Introduction

Accomplishing essential curricular change

This compendium of 49 papers provides compelling reasons for changing the curriculum in many (if not all) schools of veterinary medicine, so as to improve the education of veterinary students in the area of global veterinary public health. As Dr Vallat states in his introduction: 'This is a responsibility of all of the 500-plus veterinary schools throughout the world; they need to recognise and accomplish this mission'. In most schools, marked changes in the curriculum are necessary for this objective to be met. These changes will best be accomplished by fully integrating the various areas of global veterinary public health throughout the teaching programme. How can this be accomplished? How are major curricular changes optimally handled?

An adage ascribed to Woodrow Wilson or Calvin Coolidge goes: 'Changing a curriculum is like moving a graveyard – you never know how many friends the dead have, until you try to move them' (8). Ironically, the mission to improve global veterinary public health education is so critical that the imagery of graveyards should not be far from our thoughts if we do not accept this mandate and succeed in this mission. It is critical for veterinary education to achieve this goal, and the amount of time we have to achieve it is surely limited.

Achieving curriculum revision

Curriculum revision is a troublesome area for most veterinary schools, as pointed out in Dr Vallat's preface. Unfortunately, many of the faculty members in veterinary schools, while being very able teachers in their own field of veterinary medicine, have little or no experience in overall approaches to education and curricular change. It does not necessarily follow that if you have taught, and taught with excellence, then you know about how curriculum should be organised! Very few veterinary educators have had the opportunity to gain suitable expertise in curricular structure and its organisation. In contrast, over the last two decades most medical schools in developed countries have acquired a critical mass of staff members with quite extensive educational organisation expertise. The international attendance at meetings of the Association of Medical Educators of Europe (AMEE) (www.amee.org/index.asp) provides evidence of this. Compared to schools of human medicine, most veterinary schools have far fewer faculty members (even though class sizes are comparable), they probably have an average of 80% to 90% fewer teaching staff, and they have not had the bonus of having faculty members with specialised expertise in education. There are some notable exceptions and we have been very fortunate to have had a number of these education experts write papers for this compendium. AMEE is also now providing for a few veterinary educators to develop this educational expertise (more information can be found on the Veterinary Education Worldwide website [ViEW: www.veteducation.org).

The overall handling of curriculum evaluation and revision within a school must be given careful consideration. An effective participatory structure is essential, but it is critical that the veterinary school's leadership champion the process, while allowing all faculty members efficient and substantial involvement. Having a true champion is the key to success. The readers are particularly referred to the paper in this compendium by Turnwald and Walkington (6), which provides an excellent discussion of the essentials for curricular change. In the case they describe (curriculum change at Virginia Maryland Regional College of Veterinary Medicine), Dr Peter Eyre, the then Dean, was the champion.

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Over the last 10-15 years, it has become apparent that it is important to approach curricular change from the top down. In hindsight this makes perfect sense. The first aircraft that was built was designed to fly. Now aeroplanes are built for special purposes: to fly faster, to fly longer distances, to carry large cargos, even to go into space, each now designed for a specific purpose – not singularly to meet all these purposes. Similarly, veterinary curriculum revision should now be undertaken from the top down to address the need for major improvements.

The initial thrust for top-down planning for health sciences curricula came from the Medical School Objectives Project of the Association of American Medical Colleges (AAMC) in the mid 1990s (www.aamc.org/meded/msop/start.htm). The study concluded that a curriculum (medical, veterinary or other) should be based upon a defined set of competencies in the primary areas of knowledge and understanding, skills, and professional characteristics that all students should have attained and demonstrated by the time of their graduation. Step one of curricular change, therefore, is to define the set of student competencies that a school determines its students should have when they graduate. Once these have been defined, step two is to create a curriculum that will provide students with the necessary opportunities to acquire (and demonstrate) all of these competencies. This approach ensures that the revised curriculum is directed specifically to the product expected. This is an essential principle. Some of the professional competencies may well be those expected of a student upon admission, while the majority of the others will be attained during the veterinary school experience.

Several sets of these defined characteristics have now been published (1, 2, 3, 4, 5, 7, 8, 9, 10, 11), with major contributions by several of the authors of this compendium. The veterinary education profession must examine (re-examine?) these sets of defined characteristics against the objectives for essential training in global veterinary public health that have been described in this set of papers. We can then add to these sets of characteristics as needed. The Royal College of Veterinary Surgeons, which has created one of these sets of expected characteristics for graduating veterinary students, has added an additional highly helpful component. It has defined not only 'Day-One Skills' that should have been attained by graduation, but also 'Year-One Competencies' (1), recognising that 'just-graduated veterinarians' should be continuing their education, especially during their first year of professional veterinary activity. Within this continuum of education, it is critical to examine and define what skills should be attained and when. With 'Year-One Competencies' defined, it allows the 'Day-One Skills' to be a more precise reflection of what the veterinary students should achieve during their veterinary school training. It is thus a better set of criteria for what the curriculum should accomplish.

It is only after the expected competencies have been defined that it is appropriate to look at the structure of the curriculum and ask how it can best provide these expected competencies at day one of graduation. It is probably best to approach this stepwise: first with the major elements of curriculum structure, and then with finer refinements and detail, but at all times it is critical to keep the end product in mind.

