

One Health Perspective in a Changing World: What is our Role and Connection with Infectious Diseases and What is going to Happen in our Near Future

Gajardo Tulio

Centro de Investigación Aplicada de Chile (CIACHI), Chile

INTRODUCTION:

By the 1970s, the human burden of infectious diseases within the developed world was substantially diminished from historical levels, largely thanks to improved sanitation and therefore the development of effective vaccines and antimicrobial drugs. The emergence of a series of novel diseases within the 1970s and 1980s (e.g. toxic shock syndrome, Legionnaire's disease), culminating with the worldwide spread of HIV/AIDS, however, led to communicable disease rising copy the health policy and political agendas. Public concern about emerging infectious diseases (EIDs) has been heightened due to the perception that infectious diseases were previously in check, due to their often rapid spread (e.g. severe acute respiratory syndrome; SARS), because they often have high case fatality rates (e.g. Ebola virus disease) and since the event of medicine and vaccines to combat a number of these (e.g. HIV/AIDS) has been slow and dear. By the 1990s, authors had begun to review similarities among these diseases and identify patterns in their origins and emergence. Similarities included a skew to zoonotic pathogens originating in wildlife in tropical regions (e.g. Ebola virus), which emergence was related to environmental or human behavioural change and human interaction with wildlife (e.g. HIV/AIDS) or with livestock which had interactions with wildlife (e.g. Nipah virus). Emergence was found to be exacerbated by increasing volumes and rates of human travel and globalized trade.

Prior to 2000, wildlife diseases were mostly studied to enhance zoo animal survival and welfare, with little published on the diseases of free-living wildlife unless they affected heavily hunted species (e.g. deer in North America) or were considered a threat to livestock health (e.g. tuberculosis, rinderpest). While non-infectious diseases had been widely known as important drivers of species declines (e.g. DDT poisoning of raptors, only a little number of researchers investigated communicable disease as an element in, often covert, wildlife population regulation). The role of infectious diseases in mass mortality events or population declines was often considered controversial or secondary to other factors, and their role in species extinctions often disputed. The first definitive identification of disease as a explanation for species extinction was published in 1996 following the demise of the last population of the Polynesian tree snail *P. turgida* thanks to a microsporidian infection. This added to evidence that infectious agents had caused the extinction within the wild of the ferret, the extinction of around one-third of Hawaiian honeycreepers and therefore the

slime mould-induced decline of eelgrass (*Zostera marina*) beds within the USA, resulting in extinction of the eelgrass limpet (*Lottia alveus*). During the 1990s, wildlife mortality events caused by infectious diseases were reported in zoos, in wildlife translocation programmes and in other conservation programmes. Perhaps the foremost important of those was the invention of amphibian chytridiomycosis, caused by the chytrid fungal pathogen *Batrachochytrium dendrobatidis*, which was first recognized within the 1990s and has since been implicated within the decline or extinction of over 200 species of amphibian. This disease continues to threaten amphibians globally and has been described as 'the worst communicable disease ever recorded among vertebrates in terms of the amount of species impacted, and its propensity to drive them to extinction'.

In addition to identifying an apparently growing trend of disease threats to wildlife, Daszak et al. highlighted wildlife because the source of a series of high-impact, recently emerging pathogens affecting people. These authors reiterated the widely proposed hypothesis that the majority emerging pathogens originate in wildlife and spillover into human hosts thanks to a variety of ecological, demographic and socio-economic changes. before 2000, these wildlife-origin pathogens were known to incorporate Ebola and Marburg virus, HIV-1 and HIV-2, Sin Nombre virus, Nipah, Hendra and Menangle virus, West Nile virus, *Borrelia burgdorferi* et al. Since then, other human diseases have emerged from wildlife, including Middle East respiratory syndrome (MERS) and different subtypes of avian influenza, and further advances are made in our understanding of patterns of zoonosis emergence. A series of papers analysed a database of all known human EIDs and confirmed that the bulk are of animal origin, with viruses being a very important group. Further analysis of an updated version of this database identified that EIDs had increased in frequency (even accounting for increased numbers of researchers), with the proportion of these emerging from wildlife hosts increasing substantially over the last four decades of the 20th century.

ABSTRACT:

We have been living in a globalized world for years, but still we are not really connected. The link between human, animal and environmental health today more than ever before becomes the key pillar to ensure our future survival and coexistence, where multidisciplinary responsibility based on the correct education of the population results in the central axis of all our change as a society.