Shelter Vaccination Protocols

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Your Presenter

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Overview

- What we'll cover today:
  - Importance of vaccination
  - How vaccines work
  - National guidelines for cat and dog protocols
  - Vaccine selection
  - Handling & administration
  - Adverse events
  - Record keeping
  - Special populations & considerations

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The Importance of Vaccination

- Infectious disease control remains a continuous challenge

- Vaccines are a critical cost-effective and life-saving tool
  - Reduce severity and duration of many common, potentially fatal illnesses
  - Prevent some diseases altogether

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Vaccinations

ONE component of a herd health program

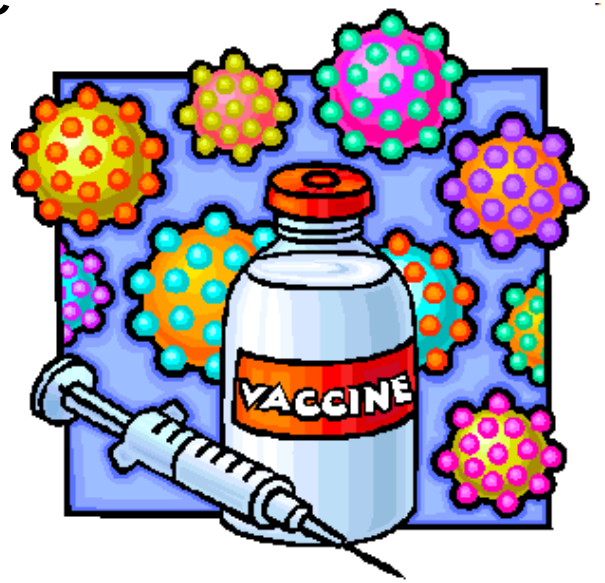
NOT a magic bullet

Protocols must consider:

- When to vaccinate
- Who to vaccinate
- What product to use
- By what route
- How often

What are vaccines?

- What vaccines are:
  - Biological products designed to trigger an immune response that will protect animals from future disease



- What vaccines are not:
  - Preformed antibodies
  - Instant immunity
  - An absolute guarantee

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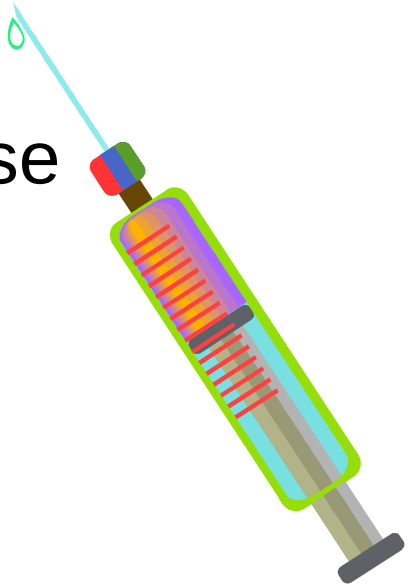
Vaccines: The Basics

- Lessen the severity of future diseases
- Prevent *SOME* diseases altogether
- Vaccines = actual live viruses
  - Similar to the ones that cause disease
  - Result in antibody production that provides protection against the real thing
  - Need to be handled carefully & administered appropriately