Pitfalls in curriculum revision

Significantly altering the curriculum within a veterinary school is not easy. Questions that tend to be addressed early in consideration of curriculum change are: What should the balance be between lectures and small group teaching? In what order should the subjects be taught? Is it better to teach the students early about the clinical relevance of curriculum information, both the newly anticipated and the currently presented, or should they first be grounded in the basic core of information? Who is best to teach the new and the existing subject matter? Should it be the clinician who knows how the subject applies to veterinary medical care, or should it be a basic scientist with a firm base in the subject's underlying principles? What approaches to teaching should the school pursue to

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meet the new objectives and address current concerns? How much laboratory work is required for students to gain a firm grounding in specific subjects and how much is needed for specific practice? What should the priorities be when resources are limited?

Often, once curriculum change has been initiated, these and many other such questions consume many hours of discussion among the faculty members. For anyone who has been embroiled in curriculum revision, these questions are probably ones that they have heard debated at meetings and in the corridors – sometimes with considerable emotion and with competition between different staff members. Attempting to address these questions often derails the underlying purpose for considering a curriculum change. Very often, these types of issues cause the endeavour to become a bottom-up process. All of these are important questions that need to be addressed, but they need to be considered within the context of the end product that is to be created. In the absence of this type of consideration, debating such questions is often meaningless. For several of these questions there will be different answers, as a given approach can help meet a specific component of the end product. The questions posed above are key in helping to meet the objectives of curriculum change, but they are blind alleys if addressed in isolation.

Demonstrating effective change

Once a curriculum change has been made, it is rare that an analysis is performed to determine if it has met its objectives. This is a serious problem that needs correction. Some of the papers in this compendium illustrate the type of study that is needed. Without a thorough evaluation it would be unwise to assume that a proposed medication for a specific clinical condition was effective, the same is true for curricular change. We often tend to look at a revised curriculum with rose-coloured glasses and assume its changes are successful, but without statistical validation and defining data, it is impossible to evaluate improvement and change.

Thanks to the authors of these papers my job as Coordinator of this compendium has been exciting, rewarding and thought-provoking, and I am delighted with the extremely high quality of each and every paper. I had many interesting conversations with the authors while preparing this publication and their input has contributed enormously to the range and depth of coverage that has resulted. The authors' breadth of insights have contributed extensively to addressing this critical area for veterinary education around the globe.

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References

1. Jaarsma D.C., Dolmans D.H., Scherpbier A.J. & van Beukelen P. (2009). – Educational approaches aimed at preparing students for professional veterinary practice. *In* Veterinary education for global animal and public health (D.A. Walsh, ed.). *Rev. sci. tech. Off. int. Epiz.*, **28** (2), 823-830.

2. Royal College of Veterinary Surgeons (2009). – Essential competencies required of the veterinary surgeon. Day one skills. Available at www.rcvs.org.uk/ Shared_ASP_Files/UploadedFiles/966BD575-F3BB-443F-995A-0D480DCE97F3_ day1_year1_comp.pdf (accessed on 17 August 2009).

3. Royal College of Veterinary Surgeons (2009). – RCVS Online. Day and Year One Competences. Available at: www.rcvs.org.uk/Templates/Internal.asp?NodeID= 95099&int2ndParentNodeID=94970&int1stParentNodeID=94964 (accessed on 17 August 2009).

4. Royal Veterinary College (2009). – Bachelor of Veterinary Medicine Day One Skills Handbook. Available at www.live.ac.uk/documents/DOS_handbook.pdf (accessed on 17 August 2009).

5. Taylor R.M. (2009). – Defining, constructing and assessing learning outcomes. *In* Veterinary education for global animal and public health (D.A. Walsh, ed.). *Rev. sci. tech. Off. int. Epiz.*, **28** (2), 779-788.

6. Turnwald G.H. & Walkington J. (2009). – Design and implementation of curriculum change. *In* Veterinary education for global animal and public health (D.A. Walsh, ed.). *Rev. sci. tech. Off. int. Epiz.*, **28** (2), 789-796.

7. Van Beukelen P. & the Project Group for Programme Outcomes of the Veterinary Curriculum (2006). – Programme Outcomes of the Veterinary Curriculum. Universiteit Utrecht, Faculty of Veterinary Medicine Curriculum.

8. Walsh D.A., Osburn B.I. & Christopher M.M. (2001). – Defining the attributes expected of graduating veterinary medical students. *J. Am. vet. med. Assoc.*, **219**, 1358-1365.

9. Walsh D.A., Osburn B.I. & Schumacher R.L. (2002). – Defining the attributes expected of graduating veterinary medical students. Part 2: External evaluation and outcomes assessment. *J. vet. med. Educ.*, **29** (1), 36-45.

10. Watson R.T., Suter E., Romrell L.J., Harman E.M., Rooks L.G. & Neims A.H. (1998). – Moving a graveyard: how one school prepared the way for continuous curriculum renewal. *Acad. Med.*, **73**, 948-955.

11. Welsh P.J.K., Jones L.M., May S.A., Nunn P.R., Whittlestone K.D. & Pead M.J. (2009). – Approaches to defining day-one competency: a framework for learning veterinary skills. *In* Veterinary education for global animal and public health (D.A. Walsh, ed.). *Rev. sci. tech. Off. int. Epiz.*, **28** (2), 771-778.