Louis Pasteur in the 19th century demonstrated the ability to protect chickens against fowl cholera (Pasteurella multocida) (Fenner et al., 1997) and thus demonstrated the benefit of vaccination in animals and paved the way for the development of the array of veterinary vaccines we have today.

Since Pasteur’s work, vaccination against infectious disease has been used successfully to protect animals from many serious diseases some of which were also significant risks to humans. Veterinary vaccine development has paralleled the research and development of vaccines in the human field.  However, in veterinary medicine there is a much wider range of products reflecting the diversity of animal species and the plethora of diseases that may commonly affect companion and food producing animals.  As a consequence the incidence of many common, life-threatening and debilitating diseases is now low, and the development of safe and effective veterinary vaccines can be said to have been a major success story for improvement in animal health and welfare.

However, success in disease control is often followed by new challenges. In pet animals, and particularly for dogs and cats, diseases that were once chronic scourges have now become relatively rare in developed countries like the UK.  As the public memory of the consequences of these diseases fades so the rationale for routine vaccine programmes is increasingly questioned. A healthy debate of the pros and cons of vaccination is valuable as it is entirely possible that a disease can become so rare that risks associated with vaccination can outweigh the risk of contracting the illness. However, such events are rare and likely to remain so as world-wide travel of people and their pets increases. The gold standard is provided by the example of smallpox in humans. The last case in man was recorded in 1977 and in 1980 the World Health Organisation (WHO) officially announced smallpox had been eradicated from the world.  On the veterinary front in 2011 the UN’s Food and Agriculture Organisation (FAO) and the World Organisation for Animal Health (OIE) announced that rinderpest (cattle plague, a devastating disease of domestic cattle, buffalo and other cloven-footed animals, killing millions of animals) has been eradicated from the globe. Vaccination against the virus was at the heart of the eradication campaigns throughout the twentieth century.

The current low incidence of dog and cat infectious diseases provides an incentive for some animal owners to argue vaccination is no longer necessary. This is generally regarded as being impractical and so the debate has focused upon the frequency of vaccination required to provide protection throughout the animal’s lifetime and the potential for routine vaccination to do harm to the individual animal.  Advising on the correct vaccination course to follow is not an easy task as a routine programme of vaccination may require adaption to the local epidemiology of the various diseases to provide the best health security. It is right therefore, that the decision is taken by the animal owner following discussion and advice from their veterinary surgeon. Before a veterinary vaccine can be placed on the UK market it undergoes a rigorous independent scientific assessment to ensure the product meets the required standards, and that the benefits of vaccination outweigh the risk of any side effects. In the UK the standards are set by the European legislation.  Independent assessment seeks to ensure three major factors are in place before any vaccine is made available for use:

* vaccines are manufactured to a consistent and acceptable quality using high grade materials and are uncontaminated with potentially harmful infectious agents or other toxic substances;
* vaccines are safe to be administered to young and older animals where relevant, and pose no risk to the owner, their families or other animals and persons coming in contact with vaccinated animals.  Where necessary, specific warnings are added to the product literature to minimise any risk of an adverse reaction following administration of the product;
* high quality scientific data are available to support the primary and any re-vaccination (booster) schedule and this has been assessed to ensure the vaccine can be expected to provide the required onset and duration of immunity claimed by the manufacturer to protect animals against disease.

In the case of dogs and cats, vaccines are manufactured and marketed for the globally important viral and bacterial infectious diseases and for diseases that are a risk for particular populations exposed to diseases with geographically limited circulation.

The World Small Animal Veterinary Association (WSAVA) has produced guidelines (Day et al., 2010, 2016; Squires et al., 2024) which divide canine and feline vaccines into core and non-core vaccines.  Core vaccines for dogs are defined as those that protect animals from severe life-threatening diseases caused by viruses that have a global distribution (for dogs these are canine distemper virus (CDV), canine adenovirus (CAV) and canine parvovirus (CPV)).  Non-core vaccines are vaccines for animals whose geographical location, local environment or lifestyle places them at risk of contracting other specific infections.  The WSAVA Guidelines also classify some vaccines as not recommended where they believe there is insufficient scientific evidence to justify their use. However, they may still be used where the diseases they intend to immunise against have a particular clinical significance.

The WSAVA stress that that their guidelines “do not serve as a set of globally applicable rules” but are intended to be used by national associations and individual veterinary practices to develop vaccination schedules relevant to the local situation. The British Small Animals Veterinary Association (BSAVA) recommends that, in the UK, core vaccines for dogs include canine distemper virus (CDV), canine adenovirus/infectious canine hepatitis (CAV), canine parvovirus (CPV) and leptospirosis (BSAVA).

There are approximately 332 veterinary vaccines or immunological products currently holding Marketing Authorisations in the UK for companion animals, horses and the major food producing animals.  At the time of writing, 50 are authorised for use in dogs in the UK and 27 products are authorised for cats.  The majority of these are multivalent vaccines containing a number of antigens to protect against a range of important diseases.  Details of the products authorised for dogs are provided in Annex 1. The maximum duration of immunity (DOI) for some of the core vaccines has been justified as three years with a range for all vaccines extending between 1-3 years. For the majority of vaccines in the UK their recommended use closely parallels the WSAVA Guideline recommendations.

Annex 1 has been constructed to provide a summary of the currently authorised primary vaccination and revaccination periods for core, non-core and other vaccines for dogs. As this information may change as companies vary their authorisations it is important to refer to the latest version of the Summary of Product Characteristics (SPC) for a product which can be viewed in the VMD’s [Product Information Database](http://www.vmd.defra.gov.uk/ProductInformationDatabase/)

The focus for this document is the canine vaccines.