



Distance Education as a Tool for Training Veterinarians in Laboratory Animal Medicine

Patricia V. Turner

(Dept of Pathobiology, University of Guelph, Guelph, ON Canada N1G 2W1)

【Abstract】 With increasing globalization and a trend towards international harmonization of standards for the care and use of animals in research and testing, there is a significant need to assist and support countries to develop training programs for laboratory animal veterinarians. Although formal educational opportunities for training laboratory animal veterinarians exist through well-established specialty colleges of laboratory animal medicine such as ACLAM, ECLAM, JCLAM, and KCLAM or through other professional organisations, such as the Federation of European Laboratory Animal Science Associations (FELASA), opportunities for participating in these programs are often limited to veterinarians in North America, Western Europe and specific regions of Asia. Creative thinking is required to develop cost-effective, practical, entry-level and advanced continuing education and applied training programs for veterinarians working in the field of laboratory animal medicine around the world. This paper will describe one potential solution for this issue, the use of a distance education program that provides theoretical information in a virtual classroom with applied training modules to deliver knowledge and practical skills to laboratory animal veterinarians. This type of program takes advantage of the online learning environment and can be an effective means to deliver training at the grassroots level to adult learners.

【Key words】 Continuing professional development; Veterinary specialisation; Animal welfare

【Chinese Library Classification】 R332 **【Document code】** A **【Article ID】** 1671-7856(2012)03-0001-04
Doi:10.3969/j.issn.1671-7856.2012.03.001

Introduction

Increasing globalisation has led to an exponential growth of exciting business and employment opportunities, many in the scientific and biomedical arenas. Many of the discoveries being made in basic and clinical sciences today continue to use a wide array of animal models as there are no adequate replacements available for this type of research. Along with these expanding business horizons is an increasing public and international interest in how animals are cared for in research settings. In many countries, the programs for research animal oversight are overseen by laboratory animal veterinarians, who have specific expertise in research animal care, management, welfare, and modeling.

In 2010, the OIE introduced a chapter into their terrestrial code specifically dealing with the welfare of research animals, drawing further public attention to

this issue and placing a burden of responsibility on member countries to ensure research animal well-being through a cadre of well-trained veterinarians (OIE, 2010). To further emphasize this point, Article 7.8.5 of the new subchapter on laboratory animal welfare indicates that it "... is important that veterinarians working in an animal research environment have veterinary medical knowledge and experience in the species used, including the normal behaviour of the species, and they should understand research methodology. Relevant approvals issued by the veterinary statutory body and appropriate national or regional schemes (where these exist) should be adopted as the reference for veterinary training." As an international regulatory oversight body, it is not appropriate for the OIE to elaborate further on the specific training required for laboratory animal veterinarians, and this has instead been left up to country-specific professional veterinary associations and

other regional or national laboratory animal science organizations to deal with.

Laboratory Animal Medicine in the Undergraduate Veterinary Curriculum

The challenge with the mandate given by the OIE in terms of veterinary medical training is one of time. In most countries, the veterinary curriculum is already packed with information because of the estimated doubling of new information in veterinary medicine every six years. It becomes difficult to imagine how another new area of practise can be thoroughly covered in the program. In North America, the Association of American Veterinary Medical Colleges (AAVMC) and the American College of Laboratory Animal Medicine (ACLAM) have defined minimum curriculum requirements for introducing laboratory animal medicine to veterinary students throughout the DVM program (Turner et al, 2009), but both groups recognize laboratory animal medicine as an area of post-graduate study and specialisation. Otherwise, the practise of laboratory animal medicine remains largely undefined internationally and it can be difficult for countries or regions to go about defining minimum competency standards and developing educational programs in this field to meet their needs. This may place countries or regions at a competitive disadvantage, if sufficient numbers of well trained veterinarians are not available to ensure high standards of animal welfare and assist with refining animal models.

Training Approaches for Laboratory Animal Medicine

It has been estimated that there are 2000 or more veterinarians working full-time or part-time in laboratory animal medicine in the United States, with another 220 laboratory animal veterinarians in Canada. Despite these seemingly high numbers, there continue to be shortages in well-trained laboratory animal veterinarians in both countries. Although formal graduate or residency programs exist, they can only accept a few new veterinarians each year and these

programs are expensive to maintain and operate. These types of formal training programs in laboratory animal medicine are recognized as the 'gold standard' for training specialisation; however, it has long been recognised that other programs are needed to provide entry-level training to veterinarians seeking to practise laboratory animal medicine (Colby et al, 2007). This population may include veterinarians looking to change their career emphasis, veterinarians consulting part-time or full-time for various research institutions, or veterinarians who live too distant to various universities that offer formal post-graduate programs; the common thread being that they are unable to return to graduate school for full-time studies in laboratory animal medicine. A new approach is needed to reach out to these adult learners and provide short and intensive training programs that will permit them to enter new positions and become competent at their duties quickly.

