

Can curriculum innovations create incentives for young veterinarians to practise in remote rural areas?

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Summary

Research on the problem of decreasing numbers of rural veterinarians has identified that rural practice employment periods following graduation are getting shorter and replacing the graduates who leave is becoming increasingly difficult. One way of addressing these problems would be to develop a Bachelor of Veterinary Science (BVSc) curriculum that motivates young graduates to seek work in rural and remote communities and ensures they are more 'practice-ready' as soon as they leave university and start working. Developments in a series of curriculum initiatives to address this strategy are discussed, including: encouraging deeper learning in livestock health and production, provision of extramural rotations in rural locations in the final year, offering opportunities to study abroad and emphasising the global impact of farm animal medicine, developing rural support enhancements for students on rural placements, and adjusting admission requirements to increase access for rural students.

Keywords

Australia – Experiential learning – International – Livestock – Rural veterinarian – Veterinary curriculum – Veterinary Public Health.

Introduction

Rural communities contribute significantly to the wealth of Australia. The annual gross value of livestock slaughtering and disposals in Australia was \$12.3 billion (2006-2007 fiscal year; all dollar amounts are in Australian dollars) and the gross value of livestock products for the same period was \$5.8 billion (2). In addition, the value of the horse industry in Australia has been estimated at \$6.3 billion (3, 5). The veterinary profession is responsible for securing the health and welfare of these animals and thus contributing to the continuing economic development of both the livestock industries and rural communities that serve these industries. It is of concern that the recruitment and retention of new veterinary graduates in rural communities has become a major challenge for employers in both mixed rural veterinary practices and in rural veterinary public health agencies.

Research has been conducted on the long-term attitudes and career pathways of Australian veterinary graduates

(8, 9), and more recently there have been international studies that aim to increase the numbers of rural veterinarians and identify qualities of successful rural veterinarians (1, 6). In Australia, it has emerged that rural practice employment periods are increasingly brief, with the average tenure of a recent graduate just 1.9 years (9). For graduates of traditional veterinary degrees that involve a lot of lectures and little hands-on experience this is barely sufficient time to become competent. In addition, veterinarians are difficult to replace, with employers continuing to report difficulties in filling positions (1). Furthermore, with more than 80% of recent graduates leaving rural mixed practice within five years and over 30% moving overseas (7), it is important to develop strategies to address this problem. There are three principal issues to consider. Firstly, we need to find an increasing number of young graduates keen to work in rural and remote communities. Secondly, it is increasingly important that these graduates be able to contribute to the viability of the practice as soon as they are employed (i.e. 'hit the ground running'). Thirdly, we need to create ways to retain them as veterinary service providers in our rural communities. This

paper describes our attempts to address the first and second issues through multiple strategies, mainly involving curriculum development.

Our strategic approach to teaching and learning

The Faculty of Veterinary Science at the University of Sydney has a culture of shared leadership in promoting our vision of world leadership 'in veterinary education, animal science and research focused on the health and welfare of animals and benefit to the community' (13). In 2000 we implemented a new curriculum with a lecture-free final year commencing in 2004, to provide Australian veterinary undergraduates with the best possible preparation for and induction into their veterinary career. In 2002, the teaching group in farm animal medicine at the University of Sydney implemented several new strategies to more strongly engage senior veterinary students in their learning in livestock medicine and veterinary public health. These strategies aimed to address the national deficit of graduates committed to the Australian rural industries and willing to seek careers in veterinary public health (4, 7). As the study of veterinary public health and livestock medicine prepares students for careers that have an international impact, the introduction of these strategies was also in line with the university policy of encouraging graduates to have a sense of global citizenship. The strategies are in part driven by a perception that the established universities in Australia have been failing to address the needs of rural and remote communities and there is an ever-increasing 'country/city divide' in the priorities and values of rural and urban communities. This has been of increasing relevance, with most rural communities struggling with the impact of prolonged drought and increasing community concerns about welfare practices on farms, such as mulesing (the removal of strips of wool-bearing skin from around the breech of sheep to prevent blowfly strike) (10).

