



Session III-2: Innovative training in human and veterinary medicine

Session III-2: Oral presentations

III-2-395

The potential of humane teaching methods within veterinary and other biomedical education

A. Knight

Oxford Centre for Animal Ethics, London, UK

info@animalconsultants.org

Both historically and in many regions today, animal use resulting in harm or death has remained prominent within veterinary and other biomedical education, in disciplines such as surgery, physiology, biochemistry, anatomy, pharmacology, and parasitology. Less recognized are the harms that may also be experienced by students and staff who participate in such animal use. These range from hazardous exposures to toxic chemical preservatives, to psychological and cognitive phenomena which may adversely affect learning and attitudes towards animal welfare. However, in recent years many non-harmful alternatives have been introduced within courses internationally. These include modernized computer simulations, high quality videos, “ethically-sourced cadavers” such as from animals euthanized for medical reasons, permanently preserved specimens, mod-

els, mannequins, advanced surgical and clinical skills simulators, non-invasive self-experimentation, and supervised clinical experiences. Published educational evaluations have demonstrated that humane alternatives achieve superior or equivalent learning outcomes such as the acquisition of clinical or surgical skills or theoretical knowledge, around 90% of the time. However, many educators remain unaware of the potential offered by humane teaching methods, or of the evidence relating to their educational efficacy. Accordingly, this presentation reviews the development of humane teaching methods and the published literature examining their educational efficacy. The contemporary and future potential of alternative teaching methods is also illustrated using selected examples.



III-2-398

A veterinary student's perspective concerning educational animal use and the potential for humane alternatives

S.-Y. "Sy" Woon

University of Sydney, Sydney, Australia

swo09768@uni.sydney.edu.au

Veterinary students internationally, as well as students from other life and health science disciplines, are provided with a range of learning tools. In particular, the use of animals offers a unique privilege, allowing students to practice technical or clinical skills and learn through physical exploration and investigation of living organisms. Yet, the animals obtained may not always be ethically-sourced, and the purposes for which they are supplied may not always be humane, or educationally necessary. Significant animal welfare benefits accrue when institutions or courses cease the killing of animals for teaching purposes. However, the sourcing of living animals and cadavers may continue to pose ethical and welfare problems. The necessity and effectiveness of these modes of teaching therefore require further examination, especially given the availability of

alternative teaching tools and methodologies that safeguard the welfare of animals. Tools such as video demonstrations or computer simulations may potentially be available yet disregarded in lieu of traditional teaching methods. Student attitudes may also be conditioned in favour of harmful animal use. Often, alternative technologies are perceived as supplementary to the use of animals, rather than accepted as viable replacements to advance student learning and contribute to reduction of animal use. Within Australia, the University of Sydney has been at the forefront of efforts to introduce humane veterinary curricula. This presentation provides the perspective of a University of Sydney veterinary student on the potential application to veterinary education of current and developing humane alternatives, and the advantages and drawbacks these may present.

III-2-071

Expected frequency of use and proficiency of core surgical skills in entry-level veterinary practice: 2009 AVMA General Practitioner and ACVS Diplomate Core Surgical Skills survey results

L. Hill¹, D. Smeak², L. Lord¹ and L. C. Allen¹

¹The Ohio State University, Columbus, USA; ²Colorado State University, Ft. Collins, USA

hill.15@osu.edu

Recent studies rank general surgical skills as the most important skill, procedure, or area of knowledge that new graduates need to know by the time of graduation. However, veterinary teaching hospitals can no longer provide consistent caseloads for students to obtain crucial hands-on surgical experience. Additionally, for ethical and financial reasons, non-survival procedural laboratories are being phased out, so overall student surgical experience is even more limited. Consequently, surgical curriculums are transitioning from a procedures-based strategy to a skills-based approach for teaching surgery. The primary goal of the skills-based approach is teaching skills fundamental to performing any surgery, rather than teaching specific procedures expected of entry-level veterinarians. Unfortunately, no definition has been provided to date regarding what constitutes these fundamental surgery skills. To help identify and define these

core surgical skills, and to determine expected entry-level frequency and proficiency for these skills, the authors considered it critical to solicit broad input from the veterinary profession to assist in formulating these definitions and parameters. Pursuant to establishing this type of profession-wide consensus, and to validate and initiate production of surgical training modules aligned with current professional input and opinion, the authors conducted two national surveys, the results of which now form the structure and sequence for producing skills-oriented e-learning instructional courses that we anticipate could be adapted into current surgical training curricula within veterinary institutions. This session will provide a review of the literature, survey methodology and present the results of the ACVS specialist survey, and the AVMA general practitioner survey.