Distance Education (DE) has increased greatly in popularity in recent years in post-secondary institutions, the main advantage being that participants can study when it is convenient. A DE program is well suited for providing basic and advanced information to veterinarians in laboratory animal medicine. Increasing number of courses are being taught in online classroom in regular undergraduate and graduate programs. Working in the virtual classroom is not necessarily easier than teaching in a traditional classroom; however, as programs must be well structured with clear objectives, and geared to developing applied problem-solving skills. It can be challenging to try to provide the degree of interactions normally achieved in live classroom and participants must be motivated to study regularly to master the material. DE courses are not necessarily less work for the instructor and it is different than traditional teaching.

Canadian Certificate in Laboratory Animal Medicine

In an attempt to meet this specific training need for entry level laboratory animal veterinarians, a short program of study was developed and approved by the

Canadian Association for Laboratory Animal Medicine (CALAM). In 2004, the Canadian Certificate in Laboratory Animal Medicine was launched through the University of Guelph (see: <http://www.open.uoguelph.ca/offerings/program.aspx?PID=59>)

The certificate program consists of four courses totaling 160 hours of effort. The first course is an online, web-based, self-study course consisting of modules in core topics (oversight of research animal care and use in Canada, ethics of experimentation, animal models and alternatives, factors affecting research data, environmental enrichment, anesthesia, analgesia and euthanasia, microbiological quality control and biosecurity, biosafety, and specific animal models). The content was developed in part; from training recommendations for laboratory animal veterinarians made by FELASA and ACLAM. Each module concludes with a multiple choice quiz randomly selected by the computer from a bank of available questions. Candidates enrolled in the program need to achieve a score of 80% to complete each module prior to beginning the next module and have a maximum of two attempts to achieve this. There are also several short written assignments that course participants must submit on a range of practical problems.

The next three courses (Applied Laboratory Animal Medicine I, II, and III) each consist of one week placements at regional training centres across Canada. Candidates spend 40 hours/week at these facilities and need to acquire a number of skills during each week (eg, animal handling, bleeding, protocol review, etc). These courses conclude with a short evaluation form prepared and submitted by both the regional mentor and the participant. These courses are graded overall as Pass/Fail. Regional training centres are assessed by the Canadian Council on Animal Care and hold Good Animal Practice (GAP) certificates. Sites were selected based upon location in Canada, number of experienced veterinarians, and range of species housed. Participants work through the online material at their own pace over a nine week period and may complete the program in as short as one month or they may take up to two years to complete all four

courses. If participants successfully complete the entire program within the specified time, they can use the credential "Cert. LAM" to indicate their basic proficiency in this field and they receive a certificate of achievement from the University of Guelph.

To assist with development of material and questions, an Advisory Committee was formed, consisting of highly experienced Canadian laboratory animal veterinarians and a skills list was also developed for participants to complete during their applied placements at regional training sites. The program was envisioned as entry-level and a jumping-off point, and was not seen as being in competition with post-graduate training programs in laboratory animal medicine.

To date, over 48 veterinarians from across Canada have enrolled in the program as well as veterinarians from Mexico, China, Israel, Australia, and Singapore. Most participants comment that they appreciate the opportunity to learn about concepts in laboratory animal medicine at their own pace and they also enjoy developing mentor contacts during their applied placements. In 2008, a U. S. Certificate in Laboratory Animal Medicine was launched and it is anticipated that a Latin American certificate program based on similar concepts, will be launched in October 2011.

Conclusion

In conclusion, there is a clear international expectation that countries or regions using animals in research will ensure appropriate oversight of animal care and use in part through appropriately trained laboratory animal veterinarians. Lengthy, intensive post-graduate training programs provide for training excellence but are low volume programs that do not fully address the issue of the large numbers of veterinarians needed for many institutions across any given country or region. A fresh approach is needed to provide entry-level training to these veterinarians and can be achieved through distance education programs. Appropriate subsequent mentoring and partnering of experienced veterinarians with early career laboratory animal veterinarians is a proven means of solidifying

theoretical knowledge gained in the online environment. This type of training program recognizes expertise available at a regional and national level and minimises the need to bring in outside ‘experts’ to assist with training. Online programs require the same amount of planning and oversight as traditional educational programs and must be reviewed regularly, to ensure that content is up-to-date and relevant.

References:

[1] Colby LA, Turner PV, Vasbinder MA. 2007. Formal Training Programs and Resources for Laboratory Animal Veterinarians.

ILAR J. 48(2):143-155. (Available free online at: http://dels-old.nas.edu/ilar_n/ilarjournal/48_2/pdfs/v4802Colby.pdf).

[2] Turner PV, Colby LA, Vandewoude S, Gaertner DJ, Vasbinder MA. 2009. Perspectives on Curriculum Needs in Laboratory Animal Medicine. J Vet Med Educ. 36(1):89-99.

[3] World Organization for Animal Health [OIE]. Terrestrial Code, Chapter 7.8; Use of Animals in Research and Education. Paris, France, 2010. http://web.oie.int/eng/normes/mcode/en_chapitre_1.7.8.htm

[修回日期]2010-10-20