Our curriculum aims to support, influence, motivate and inspire students to learn more effectively. However, for many years our annual student intake of between 120 and 130 (which includes 20 to 30 international students) in the Bachelor of Veterinary Science (BVSc) degree has been increasingly dominated by students from urban backgrounds with little knowledge of, or experience in, rural communities and livestock husbandry. As it is our aim that a significant number of our graduates will serve and eventually lead developments in the livestock industries in both private and public practice roles in Australia and other countries, it is crucial that we develop creative ways to inspire students to develop livestock industry interests and encourage them to engage with members of rural and remote communities, including

those in developing countries. To enable students to learn more effectively, we introduced a series of innovations in teaching and research in livestock health and production that encourage students to engage with rural communities. This paper will discuss the implementation of this strategy through several approaches, including:

- encouraging deeper learning in livestock health and production in the curriculum
- the provision of extramural rotations in rural locations in the final year of study
- internationalising the curriculum, i.e. highlighting the international impact of rural industries and offering opportunities to study abroad, to co-operate with students in other countries, and to learn about animal health policies and procedures in different areas of the world
- developing rural support enhancements for students in rural locations
- adjusting admission requirements to increase the numbers of rural students.

Encouraging deeper learning in livestock health and production

To engage more students in rural issues, we have continuously improved three new units of study that were introduced in 2002 and 2003 to encourage deeper learning for our fourth- and fifth- year students in livestock issues (Table 1). Ruminant Health and Production (RHP) in year 4 of the BVSc is delivered at a country campus just outside Sydney. This campus contains multiple learning venues, including:

- new lecture theatres and a computer laboratory
- refurbished research laboratories and library facilities
- a mixed practice clinic with equine specialist facilities
- an ambulatory bovine clinic
- a dairy research unit with a large commercial dairy
- a piggery
- a poultry and nutrition unit
- a ruminant reproduction research unit
- a genetic research unit with a sheep dairy
- multiple farms, including access (within one and a half hours) to a 7,500 hectare commercial farm with 15,000 wool sheep and a herd of Angus beef cattle (500 head).

In the RHP course, students engage in lectures, practicals and tutorials, supplemented by a substantial e-learning portfolio of case studies known as TILHAPs (teaching

Table 1
Units of study at the University of Sydney designed to encourage in-depth learning of livestock issues

Unit of study	Unit name	Credit points	Location	Semester
VETS4224	Ruminant health and production	10	Camden campus	8
VETS5358	Rural public practice	4	Extramural	9 and 10
VETS5357	Rural mixed practice	4	Extramural	9 and 10

innovations in livestock health and production). The TILHAP portfolio now comprises over 70 cases. Up to 28 cases are used per semester, linking 'real' field cases to industry websites and using many of the 10,000 images and 65 videos of livestock disorders from OLIVER (our on-line library of images for veterinary education and research). Students use group learning to prepare oral presentations and case summary documents for loading onto the website discussion board. This learning experience encourages high-level development of communication and research competencies, preparing students for life-long professional learning. In addition, the OLIVER images and case studies have been incorporated by other staff into pre-clinical e-learning modules and are valued by students, staff and affiliates, providing earlier curriculum exposure of students to livestock disease and substantial material for oral presentations and publications (15). The Course Evaluation Questionnaires (CEQ) and Unit of Study Evaluation (USE) reports for RHP routinely show high-level student satisfaction with this unit and enable ongoing improvements in the learning activities. In particular, the USE reports enabled enhanced 'delivery of feedback from staff' and 'student participation as an active learner'. The reports also identified that students recognised that the on-line component led to more effective learning (12, 14, 16). In 2010 the unit will incorporate the equine studies unit and be delivered over two semesters as Large Animal Health and Production to increase the time available for animal-handling skill development.

