access to the libraries of the departments and institutes; their content is centrally indexed.

E-Learning resources have been created and are regularly updated. There are now many resources, some of which are also in open access to the general public, e.g. the ClinPharm/CliniTox interactive database.

### **8.2 Comments**

Sufficient books and journals are available for undergraduate training. Multiple copies of the most important textbooks (up to 8 copies principally for books written in German) are on stock; this is important because self-learning is implemented on a large

scale and students have to use the textbooks. However, the librarians and students estimate that more copies of some books should be available.

All significant veterinary medicine journals are available as paper copies and electronic versions.

During the visit, the team was informed that the library in Zürich had been designated to be the Swiss “reference” veterinary library with the obligation to conserve original copies of all major veterinary journals

Working places in the immediate library are limited: however, at both locations ample additive reading space in the immediate vicinity of the library with internet access is available.

Students are well trained in using the resources of the library and internet, which is essential because they have to use all documentation resources for their self studies and to prepare reports. Teachers responsible for the libraries informed us that there was no structured teaching of documentation but that there was one-on-one information and training of the students by librarians according to the personal needs of each student.

Opening hours are estimated to be too limited by students. However, this is overcome in Berne where students can keep the library open after the official opening hours.

The tele-teaching system described in the SER is now used from the beginning of this academic year. Students reported that they appreciated this way of teaching. Teachers were not as enthusiastic and some expressed reservations concerning the lack of direct contact between teachers and the audience. However, all agreed that as a new tool, both teaching staff and students had to learn how to optimize its use.

### **8.3 Suggestions**

It may be useful to teach “Scientific and technical information and documentation methods” as a separate very short course at the beginning of the studies to give a general overview of scientific documentation to students. This would also comply with the list of EU listed subjects.

It may be a good training of students to give them recommendations to use more textbooks written in English, because they would therefore be better prepared to the needs of international communication in veterinary medicine, which is mostly based on the English language.

Opening hours in Zürich should either be extended or the Berne model introduced.

## **9. Admission and enrolment**

### **9.1 Findings**

Students apply for admission to Vetsuisse and a “numerus clausus” applies for admission to both sites (Zürich 80, Berne 70). The number admitted is set by the Swiss University Conference.

Only Swiss nationals and those foreigners, who have a residency in Switzerland and who have obtained the “Swiss Matura”, that is the national university entrance qualification, are admitted to the first year.

If the number of applications exceeds the places available, an aptitude test with a highly predictive value is performed.

There seems to be no preference of the students to get enrolled at either Berne or Zürich.

Extra students may be admitted if they have completed 2-years of veterinary study at another establishment and when there is a vacancy.

Examinations after the first and second semester are selective and may be repeated only once. All further exams (after years 2/3, 4 and 5) may be repeated twice. In case of failure students are excluded from continuing the study of veterinary medicine.

The examination system leads to a loss of about 30% of the originally admitted students after the first year. There is no “fill up” and the student number remains fairly constant thereafter.

Students are only admitted to the next year if they have successfully passed the exams after year 1, 3 and 4.

Students in general conform with the official time allotted to the veterinary curriculum, the average duration of the study-time is 5.8 years in Zürich and 6 years in Berne and hence almost identical at both locations

### **9.2 Comments**

The procedure regulating the number of students admitted annually is not transparent but apparently very effective.

### **9.3 Suggestions**

For the sake of the European spirit a more liberal admission of some non Swiss nationals in the first year should be considered.

## **10 Academic and support staff**

### **10.1 Findings**

In general numbers and ratios of staff exceed the satisfactory rating. In Zürich the ratio of teaching staff to students is 1:4.35, and the ratio of staff to support staff is 1:2.7. In Berne the ratio of teaching staff to students is 1:3.5, and the ratio of staff to support staff is 1:3.6.

The responsibility for all promotions and appointment of professorial staff is at the level of the Faculty board (Berne) or the Dean's executive board (Zürich). Heads of Vetsuisse departments and committees are appointed by the Vetsuisse Faculty Council, but in the case of Vetsuisse department heads this mechanism has not been activated to date.

The majority of staff in the clinical departments are veterinarians. In the non clinical departments/institutes the percentage of non-vets is 60% in Berne and varies between 30 and 60% in the Zürich.

There appears to be reasonable opportunities for young staff (interns, residents, post docs and assistants) to move within the establishment. However, most of the junior academic positions are not permanent but on a time basis.

Professor posts (full and associate professors) that fall vacant are generally re-filled, provided they match the strategic vision. However, such a procedure may be extremely long (e.g. anatomy in Zürich).

Staff are encouraged to acquire additional skills and training through supported attendance at conferences and by appropriate sabbatical provision.

The establishment has reasonable autonomy in deciding staffing levels and benefits.

