

Introduction

Brucellosis: recent developments towards 'One Health'

Nearly thirty years ago, in the volume entitled 'Veterinary Medicine and Human Health', Dr Calvin Schwabe spoke to the increasing interdependence of humans and animals (and animal products) by promoting the emerging concept of One Medicine, now referred to as One Health. He believed that the concept could be usefully applied to the 'immensely complex, multifaceted problem [of the] future quality of human life and, ultimately, of human survival'. Notably, he reviewed brucellosis through the One Health lens as a highly illustrative zoonotic case study.

Brucellosis is an ancient disease with evolutionary mechanisms that allow it to manipulate cellular immunity and resist cellular immune responses, thus achieving intracellular persistence. It yields low fatality rates but causes substantial host disability. Despite estimates of more than 500,000 new human cases annually, brucellosis remains frequently under-diagnosed and neglected amongst livestock diseases in many endemic countries. Although the majority of reported human cases are caused by transmission of *Brucella melitensis*, *B. abortus*, and *B. suis* from livestock, the pathogenicity for humans of newly described species and atypical strains is also currently being reported. Transmission of *Brucella* spp. from wildlife to humans is generally via preparation and consumption of bushmeat, yet there remains potential for wildlife populations to also serve as sources of atypical transmission and spillback to livestock. While most evidence on the economic burden of zoonotic brucellosis and the benefits of its control are from developed countries, the overall burden of brucellosis is considered greatest in developing countries, as these countries can have insufficient human health and veterinary infrastructure, inefficient veterinary services and inadequate control of livestock movement.

The global environmental changes being wrought by humans are rightfully recognised as having substantially altered the environment in which species and zoonotic pathogens survive and evolve. In this context, One Health is recognised as the collaborative effort of multiple disciplines to attain optimal human, animal, and environmental health. As noted in the Preface to this volume, notable brucellosis science and technology advances are occurring. This volume of the OIE *Scientific and Technical Review* discusses brucellosis epidemiology, pathogenesis, immunity, diagnosis, surveillance, and vaccinology, as well as the economics of prevention and control, and adaptive risk management across livestock, humans and wildlife.

Almost three decades have elapsed since Calvin Schwabe used the example of brucellosis to illustrate the potential for One Health. It is now imperative that professionals in veterinary public health, human health, wildlife health, and environmental health deliberately and determinedly address brucellosis using a One Health approach at local, regional, and global levels. Brucellosis has caused ill health and economic hardship the world over for far too long and it is my hope that this publication will support the work of the animal and human health communities as they seek to find practical and effective solutions to these problems.

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