Provision of extramural rotations in rural locations

The lecture-free final year in the BVSc (semesters nine and ten) includes both intramural and extramural experiential learning for our future graduates. As students are given provisional registration under the Veterinary Surgeon Act, enabling them to perform acts of veterinary science under supervision, we designate them as 'interns' and expect them to display and measure their increasing professionalism throughout their fifth year. The interns spend almost half their year working in the clinics in

Sydney and Camden, and for the remainder they are required to work in multiple rural locations. When working in these rural locations students complete two final units of study: Rural Public Practice (RPP), where students work under the supervision of affiliate veterinary public health professionals, and Rural Mixed Practice, where the interns work in rural veterinary practices. Rural Public Practice is aimed at ensuring that our graduates develop an understanding of the importance of veterinary public health. They learn how disease surveillance, biosecurity and emergency management systems support international trade in livestock products and contribute directly to rural community welfare. The rotations include placements with veterinarians at the Department of Primary Industries (DPI) in New South Wales (NSW) or in another state, the Rural Lands Protection Boards (RLPBs) in NSW, the Australian Quarantine Inspection Service, the Australian Animal Health Laboratory (Commonwealth Scientific and Industrial Research Organisation [CSIRO]), and numerous international veterinary public health agencies in many countries. The RPP programme is the first programme of its type in Australia and its creation required significant legislative change, negotiations with stakeholders, resource development and sustained development of collegiate relationships with affiliates in many public health agencies. On completion of RPP, our interns are able to describe the key roles of 'rural public practice' veterinarians and are expected to:

- apply field or laboratory skills in pathology, epidemiology and medicine to improve production animal biosecurity, food safety and welfare
- reflect on and discuss the unique role of veterinarians involved in rural public practice agencies in contributing to the international livestock industry
- communicate to rural communities through extension and education programmes
- design and implement a disease investigation and present this in a professional scientific report.

In gaining 'hands-on' understanding of veterinary public health through RPP, our interns work with affiliate supervisors providing evidence-based management of rural community and livestock issues, including drought management, animal welfare, disease diagnosis, surveillance and control, food safety and security, emergency disease preparedness, invasive animal management and control of zoonoses. Recent examples of the important role of RPP have been: the contribution to global avian influenza management of our interns working in Southeast Asia (especially Hong Kong and Singapore), the provision of drought support for a significant proportion of Australia, the eradication of equine influenza from NSW and Queensland, and the control of an anthrax outbreak in the Hunter region of NSW. An example of the

impact of the learning experience in RPP is quoted from the reflective journal of an intern with an urban background placed with the RLPB in Wagga Wagga during the drought in early 2007. He was faced with an elderly farmer who was not able to manage his starving lice-infested sheep:

'The situation was tragic. It can only be from first-hand experience like this, that one can truly understand the consequences of drought. This experience provided me with heightened awareness of our professional role in supporting farmers and highlights the ignorance of city-dwellers.'

The RPP unit has been strengthening the relationships of the faculty and university with our many stakeholders in the institutions in which our interns work. Our affiliates have recognised that our interns are very useful to their work, with the significant assessment tasks required of our interns in RPP providing the supervisors with a competent 'researcher' for a month. In turn, as interns routinely conduct necropsies of ruminants during their placements, RPP provides remote area case investigations and assists in addressing deficits in livestock pathology services on campus. We audit the quality of this learning experience and have instituted a pathology training course for the affiliate district veterinarians (DVs) to enhance their mentoring of students in disease investigation. Interns complete a written scientific report of 2,000 words at publication standard and a reflective journal of 500 words that is placed on the on-line discussion board for comment by the course co-ordinator and other interns. Students are also given a communication task by their supervisor that is assessed using ten professional development criteria. The results of these three assessments are integrated into a unit of study feedback form with grade descriptors and a comment welcoming our interns into the profession. The assessments enable the awarding of two prizes, the McGarvie Smith Institute Fund Prize for outstanding work in RPP, and the Australian College of Veterinary Scientists Epidemiology Chapter Award for an outstanding contribution to applied epidemiology.