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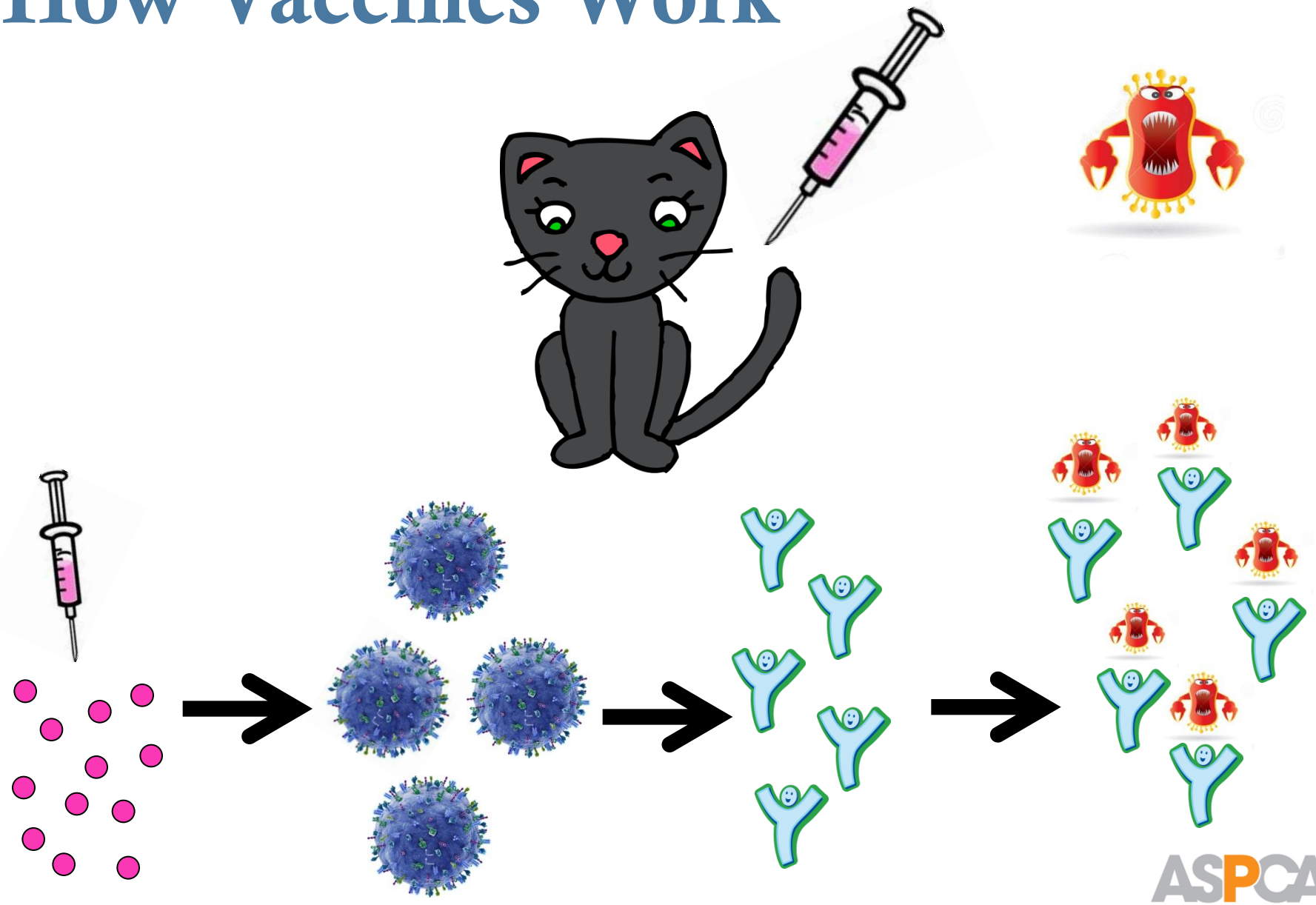
How Vaccines Work



