Controversy and confusion: Frequency of revaccination of adult dogs and cats – An update

Richard A. Squires

Outline

- Potted history / Public perceptions / Safety
- Duration of Immunity / Core vs. Non-core
- Recommendations / Commentary

Overview

- Companion animal vaccines have served society well for many years and continue to play a crucial role in preventing disease and suffering
- As large a proportion as possible of all puppies and kittens should be properly protected by vaccination
- Veterinarians are debating the details of how best to use vaccines, not whether or not to use them [Nosodes]

Finland, 1994-5

5000 dogs became severely ill, 1500 died...

Potted history

- Our current vaccination practices are not, by and large, based on science
- It is costly to determine ultimate duration of immunity
- Regulatory authorities have not generally required manufacturers to do more than short-term challenge studies [rabies exception]
Potted history

- Until recently, the commercial pressures have been to show earlier onset and higher degree of protection rather than longer duration of protection.
- Some veterinary immunologists have questioned our practices all along, but were largely ignored for decades. Then...

Consumer magazine
March 2002

“The Pet Jab Problem”
“...Small animal vets are getting a reputation as the used car salesmen of the veterinary profession”
Senior veterinary practitioner (farm animal) 2001

VETS AND VACCINES
“What vets don’t tell you about vaccines”
“I believe it possible that veterinarians have also been misled” [by vaccine manufacturers]
Catherine O’Driscoll
New Zealand Gundog Magazine
December 1999

Are we over-vaccinating?
And why are we being asked this question?

Declining “authority” of professions
Sophisticated clients
Autoimmune diseases in dogs
Free Medline
Increasing interest in “alternative” remedies
Long-ignored views of some immunologists
Are we over-vaccinating?

World Wide Web

Increasing interest in "alternative" remedies

Data

Vaccine-associated sarcomas in cats

Sophisticated clients

Autoimmune diseases in dogs

In Australia?

In Australia?

Do postvaccinal sarcomas occur in Australian cats?

Burton G. and Mason K.V. (1997)

Australian Veterinary Journal 75: 102-106.

— Yes they do.

— "At least 1 per 178,600 vaccinations"

Justifications for keeping on keeping on?

It is relatively harmless...

It gets them in the door every year so I can help them in so many other ways...

My practice will fold if I stop doing it, then I won’t be able to help anyone...

I see cases of parvo every year but I haven’t seen any vaccine-associated problems in 20 / 30 / 40 years...

Francis Bacon, 1620

"What a man would like to be true, he preferentially believes"

Cited by John Ellis in a letter to Newsweek editor DOE, 1999.
A practitioner might revaccinate fewer than 1000 animals of a particular species in a year.

If the risk of a fatal vaccine-associated disease is 1 to 3 per 10,000 vaccinated animals or less, that practitioner might go many years before seeing a single instance of that fatal disease.

Then she/he might not recognise it for what it is, because of its rarity.

So does that make a risk of fatal disease in 1 to 3 per 10,000 of your vaccine recipients acceptable to you?

It is all about risk vs. benefit, isn’t it?

Safety issues

Safety data

Epidemiologic evidence for a causal relation between vaccination and fibrosarcoma tumorigenesis in cats


Journal of the American Veterinary Medical Association


Kass et al. 1993

- 345 fibrosarcoma-bearing cats enrolled; 185 with tumours at sites used for vaccination, 160 at other sites.
  - FeLV vaccine recipients were 2.78 - 5.49 times more likely to get an injection site sarcoma versus a sarcoma elsewhere
  - Rabies vaccine recipients were 1.2 - 1.99 times more likely to get an injection site sarcoma versus a sarcoma elsewhere
  - The more vaccines injected simultaneously, the greater the risk

It’s the adjuvant
Hydranencephaly and cerebellar hypoplasia in two kittens attributed to intrauterine parvovirus infection

Sharp NJ, Davis BJ, Guy JS, et al.  
*Journal of Comparative Pathology*  
**121**: 39-53 (1999)  
*"an in-utero parvovirus infection, possibly due to vaccination" [italics mine]*

Outbreak of fatal salmonellosis in cats following use of a high-titer modified-live panleukopenia virus vaccine

*Journal of the American Veterinary Medical Association*  
**214**: 67-70.

Abortion and death in pregnant bitches associated with a canine vaccine contaminated with bluetongue virus

Levings RL, Wilbur LA, Evermann JF et al. (1996)  
*Developments in Biological Standardization*  
**88**: 219-20.

Vaccine-associated immune-mediated hemolytic anaemia in the dog

Duval D, Giger U.  
*Journal of Veterinary Internal Medicine*  
**10**: 290-295. (1996)

Rigorous case definition (58 cases)  
Showed a *temporal*, not a *causal* relationship  
*Is there a biological precedent for causality?*  
- Parallels findings in vaccinated children and experimental mice  
- Antibodies have been eluted off red blood cells of children with IMHA after diphtheria-pertussis-tetanus vaccination. These antibodies reacted with the vaccine antigen(s)
NEW MILLENIUM + NEW ATTITUDES
= REAL HEALTH

“...nowadays animals are suffering from and passing on to their offspring the inexcusable effects of over-vaccination.”