Close monitoring of the student intern learning experience in RPP is carried out through continual review of intern reflective journals on-line through the unit discussion board and the exit survey data collated annually. It has been pleasing to note that as expectations of students and affiliate supervisors have become more aligned, the percentage of students in the exit survey expressing overall satisfaction with RPP has risen from 91% in 2005 to 100% in 2007. The percentage of students describing the teaching, supervision and mentoring provided by affiliates as 'satisfactory' rose from 78% to 92% in the same period. Other recent survey data show that, on completion of their fifth year, 78% of interns agree that the rural experience gained during their course increased their interest in

working in rural or remote communities and 56% agree that their BVSc course has increased their interest in working in a veterinary public health agency at some stage in their career (Windsor, unpublished data). There has also been a very high level of recognition of the importance of this unit in the reflective journals of interns, as this example shows:

'This rotation was enjoyable, challenged my anticipated career, making me consider a research position career and has been exceptionally useful in preparing me for the profession.'

Internationalisation of the curriculum for global citizenship

In RHP and RPP we seek to motivate our students to 'internationalise' their career aspirations so that they can contribute to improving international livestock health. One of the aims of the university is to equip graduates for global citizenship, and in RPP, many of our interns are located in veterinary public health agencies outside Australia. Our many international students (about 20% to 25%) are encouraged to undertake their RPP rotation in their own country. By means of on-line web discussion groups, students are able to exchange information on policy and procedures (including quarantine processes) for disease surveillance and the control of transboundary and other diseases exotic to Australia (e.g. bovine tuberculosis and brucellosis, foot and mouth disease and highly pathogenic avian influenza). In addition, we have recently begun using our international research projects to host our interns and Honours and PhD students, supported by funding from the Australian Centre for International Agricultural Research and the Australian Biosecurity Cooperative Research Centre. This enables international research-led teaching to be incorporated into the learning experience for our interns. There is considerable interest from students wishing to undertake their RPP placements in Cambodia and Laos and other developing countries in projects that aim to address rural poverty through animal health and production interventions (17, 18). In 2008 we had a successful intern placement in Cambodia and in 2009 we will have three Honours students placed in Laos for up to three months and a RPP intern placement in Cambodia for a month.

Rural support enhancements

In 2007, the University of Sydney established the Rural Focus Group (RFG). This committee aims to increase the support for students and staff working in rural areas and promote the interests of the university in rural communities. The RFG consists of academics from all the non-health faculties of the university and forms a

companion to the Rural Health Group, whose members come from the health faculties. A key brief is to motivate students to spend more learning time in rural areas, encouraging their interest in returning to these communities following graduation. In 2008 the RFG obtained a Teaching Improvement Fund (TIF) grant to audit existing university programmes that involve rural placements, in order to co-ordinate them more effectively. This will enable students from the non-health faculties to share in initiatives organised by the health faculties, such as bus tours to examine student facilities in central-western NSW and medical student accommodation facilities. For 2009, the RFG obtained a further TIF grant to establish two pilot learning 'hubs' in country areas of NSW (Dubbo and Broken Hill). The hubs will provide improved services for students to complete their professional placements, fieldwork or research, including accommodation, internet access, teaching facilities and other infrastructure and services, enabling students from across the university to live in a rural community and work on local problems with fellow students and members of the community. For example, our veterinary student interns located in the hub and involved in drought work with livestock producers can interact with education students committed to drought information in local schools. The rural hub project is also identifying the additional infrastructure required for placements and supporting programmes that raise awareness of social, cultural and racial issues significant to rural communities. This initiative promotes experience of cultural diversity and equity among students and the success of the TIF grant projects may lead to a 'scaling out' of the rural hub concept to other rural communities hosting our students. This would enable greater participation of our interns in rural hubs. An additional objective of the RFG is to attract more students from rural communities to attend the University of Sydney and the TIF will be surveying rural families to try to discover what would encourage young people from these communities to choose the university for their tertiary education. The RFG has also been conducting rural school visits and attending rural field days and agricultural shows to promote the rural focus of this university.

