2018 AVA ANNUAL CONFERENCE

VACCINE-RELATED ISSUES

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Key Points on Vaccine Issues

- Modern vaccine technology has afforded effective protection of companion animals against serious infectious diseases
- But, this advancement brings increased risk of adverse reactions (vaccinosis)
- Some are serious, chronically debilitating and even fatal
- Must balance this benefit : risk equation
- " Be wise and immunize, but immunize wisely ! " (Dr. Ron Schultz)

Benefits of Vaccines

- **More lives saved, more animal production safeguarded than any other medical advance**
- Eradicated smallpox, & nearly all polio and measles in people
- First vaccines were against small pox, anthrax, and canine distemper
- Significantly reduced endemics of canine distemper, hepatitis and parvovirus, but *not* in wildlife reservoirs
- Significantly reduced endemic feline panleukopenia
- Eliminated rabies in Europe; eradicated Rhinderpest in Africa, foot & mouth disease in Europe

Summary on Vaccine Policy

- **AAHA 2003** – Current knowledge supports the statement that •••

" No vaccine is always safe, no vaccine is always protective and no vaccine is always indicated"

- "Misunderstanding, misinformation and the conservative nature of our profession have largely slowed adoption of protocols advocating decreased frequency of vaccination"

Summary on Vaccine Policy

❖ WSAVA 2015-2017

From Prof. Michael J. Day •••

- "Vaccination should be just one part of a holistic preventive healthcare program for pets that is most simply delivered within the framework of an annual health check consultation."
- "Vaccination is an act of veterinary science that should be considered as individualized medicine, tailored for the needs of the individual pet, and delivered as one part of a preventive medicine program in an annual health check visit."

Vaccine Non-Responders

- Genetic trait ; do *not* breed them
- They will remain susceptible to the disease life long
- Rate = 1:1000 for CPV (parvovirus)
  - Especially Black Labradors and Akitas
- Rate = 1: 5000 for CDV (distemper virus)
  - Especially Greyhounds
- Rate = zero for CAV (hepatitis, adenovirus)
- Rate = unknown for cats

Adverse Vaccine Events = Vaccinosis

- How and Why do they occur ?
- Millions of people, pets and livestock vaccinated annually
- Reactions relatively rare --- about 3-5 events per 100 vaccines given
- Affects those genetically predisposed
- Can be acute, sub-acute and delayed for 30-45 days
- New data relates vaccinosis to integrity and function of gut microbiome

Adverse Reactions & Cautions

Canine Distemper Virus

- Rate = 1:100,000 for Rockborn & Snyder Hill vaccine strains
- Rockborn strain CDV found in most of today's MLV vaccines
- Produces PVE = post-vaccinal encephalitis, blindness & death
- Recombinant (rCDV) Recombitek (Merial) cannot cause PVE
- Rate = 1: 500,000 for Onderstepoort strain , but less potent
- When MLV CDV combined with adenovirus (Hepatitis) in combo , risk of immune suppression and PVE increases– especially in puppies

‘Core’ Vaccines *

Dog	Cat
Distemper	Feline Parvovirus
Adenovirus	Herpesvirus
Parvovirus	Calicivirus
Rabies	Rabies