III-2-508

Alternatives outreach and a new student movement for humane veterinary education and practice in Egypt

S. I. Elzaabalawy¹, M. A. Abdelbaki¹, A. I. Abdelhakim¹, W. M. Alamir¹, M. O. Elsayed¹, M. M. Eryan¹, A. M. Hamed¹, N. Jukes², H. M. Mahdi¹, M. A. Roshdy¹ and M. A. Shaheen¹

¹Cairo University Vets for Alternatives (CUVA), Cairo, Egypt; ²InterNICHE, Leicester, UK
coordinator@interniche.org

A new student movement for alternatives in veterinary education and for humane veterinary practice has been founded in Egypt. Cairo University Vets for Alternatives (CUVA) was established in 2010 through student self-organisation, with a vision to enhance education and training with humane alternatives. This followed the 1st North Africa and Middle East Seminar on Alternatives in Education and Training and subsequent InterNICHE outreach to faculty and students. Membership of CUVA includes over 400 students and junior teachers, facilitated by the social networking site Facebook. A workgroup on clinical rotations has developed collaborative projects with shelters and veterinary outreach organisations to help animal patients in cities and in villages. This can increase their practical experience and develop an animal welfare awareness that is often lacking in

graduates. The Egyptian revolution of February 2011 gave rise to many welfare challenges for animals, particularly horses and camels, due to the disruption to the tourist trade. A month-long outreach project with CUVA involvement provided targeted animal care. A work group on body donation programs plans to provide cadavers that are ethically sourced according to the InterNICHE policy. Both clinical work and body donation programs can potentially replace the killing and animal experiments within anatomy, pathology, clinical skills and surgery training. The empowerment achieved through CUVA's establishment and activity has now led to a focus that reaches beyond alternatives, with a new awareness of the role of the veterinarian in a wide range of animal care issues. CUVA aims to help initiate campaigns at other faculties in Egypt and across the region.

III-2-516

Elimination of live terminal surgeries in Canadian veterinary practice: The case of the Veterinary Skills Training and Enhancement Program (VSTEP) curriculum change at the Ontario Veterinary College (OVC)

A. Yushchenk¹, O. Berreville², N. Wright³, L. White⁴ and E. Sullivan⁴

¹InterNICHE, Toronto, Canada; ²InterNICHE, Winnipeg, Canada; ³Lawyers for Animal Welfare, Toronto, Canada;
⁴Animal Alliance of Canada, Toronto, Canada

diver18@yandex.ru

The Veterinary Skills Training and Enhancement Program (VSTEP) is a program at the Ontario Veterinary College (OVC) designed to upgrade the skills of foreign-trained veterinarians living in Canada. While the OVC has offered for years the optional use of non-harmful alternatives to the terminal surgeries performed on live animals as part of the traditional veterinary medical degree, the VSTEP included mandatory terminal surgeries on live animals. As a result of a campaign, these surgeries were eliminated in September 2010. This presentation will explore the ethical issues surrounding the surgeries in the VSTEP

and the difficulties encountered by students asking for alternatives, through the experience of a recent VSTEP student and InterNICHE member, Dr. Anya Yushchenk. The presentation will also examine how an alternative program can be successfully implemented, and other positive change brought to a veterinary curriculum, by way of the combined effort of activists and professionals. Finally, practicalities regarding the successful elimination of terminal surgeries from the curriculum will be discussed using as an example the rescue from slaughter by Animal Alliance of Canada of purpose-bred sheep.