Adjusting admission requirements

In NSW and the Australian Capital Territory entry into university is dependent on the Universities Admission Index (UAI). The UAI is a number between 0 and 100 that is allocated to all school leavers on the basis of their results in the high school examinations. Performance in these examinations is often not as good in rural areas as it is in urban areas and there was concern that even the best students in rural areas were unable to gain access to the University of Sydney because of the extremely high UAI required. To address these concerns the

faculty has recently made an adjustment to the criteria for admission to the BVSc under the Rural Students Entry Scheme. Current NSW Higher School Certificate or interstate equivalent applicants may be offered a place in this scheme if they meet a number of criteria, as follows:

- their UAI is not more than five points below the main round cut-off mark for the year of entry
- they have completed at least the last four years of secondary education at a rural school ('rural' is the area encompassing the rural NSW Area Health Service regions or the equivalent definition of rural applicable to other states; all of NSW is considered rural, with the exception of Sydney, Central Coast, Newcastle, Wollongong, the Blue Mountains and their surrounding areas)
- they have had a permanent home address in a rural area for a period of at least four years at any time prior to their application
- they are able to demonstrate a commitment to an animal-related career in a rural setting (this may include a record of involvement and achievement in community affairs at school or local community level in a rural environment).

It is expected that this scheme will assist a small number of country students that would have previously just missed out on places in our BVSc degree.

Discussion

The faculty has significantly altered the curriculum to 'blend' a diverse array of student learning experiences that develop the graduate attributes of teamwork, communication, research, independent learning and global citizenship. These learning experiences begin in the pre-clinical curriculum and are then developed in the fourth year and applied in rural and remote locations in the fifth and final year. Our innovations in livestock teaching in RHP in the fourth year of the curriculum enable fifth-year interns to be tasked by their affiliate supervisors with many independent learning activities, including: conducting workshops for farmers, preparing press releases and extension articles, developing applied research projects and writing scientific papers for web-based and written publications. The feedback we obtain through supervisor report forms and supervisor surveys has shown that the attributes of our interns are highly valued by affiliate supervisors. Supervisors are often particularly impressed with their 'communication, computer and information skills', as well as their 'enthusiasm' and their 'knowledge of diseases'. Many affiliate veterinarians have become highly skilled at

supervising students, as is evident from the comments of a recent intern engaged in a southern NSW RLPB:

'It was an honour to spend a month with this DV. I learned very important practical and theoretical skills, such as how to perform a thorough ovine autopsy, how to conduct a herd health investigation, and about important health issues in sheep and cattle. But the most important thing I learned is how to relate to and empathise with farmers so that I can communicate effectively with them when I am a vet.'

Developing the extramural programme has required the teaching staff to develop numerous resources to ensure that students, staff and members of the profession (including extramural supervisors) are able to participate in a 'virtual campus' that supports the needs of each group. Students were prepared for participation in the RHP programme through a new unit of study (Preparation for Veterinary Practice) and the profession was prepared by staff visits to workplaces, the annual conferences for affiliates, a training programme developed by the university for newly appointed veterinarians in disease investigation procedures, and a newsletter to ensure continuous feedback between affiliates and university staff. Staff presentations at the annual conferences of the NSW district veterinarians and the RLPB State Council have assisted this process.