* Vaccines that every dog and cat should have



Maternal Immunity & Protection

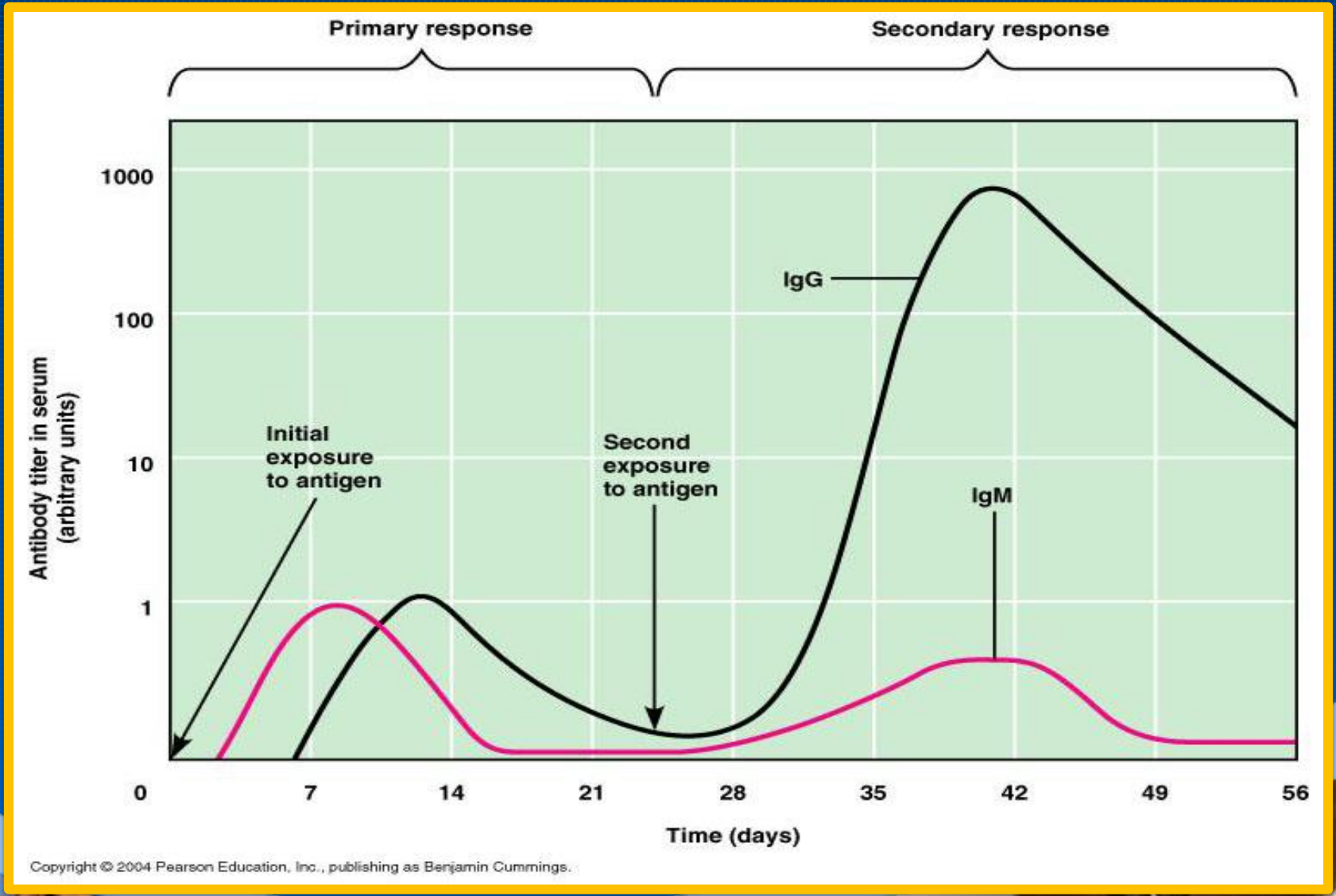
Milk Replacer

- Feeding milk replacer proteins instead of natural colostrum will coat bowel of newborns and shut down absorption of antibodies needed for protection from disease
- Give FFP (Fresh-Frozen Plasma) immediately to orphan or weak pups to get passive immunity ; then add milk replacer

Vaccine Timing

- Last puppy vaccine at 16-18 weeks for protection
- Last kitten vaccine at 12-14 weeks for protection

Anamnestic Immune Response



Vaccine Dosage

Body Mass

- Same dose intended for toy and giant breeds
- Why ?
- MLV vaccines --immunogenic principle *not* based on body mass
- Killed inactivated vaccines -- should be adjusted for body mass
- Minimum/optimum doses for protection ?
- Excess antigen present

