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# Duration of immunity (DOI) and booster vaccination—dealing with the issue at practice level in the UK

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## Abstract

The presentation offers a UK veterinary practitioners viewpoint on issues of DOI and booster vaccination with reference to both dog and cat vaccines. The current use of vaccines and issues surrounding their use are discussed, including motivations for and against vaccinating in a climate of reduced fear of disease, and increased suspicion of vaccines. Attitudes to extended DOI and routine booster vaccinations are explored, and specific disease and prevention issues concerning leptospirosis in particular are presented. The strategy and tactics of implementation of extended DOI vaccines at general practice level are discussed based on the author's own experiences, and thoughts offered on how vaccine manufacturers might support the process at local and national levels, as well as communicating a positive message for continued routine vaccination of dogs and cats, and the advantages that extended DOI offers.

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## 1. Introduction

This paper hopes to explore current opinion and issues surrounding the move towards extended duration of immunity (DOI) booster vaccination protocols in the UK from a veterinary practice perspective. It is based on the author's own experiences (both in practice and from time in a technical support role servicing small animal vaccines within the animal health industry) and those sought from other practices across the UK. This paper is very

much opinion-based, and the issues discussed are covered under a series of sub-headings.

## 2. The current situation in the UK in respect of extended DOI vaccines

Extended DOI vaccines are beginning to become available in the UK vaccine market, especially for dogs. Intervet has led the way with their Nobivac<sup>®</sup> canine vaccines, extending the requirement for distemper, hepatitis and parvovirus booster vaccination from once yearly to one every 3 years. However, annual leptospirosis and parainfluenza virus booster vaccination is still necessary. Intervet's intranasal

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kennel cough vaccine (Nobivac KC) also now has an extended DOI from 3 months to 1 year. Other manufacturers have started to introduce extended DOI canine vaccines too, including the 'Procyon' dog vaccine range from Schering Plough and more recently the 'Vanguard' canine vaccines from Pfizer Animal Health. Extended DOI vaccines for cats are less common, although e.g., Merial Animal Health markets a 2-year DOI vaccine for feline panleucopenia (Eurifel P). However, once yearly "cat flu" vaccination: (feline rhinotracheitis [herpesvirus] and feline calicivirus) is still the normal protocol.

Other established vaccines have traditionally been authorised for annual booster vaccination, and although this has been the accepted protocol for many years of successful disease prevention with few associated problems, more recently questions have arisen which challenge this regime. Veterinary Practices in the UK generally follow the manufacturers' Data Sheet recommendations for booster intervals. Some veterinary surgeons, however, have tried to incorporate extended DOI protocols into canine vaccination regimes as extended DOI has become an issue; very often (in the author's experience) as a response to client demand (e.g. giving a canine primary vaccination course with no boosters—not even leptospirosis; giving a primary course followed by a few boosters in younger years only; giving a primary course followed by just annual leptospirosis boosters). In this respect, the problem that practitioners face is that recommending any vaccine or medicine usage "off data sheet" carries an increasing risk in modern litigious times. Vaccine manufacturers can only reasonably be expected to support the use of their vaccines according to their authorised recommendations (as detailed on the official Summary of Product Characteristics and UK Data Sheet). Fortunately the recent development and availability of extended DOI vaccines will help address many of the concerns being raised regarding "over-vaccination".

### 3. Dog versus cat vaccines

Traditionally, dog and cat vaccines have fallen into the "core" and "non-core" categories. Core canine vaccines included those against distemper, hepatitis,

parvovirus, parainfluenza virus and leptospirosis (*L. canicola* and *L. icterohaemorrhagiae*); whereas "non-core" include those against kennel cough (*Bordetella bronchiseptica*) and rabies (increasingly used as the PETS passport scheme develops). Core feline vaccines include those against "cat flu" (feline rhinotracheitis [herpes virus] and feline calicivirus) and feline panleucopenia; whereas "non-core" include those against feline leukaemia virus (FeLV), *Chlamydomydia felis*, *Bordetella bronchiseptica* and rabies.

For most of these vaccines, routine yearly boosters have been recommended and disease has been successfully prevented without undue problems. Latterly, however, many issues have arisen, especially related to routine canine vaccination. One major factor is the falling prevalence of the once-common, life-threatening diseases such as distemper, hepatitis and parvovirus. Paradoxically, this is due to the success of modern vaccines, but with the "out of sight; out of mind" philosophy resulting in falling awareness and concern about disease, has come an increased awareness and even fear of the vaccines themselves amongst a percentage of owners. This has been fuelled by several factors, which will be discussed later. Leptospirosis in dogs, especially *L. icterohaemorrhagiae*, remains a notable disease threat.