The academic staff was reported to be devoted to teaching with an in general open mind to students and student questions. There seem to be none or only little activities yielding an additional income to the regular salaries.

### **10.2 Comments**

The staff ratios exceed the minimum required in the SOP. Relative to other disciplines the pre-clinical areas have lower staff numbers available in Berne.

The junior academic staff who are not put on one of the few tenure track positions inevitably wants to get ready for an extramural employment. There is the imminent danger, particularly when approaching the end of his/her contract, that he/she gets distracted from academic teaching and research.

It became apparent that assistants and young staff have restricted time availability to pursue research activities. This is not helpful to the aim of Vetsuisse to enhance clinical research activities.

### **10.3 Suggestions**

A reassessment of pre-clinical staff numbers at Berne in order to provide sufficient staff for teaching, research and service activities in this area is required

Systems to roster blocked time out of clinical duties for younger staff is required if Vetsuisse is to achieve its aim to increase clinical research output. However, this also requires an interest from the staff at all levels in the clinical areas to engage in clinical research

The faculties should ensure that there are enough tenure track positions for the junior staff to maintain a high quality level of teaching and research.

## **11 Continuing education**

### **11.1 Findings**

As indicated in the SER there are many continuous education sessions organized by the Veterinary faculties in Berne and Zürich. Subjects vary and cover the needs of continuing education in the different fields of veterinary medicine.

From the interviews with the practitioners, the following additional information was obtained:

- Some continuous education courses offered by the Veterinary faculties of Berne and Zürich are free, e. g for bovine practitioners at the Berne faculty. However, in general the registration fee charged for most other courses was felt to be too high. Particularly those practitioners who are tutors for external training of students consider that they should benefit from a reduced registration fee.
- Continuous education is also offered by commercial companies and by some private practices. Continuous education offered in the neighbouring countries, e. g. Germany, is also readily perceived
- Continuous education is compulsory for veterinary practitioners and veterinarians working in official services. Each practitioner in Switzerland must obtain 8 points per year. This means 4 full days of continuing education per year. Continuous education sessions are validated and accredited by an official administrative body (Swiss Veterinary Association) and education credits thus gained are computed.

## 11.2 Comments and Suggestions

No information could be obtained about the rights of veterinarians to practice if the obligation for continuing education is not met. Apparently the respective information is missing and it is suggested to develop and publish consequences for not meeting the continuing education requirements.

Continuing education is not in the list of the objectives of Vetsuisse. However, it is clearly one of the objectives of both faculties, as it is offered on a large scale.

In view of the importance of life long learning the need for continuing education could be added to the list of objectives.

## 12. Postgraduate education

### 12.1 Findings, comments, suggestions

Postgraduate education:

There are two main types of postgraduate education:

*postgraduate clinical training (interns and residents) and postgraduate research programmes (Dr. med. vet. and Ph.D.)*

Postgraduate clinical training: Both sites run European veterinary specialization programs with an impressive number of staff members (29) belonging to various European colleges of veterinary specialization.

Residencies are an important component both for supporting undergraduate teaching activities and for implementing research programs.

Furthermore, the Vetsuisse faculty also supports a national species-oriented specialization program, accredited by the Swiss Veterinary Association.

Berne has 44 full time and 6 part time residencies and 10 full time interns. Zürich has 30 full time and 4 part time residencies and 11 full time and 5 part time interns.

At Berne the number of candidates enrolled for a postgraduate certificate amounts to 81 and in Zürich to 96.

Postgraduate research programs: in Berne a graduate school of biomedical sciences houses the Ph.D. program. At Zürich students graduating from the track Biomedical Research may apply for acceptance in the Zürich Graduate School; other graduates have to pass a further one year of training.

Berne has 27 Ph.D. students and Zürich 11. Zürich also refers to 49 Dr. med. vet. candidates in training. Ph.D. candidates need to have at least two papers accepted in refereed journals.

The Dr.med.vet. program consists of one to three years work in a project leading to the presentation of a thesis with no need of a formal course work to go with it. Following acceptance of the thesis and having passed an exam the title of a Dr. med. vet. is

granted. This title may also be obtained during the PhD-Program, however, research must be based on a different topic.

A master degree also open to non veterinary graduates is still offered in Zürich; following the full implementation of Vetsuisse all graduates will be entitled to a masters degree. It is advised to clarify this situation soon.

## **13. Research**

### **13.1 Findings**

Adequate information on research and research programs is given in the SER. There has not been enough time (and it was not the main object of the visit) to deal in detail with the different research programs and their outcome. However, there is no doubt that research is on a high level resulting in a substantial number of publications in peer reviewed journals, among them Nature.

