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Entry of viruses into the body

Viruses can enter the body by any one of several routes depending on the type of disease involved.

For respiratory diseases, viruses are inhaled, often in microscopic droplets, that are sneezed or coughed out of another animal. These droplets do not last long in hot, dry air and sunshine but can last much longer in damp, cool, overcast conditions.

For viruses associated with enteric diseases, infection is by ingestion. This basically means ingestion of faeces either from the animal, for example by mutual preening or grooming, from the environment, or indirectly via contaminated feed or water. Anything that is contaminated with the faeces from an infected animal that is subsequently licked by another animal can transmit disease. Such things are known as fomites.

Mating or artificial insemination is a very effective way of transmitting virus from the male to the female and in ovo or in utero infection can transmit viruses from mother to offspring. Other ways include from blood to blood, for example via mosquitos, or via needles which can act as 'mechanical mosquitos'.

Some skin diseases can be spread by touch.

Action of viruses in disease

On reaching its target organ the virus attaches to its surface and enters a cell by penetrating its membrane. It releases its genetic material which then interacts with the cell's genetic material to produce many more viruses. Eventually the cell bursts and releases these new viruses. The cell dies and if enough cells die the functioning of that particular organ is impaired and this can result in clinical sign(s).

These viruses then repeat this cycle in other cells in the same animal or are shed from it and can then infect other animals.

Shedding of the virus from the body

Viruses can be shed from the mouth in the saliva, in micro-droplets or nasal discharges from the respiratory tract, in vaginal mucus, semen or milk. Viruses can also be transferred from the mother to her offspring or via the blood. In poultry they can also be transferred by feather and skin dust (dander).

The effectiveness of disease spread is dependent upon the virus type, the number of viruses shed, the number of viruses needed to infect a recipient animal, the number of recipient animals and the distance the virus has to travel.