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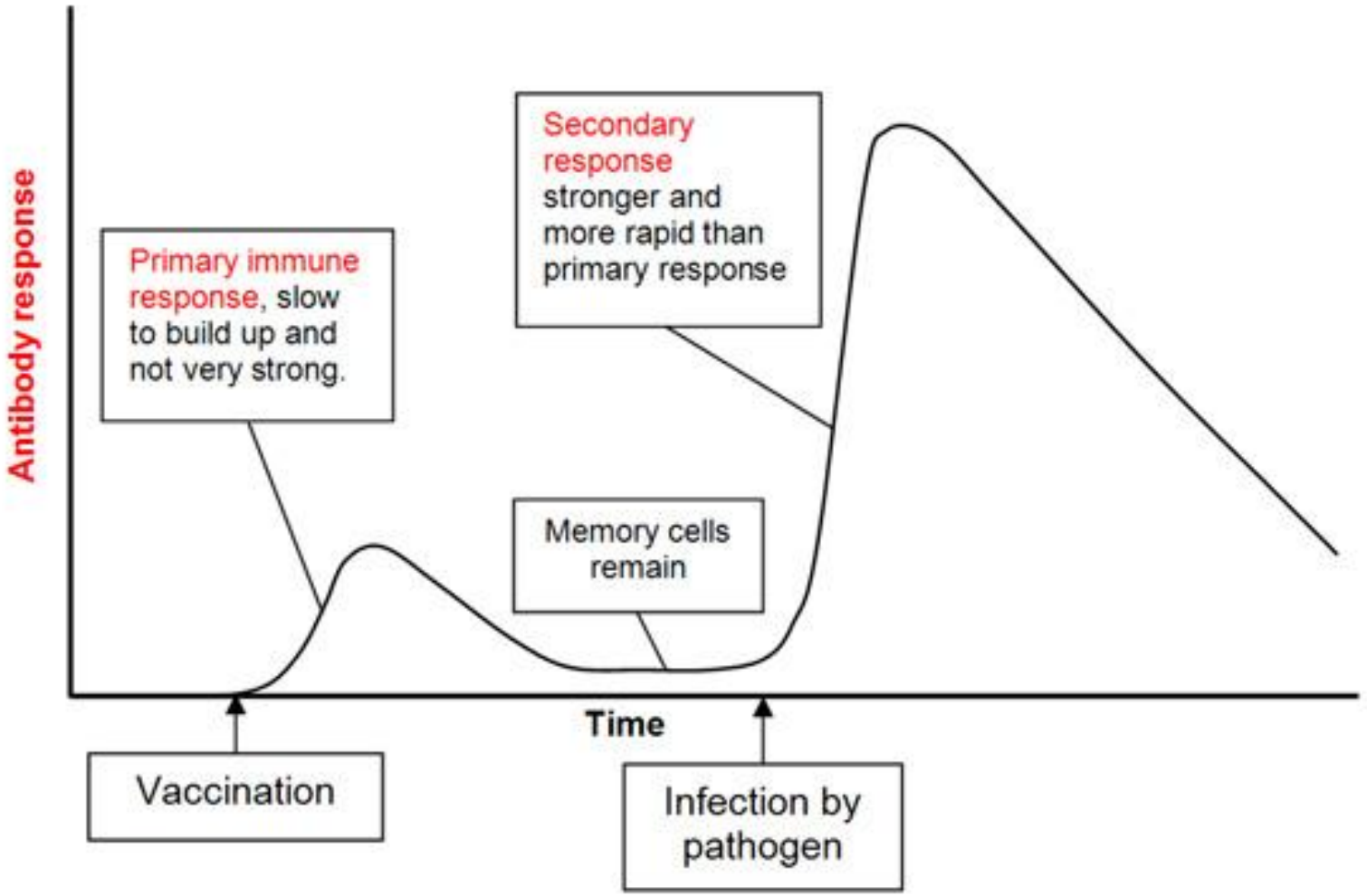
How Vaccines Work



Vaccination may indeed be beneficial, but it is not innocuous, and the benefit of vaccinating an animal must be balanced against the risk of adverse events, likelihood of exposure, and severity of disease.

- 2013 AAFP "Feline Vaccine Advisory Panel Report"

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Vaccination Protocol Goals

- To vaccinate:
  - Only against infectious agents that cause significant disease AND that there is a realistic risk of exposure
  - When potential benefits outweigh potential risks
  - No more frequently than necessary
  - As many animals as possible in the population at risk
  - To protect human/public health

- 2013 AAFP "Feline Vaccine Advisory Panel Report"

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National Vaccination Guidelines

- American Animal Hospital Association's (AAHA) "Canine Vaccination Guidelines"
- American Association of Feline Practitioners's (AAFP) "Feline Vaccine Advisory Panel Report"

- Written by a panel of experts in the field
- Represent the current thinking on vaccination for cats and dogs
- Available online for free

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National Vaccination Guidelines

Vaccines are classified as:

- Core: recommended for all
- Non-core: recommended for certain dogs or cats, based on life-style and risk
- Not recommended

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Vaccination Resources

Guidelines are available on the organizations' websites in a downloadable format:

AAFP "Feline Vaccine Advisory Panel Report" (2013)

- http://www.catvets.com/guidelines/practice-guidelines/feline-vaccination-guidelines

AAHA "Canine Vaccination Guidelines" (2011)

- https://www.aaha.org/professional/resources/canine_vaccine.aspx#gsc.tab=0

Shelter Animals are Different

Animals entering shelters:

- Have a high likelihood of exposure to infectious disease
- Are often housed in high-density environments with new animals arriving daily
- Often have had little or no preventive care prior to admission
- Are at tremendous risk for infection

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Recommendations for Cats

FVRCP vaccination against panleukopenia, herpesvirus, and calicivirus for all cats on entry

- Starting at 4-6 weeks of age
- Repeated every 2 weeks of age in high-risk environments until 16+ weeks of age
- One booster for cats and kittens 16+ weeks

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Recommendations for Cats

FVRCP: injectable MLV or intranasal?