Sarandra G. Unwin
N.Z. Kennel Gazette November 1999
Supplement

On the other side of the coin…

Vaccination and ill-health in dogs: a lack of temporal association and evidence of equivalence
Annual Health Trust, Auckland, New Zealand
Infectious Disease Unit, NZ

Results demonstrated that recent vaccination (<3 months) does not increase signs of ill-health by more than 0.5% and may actually decrease it by as much as 5%.”

Annual revaccination

Is it safe?

Is it efficacious?

Is it justifiable?

i.e., does the necessity for frequent boosters stand up to scientific scrutiny?

Duration of Immunity (DoI)

But first, core versus non-core...

‘Core’ vaccines for dogs protect against...

♦ CDV
♦ CPV-2
♦ CAV

‘Core’ and ‘non-core’ vaccines
‘Core’ vaccines for cats protect against…

- FPV
- FCV
- FHV-1

‘Non-core’ vaccines for dogs

- CPiV
- *B. bronchiseptica*
- *Leptospira* spp.
- *CCoV*

* Not recommended for routine use by most large organisations

‘Non-core’ vaccines for cats

- *Chlamydophila felis*
- FeLV
- *B. bronchiseptica*
- FIV*
- FIP*
- *Giardia* *

* Not recommended for routine use by most large organisations

CDV: Auby et al. (1974)

Five 3 month-old puppies, vaccinated twice, kept isolated and challenged intracranially 30 months after the 2nd vacc. Two seronegative controls.
- All 5 vaccinates were protected
- Both control puppies died
- “Protective” SN Ab titres persisted throughout the study in the vaccinates

FPV, FHV, FCV


Duration of serologic response to five viral antigens in dogs

From *Veterinary Medicine Biologics Research and Development, Pfizer Animal Health, Pfizer Inc.* 7500 Postage Rd. Kalamazoo, MI 49007.

JAVMA, Vol 224, No. 1, January 1, 2004  

p. 55-60
Duration of serologic response to five viral antigens in dogs

Douglas E. Moxon, Jr., MD, Marianne J. Lorenzo, MD, John D. Howarth, MD, and Victor L. King, MD

Pfizer. Four years...

Results—The percentage of dogs that had titers at or greater than the threshold values or responded to revaccination with a ≥4-fold increase in titer was 98.1% for CDV, 98.4% for CAV-1, 99.0% for CAV-2, 100% for CPIV, and 98.1% for CPV.

Duration of serologic response to three viral antigens in cats

Douglas E. Moxon, Jr., MD, Marianne J. Lorenzo, MD, John D. Howarth, MD, and Victor L. King, MD

Pfizer. Four years...

Results—The percentage of cats that had titers at or above the threshold values or responded to revaccination with a ≥4-fold increase in titer was 96.7% for FPV, 97.8% for FCV, and 88.2% for FHV.

The 2006 American Association of Feline Practitioners Feline Vaccine Advisory Panel Report

Surface: 1308
Introduction: 1308
Immune response to vaccination and infection: 1307
Vaccine safety and efficacy: 1307
Types of vaccines: 1308
Routes of administration: 1308
Special considerations: 1309
Vaccine antigens: 1313
Vaccine labeling: 1314
Vaccine requirements: 1314
Adverse events and adverse event reporting: 1315
Non-product information: 1315
Adverse events and adverse event reporting: 1316
Vaccination schedules and multiple cat environments: 1316
Vaccination of cats in multi-cat systems programs: 1316
Vaccination for feline infectious peritonitis: 1316

Triennial for the core vaccines

2006 AAHA Canine Vaccine Guidelines

In 2006, AAHA’s Canine Vaccine Task Force met to re-examine and revise guidelines on the use of vaccines in dogs. The results of the Task Force’s work are summarized and tabulated in this article and are published in their entirety on the AAHA website (www.aaahotline.org). The 2006 AAHA Canine Vaccine Guidelines contain information on new technological developments in vaccines, an introduction to conditionally licensed vaccines, and detailed recommendations on the use of available vaccines. Perhaps the most noteworthy addition to the guidelines is a separate set of recommendations focused on shelter facilities. Vaccines are classified as core (universally recommended), non-core (optional), or not recommended. The Task Force recognizes that vaccination decisions must always be made on an individual basis, based on risk and lifestyle factors.


Triennial for the core vaccines
Uncontroversial recommendations

- For cats, educate owners about the seriousness of persistent post-vaccinal lumps
- Avoid injecting adjuvanted vaccines between the scapulae of cats. Consider other sites (limbs as distal as feasible, even the tail) or avoid adjuvant altogether

Finally...

- Vets have the power to influence:
  - Accreditation requirements for kennels and catteries
  - The demands re vaccination made by kennels and catteries of their customers
  - Clients’ expectations
  - The likelihood of clients returning to the practice regularly for health checks