Half-Dose CDV & CPV Vaccine Study in Small Breed Adult Dogs

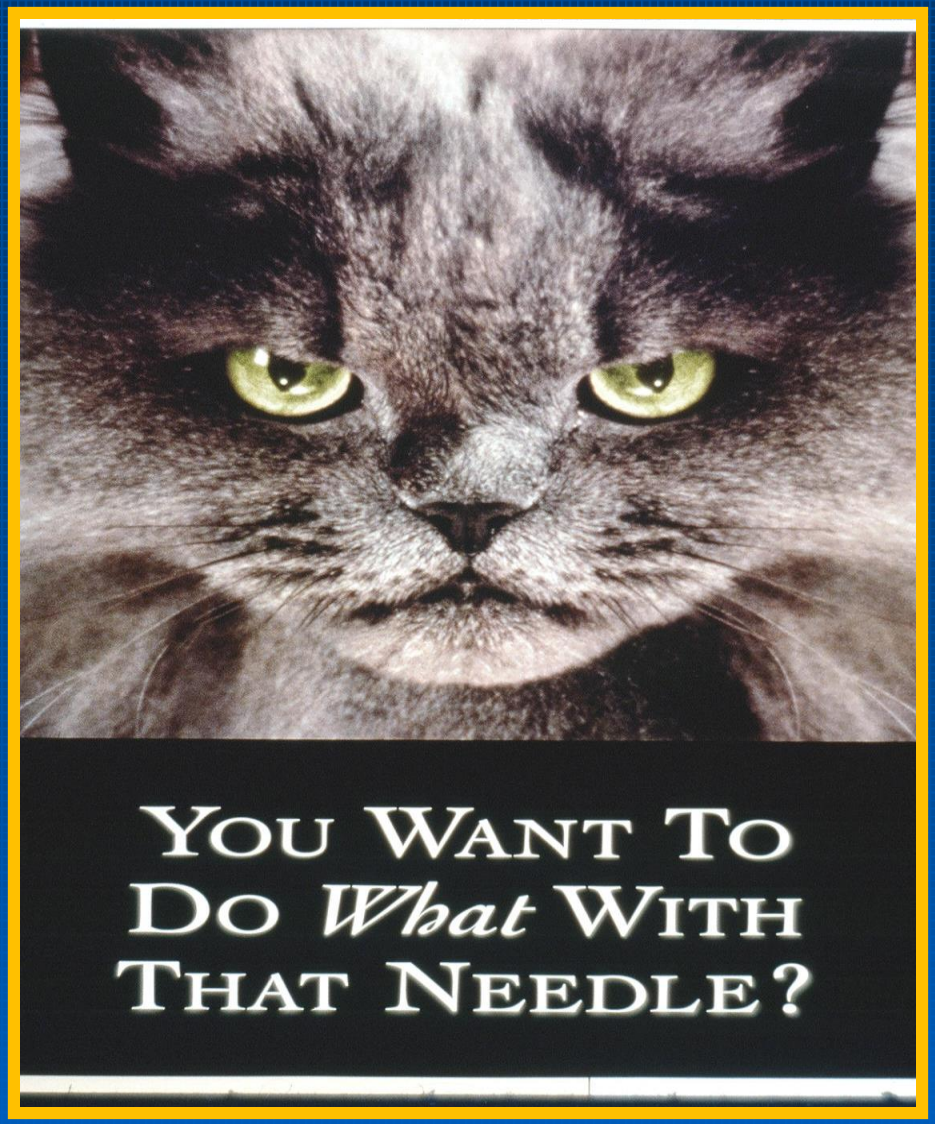
W. Jean Dodds, DVM **[*JAHVMA*, vol. 41; 12-21, winter 2015]**

- Small breed adult dogs, between 3-9 years of age, were studied.
- Dogs were healthy and had no vaccines for at least 3 years.
- Purpose was to determine if just half-dose of bivalent CDV & CPV vaccine elicited protective serum antibody titer responses.
- Titer levels compared 1 & 6 months later vs pre-vaccine titers.
- Half-dose vaccine resulted in sustained protective serum antibody titers for all dogs studied.