Session III-2: Poster presentations

III-2-113

Course on alternative methods to animal use in toxicology in the veterinary faculty of Milan

F. Caloni

Università degli Studi di Milano, Milan, Italy

francesca.caloni@unimi.it

In Italy the Three Rs, even if experiencing growing demand and starting to interest students, is a topic included only occasionally in the education of life science undergraduates. If existing, it is restricted to *ad hoc* lessons and rarely included in institutionalized post-graduate or continuing education courses. Even rarer are Three Rs focused courses at the university level in professional degree programs. In the first semester of the 2010-2011 academic year, a mandatory course entitled Alternative Methods for Animal Use in Toxicology was established as part of the curriculum of the two-year Masters Program in Veterinary Biotechnology Sciences, organized by the Faculty of Veterinary Medicine in Milan. It is a 6-credit course totalling

48 hours, 24 theoretical and 24 practical. The aim of the course is to teach the Three Rs by giving a critical methodological view of the use of alternative methods in toxicology, helping students to gain a better understanding of the Three Rs concept, thus educating and training people able to work with the Three Rs in toxicology. This pilot course covers different aspects of the Three Rs, ranging from a general introduction to the illustration of new and innovative techniques that support the Three Rs in toxicological research. It includes hands-on training and an informational website exclusively dedicated to this topic. Very positive feedback has been received from the students about this initiative.

III-2-128

Ophthalmic artery super-selective catheterization of the pig as a training model with possible implications in retinoblastoma treatment

M. Asprea¹, P. Schaiquevich², F. Requejo³, E. Buitrago⁴ and G. Chantada⁵

¹Office Laboratory Animal Care, Hospital JP Garrahan, Buenos Aires, Argentina; ²Unit Clinical Pharmacokinetics, Hospital JP Garrahan, Buenos Aires, Argentina; ³Interv Neuro, Hospital JP Garrahan, Buenos Aires, Argentina; ⁴Department of Pharmacology, University of Buenos Aires, Buenos Aires, Argentina; ⁵Hematology & Oncology Services, Hospital JP Garrahan, Buenos Aires, Argentina

masprea@hotmail.com

Purpose: To develop a technique for local drug administration in a porcine model with potential translation to retinoblastoma chemotherapy treatment.

Methods: The ophthalmic artery catheterization was carried out in an anesthetized animal under anticoagulation. A 5-French arterial sheath was placed in the femoral artery and a 5-F catheter was guided into the common carotid artery to the maxillary artery. The ophthalmic artery was super-selectively catheterized (OAI) using a microcatheter. Serial angiograms were performed. Chemotherapy (topotecan) was delivered in a pulsatile

fashion. The microcatheter was removed and systematic procurement of vitreous and plasma samples started immediately. Two animals were systemically administered (IA) with the same dose of chemotherapy through the external carotid and plasma and vitreous samples were obtained.

Results: The ophthalmic artery of the 4 animals was successfully catheterized by means of the super-selective ophthalmic artery technique. Maximum total topotecan concentration in the vitreous (median, range) after OAI and IA was 131.8 ng/ml (112.9-138.7) and 5.4 ng/ml (4.7-6.1), respectively. Systemic



exposure for topotecan was low for both modalities of administration with a median (range) value of 10.6 ng*h/ml (6.8-13.4).

Conclusion: We were able to develop the super-selective ophthalmic artery catheterization in a porcine model. Topotecan was infused using this technique and vitreous drug levels were 24 times higher than those attained after IA infusion of the

same dose of chemotherapy. Topotecan systemic exposure was low and comparable between drug administration techniques. These results show the selectivity of the infusion to attain the ocular structures with potential implications in retinoblastoma treatment.

III-2-434

New replacement alternatives used for training students in veterinary medicine in the Netherlands

H. Blom¹, C. Wolschrijn¹, I. den Hartog² and C. Wittevrongel²

¹Utrecht University, Utrecht, The Netherlands; ²Dutch Society for Replacement of Animal Testing, The Hague, The Netherlands
h.j.m.blom@uu.nl

Over the last 12 months, the Faculty of Veterinary Medicine, Utrecht University, The Netherlands and the Dutch Society for Replacement of Animal Testing (ds RAT, Proefdier vrij) have discussed possibilities to further reduce the use of laboratory animals for teaching and training veterinary students. The deliberations have led to the signing of two formal agreements between both parties.

Until recently animals, mainly dogs and cats, that were frozen or formaldehyde fixed after euthanasia upon arrival were used for teaching knowledge of anatomy in practical classes at the Faculty of Veterinary Medicine in Utrecht. A similar approach was used for practical classes in which students were trained in surgical skills. The Utrecht University and ds RAT agreed to

join forces to introduce a body donation program aiming at a full replacement of laboratory animals by pets euthanized for health related causes. After roughly half a year the initiative already can be called a success.