These innovations, which were first developed in 2002, were accompanied by a number of initial difficulties, including some resistance from students and affiliates. Some students were slow to adopt the e-learning portfolio approach in RHP in 2002/2003, although the TILHAPs now operate very smoothly, with students recognising this as an enjoyable learning activity. In RPP, initially both students and affiliate supervisors were concerned that this unit would not meet their expectations. Final-year students are believed to be mainly interested in clinical medicine and our affiliates often lacked confidence in their ability to mentor undergraduates. However, these concerns have been resolved and RPP has now been recognised by staff and the community as a source of students who are of great value to the profession, as demonstrated in the recent emergency disease response to equine influenza. One of our affiliates (Dr Tony Morton of the RLPB in Wagga Wagga) wrote:

'With the battle against equine influenza largely over it is timely to reflect on the magnificent contribution of your students.... They were awesome; they won the respect of Board DVs and rangers, DPI staff and private veterinarians both for their ability and [for their] willingness to work extraordinarily hard and we would have been in a lot of trouble without them.'

Frawley (4) had previously suggested the need for the establishment of a veterinary reserve for emergency disease

responses. Our RPP initiative has created an additional 'reserve' of prospective veterinary public health professionals who can be called on to respond to a national animal disease emergency. In the outbreak of equine influenza in 2007, over 40 of our students were actively involved in the field and at Local Disease Control Centres. This experience and our recent survey data give us confidence that our teaching and learning strategy is producing future veterinarians willing to embrace veterinary public health careers, as is evident in a student quote on the learning outcomes achieved in RPP:

'The vets in the RLPB were fantastic and the experience I gained met and exceeded all I hoped my rotations this year would yield. It is a testament to the potential benefit in education and experiential growth which this year's structure allows. Thank you very much for helping make it a reality.'

The productive relationship between industry and the faculty, achieved through electronic communication and personal contact between industry partners, faculty members and the student body, has resulted in numerous benefits to all participants and led to improved assessments, better organisation of the placements and greater sharing of resources. For example, affiliates now have access to library and image database resources and students have more employment opportunities (PhD students have been recruited by CSIRO and a number of universities, and an intern has been recruited by the NSW DPI as a fisheries officer). In addition, affiliates benefit from the communication skills of the interns, with preparation of field day and conference presentations plus scientific papers on new livestock health observations. The interns have made numerous contributions to industry journals such as *Skirting the Issues*, produced by the Australian Sheep Veterinarians Society, and websites such as the RLPB 'Flock and Herd Case Notes'. The RPP study unit increases the exposure of our students to a greater range of pathological material than is available through the university clinics, as DVs perform regular field necropsies for disease diagnosis. The RPP programme also enables students to learn in a broader range of 'live' pathology situations, which is greatly appreciated by students, as demonstrated by this comment from an intern:

'Spending every Thursday practising post-mortem techniques at the local saleyard was great, particularly as these were well supervised, as were tasks such as taking blood whilst on farm-visits.'

Establishing a new extramural programme has not been without its challenges and several major issues have had to be addressed. For example, there were problems with registration requirements (including insurance issues) for student interns participating in work placements. Provisional registration as a veterinary surgeon (intern) was

developed to enable students to gain broader clinical practice experience and the faculty consulted extensively with the profession, and with legal and risk management experts to achieve a satisfactory outcome for insurance coverage. There were also a number of social barriers to address. Firstly, our urban veterinary students are generally more interested in companion animal practice, due to their lack of exposure to rural communities. Our programme requires a significant change in their attitudes to the role of veterinarians in society, so that students understand the importance of livestock animal health surveillance for food safety and security. Secondly, our programme requires a significant investment by the profession in the education of future veterinarians, without financial reward. Finally, establishing the learning community and the culture of life-long learning that is necessary for this programme to succeed has required that social barriers be addressed through improved collaboration between the stakeholders involved in this partnership and the broader veterinary community.