Vaccine Dosage (cont'd)

Age

- Optimal age for response
  - 12 wks + for puppies
  - 10 wks for kittens
  - Same for all breeds and sizes?
- Earliest age for safety
  - 6 wks for puppies and kittens
- Effective age varies
- Blocking effects of maternal immunity


YOU WANT TO
DO *What* WITH
THAT NEEDLE?

Kennel Cough & Flu Vaccines

- **Intranasal/Oral Bordetella** releases interferon, which impairs growth of other respiratory viruses (parainfluenza, adenovirus - 2, influenza)
- Injectable Bordetella vaccine does ***not*** release interferon
- Hypersensitivity reactions with intranasal vaccine
- Kennel cough vaccines *not* 100% effective . Needed ?
- **Influenza** (vaccine needed?)
- Produces fever whereas kennel cough does *not*. When combined with Streptococcus, 2-3% can die

More on Canine Influenza

Best way to *clinically* distinguish canine influenza from kennel cough:

- Kennel Cough typically does *not* produce a fever unless it subsequently leads to pneumonia in debilitated dogs
- Canine Flu usually presents as a fever with a cough in the early stages. For mild fever (102-103 ° F) *no* treatment is needed. If above 104 ° F, then secondary pneumonia can result and should be treated promptly with antibiotics and supportive care.
- We do *not* routinely give canine influenza vaccines to <u>healthy</u> pups or adult dogs.
- Even though canine flu viruses (H3N2 and H3N8) are highly contagious

Vaccination, Exposure & Protection

CDV (distemper virus)

- Vaccinates immediately protected, if exposed simultaneously
- MLV CDV does not shed appreciably

CPV (parvovirus)

- Vaccinates protected after 48-72 hrs; exposed pups get sick
- MLV CPV sheds from post-vaccine days 3-14; exposure risk
- Shed vaccine CPV not seen on Idexx SNAP, but present on CPV PCR of feces for 2 weeks

Alternatives to Current Vaccine Practices

- **Measure serum antibody titers**
- Avoid unnecessary vaccines or over-vaccinating
- Caution vaccinating sick or febrile animals
- Tailor specific minimal vaccine protocol for dogs/cats breeds or families at risk for adverse reactions
- Start vaccination series later (9-10 wks, dog; 8 wks cat)
- Alert caregiver to watch puppy/kitten behavior and health after boosters
- Avoid revaccination of those with prior adverse events

Reasons for Vaccine Titer Testing *

- To determine that animal is protected (suggested by a positive test result)
- To identify a susceptible animal (suggested by a negative test result)
- To determine whether an individual animal has responded to a vaccine
- To determine whether an individual vaccine is effectively immunizing animals

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* from: Schultz, Ford, Olsen, Scott. *Vet Med*, 97: 1-13, 2002 (insert)

Hormonal State During Vaccination

Avoid Vaccination

- Period just before estrus (30 days)
- During estrus
- Pregnancy
- Lactation

Periodicity of Booster Vaccinations

- No evidence that annual boosters are necessary
- Need to lengthen interval

  (every 3-7 years or more for healthy adults)
- Geriatric animals vaccinated only with caution
- Monitor serum antibody titers instead

Vaccine Conclusions for Canines*

Factors increasing risk of adverse events 3 days after vaccination:

- Young adult age
- Small-breed size
- Neutering
- Multiple vaccines given per visit
- These risks should be communicated to clients

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* from Moore et al, *JAVMA* 227:1102–1108, 2005

Vaccine Conclusions for Felines*

Factors that increase risk of adverse events 30 days after vaccination:

- Young adult age
- Neutering
- Multiple vaccines given per visit
- These risks should be communicated to clients, and the number of vaccines administered concurrently limited