Ds RAT has also agreed to substantially support the Utrecht University to further develop plastinated models of animals to replace the need for carcasses. This assistance allows for the production of a number of educational boxes containing a variety of detailed body parts of different animal species for teaching and training veterinary anatomy. Both projects are a typical demonstration that parties that may have conflicting points of view can nevertheless find ways to join efforts so as to reach goals of mutual interest.

III-2-488

Implementation of a body donation program and use of software: Replacement in veterinary anatomy in Peru

M. Navarrete¹, J. Cisneros¹, A. Sato¹, M. Quevedo¹ and M. Ramos²

¹National Major University of San Marcos, Lima, Peru; ²Humane Education Alternatives for Peru, Lima, Peru
miluskabeatriz@gmail.com

In 2009 the Laboratory of Animal Anatomy and Wild Fauna (LAAFS) of the Faculty of Veterinary Medicine, National Major University of San Marcos (FMV-UNMSM), Peru implemented the use of ethically sourced animal cadavers in a pilot body donation program. The Department of Animal Anatomy has 55 students per year who use cadavers of different animal species, including dogs, for dissection and acquisition of manual skills with the use of surgical equipment. InterNICHE donated to the LAAFS the Virtual Canine Anatomy software, enabling the partial replacement of the use of animals for dissection from 60 animals to 12 dogs per year. In a survey, 91.1% (41/45) of students requested to use the software more frequently, and 84.4% (38/45) were able to identify anatomical structures more easily. The 12 bodies of dogs were acquired ethically as defined

by the InterNICHE policy, from veterinary clinics and in the same clinic FMV-UNMSM, in which they had died or were euthanized for terminal diseases, cancer, poisoning and car accidents. The establishment of the body donation program required awareness from veterinarians working in the clinics to explain to the companion animal guardians the need for a culture of donation of cadavers. Authorization for donation is provided by the guardian or witness. The FMV-UNMSM supports administratively the LAAFS with the transportation expenses to collect the cadavers from the clinics and for embalming, and continues to change its educational approach from a conventional to a more humanitarian and effective one using alternative tools and approaches.



III-2-492

Curricular transformation at St Petersburg State Veterinary Academy

*T. Novosaduk*¹, *N. Jukes*² and *E. Maroueva*³

¹St Petersburg State Veterinary Academy, St Petersburg, Russia; ²InterNICHE, Leicester, UK;

³InterNICHE Russia, Moscow, Russia

lynx@gn.apc.org

Collaboration between InterNICHE and the Department of Pharmacology at St Petersburg State Veterinary Academy in Russia began in 2005 following alternatives promotion by InterNICHE at veterinary congresses and across Russia. Demonstration and loan of alternatives, along with presentations and meetings with Academy officials, teachers and students, led to great interest in humane teaching approaches. Economic considerations and recognition of the importance of computer literacy also played a role in developing more openness to new and modern teaching methods. With support from the International Association Against Painful Experiments on Animals (IAAPEA) a multimedia laboratory was established and InterNICHE provided computer software and a training mannequin. Further material to support successful implementation of the learning

tools was produced by InterNICHE and the department, including a translated version of pharmacology software and a manual on its use. The annual use of over 1000 animals in the department was ended and a formal agreement was signed to confirm the transformation. Widespread media coverage across former Soviet countries demonstrated that change and innovation had brought major benefits to the educational process. Visits and donations to other departments, and recognition of the benefits of humane education have now led to virtually the whole Academy abandoning animal experiments. A conflict between progress at the Academy and outdated demands for animal use from the Russian government's Academic Methodology Unit is being addressed.