A high priority has been given recently to clinical research at both faculties as a result of a preceding evaluation which classified clinical research as not sufficient. In order to cope with the special situation of the clinical academic staff (high teaching and clinical work load) special measures in respect to funding and the provision of equipment were taken. Particularly in Berne the installation of a well staffed and equipped scientific platform aimed at serving as a basis for projects involving clinicians with scientists of the pre- and paraclinical institutes. In both sites, partnerships between clinical and pre- and paraclinical scientists is a prerequisite for subsidizing a project by the faculty.

Also undergraduate student are exposed to research during the core curriculum as all teaching evolves from evidence-based medicine. Moreover, they get exposed to scientific literature as they have to prepare and present a substantial number of reports. Otherwise undergraduates have little direct involvement in research, but they have access the research facilities during some of their practical training. As a track Vetsuisse offers “Biomedical Research”; yet so far only few students have enrolled and it is too early to come up with a statement. Postgraduates (Dr. med. vet., PhD and Residents) are the main students doing research (see chapter 12).

### **13.2 Comments**

Both faculties provide excellently equipped and well staffed research facilities. The measures taken to improve clinical research, which was considered “weak” in comparison to pre- and paraclinical research, seem to be effective and there is a very strong commitment to research by all the teaching staff. The academic personnel know that research performance is a very important point when it comes to their evaluation. It became obvious that research activities are on a very high level as shown by the number of papers published.

The interviews with junior staff at Berne and Zürich confirmed the general observation that in veterinary medicine it is difficult to combine research and clinical work. They appreciate the measures taken by the faculty to improve clinical research and some good research papers have been published in the top veterinary journals.

In particular the creation of a Clinical Research Unit in Berne was seen with great hopes by some junior clinicians. But as the scientific platform has just been completed, the efficiency of this system cannot yet be evaluated.

With the formation of Vetsuisse and the integration of the two faculties it was also attempted to strengthen research in general. In some areas, however, the two faculties seem to already cooperate rather intensively (and also for general services such as diagnostics) and it was challenged by some project leaders that further integration would make them more efficient.

### 13.3 Suggestions

The only suggestion of the team is that the efforts made to facilitate clinical research be implemented and supported on a long-term basis.

## 14 Executive summary

Objectives and strategy: It is recommended to present research and continuous education as having the same level of priority.

Organization: The merger between the Berne and Zürich faculties started in 1994 and officially completed by 2006. Reorganization has led to the induction of synergy effects. However, major goals, i.e. the formation of a common department structure, have not yet been reached.

Reorganization has also led to the formation of some largely independent “mini-units” headed by one professor without having access to the necessary staff to maintain adequate research based teaching and research.

A critical reevaluation of the process initiated and the progress achieved is suggested, at the latest in 2012, when the next Swiss intern evaluation of Vetsuisse is due.

Finances: Financial support by the “kantonal” governments can be considered as good.

Curriculum: The curriculum is regulated by law; the present curriculum is a pilot project, in 2010 final approval and certification are required.

In general it meets the requirements of Directive 2005/36/EC and is based on a modern teaching concept in reducing the total number of teaching hours, by increasing the hours for self learning, by providing most of the teaching in a block (module)-organ orientated way and by offering tracks (17% of the total curriculum) from the 4<sup>th</sup>

year on. In order to execute this curriculum an excellent teaching environment is provided.

The curriculum attempts to follow the Bologna process. However, the Bachelor title granted does not imply the requested professional qualification. In 2006 and again in 2007 the general assembly of the EAEVE accepted the Principles and Process of Evaluation. There it is stated that “the competition of the 5-year full-time minimum period of undergraduate veterinary education leads of the degree of Veterinary Surgeon (or equivalent professional denomination). This degree is equivalent to the Master denomination provided by the Bologna Declaration. Within this period of education, faculties may also follow the Bologna Declaration by offering an intermediate Bachelor degree in accordance with national legislation.” By taking this statement into account, Vetsuisse might reconsider the approach taken.

*Basic subjects and sciences:* Chemistry and physics, and to some extent also biochemistry and physiology, are primarily taught by a professorial staff not being part of the veterinary faculty. The teaching of these subjects only in part meets the requirements for veterinary education. This issue should be addressed in order to make these important subjects more veterinary orientated.

Instructions in anatomy are at the bottom level and more emphasis should be given to practical studies and also practical examinations.

The balance is greatly in favour of theoretical work; though still acceptable this should be reconsidered.

*Animal production:* This subject has a low visibility. It is not taught on its own but is covered as part of other subjects. Most areas are apparently addressed properly. However, there is a lack of practical studies and exposure to hands on animal management and handling. The Berne students also lack exposure to adequate instructions in modern biotechnology of reproduction. The curriculum should be modified accordingly and access to modern farm facilities for teaching purposes with different housing systems for cattle and swine must be secured. This also accounts for poultry diseases. Exposure of students to handling of farm animals should be earlier in the curriculum.

