




High Impact Diseases

Author: Dr Mary-Louise Penrith

Licensed under a Creative Commons Attribution license. 

Introduction

Diseases are a major constraint for animal production and therefore constitute a threat to livelihoods and food security, and sometimes to the survival of a species. While any disease has negative effects and causes suffering, some diseases have higher impacts than others and are major targets for management and control.

High impact diseases – the criteria

High impact diseases (HIDs) are diseases that must be reported to the World Organisation for Animal Health (OIE) because they can have a significant negative effect on the lives of humans and animals. These diseases fall into one or more of the following categories:

- Epidemic diseases with the ability to spread rapidly across international boundaries and have severe effects on livestock health and production and/or on human health;
- Natural transmission to humans occurs and can result in serious disease or death;
- Diseases that cause significant morbidity and/or mortality at the level of a country or zone;
- Emerging diseases characterised by apparent zoonotic properties and/or rapid spread.

The current list replaces the former List A of the OIE in which the transboundary diseases were defined as ‘those epidemic diseases which are highly contagious or transmissible and have the potential for very rapid spread, irrespective of international borders, causing serious socio-economic and possibly public health consequences’.

The revised approach permits the inclusion of diseases that spread more insidiously but nevertheless have a high impact on animal production or cause serious zoonoses. Two diseases that emerged in the last decades of the 20th Century, porcine reproductive and respiratory syndrome (PRRS) and bovine spongiform encephalopathy (BSE or ‘mad cow’ disease) did not qualify for inclusion under the List A criteria and yet both diseases have had



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Veterinary Science



OER Africa
An Initiative of Saide



OIE Collaborating Centre for Training
in Integrated Livestock and Wildlife
Health and Management

a high impact in terms of production (PRRS) and trade and human health (BSE). Zoonotic diseases such as bovine tuberculosis, brucellosis, anthrax and porcine cysticercosis, some of which are also classified as neglected zoonoses, are now included. The inclusion of many of the vector-borne parasitic diseases in the list of diseases to be reported recognises the fact that they have serious effects on animal production and in some cases on human health in large areas of the developing world.

HIDs are divided into two major groups on the basis of how they are transmitted: contagious diseases and vector-borne diseases. It must be borne in mind, however, that certain diseases use both routes of transmission.

Contagious diseases

Contagious diseases are transmitted by direct contact with infectious animals or with infected material derived from or contaminated by infectious animals. Most of the epidemic diseases are highly contagious and this is the reason for their ability to spread rapidly. Some of the most feared diseases like rinderpest and foot-and-mouth disease are highly contagious diseases with the ability to sweep through large numbers of animals and across international borders in a short space of time. Most contagious diseases result from susceptible animals inhaling or eating infected material, but some are transmitted by other routes, for example during mating. Rabies, which results from the bite of an infected animal, is also classified as a contagious disease, but it could be argued that the term transmissible would be more appropriate for diseases like rabies and BSE that require an action on the part of either the infected animal or the susceptible host for transmission to occur.

HIDs that are both contagious and vector-borne include Rift Valley fever, African swine fever and lumpy skin disease. Rift Valley fever in animals is transmitted by the bites of mosquitoes and is therefore a vector-borne disease, but humans are usually infected by contact with the carcasses and blood of animals that have died of RVF although mosquito bites may be responsible in a low number of cases. African swine fever is naturally maintained in a cycle between warthogs and argasid ticks and is strictly vector-borne, but once domestic pigs become infected the disease is highly contagious and transmission by vectors is either absent or relatively unimportant. The vector-borne component of lumpy skin disease is well documented, but infection per os from contaminated water and feed sources is recognized.



Vector-borne diseases

The infectious agent in vector-borne diseases is transmitted by an arthropod vector that may be a tick, a fly, a mosquito or a midge; some disease agents are transmitted by fleas and lice. Transmission by vectors may be simply mechanical, but most of the vector-borne diseases have biological vectors in which the pathogen replicates and which may be essential for completion of the cycle of transmission. Tick-borne diseases have great economic importance world wide, especially in developing countries, and include erosive diseases like bovine anaplasmosis and highly fatal diseases like heartwater, East Coast fever and Corridor disease. Trypanosomosis is transmitted by tsetse flies and can affect a wide range of species including humans. Rift Valley fever is transmitted by mosquitoes, and bluetongue and African horse sickness are transmitted by midges. Unlike most contagious diseases, many vector-borne diseases tend to be seasonal, particularly in temperate climates where the vectors are not active in the cold winter months, but their activity may also be reduced during dry periods.

Prevention and control

The way in which a disease is transmitted determines the way in which it can be prevented and controlled. Logically, controlling the vectors should result in the disappearance of a vector-borne disease, and it has been possible to free some areas and countries of certain tick-borne diseases like East Coast fever using this approach, but unfortunately vector control can be very difficult indeed. Additionally, the use of chemicals to kill vectors is increasingly under the spotlight for possible environmental effects. They may even achieve the opposite of the desired effect by eliminating a natural means of control of arthropods as occurred when oxpeckers were eliminated from some areas where there was regular dipping of cattle. Contagious diseases are controlled in various ways depending on the nature of the disease, the species involved and the routes of transmission. Vaccines have proven an excellent tool for preventing many diseases, and were instrumental in the eradication of rinderpest. However, it is increasingly realised that the application of strict biosecurity in production systems is essential in preventing contagious diseases cost effectively.

Find out more



- Web-based modules on HIDs available on the veterinary HUB as part of a Master's degree or as a stand-alone CPD unit provide more information about the range of diseases listed in the Terrestrial Animal Health Code of the OIE and why they are on the list;
- Web-based modules on HIDs provide an in-depth look at how the diseases are transmitted, how to recognise them, their prevention, control and socio-economic importance, and where to look for further information;
- Web-based modules on animal health management and on the tools used for animal health management, including biosecurity, provide a broad overview of approaches to the management of high impact diseases.

