

The One Health Initiative from a Laboratory Animal Medicine Perspective

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Opinion

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INTRODUCTION

Due to the very nature of our work—the care of the laboratory animals used to make advances in both human and veterinary medicine—the field of Laboratory Animal Medicine has thoroughly embraced the ideas that underpin the One Health initiative. The Journal of American Veterinary Medical Association (JAVMA) has posed the problem of One Health as one of a “convergence of people, animals, and our environment” that has created a new dynamic of challenges that are “demanding, profound, and unprecedented” [1]. And yet, Laboratory Animal Medicine as a field remains an untapped resource in the mission of the Initiative.

In perhaps no other field is the mission of the One Health initiative so seamlessly integrated. Research animals are utilized for their similarities to humans in the study of diseases that affect both animals and humans alike. Laboratory Animal Medicine can therefore serve as a platform for the One Health Initiative, in that it provides many of the beneficial goals of the initiative. Laboratory Animal Medicine and Animal Research aim to develop novel techniques and therapeutics that improve the health of all living things, and Laboratory Animal Veterinarians work collaboratively with PhD scientists, medical doctors, and specialists from a wide variety of fields. Many of these collaborations occur in centers of both veterinary medical and human medical teaching institutions while continually adding to our scientific knowledge. Laboratory Animal veterinarians are an indispensable element of any team working to solve medical problems across the globe, and they are often the one constant and connecting factor in collaborative teams working amongst higher education and public institutions tackling these issues.

And yet, in discussing these goals, the American Veterinary Medical Association (AVMA) does not directly recognize the importance of Laboratory Animal Medicine, or Comparative Medicine, in its literature [1]; whereas the American Medical Association (AMA) clearly brings Comparative Medicine and the use of research animals into the discussion of the One Health Initiative [2]. The AMA recognizes “advanced health care options for humans (and animals) via comparative biomedical research,” “policies on the use of animals in research,” and “product safety testing” [2], whereas these things are not so prominently mentioned in the benefit goals of the AVMA. Perhaps some of the gaps that still exist between human and veterinary medicine can be bridged via the field of Laboratory Animal Medicine.

One particular area of discussion for which the inclusion of Laboratory Animal veterinarians is needed is that of antibiotic misuse and/or overuse and the crisis of antibiotic resistant microbial facing the world. It is vital for veterinarians in the field of Laboratory Animal Medicine to be prudent in their use of antibiotics in today’s scope of increasing antibiotic resistance. While we do face some instances of antibiotic resistance in laboratory animal species, we have advantages not always available to veterinarians in private practice medicine, including assurance that antibiotics are administered when needed and as directed, as well as routine access to microbiological screening to determine the best antibiotics to be used. However, with those advantages often comes the fact that veterinarians in laboratory animal medicine are more likely to use stronger, later generation antibiotics rather than starting with the basics, for example enrofloxacin is a very commonly used antimicrobial but is an antibiotic on the list of Veterinary Critically Important Antimicrobials meeting criteria of being both important for use in veterinary medicine and essential against specific infections with lack of therapeutic alternatives [3]. Antibiotics from this classification are recommended to be used very judiciously and with caution. By integrating into the One Health initiative, veterinarians in all aspects of the profession could use the guidance developed by those working on the Initiative more effectively on the treatment of infectious diseases with antimicrobials, as could many practitioners in the human sector.

As a mission of the One Health initiative is joint efforts in the development and evaluation of new diagnostic methods, medicines and vaccines for the prevention and control of diseases across species^[4], another important aspect in which Laboratory Animal medicine could platform the mission is that of the study of agricultural animals and how to improve on their production and growth without the use of antibiotics. Unless research into options to improve production in agricultural animals without the use of antibiotics continues, agricultural producers will continue to be left with no other option than to turn to antibiotic use to maximize outcomes. The more research we can do into options of improved husbandry conditions, improved feed sources, and other viable treatment and/or prevention options, the more agricultural producers will have in their arsenal of defense against microbial diseases.

As the global problem of antibiotic resistance increases, research into alternative treatments for resistant infections in both animals and humans is going to be vital to the survival of our environment, human, and animal populations. Animals will need to be utilized to determine treatment alternatives to diseases that are no longer able to be treated as they once were. Thus, the fields of Laboratory Animal medicine must become an integrated piece of the One Health puzzle^[5].

COMPETING INTERESTS

The authors declare that they have no competing interests.

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