*Clinical sciences:* The clinical sciences are a strong point of the education in Berne and Zürich. The curriculum and the type of teaching seem to ensure that all students acquire the required day 1 competences. Students in the tracking system (horses, small and farm animals) are somewhat more advanced.

The patient load and hence exposure of students to clinical cases is good. The clinical rotation often allows a 1 student to 1 instructor ratio in clinical hands on training.

*Food hygiene and technology and veterinary public health (VPH):* Only students in the VPH track get enough exposure to qualify according to EEC Directive EG Nr. 853/2004. The track VPH is a stronghold of the Zürich faculty and encompasses an excellent teaching environment. The few students enrolling in this track might not be enough to meet the needs of society long term. It is therefore suggested to additionally offer some well selected practical studies and activities related to food safety issues in the core curriculum to make the VPH track more attractive to students.

*Teaching quality and evaluation:* In general the teaching and learning environment are excellent. The students follow an exact schedule and the type and form of instructions are well accepted. For the times allotted to self learning more guidance is required.

The ratio of theoretical to practical and clinical training is 1:0.83 and falls into the category unsatisfactory. This it is not unacceptable as the limits are 1:<0.6 for satisfactory and 1:>1.0 for unacceptable. This could easily be improved by adding some practical studies in the first 3 years as suggested above.

Clinical to theoretical and practical training is equal to 1:2.55 and hence in the range satisfactory.

The time of examinations at the end of an academic year/semester is highly appreciated by the students. Examinations are mainly by multiple choice and short essay questions in combination with clinical examinations and case reports; and - in a few case - oral exams. They allow for evaluation of teaching success.

*Physical facilities and equipment:* In general the physical facilities and equipment are considered as excellent in all areas.

The only three weaknesses are the horse clinic and the laboratory for anatomical work in Berne and the swine facilities in Zürich. These three facilities must be adapted to modern standards meeting the legal requirements.

Another weakness, particularly in Zürich, is the inadequate access to modern farm facilities.

*Animals and teaching material of animal origin:* With the exception for on farm teaching on life animals, all requirements are met or even exceeded.

*Library and educational resources:* In both locations the libraries are modern and well stocked. The libraries and the adjacent seminar room provide an ample study area. The only shortcomings are the opening hours and a way should be found to secure student access outside official working hours.

While in Zürich computers are provided by the faculty, the students in Berne are expected to bring their own laptops.

E-learning resources have been created and are regularly updated. Students have access to these and module instruction material through the intranet. However, there are restrictions for the Berne students to get into the Zürich data base and vice versa, a situation that needs changing.

Tele teaching helps to overcome the distance between Berne and Zürich. However, the faculty should be aware that it only in part compensates for the necessary student-teacher interaction.

*Admission and enrolment:* Admission is on a "numerus clausus" basis (Zürich 80, Berne 70) and among others requires the Swiss "matura". About 20 to 30% of the students fail the examination after year 1 and there is no replacement.

If the number of applications exceeds the places available, an aptitude test with a highly predictive value is performed.

This system secures that the number of students to be trained remains adequate.

*Academic and support staff:* The teacher to student ratio is 1:4.35 in Zürich and 1:3.5 in Berne; both ratios fall into the category satisfactory as do the teacher to support staff ratios which are 1:2.7 in Zürich and 1:1.36 in Berne.

The latter figure indicates that a reassessment of the pre-clinical staff in Berne should be considered.

Due to the high load of clinical teaching and services, a system to roster blocked time out of clinical duties for younger staff is required if Vetsuisse is to achieve its aims to further increase the output in clinical research.

The faculties should ensure that there are enough tenure track positions for the junior staff to maintain a high quality level of teaching and research.

*Continuing education:* A wide spectrum of lectures and courses to meet the national needs for continuing education is offered. Accreditation and credit points are given by the Swiss Veterinary Association. Apart from Vetsuisse also other organizations located in Switzerland and the neighbouring countries offer continuing education.

*Postgraduate education:* On the professional level postgraduate education is based on the national species orientated program as well as on the rules of the European College of Veterinary Specialisation. Interns and residents have teaching obligations. On the academic level both faculties offer a PhD program and education to the Dr. med. vet..

*Research:* Research was not the main focus of the evaluation but only recognized. The team was impressed by the facilities provided, the research programs and the output and came to the conclusion, that research meets international standards and is on a very high level.

**Summarizing conclusion:** Training to a veterinary surgeon at Vetsuisse is on a very high level and shows only few weak areas which should easily be eliminated. Teaching is research based. Research also includes clinical research and is on a very high, international level. There are no category one deficiencies.