- Lack of data showing improved efficacy against viral causes of URI
- Concern over reliability of panleuk portion in intranasal
- Give MLV injectable panleuk regardless of route for herpes & calici

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Recommendations for Cats

- FeLV vaccination for group housed cats:
  - Kittens as young as 8 weeks of age, booster 2-3 weeks later
  - Not recommended for individually housed cats – spread through close prolonged physical contact
  - Remember: does not replace testing and appropriate segregation by retroviral status

- FIV vaccination not recommended

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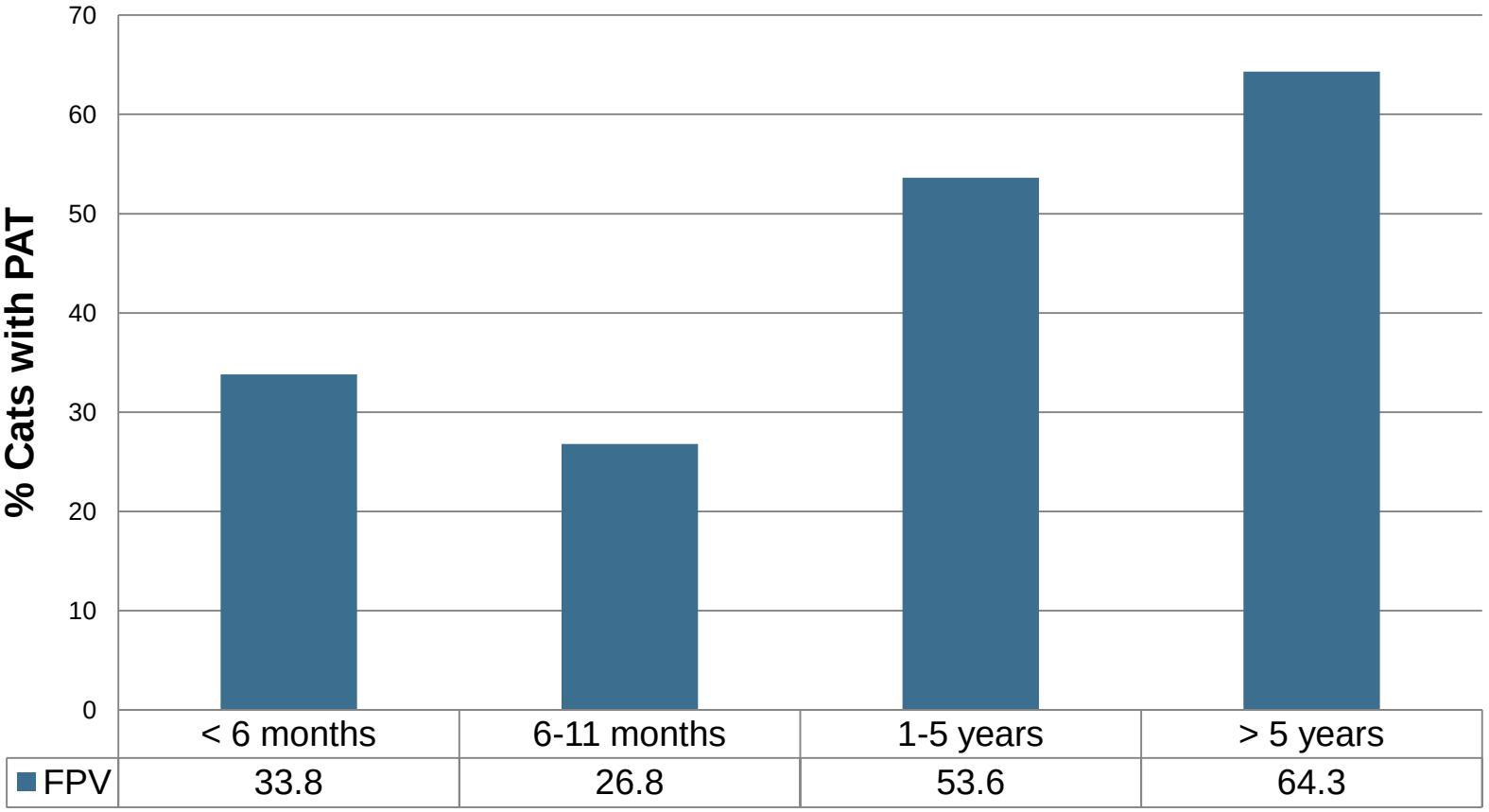
Panleukopenia