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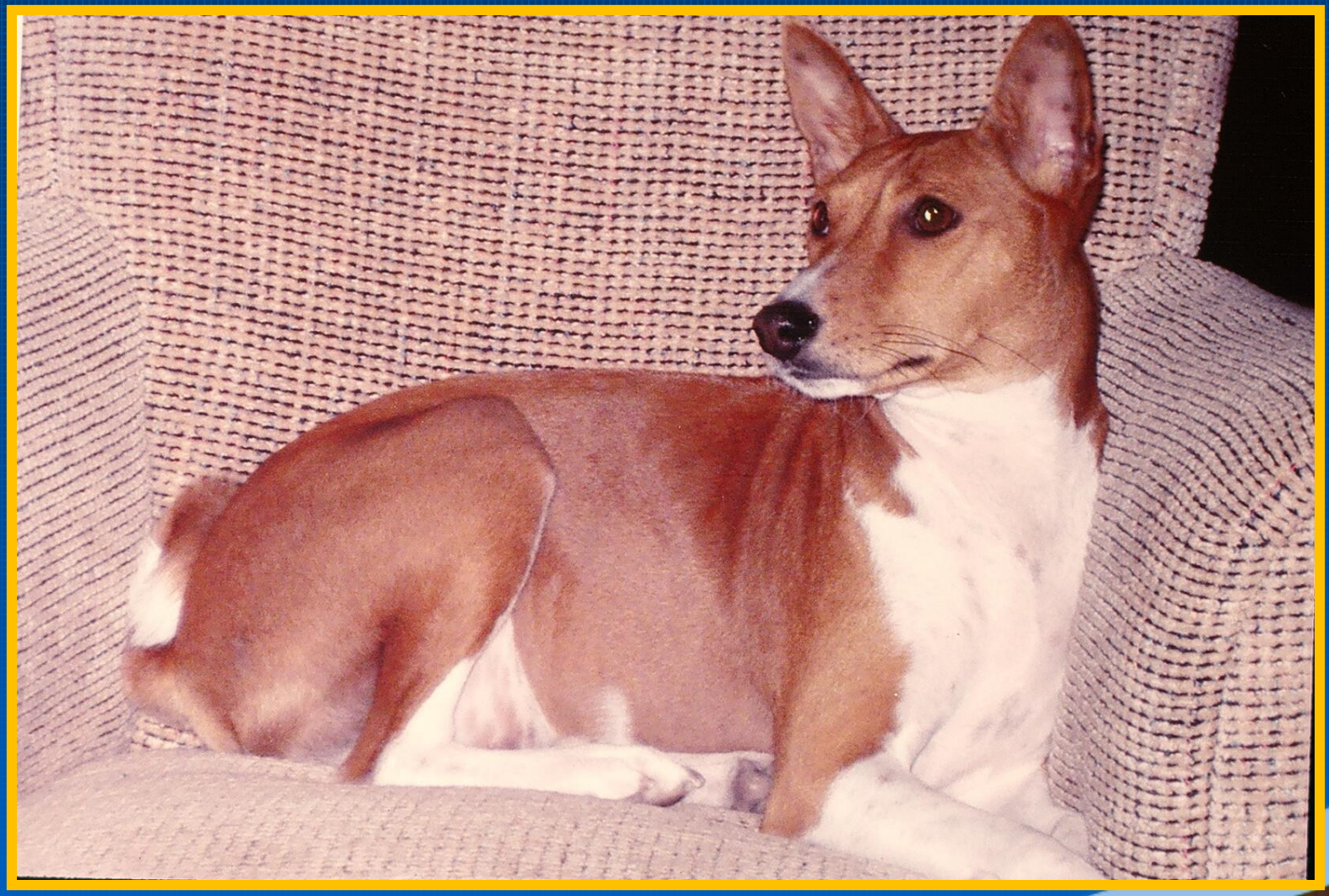
*from Moore et al, *JAVMA* 231:94-100, 2007