III-2-510

The use of formal agreements to achieve replacement in education: The experience of Russia and Ukraine

*N. Jukes*¹, *E. Maroueva*², *D. Leporsky*³ and *C. Gericke*⁴

¹InterNICHE, Leicester, UK; ²InterNICHE Russia, Moscow, Russia; ³InterNICHE Ukraine, Kharkov, Ukraine;

⁴Doctors Against Animal Experiments, Braunschweig, Germany

coordinator@interniche.org

By 2011, nearly 40 formal agreements had been signed between humane education campaigners and universities across Russia, Belarus and Ukraine. Since 2005, when InterNICHE signed the first contracts with St Petersburg State Veterinary Academy and Velikie Luki State Agricultural Academy, adopting a strategy of formalising the collaboration with universities to achieve specific replacement-focused objectives has proved effective. InterNICHE National Contacts perform the majority of outreach, alliance-building and follow-up with universities, and liaise internationally to combine the strengths and resources of the localised and the global in the process. InterNICHE pioneered the use of agreements in Russia, and InterNICHE and Doctors Against Animal Experiments (DAAE) (Germany) collaborate for those in the Ukraine. Typically the Agreements are signed by the Dean or Rector of the university along with the InterNICHE

Co-ordinator and DAAE Project Manager. They usually detail the animal use to be replaced, and refer to curricular change at the level of department, faculty or whole university. Resources such as computer hardware, models, mannequins and software alternatives are usually provided by InterNICHE and DAAE. Media interest in the curricular transformation has been high. In many cases the agreements bring to an end the animal experiments and dissections and secure the implementation of alternatives; in others the project confirms and consolidates an existing change and secures implementation. By 2011, together they are saving an estimated 40,000 animals (vertebrates and invertebrates) from being killed annually. As one tool in the broader campaign for humane education, the successful use of agreements reflects a growing acceptance of replacement of animal experiments in education in former Soviet countries.



III-2-517

International harmonization of education and training standards for laboratory animal veterinarians

K. Bayne¹, T. M. Kurosawa², J. MacArthur Clark³ and P. V. Turner⁴

¹AAALAC International, Frederick, MD, USA; ²Osaka University Medical School, Osaka, Japan; ³Animal Scientific Procedures Inspectorate, United Kingdom Home Office, UK; ⁴University of Guelph, Guelph, ON, Canada

pvtturner@uoguelph.ca

Animal-based research and education is increasingly an international enterprise that draws significant public attention. The welfare of research animals, quality of scientific data, and institutional reputation significantly depend on assurance that veterinarians managing and overseeing research animal care are adequately trained and qualified. Yet, the knowledge and experience of veterinarians serving in this role can vary widely and globally, education and training available to veterinarians in laboratory animal medicine ranges from specialty board certification to on-the-job exposure. The International Association of Colleges of Laboratory Animal Medicine (IACLAM) has determined that even within its member Colleges there is considerable variability in training programs, credential review, recertification procedures, and examination composition. New graduates from veterinary colleges often have not received adequate education and training in research animal care, medicine, or management. Inadequate training can adversely jeopard-

ize animal health and welfare, as well as personnel and facility safety, and the entire institutional research enterprise. The World Organisation for Animal Health (OIE), in collaboration with IACLAM and the National Academies' Institute for Laboratory Animal Research, recently assessed the laboratory animal veterinary community's perspective on harmonizing global veterinary training and education in laboratory animal medicine. This was based on discussion groups convened during several major laboratory animal science meetings in Europe, North America and Asia in 2010. A total of 106 individuals representing 27 countries participated. Topics addressed included roles of laboratory animal veterinarians; core knowledge and practical work-related skills required for proficiency; acceptable approaches for imparting core knowledge; types of experiences suitable for instilling work-related skills; and type and amount of training necessary to attain proficiency. The concept themes from the discussion groups will be addressed.

III-2-521

How formal training influences researchers' awareness and attitudes to animal use in biomedical research

N. H. Franco^{1,2}, J. A. Nunes² and I. A. S. Olsson¹

¹IBMC – Institute for Cellular and Molecular Biology, University of Porto, Porto, Portugal; ²Center for Social Studies, University of Coimbra, Coimbra, Portugal

nfranco@ibmc.up.pt

Even with existing regulation and supervision of animal use, the individual researcher's responsibility is still decisive in implementing the 3Rs. Training in laboratory animal science aims to raise researchers' awareness and increase their knowledge, but its effect on scientists' attitudes has not so far been systematically assessed. Participants in six FELASA Cat-C courses (N=150), held between 2008 and 2010 in Portugal, were surveyed in a self-administered questionnaire. Questions related to the 3Rs and their application, attitudes to animal use and ethical review of animal experiments. One year later, respondents were asked to answer a similar questionnaire (53% response rate) with added self-evaluation questions on the impact of training. Prior to training, most researchers (62%) were completely un-

ware of the 3Rs of animal research (23% claimed to know but failed to name them; 15% correctly named the 3Rs), a problem the courses effectively overturn, with 98% of respondents being able to name the 3Rs one year after. Moreover, the actual implementation of the 3Rs in their research rose considerably (from 30% to 60%). There is, however, a degree of reluctance to acknowledge Replacement, since participation in the course did not change perceptions of the current and future need for animal use in research. Based on this and other data from the surveys, our presentation will focus on the importance of formal training not only as a means to increase knowledge and develop technical skills, but also to raise awareness to ethical aspects of the use of animal models of research.



