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Introduction

Disease is one of the things that can have the greatest of impacts on flock profitability. In the next few Poultryhealth BYTES we will take a general or generic look at disease and we will begin by looking at the causes of disease.

By definition a disease must have a cause and negative consequences. There are, for example, some viruses which are virtually ever present in poultry production but because they do not induce negative consequences they are not considered to be pathogenic or causes of disease.

To be defined as a cause of disease a micro-organism must fulfil Koch's postulates, which the German scientist defined in 1890. Koch's postulates state:

- The micro-organism or other pathogen must be present in all cases of the disease.
- The pathogen can be isolated from the diseased bird and grown in pure culture.
- The pathogen from the pure culture must cause the disease when inoculated into a healthy, susceptible laboratory animal.
- The pathogen must be able to be re-isolated from the new host and shown to be the same as the originally inoculated pathogen.

Infectious and non-infectious diseases

Infectious diseases are those caused by living causal agents such as bacteria, viruses, mycoplasma and protozoa.

Non-infectious diseases are caused by non-living causal agents such as chemicals (toxicities and deficiencies), metabolic diseases or genetic diseases.

If we know a disease is caused by an infectious agent then we know several very important things about its management:

- We can treat the disease by killing the causal agent in the host by using antibiotics, anti-viral drugs, anticoccidials or wormers.
- We can kill the disease-causing agent outside the host using chemicals called disinfectants.
- The disease-causing agent is able to induce protection (immunity) in an animal it infects (if it lives long enough) that will protect it against a second infection by the same causal agent. This provides the basis of vaccination so we can protect our poultry without having to expose them to disease.
- The disease-causing agent can spread between animals and between flocks either by direct contact, such as touch, ingestion of infected faeces, inhalation or via the reproductive tract, or by indirect contact, for example on wellington boots. These 'microbiological taxis' are known as fomites.

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