- Panleuk is considered to be a vaccine-preventable disease – “sterile immunity”

- Vaccination is highly effective for FPV:
  - Clinically relevant protection within hours
  - Immunity within 72 hours of administration

Panleukopenia

This is a core vaccine – don't assume they are protected!



DiGangi BA et al. Prevalence of serum antibody titers against feline panleukopenia virus, feline herpesvirus 1, and feline calicivirus in cats entering a Florida animal shelter. J Am Vet Med Assoc. 2012 Nov 15;241(10):1320-1325.

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Panleukopenia

Variable	Category	No. tested	No. seropositive	Prevalence (%)	OR	95% CI	*P* value
Age	< 6 m	195	66	33.8	Referent	NA	NA
	6–11 m	41	11	26.8	0.7	0.3–1.6	0.38
	1–5 y	97	52	53.6	2.3	1.3–3.8	< 0.01
	> 5 y	14	9	64.3	3.5	1.0–12.7	0.02
Neuter status	Sexually intact	291	99	34.0	Referent	NA	NA
	Neutered	56	39	69.6	4.5	2.3–8.7	< 0.01
Source	Stray	234	81	34.6	Referent	NA	NA
	Owned	95	47	49.5	1.9	1.1–3.1	0.01
	Other	18	10	55.6	2.4	0.8–6.9	0.07
Environment	Rural	259	92	35.5	Referent	NA	NA
	Urban	88	46	52.3	2.0	1.2–3.3	< 0.01
H							
Si							
B							
	4–6	297	113	38.0	0.9	0.4–1.9	0.77
	7–9	13	10	76.9	4.9	1.0–27.3	0.02
Vaccinated < 24 h after admission	No	82	41	50.0	Referent	NA	NA
	Yes	265	97	36.6	0.6	0.3–1.0	0.03
Outcome	Adopted	93	28	30.1	Referent	NA	NA
	Transferred	46	16	34.8	1.2	0.6–2.8	0.58
	Reclaimed by owner	6	6	100.0	—	—	< 0.01
	Euthanized	202	88	43.6	1.8	1.0–3.1	0.03

NA = Not applicable. — = Not determined.

Protect all cats – don't try to predict who may or may not have previously been vaccinated!

DiGangi BA et al. Prevalence of serum antibody titers against feline panleukopenia virus, feline herpesvirus 1, and feline calicivirus in cats entering a Florida animal shelter. J Am Vet Med Assoc. 2012 Nov 15;241(10):1320-1325.

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Good News!

"The time necessary to obtain the immunity of cats against Panleukopenia has been studied by means of a modified live vaccine. This vaccine makes it possible to obtain a very early post-vaccinal immunity: the full immunity is reached 72 hr after the inoculation of the vaccine by the subcutaneous route. Furthermore, we have demonstrated that a sensitive kitten can be admitted in a contaminated environment immediately after vaccination without showing any clinical evidence of the disease."

Brun, A., G. Chappuis, et al. (1979). "Immunisation against panleukopenia: early development of immunity." Comp Immunol Microbiol Infect Dis 1 (4): 335-9.

TNR Programs: Core Vaccinations

- Rabies (3yr DOI) – huge public health benefit
- FVRCP strongly recommended

Can an animal even respond to a vaccine if we give it the same day as surgery?

The short answer →

Yes!

The long answer →

Yes, as best we can tell from the few studies that have looked at this situation

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What's Been Published on the Topic

Best evidence to date: a prospective study looking at response to vaccines given at surgery!