Feline vaccines have been, and continue to be largely advocated for routine yearly booster vaccination, but are also not without their problems—for example the continued prevalence of "cat flu" despite years of vaccination. This is in part due to the persistence of these viruses in their host, enabling spread from stressed lactating queens to their kittens before they can be practically vaccinated, but possibly also due to issues of cross protection (or lack of) between vaccinal strains (e.g. F9 calicivirus) and field strains of ever changing virulence. More work is required to develop vaccines with broader efficacy, and FCV vaccines may need to be multivalent in future. Feline panleucopenia vaccines have been much more effective, and offer clearer potential for extended DOI claims. FeLV vaccines have also been successful but are unlikely to lend themselves to extended DOI claims. There are no vaccines currently available in the UK for other common and serious feline diseases caused by viruses such as feline immunodeficiency virus (FIV), and feline coronavirus (causing the FIP complex), and these diseases remain a problem in practice.

#### **4. Why do owners have their animals vaccinated?**

A variety of factors contribute to owners bringing their dogs and cats for routine vaccination. These include habit and routine, often prompted by practice policy and use of reminder systems (the owners continuing to do what they have always done). Fear of disease and a wish to prevent it are strong drivers when disease is widely prevalent and “visible”. There are some situations where vaccination is ‘mandatory’, e.g. kennel and cattery stipulations that animals be vaccinated against core canine and feline diseases, and often also against “non core” diseases such as kennel cough. Such requirements may be part of the kennel’s local authority license to operate, and are, therefore, compulsory for any animal staying. Another mandatory requirement for vaccination is that for rabies as part of the Pet Passport scheme, which is becoming more popular as owners wish to travel abroad with their pets. The author’s own practice has seen a 50% increase in use of rabies vaccines as a result of this in the last 12 months.

Finally, the incentive of a routine health-check also contributes to owners bringing their animals in for regular vaccination.

#### **5. Why might owners stop having their animals vaccinated?**

As previously mentioned, a reduced overall prevalence of infectious disease has led to a decreased awareness and perception of risk, especially with regard to the canine diseases where vaccination has been so successful. This has been combined with a rising fear of harm associated with vaccination, fuelled by issues involving human vaccines (e.g. child vaccination against measles, mumps and rubella [MMR] which has purportedly been linked to problems such as autism), and a heightened awareness of supposed pet vaccine reactions. The Canine Health Concern group has been partly responsible for driving these concerns, despite the fact that reported adverse events in dogs and cats are a consistently low percentage of vaccines given (e.g. 0.21–0.61 reports per 10,000 doses) (The Veterinary Products Committee (VPC) report of the Working Group on Feline and Canine Vaccination 2002). The author’s own experience is that serious

adverse events truly associated with vaccination are rare, a view shared by many.

A further and linked fear in owners is that of “over-vaccination”—i.e. too many routine vaccines being given; that they are not necessary; and that they cause harm (e.g. to the immune system). This concern has partly arisen from opinion in academia, especially in the USA, but has been fuelled by negative media attention, and availability of all kinds of unreviewed opinion on the internet. Extended DOI vaccines could go a long way to allay some of these fears, provided their benefits are adequately communicated. There is also a perceived mood of mistrust in some owners. This mistrust is of medicines, vaccines, doctors and veterinary surgeons, who are accused of using routine vaccination solely as a means to make money. The issue of cost and value is ever-present in veterinary practice, and one that needs tackling with energy to ensure that clients feel they have paid for a good service at booster time, and not just a “quick jab”.

The media in general have seized on the opportunity to turn pet vaccination from “hero to villain”, using material from groups such as the Canine Health Concern, and even open letters from homeopathic veterinarians calling for a cessation in the policy of annual vaccination. This has led to startling headlines such as “vet jabs kill our pets”; “booster jabs unnecessary”; “waste of money” etc. Headlines such as these are bound to cause owners to question vaccines and vaccination policy, and the risk is that such sensationalism will seriously undermine the clear benefits that vaccines have quietly achieved over the last 30–40 years. Anyone who has seen life-threatening diseases such as distemper and parvovirus, and their potential to spread, will understand the obvious benefits of vaccination. A re-emergence of these diseases and their serious consequences is likely if the level of vaccine-induced immunity in the UK canine population falls too low. There is also an associated human health risk from diseases such as leptospirosis (also known as Weil’s disease) caught from unvaccinated dogs that may be showing no clinical signs themselves.

#### **6. Attitude to extended DOI**

To have an opinion on extended DOI issues the pet-owning public must be aware of it, and routine vaccine

appointments are a good opportunity to disseminate the message, particularly if any vaccine related concerns have been raised.

The author has found a split of owners regarding awareness, but those that have an opinion generally welcome the use of extended DOI vaccines since they neatly overcome the prevalent “over-vaccination” fear.

Veterinary practitioners now have a solution to the dilemma of doggedly following yearly boosters of all vaccinated fractions according to the data sheet, and the desire to follow calls from academia and their clients to vaccinate less against some diseases. Consequently the scientific evolution of vaccines from an “arbitrary” 12-month DOI for all fractions has been generally welcomed in the author’s experience.

