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Essential veterinary education in avian medicine: a global perspective

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Summary
Avian medicine is a relatively recent discipline in the veterinary curriculum, and is definitely not considered a topical issue. However, in the face of a growing demand for poultry meat worldwide, and in view of the health issues surrounding wild, exotic and pet birds, the relevance of avian medicine should be acknowledged and taken into account when revising curricula.

Keywords
Avian medicine – Curriculum – Veterinary education.

Introduction

Although birds are animals that occupy significant niches in animal production and in the companion animal sector, in most veterinary schools there is little research and very few clinical and field activities undertaken in this field and education in avian medicine is largely lacking. There are a few specific and sporadic initiatives in certain veterinary institutions that have a tradition of providing training in this discipline, but they are often managed by a few staff members rather than being considered an integral component of the education that the institution provides. The reason for the fragmentation and isolation of avian medicine from the rest of the curriculum may be linked to several factors, including the anatomical and physiological differences of birds compared to mammals and the fact that it is a more recent discipline which does not have historical roots in the development of veterinary faculties. (A similar phenomenon occurs in the case of aquatic animal medicine.) In addition, whereas in the past students have been attracted by large animal practice, more recently the emphasis has shifted to companion animal medicine.

A wider perspective on avian medicine

Avian medicine should be viewed as an evolving discipline with great potential for offering a much wider range of job opportunities than is currently proposed. For the sake of clarity a list of areas of expertise based on avian medicine is listed below:

– poultry clinician for industrially reared poultry (broilers, layers, turkeys, ducks/geese, game birds and minor species such as quail and guinea-fowl)

– poultry epidemiologist

– poultry nutritionist/geneticist

– poultry laboratory diagnostician

– quality and hygiene industrial process supervisor

– poultry public health specialist

– rural poultry specialist for international cooperation programmes

– pet bird clinician/surgeon

– avian wildlife expert (epidemiologist, diagnostician, etc.).

Poultry performs a key role in the supply of protein to human populations around the world through the production of meat and eggs (3, 5). It is regarded as a low-cost, high-efficiency, high-quality dietary component and its consumption is not constrained by any religious or cultural beliefs. Ease of transport together with the ability of the bird to live in a wide range of environments make poultry an ideal choice for developed and developing markets. In addition, rural and semi-rural poultry farming contribute significantly to poverty alleviation and to reducing malnutrition in the most remote and underdeveloped areas of the world (2).

At a global level, poultry meat production is second only to that of pig meat. The estimated amount of poultry meat produced worldwide in 2007 was 86 million tonnes and it is the most traded product internationally (8.2 million tonnes in 2007) (4). The global chicken population is composed of approximately 45 billion meat-type birds together with around 6 billion commercial egg-laying birds. Historical trends demonstrate that these numbers may grow between 2% and 4% per annum. Optimisation of the production efficiency in chicken farming systems is achieved most commonly by controlling disease burdens (often associated with mortality or morbidity that prevents the bird from converting the maximum level of feed-based protein to muscle-based protein) and feeding the bird in the most efficient manner. This becomes even more important when the current price rises in commodities such as wheat are considered. The practice of feeding animals in commercial farming systems with foods that could be eaten directly by humans should be accompanied by a commitment to maximise the efficiency with which these resources are utilised.

The role of the veterinarian in industrial poultry production, be it in meat or egg-based production systems, requires an active working knowledge of disease diagnosis, population medicine (in terms of the dynamics of disease spread and control strategies) and public health (in areas of food safety and other zoonotic infections). Moreover, the dispersion of this knowledge to the developing world will have profound effects on the ability of these regions to support their human populations with adequate nutrition.

Veterinary interventions in international cooperation programmes are focused on establishing simple and sustainable animal production units. This is a major challenge for poultry husbandry in remote areas where even minimum biosecurity standards are not applied and where the cold chain is non-existent. However, poultry farming yields different types of animal protein that can be fed to infants and adults, and, in the case of egg production, is sustainable without sacrificing the stock. In addition, poultry can be kept at home in enclosures and are therefore relatively simple to manage. Thus, sustainable systems for poultry rearing are extremely important for improving rural lifestyles, and the lack of such systems is still one of the major obstacles to poverty reduction.

In general, veterinary schools worldwide devote limited teaching time and insufficient research efforts to avian medicine (6). This has resulted in hampered management of global crises, such as the recent H5N1 panzootic, and in the involvement of other professions in the management of issues that strictly speaking pertain to the veterinary profession.

The recent spread of avian influenza viruses within the avian population of three continents, and its spillover to mammals, including humans, have raised concerns about the associated threat of a human influenza pandemic (1) originating from an avian virus. This has emphasised the requirement for adequate veterinary infrastructure and capacity to deal with viruses and other disease-causing agents with the potential to emerge from the avian population and infect humans. In many areas of the world, humans live in extremely close proximity to poultry. Many developing countries incorporate poultry into the household, guarding it as a key food source. This type of living arrangement is widespread and forms part of many different cultures, thus, a major circumstance that facilitates the transfer of infection across the species barrier to humans is likely to persist for quite a significant period into the future. This will be difficult to combat. Given the potential of any such transfer to have serious effects on human health across the globe, the strengthening of knowledge about poultry medicine within the veterinary curriculum would seem wise.