- 61 cats (4+ months old) in a TNR program
- Trapped, anesthetized, sterilized, vaccinated post-op against FVRCP, Rabies, FeLV
- Trapped and sedated again 2 months later for blood draw

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What's Been Published on the Topic

- There was a significant increase in the number of cats with protective levels of antibodies following vaccination ☺

	Before vaccination	After vaccination
Panleuk	33%	90%
Herpes	21%	56%
Calici	64%	93%
Rabies	3%	98%

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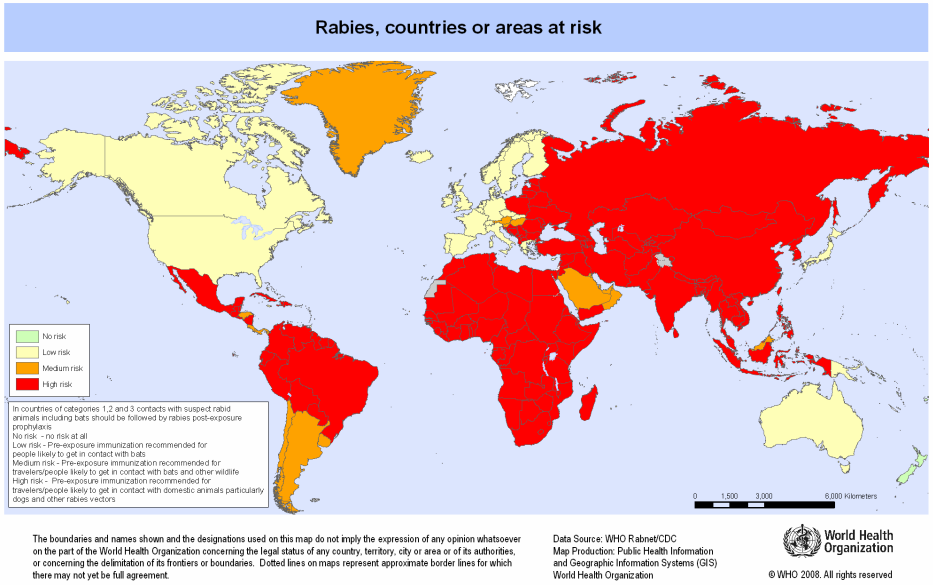
Rabies Vaccination

For kittens/cats at least 12 weeks of age:

- At intake for long-term stays or high LRR
- Optional at intake or give prior to release for short term stays



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Recommendations for Dogs

DA_2PP vaccination for all dogs on entry

- Starting at 4-6 weeks of age
- Repeated every 2 weeks of age in high-risk environments until 18-20 weeks of age
- Boosters as for pet dogs if very long term stays

Intranasal *Bordetella* and Parainfluenza for all dogs on entry

- Starting as early as 3 weeks of age
- No booster necessary unless < 6 weeks old at intake

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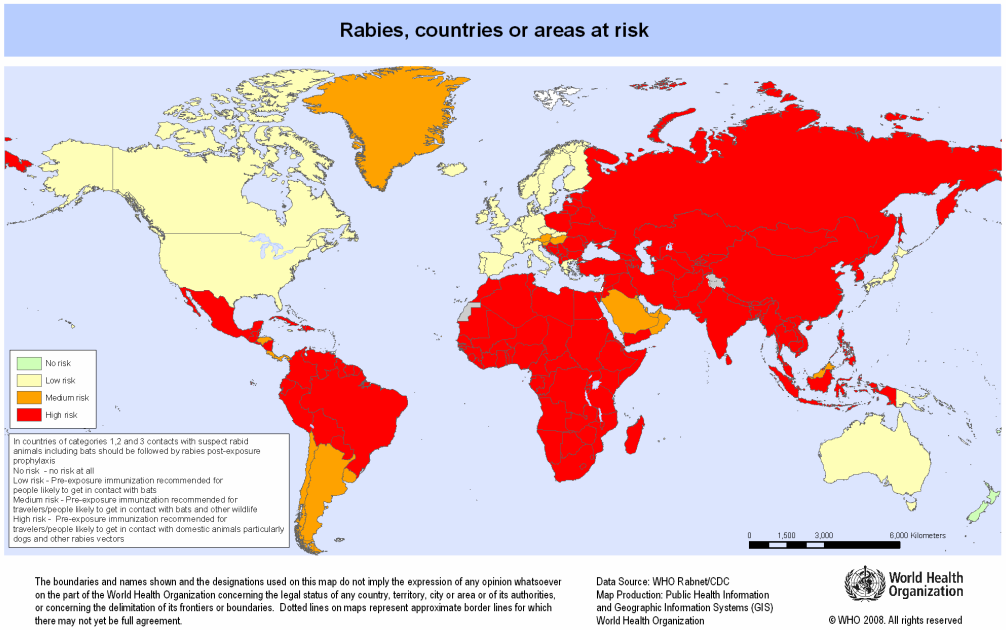
Rabies Vaccination