III-2-700

International Harmonization of Education and Training Standards for Laboratory Animal Veterinarians

K. Bayne¹, T. M. Kurosawa², J. MacArthur Clark³ and P. V. Turner⁴

¹AAALAC International, Frederick, MD, USA; ²Osaka University Medical School, Osaka, Japan; ³Animal Scientific Procedures Inspectorate, United Kingdom Home Office, UK; ⁴University of Guelph, Guelph, ON

pvtturner@uoguelph.ca

Animal-based research and education is increasingly an international enterprise that draws significant public attention. The welfare of research animals, quality of scientific data, and institutional reputation significantly depend on assurance that veterinarians managing and overseeing research animal care are adequately trained and qualified. Yet, the knowledge and experience of veterinarians serving in this role can vary widely and globally, education and training available to veterinarians in laboratory animal medicine ranges from specialty board certification to on-the-job exposure. The International Association of Colleges of Laboratory Animal Medicine (IACLAM) has determined that even within its member Colleges there is considerable variability in training programs, credential review, recertification procedures, and examination composition. New graduates from veterinary colleges often have not received adequate education and training in research animal care, medicine, or management. Inadequate training can adversely jeopard-

ize animal health and welfare, as well as personnel and facility safety, and the entire institutional research enterprise. The World Organisation for Animal Health (OIE), in collaboration with IACLAM and the National Academies' Institute for Laboratory Animal Research, recently assessed the laboratory animal veterinary community's perspective on harmonizing global veterinary training and education in laboratory animal medicine. This was based on discussion groups convened during several major laboratory animal science meetings in Europe, North America and Asia in 2010. A total of 106 individuals representing 27 countries participated. Topics addressed included roles of laboratory animal veterinarians; core knowledge and practical work-related skills required for proficiency; acceptable approaches for imparting core knowledge; types of experiences suitable for instilling work-related skills; and type and amount of training necessary to attain proficiency. The concept themes from the discussion groups will be addressed.

III-2-701

Surgical training applied to experimentation: a course without the use of live animals

C. Vogt¹, D. Gervasoni², D. Grezel³ and A. Morales¹

¹University Lyon, Lyon, France; ²Laboratory of Experimental Medicine, INSERM, CNRS, University of Lyon, France;

³VetAgro-Sup, Lyon, France

Catherine.vogt@univ-lyon1.fr

The main objectives of surgical training are to learn how to consider the patient as a whole and to acquire perfect technical skills. Often neglected, the latter allows a decrease of the impact of surgical trauma, decreased morbidity and even mortality. Insisting on the importance of a thorough evaluation of the patient, from the physiological point of view, as well as in terms of discomfort and pain, this set of courses aims to increase the technical competence of novice or confirmed trainees.

The program focuses on:

- Mastering the surgical context from the preparation of the equipment and tools to aseptic techniques.
- Numerous practical training with alternative supports
- Interactive discussion and analysis of selected surgical procedures and procedures proposed by trainees.

The twenty-two hours of training include 90% practical and tutored courses with a maximum of 20 attendees* per session. Teaching is ensured by veterinarian surgeons (DVM), lecturers or research scientists (Ecole de Chirurgie de Lyon). Teaching material, documents and state of the art alternative supports (patent pending) are specially developed. This formation has been approved by the Swiss "Association des Vétérinaires Cantonaux" and has been submitted to the French "Commission Nationale de l'Expérimentation Animale". This poster was awarded the first prize by the "Association Française des Sciences et Techniques de l'Animal de Laboratoire" (AFSTAL) during the 2011 meeting in Marne La Vallée – France.

*In France an initial "Niveau 1" or "Niveau 2" training is required.