This faculty has aligned its philosophy with an evidence-based approach to education. The current educational theory is tested in work-based settings and feedback is sought from students, the faculty and the profession to inform the direction for continuous improvement (11). Leadership and innovation in veterinary science are core values for the faculty and our BVSc programme promotes these values. The faculty has consulted widely within the university (e.g. Social Sciences, Education and Health Sciences) and with other universities, both in Australia and overseas, in the development of our programme,

stimulating funded research groups (e.g. the RFG) to examine work-based learning enhancements. Our students now enter the profession with a more positive approach to life-long learning stimulated by a combination of authentic work-based experiential learning supported by appropriate university assessments. Preliminary analysis of these innovations in our curriculum suggests that they have been successful in raising student interest in rural and remote communities and public health. We believe we are able to increase both the number of young graduates keen to work in rural and remote communities and their ability to contribute to practice viability when they find employment. However, it is beyond the scope of our curriculum to address ways of retaining them as veterinary service providers in our rural communities and other incentives need to be found by the profession to address the increased mobility of new graduates in and out of rural practice. The recent increase in the number of veterinary schools in Australia, from four to seven, and the resulting increase in the numbers of students that will be qualifying as veterinarians in this country in a few years (graduates from the established schools in Sydney, Melbourne, Brisbane and Perth will soon be accompanied by graduates from Townsville, Wagga Wagga, and Adelaide) are likely to address the apparent need for a regular supply of short-term rural veterinarians. However, addressing the supply of 'transient' veterinarians in rural practice may mean that there are fewer experienced rural veterinarians with the in-depth knowledge of their community and their clients' needs to meet the increasingly complex challenges of the global livestock revolution.



Peut-on inciter les jeunes vétérinaires diplômés à exercer en milieu rural et isolé grâce à des programmes de formation innovants?

P. Windsor

Résumé

Les études conduites pour élucider les raisons de la pénurie croissante de vétérinaires exerçant en milieu rural ont révélé que les vétérinaires récemment diplômés quittent de plus en plus tôt les cabinets vétérinaires ruraux qui les emploient à l'issue de leur formation, de sorte qu'il devient de plus en plus difficile de remplacer les anciens praticiens ruraux. L'une des solutions

envisagées pour résoudre ce problème consiste à mettre en place une licence de sciences vétérinaires visant à motiver les jeunes diplômés à exercer leur activité dans des communautés rurales et isolées et à les rendre opérationnels dès leur entrée dans la vie active. L'auteur examine diverses pistes permettant de mettre en œuvre cette stratégie, en particulier : approfondir les connaissances des étudiants dans les domaines de la santé des animaux d'élevage et de la production animale ; proposer une série de stages en milieu rural pendant la dernière année d'études ; offrir des possibilités de formation à l'étranger et sensibiliser les étudiants sur les conséquences mondiales de la santé des animaux d'élevage ; développer des initiatives de soutien au placement d'étudiants en milieu rural ; adapter les conditions d'admission afin de favoriser l'accès des jeunes issus des milieux ruraux.

Mots-clés

Animal d'élevage – Apprentissage expérientiel – Australie – International – Programme d'enseignement vétérinaire – Santé publique vétérinaire – Vétérinaire d'exercice rural.



Integración de incentivos en los planes de estudio para que los jóvenes veterinarios ejerzan en zonas rurales alejadas

P. Windsor

Resumen

Los resultados de los estudios sobre la disminución del número de veterinarios de campo mostraron que, tras graduarse, los profesionales permanecían cada vez menos tiempo en las zonas rurales, así como las crecientes dificultades experimentadas para reemplazarlos. El problema podría resolverse mediante la creación de un diploma de primer ciclo universitario en ciencias veterinarias en el que se motive a los jóvenes graduados a trabajar en comunidades rurales alejadas y se garantice su capacidad para ejercer la profesión en cuanto acaban los estudios. El autor examina varias iniciativas al respecto que podrían integrarse en los planes de estudios, como la instauración de una formación más completa sobre la sanidad y la producción pecuarias; la incorporación de periodos de prácticas rotativos en el campo durante el último año de estudios; la posibilidad de estudiar en el extranjero; la integración de las consecuencias mundiales de las enfermedades del ganado en los programas; la mejora de las oportunidades de estudio en las localidades rurales y la adaptación de los requisitos de admisión para aumentar el ingreso de estudiantes de zonas alejadas.