Core for puppies/dogs at least 12 weeks of age:

- For long-term stays and/or high LRR: at intake
- For short-term stays: optional at intake or prior to release



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Parvovirus

- Parvo is considered to be a vaccine-preventable disease – “sterile immunity”

- Vaccination is highly effective for CPV:
  - Current vaccines provide protection against known variants, including CPV-2c
  - Immunity within days of administration

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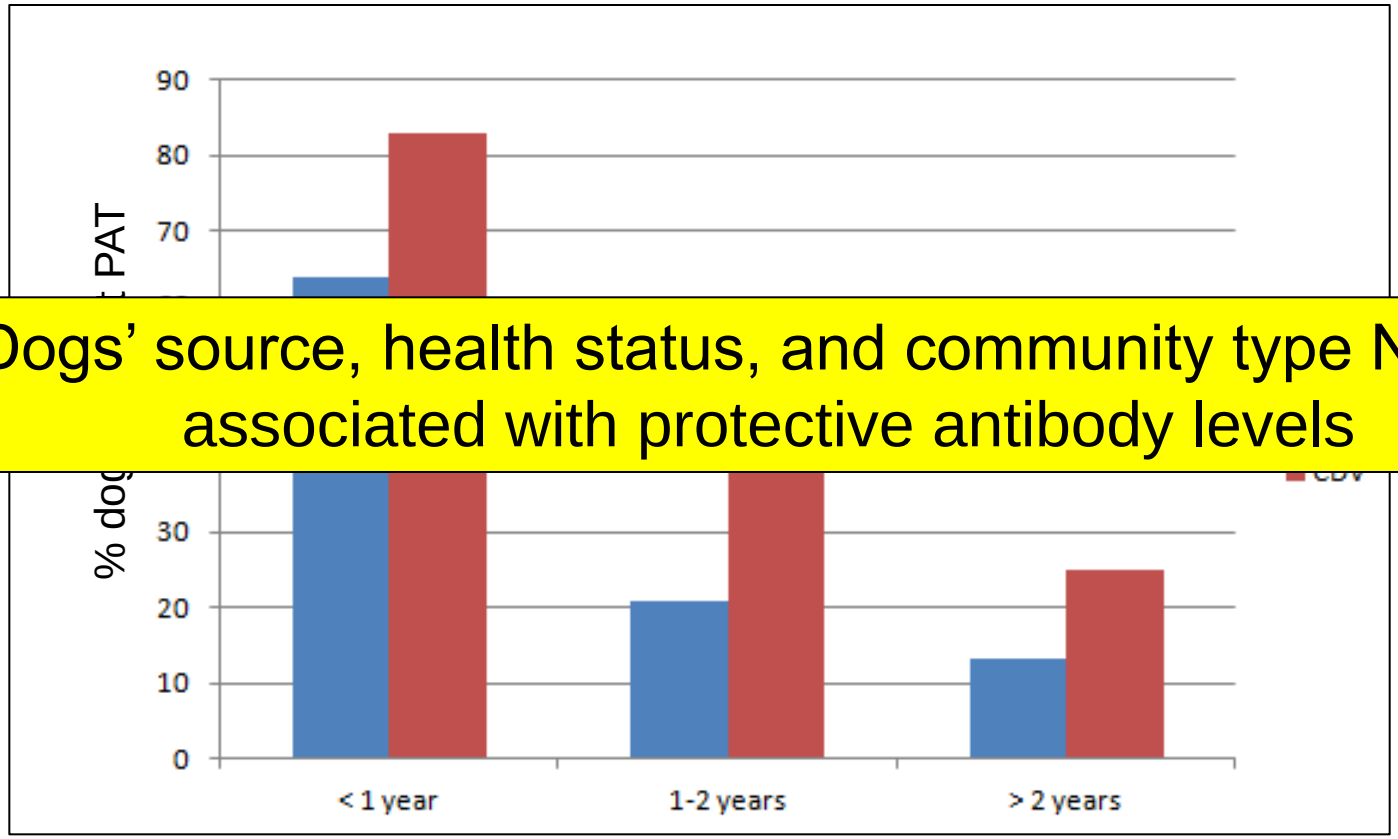
Parvovirus

This is a core vaccine – don't assume they are protected!