USE NO SALT OR DE ICER

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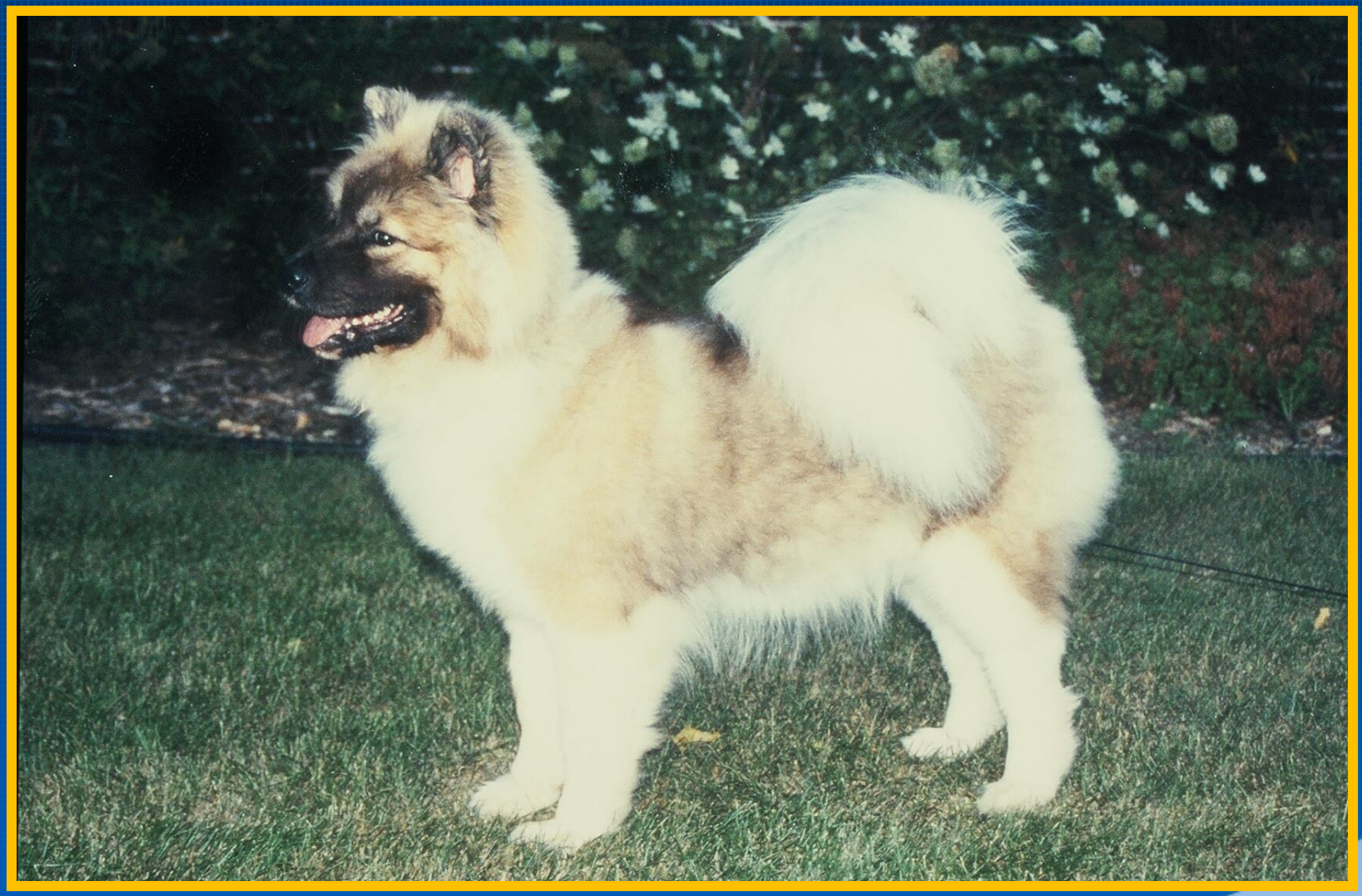



The Thimerosol (Mercury)-Free Rabies Vaccine

Rabies Challenge Study Update

- Rabies remains a serious and usually fatal disease in many countries, despite the absence in North America of documented cases of rabies in vaccinated, truly immunized dogs and cats for 2 decades
- While most pet dogs are vaccinated for rabies, fewer cats have historically been vaccinated until recent laws have required it
- The Rabies Challenge Fund research studies are now at years 7 and 8; the initial live rabies challenge phase results showed > 85% survival at 5 years