



Livestock infectious diseases information sheet

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The Federation of Veterinarians of Europe (FVE) - representing around 300,000 veterinarians across 39 European countries - aims to enhance animal health, animal welfare, and public health and to protect the environment by promoting the veterinary profession.

With this information sheet, FVE aims to help people better understand how infectious diseases emerge and spread between individuals of the same species, and between different species. We also look at their relationship with animal husbandry and food production systems and the role veterinarians play in disease prevention and control.

Infectious agents – the basics

Animals and humans share environments. Potentially infectious agents are present in all living creatures: from single-celled protozoa to human beings. Well-known examples of infectious agents are viruses, bacteria, fungi and parasites.

A pathogen is an infectious agent able to produce disease. Infectious agents can be divided into two different categories. The first category is beneficial to the host or at least will not harm the host. Commensal co-exists without causing harm to its host and, often described as the normal flora, can have beneficial effects on its host. The second category that may cause disease is the pathogens as their virulence determines the severity of the disease.

Infections occur when infectious agents break down the animals' natural defences and invade their tissues. Sometimes infections do not progress to disease, while there are pathogens that have the ability to cause clinical or subclinical disease.

The likelihood that an individual contracts disease depends on multiple factors:

- Pathogen factors: toxin production, load, adhesion in the host and survival in cells, affinity to specific tissues or organs and severity of lesions;
- Host factors: such as age, immune and nutritional status, condition and genotypes.
- Environmental factors: such as climate and weather, population density, frequency of contacts, population size, number of susceptible individuals, availability of carriers, vectors or reservoir organisms.

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Genetic modifications are fundamental mechanisms in the evolution and development of all living beings, including pathogens and their hosts

The genetic information of all living creatures, including infectious micro-organisms, are continually evolving through recombination and mutations, and are occasionally transmitted across species. Those individuals that are better adapted to their living conditions and their offspring have a higher chance to survive.

It may happen that an infectious micro-organism manages to adapt to living in a new host species; this is called a spill-over. The new host can be another animal species or people. In most cases, they don't cause problems, but sometimes serious disease outbreaks occur and even more rarely they cause epidemics or pandemics. A recent and clear example that the health of animals, people and ecosystems are strongly interlinked in One Health, is the COVID-19 pandemic.

Animals and humans share environments and exchange infectious agents therefore a One Health approach is key to the prevention and control of infectious diseases

The health of people, animals and our ecosystems interlink, this is why a One Health approach is vital. To effectively tackle pandemics, they have to be addressed in a cross-sectoral and trans-disciplinary way. It is crucial to consider the broader picture and think about the conditions that allow pathogens and diseases to emerge and spread.

Scientists and scientific developments have led to improved animal husbandry and improved prevention and control of epidemics. Healthy and well-kept food-producing animals are fundamental to human health, food safety and food security as they ensure the availability of stable protein sources, high biological quality food, and high-value diets.

Europe has the knowledge and competency to further improve the current animal food production systems, making them more resilient to epidemics, more sustainable and welfare-friendly, and less dependent on antimicrobial use.

The EU animal food production systems, through-out legislation and food chain actors, can reduce the risks of infections by monitoring diseases and robust prevention and control measures. Animals' health and welfare can further be improved by ensuring appropriate environments, housing, biosecurity measures as well as by applying preventative veterinary medicine and responsible use of medicines. Preventative veterinary medicine improves livestock and wild animal control activities while protecting them from the risk of the spread of diseases.

Veterinarians help to reduce the spread of diseases through the provision of essential services

Veterinarians and well organised veterinary services contribute to the prevention, early detection and control of infectious diseases. It is important to maintain ample access to goods and services in rural areas along with veterinary services

By preserving and further improving the European animal health and welfare standards, veterinarians and well-equipped veterinary services are effective against these risks.

We now have an opportunity for a systemic policy change

The ongoing COVID-19 pandemic and the climate change emergency are opportunities to drive a systemic policy change in the food production systems, in preventing the spread of diseases by using all available scientific evidence.

An effective public health response requires a One Health approach with interdisciplinary, coordinated, and transparent integration of all professionals: doctors, veterinarians and environmental experts.

Balanced ecosystems are a key component of resilience. Strengthening our preparedness can be done by developing risk-based emergency plans and procedures together with ensuring enough trained personnel, equipment and resources. Measures to restore and protect ecosystems constitute an investment for greater global security and an opportunity to improve the environment for future generations.

Further readings

- [Prevention is better than cure: regular animal health visits make this happen](#)
- [Veterinarians continue to look after animals and public health during the pandemic: they also need protection](#)
- [The Official Veterinarian's role in food hygiene: an essential public good](#)
- [Veterinarians – vital for animals, vital for people](#)
- Berlin principles on one health – [Bridging global health and conservation](#)

Notes to Editor

The Federation of Veterinarians of Europe (FVE) strives to promote animal health, animal welfare and public health across Europe. For further information, consult the FVE website www.fve.org FVE Secretariat on Tel +32 2 533 70 20 or by e-mail to info@fve.org