Palabras clave

Aprendizaje basado en la experiencia – Australia – Ganado – Internacional – Plan de estudios veterinarios – Salud pública veterinaria – Veterinario rural.



References

1. Andrus *et al.* (2006). – Work conditions, job preparation, and placement strategies for food animal veterinarians. *J. vet. med. Educ.*, **33**, 509-516.
2. Australian Bureau of Statistics (ABS) (2008). – 7503.0 Value of agricultural commodities produced, Australia, 2006-2007. ABS, Canberra.
3. Australian Companion Animal Council (2003). – Contribution of the pet care industry to the Australian economy, 5th Ed. BIS Shrapnel, North Sydney.
4. Frawley P.T. (2002). – Review of rural veterinary services. Department of Agriculture, Fisheries and Forestry, Australia. Available at: www.daff.gov.au/__data/assets/pdf_file/0008/156923/vetreport.pdf (accessed on 5 August 2009).
5. Gordon J. (2001). – The horse industry contributing to the Australian economy: a report for the Rural Industries Research and Development Corporation. RIRDC, Canberra.
6. Gwinner K. *et al.* (2006). – Importance–performance analysis of food supply veterinary medicine career commitment. *J. vet. med. Educ.*, **33**, 525-529.
7. Heath T.J. (2004). – Recent veterinary graduates. *Aust. vet. J.*, **82**, 602-604.
8. Heath T.J. (2007). – Longitudinal studies of Australian veterinarians: the first 20 years. *Aust. vet. J.*, **85**, 281-289.
9. Heath T.J. (2008). – Initial work experiences of veterinarians who graduated from Australian universities in 2005. *Aust. vet. J.*, **86**, 357-364.
10. Lomax S., Shiel M. & Windsor P.A. (2008). – Impact of topical anaesthesia on pain alleviation and wound healing in lambs following mulesing. *Aust. vet. J.*, **86**, 159-169.
11. Schon D. (1987). – Educating the reflective practitioner. Jossey Bass Publishers, San Francisco.
12. University of Sydney (2003). – CEQ results and reports. Institute for Teaching and Learning, University of Sydney. Available at: www.itl.usyd.edu.au/CEQ/reports.cfm (accessed on 5 August 2004).
13. University of Sydney (2004). – Our vision. Faculty of Veterinary Science, University of Sydney. Available at: www.vetsci.usyd.edu.au/about/our_vision.shtml (accessed on 19 July 2004).
14. University of Sydney (2008). – CEQ results and reports. Institute for Teaching and Learning, University of Sydney. Available at: www.itl.usyd.edu.au/CEQ/reports.cfm (accessed on 29 August 2008).
15. Windsor P.A. (2005). – Use of on-line resources in virtual teaching and learning in sheep medicine. *In Proc. 6th International Sheep Veterinary Congress*, 17-21 June, Crete, 329-331.
16. Windsor P.A. (2007). – On-line resources to support farm animal and veterinary public health teaching at the University of Sydney. AVA Education Symposium. New technologies in veterinary education: better learning outcomes? 18 May, University of Melbourne, Parkville.
17. Windsor P.A. (2008). – Best practice health and husbandry of cattle, Cambodia. Australian Centre for International Agricultural Research, Canberra. Available at: www.aciar.gov.au/project/AH/2005/086 (accessed on 4 August 2009).
18. Windsor P.A., Sothoeun S. & Khounsey S. (2008). – Identifying research priorities for the development of the beef industry in Cambodia and Lao PDR with special reference to animal health interventions. Australian Centre for International Agricultural Research, Canberra. Available at: www.aciar.gov.au/project/AH/2006/077 (accessed on 4 August 2009).

