

## One Health in South Africa?

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The concept of “One Health” is not of recent design. As such, the fundamental similarities and cross-sectioning of veterinary and human health sciences were already appreciated in the mid-1800s and referred to as “one medicine”.<sup>1</sup> Nevertheless, although intuitively intertwined, human, veterinary and environmental health have been largely developed and managed in isolation.<sup>2,3</sup> This separation has been brought about on various levels, stemming from non-inclusive training for these disciplines through to segregated practice and policies.<sup>2,3</sup> The awareness of the importance of the One Health approach has, however, blossomed in the past decade, in particular due to the increasing number of zoonotic disease events demonstrating its requirement.<sup>2-6</sup> It has been reported that up to 75% of emerging diseases in recent times can be ascribed to zoonotic infectious agents, and to a greater degree, viruses.<sup>4-6</sup> Important examples include Ebola virus disease, Middle Eastern respiratory syndrome (MERS), severe acute respiratory syndrome (SARS), Nipah and Hendra diseases, Zika fever, and the list continues.<sup>4-6</sup> In addition, two recent events constituted the first and so far only, Public Health Emergency of International Concern events to be declared by the World Health Organization, and were related to zoonoses, namely the Ebola virus disease outbreak in West Africa and the emergence of microcephaly and birth defects associated with the Zika virus outbreak in South America.<sup>7</sup>

The increased occurrence of these zoonotic diseases has been ascribed to changing pressures at the human and animal interface, and changing ecological factors. In addition many new infectious agents have become known to us and previously controlled ones have re-emerged.<sup>4-6</sup> Zoonotic disease transmission cycles are typically intricate, involving wildlife, domestic livestock and invertebrate vectors in various combinations.<sup>4-6</sup> Humans are typically dead-end hosts of these infections, and therefore studying the disease in humans only, will contribute only partly to our understanding and knowledge of these diseases. It is therefore critical to study the natural ecology of these diseases as well in order to understand the driving factors for emergence and spill-over, so that control and prevention can be affected.

Given these trends in emerging zoonoses, it is understandable how the pressure has mounted to tackle emerging disease risks effectively in order to better control, and possibly prevent, such outbreaks to avoid catastrophe. As such, One Health initiatives have blossomed globally.<sup>2</sup> Apart from expanding training

opportunities harnessing the concept, and increased funding for research along the One Health theme, political buy-in for the approach has also become a reality. For example, this is evident through the focus of One Health approaches through the International Health Regulations and the Global Health Security Agenda.

The global One Health trend has not gone unnoticed in South Africa, and various examples are available demonstrating One Health efforts in the country. One such example relates to the expansive Rift Valley fever (RVF) outbreak of 2008–2011.<sup>8</sup> Real-time information-sharing between veterinary and human health laboratories and other stakeholders provided opportunities for improved control of the outbreak.<sup>8</sup> In practice, the identification of human RVF on few occasions preceded the identification of the animal outbreak in remote areas, but timeous information-sharing allowed for the veterinary health responses to be deployed in these areas.<sup>8,9</sup> The reverse was true as well.

The management of rabies in the country also offers more opportunities to demonstrate One Health in action. The National Rabies Advisory Group, constituting a multi-sectoral network of stakeholders from governmental, provincial, laboratory and academia from both veterinary and public health structures, has been active for decades. The Group not only provides combined annual surveillance reports with recommendations for action, but also regularly and routinely provides surveillance data amongst the network, facilitating timeous and knowledge-based responses for the control and prevention of rabies. In addition, the Group has produced national rabies guidelines which govern both veterinary and human health practices in this regard.

In an effort to formalise such One Health approaches in South Africa, the National Departments of Health, Agriculture, Forestry and Fisheries and Environmental Health came together in 2014 to establish the National One Health Forum. During its young existence the Forum has developed terms of reference which were vetted by all three departments. The Forum’s activities have included holding a prioritisation workshop for zoonosis in the country, involving the input of a multi-sectoral stakeholder group. Such activities assist in the coordination of efforts in a systematic and informed way to improve control and prevention of important zoonotic diseases. In 2016, the Forum hosted the first (to be annual) One Health Symposium in South Africa attracting the interest of more than 100 participants.

The symposium showcased One Health-inspired surveillance, training and research in the country. As part of the event, multi-sectoral student groups in South Africa were invited to devise integrated One Health outreach projects. One of these projects, led by a University of Pretoria group, went forth to win an international competition in recognition of their efforts. In addition, the Forum publishes regular newsletters reporting on One Health efforts through training, surveillance, outbreak responses and research in the country.

These examples demonstrate the feasibility and rewards of One Health in South Africa. As systems and policies continue to evolve internationally and locally in order to support One Health efforts, it remains in the hands of veterinary, medical and environmental healthcare workers and researchers to actively seek opportunities to collaborate to improve health outcomes in South Africa.

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**Figure 1:** Human, animal and environmental health are intimately intertwined.

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