Fears that dogs will be seen less than yearly are countered by the need for yearly leptospirosis boosters. This gives a continuing opportunity for a full annual health check etc.

## 7. Leptospirosis

Canine leptospirosis, especially that caused by *L. icterohaemorrhagiae* is an important disease for a variety of reasons:

- (i) It causes serious, life threatening illness in dogs and cases are not infrequently seen.
- (ii) It is a serious zoonosis (Weil’s disease).
- (iii) It is spread by rodents, especially rats, passing the organism in their urine where it can survive in water.
- (iv) The rodent population in the UK is generally high in both urban and rural areas, and so the risk of disease to both dogs and man is ever-present.
- (v) There is a potential for more direct spread to man from infected dogs, which can also shed the bacteria in their urine.

The author’s practice has seen several leptospirosis cases in dogs in recent years, often with fatal results when presentation of a case has been late. The practice is in a rural area, and dogs working in water, ponds and ditches are particularly at risk (e.g. sporting dogs). Owners seem to have a fair awareness of the canine disease and its human equivalent.

The vaccines currently available are killed bacterins. This, combined with the fact that protection is dependent more on cell-mediated immunity rather than humoral immunity, and is relatively short-lived, means that the DOI for the current leptospira vaccines is unlikely to exceed 1 year.

Consequently routine canine revaccination must remain yearly for the moment, with fractions enjoying extended DOI (e.g. parvovirus, distemper, hepatitis) being added in at longer intervals (e.g. every 3rd year).

## 8. Implementing extended DOI

Extended DOI regimes offer a solution to some of the criticisms levelled at vaccines and their use, but the message must be adequately communicated at practice level. To this end the author’s practice and others have employed a variety of tactics, including:

- (i) Direct communication vet-to-client at suitable opportunities (e.g. primary course, booster vaccination visits, routine examinations, animals seen for other reasons but with overdue vaccinations showing on their record). This needs deliberation and time.
- (ii) Vet and reception/nursing team suitably briefed and motivated to communicate at appropriate opportunities.
- (iii) Good vaccine reminder/re-reminder system.
- (iv) Offering vaccine ‘amnesties’—i.e. a cost effective re-start for animals with a lapsed routine vaccination history-and suitable communication of the scheme.
- (v) Puppy parties—a great socialising event and opportunity for a variety of messages, including the importance of vaccination and other prophylactic measures.
- (vi) Waiting room displays and other support material (e.g. in puppy packs, practice newsletters, information sheets etc.).
- (vii) Media—use of local papers and radio stations to report disease cases/outbreaks, and for any other PR opportunities.

In the author’s experience, reports of a disease problem e.g. leptospirosis or parvovirus outbreak have soon brought owners in with lapsed or un-vaccinated

animals. Word of mouth can travel a long way in the face of a potential disaster.

### 9. How can vaccine manufacturers help?

Help from vaccine manufacturers is vital in communicating the need for regular vaccination and the benefits of extended DOI. This communication and help needs to be available at different levels and might include support at practice level e.g. vet and staff training; provision of suitable support and campaign materials etc., but also co-ordinated at a regional or national level e.g. national campaigns with inter-company cooperation; trying to use the media more positively to report on the benefits of extended DOI; using the media to report disease outbreaks and incidence in order to remind owners that they should fear the diseases rather than the vaccines.

It might also be possible to collate information on the national incidence of diseases such as leptospirosis and parvovirus to enhance awareness. Further information on the incidence of Weil's disease in people would also be of interest. Perhaps veterinary practices could be persuaded to report cases of e.g. parvovirus, leptospirosis etc. to their vaccine manufacturer, and these data shared with all manufacturers to produce national figures?

The results of the so-called 'POOCH' (Practice Overview of Canine Health) study (Edwards *et al.*, 2004) are encouraging, and its conclusions should be promoted to maximum effect to help allay vaccine fears (i.e. there is no association between recent vaccination and ill health in dogs, nor association

between the number of vaccinations received and ill health in dogs).

Overall a coordinated national and local approach is needed to disseminate these messages to concerned pet owners.

### 10. Summary

- (i) Routine vaccination is still very important.
- (ii) Fear of disease has fallen, but fear of vaccination has increased. This situation must be redressed.
- (iii) Extended DOI vaccines offer a positive advantage and will help allay fears of over-vaccination if the message can be communicated effectively.
- (iv) Leptospirosis in dogs (and man) must not be underestimated and still requires yearly vaccination, enabling regular health checks to continue.
- (v) The advantages of routine vaccination and benefits of extended DOI must be communicated properly to pet owners to counter irrational fears of the very vaccines that have so effectively reduced incidence of serious disease in dogs and cats over the years.

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<sup>1</sup> NB-This paper reflects the personal views of the author, and those sought informally from other practitioners. It has few specific references; rather it seeks to promote a platform for discussion and debate.