It is clear that the medical community would benefit from closer links with veterinary specialists as they attempt to control the emergence of new zoonotic diseases from the avian reservoir. This does require that qualified veterinary resources be available to interact with the medical community and that the input given contribute actively to a more successful prophylactic or control strategy developed in collaboration with specialists in other fields.

In many developed countries opportunities for the commercial poultry veterinarian are limited to roles in specialist private practice or companies that produce meat and poultry products. It is not easy for qualified veterinarians to obtain knowledge and expertise in poultry medicine, as it is not common for them to encounter clients unless they are already in this specialist area. From this point of view, the inclusion of poultry production medicine in the veterinary curriculum becomes essential. However, more in-depth coverage must be provided, not

simply a list of the major diseases of chickens and turkeys. Whilst it is common for undergraduates to receive education in the prevention and treatment of individual and herd disease in the major companion animal and domestic animal species, poultry (despite its numerical global prominence) is often omitted. The attitude that says avian medicine is a marginal subject and need not be taught in standard veterinary programmes creates a type of self-fulfilling prophecy. Education in avian medicine is not widely available, so not many students are particularly interested in the subject; it therefore becomes a specialist field and remains of interest to only small numbers of people. This results in there being a limited number of scientists or lecturers able to pass on their knowledge. Consequently, when major health crises occur, such as outbreaks of avian influenza, Newcastle disease or salmonella, countries are often left short of veterinary resources, because only a few experienced professionals are available. The lack of undergraduate background training leads to little interest in poultry medicine and this makes it extremely difficult to recruit veterinarians to positions in scientific poultry research or governmental positions where coordination and administration of the food supply chain is required. In certain instances this leads to lack of coordination and of appropriate management, which in turn often results in an uncontrolled spread of infection or dispersion of the contaminant or unauthorised substance along the food chain.

Another aspect of avian medicine which is becoming more and more relevant to the veterinary profession is that of the pet bird clinician or surgeon. In many cultures birds are reared for hobby purposes and exotic birds have become more popular in households (7). Pet bird medicine involves several components, including the management of quarantine stations, aviaries, captive breeding colonies and birds kept in households and public areas. The mingling of birds of different species, originating from different geographical areas, with different health statuses is a risk factor for the spread of diseases, including certain zoonoses. Specific knowledge of husbandry, breeding and diseases is required to intervene in these establishments and liaise with owners and public health officials, and to minimise the requirement for the implementation of draconian measures for disease control and the prevention of economic losses. Specific specialists that are essential in pet bird medicine, but rather difficult to find, are animal welfare experts and behavioural specialists.

Conclusion

Detailed subject content for veterinary undergraduates will always be a matter defined by the disease issues that are relevant to the country in which the university is located. In part, teaching will also be limited by the availability of professionals with adequate experience in the field. If avian medicine is believed to be an area that requires expansion, veterinary schools should liaise with the World Organisation for Animal Health to develop a register of specialists willing to assist students in their training and deliver key lectures on aspects of avian medicine that have implications for the facilitation of the world trade in live birds, meat, eggs and other commodities. It is critical that any such lectures and associated material be of the highest standard and serve to stimulate the veterinary graduate to explore a field of study that may otherwise not appeal. The current global health crisis with H5N1 serves as an example of why the study of avian medicine should be of interest to students, involving as it does the zoonotic potential of avian viruses and the real (not theoretical) control strategies used to defend against such a global threat. As other zoonotic risks emerge, their inclusion into this part of the curriculum would be appropriate. It should be the responsibility of leaders in the veterinary profession and in veterinary schools to have the vision to modify veterinary curricula to include these non-traditional fields and to create opportunities for new professionals, rather than continuing to teach what is most lucrative today.

Les fondamentaux de l'enseignement vétérinaire dans le domaine de la médecine aviaire : une perspective mondiale

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Résumé
La médecine aviaire, discipline d'introduction relativement récente dans les programmes d'enseignement vétérinaire, n'est guère considérée comme un sujet d'actualité. Toutefois, face à la recrudescence de la demande mondiale de viande de volaille, et compte tenu des risques sanitaires associés à l'avifaune et aux espèces d'oiseaux exotiques et d'ornement, la médecine aviaire commence à être reconnue comme une discipline importante qui devra être prise en compte lors de la révision des programmes d'enseignement.

Mots-clés
Enseignement vétérinaire – Médecine aviaire – Programme d'enseignement.

Elementos esenciales de la enseñanza veterinaria en materia de medicina aviar desde una perspectiva mundial

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Resumen
Parece a todas luces claro que la medicina aviar, disciplina relativamente nueva en el plan de estudios veterinarios, no está considerada de palpitante actualidad. Sin embargo, ante la creciente demanda de carne aviar en todo el mundo, y en vista de los problemas sanitarios que surgen por doquier en torno a las aves salvajes, exóticas y domésticas, convendría reconocer la importancia de la medicina aviar y tenerla en cuenta al revisar los planes de estudios.

Palabras clave
Enseñanza de la veterinaria – Medicina aviar – Plan de estudios.

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