Dogs' source, health status, and community type NOT associated with protective antibody levels

Lechner ES et al. Prevalence of protective antibody titers for canine distemper virus and canine parvovirus in dogs entering a Florida shelter. J Am Vet Med Assoc. 2010 Jun 15;236(12):1317-21.

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Good News!

"Dogs vaccinated with modified live canine parvovirus develop high hemagluttination inhibition titers ***within four days*** of inoculation and antibody persisted."

Carmichael LE, et al. (1983). "A modified live canine parvovirus vaccine with novel plaque characteristics. 1. Viral attenuation and dog response." Cornell Vet 73(1): 13-29.

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Vaccination and CIRDC

- Vaccines available to protect against some causes:
  - *Bordetella bronchiseptica*
  - Parainfluenza virus
  - Adenovirus
  - Canine distemper virus
  - Canine influenza virus

- Vaccines not available to protect against others:
  - Respiratory coronavirus
  - Strep zoo
  - Mycoplasma

- Not vaccine preventable disease, but still an important tool

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Distemper, Adeno, Parainfluenza

- Vaccination is highly effective for CDV:
  - Clinically relevant protection within hours
  - Longer time frame to prevent mild signs, actual infection, viral shedding
- Reasonable protection against CAV
- Don’t rely on it for CPiV

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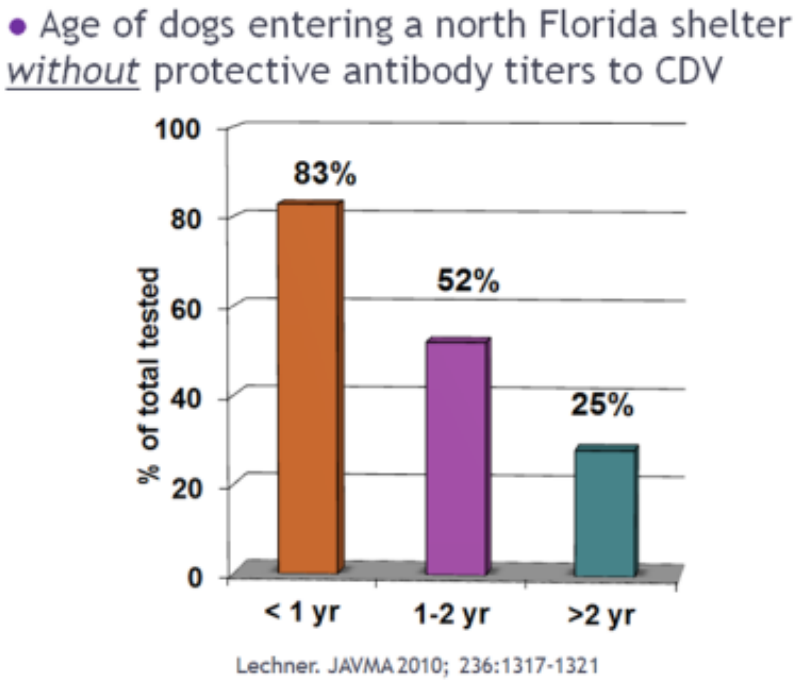
Distemper Vaccination

- Don’t assume they are protected!



- Dogs’ source, health status, and the type of community from which they originated were not associated with protective antibody levels

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Intranasal Vaccination

- Intranasal *Bordetella* AND Parainfluenza at intake for dogs as young as 3-4 weeks of age
  - Dogs < 6 weeks old: repeat once in 14 days
  - Dogs > 6 months old: not necessary
- Caution not to give via parenteral route: severe reactions, including acute hepatic necrosis and death may occur
- Oral *Bordetella* vaccine → effective, but lacks CPiV component

Respiratory disease outbreak in a veterinary hospital associated with canine parainfluenza virus infection

J. Scott Weese and Jason Stull

Canine Influenza Vaccination

- Recent approval of a vaccine against canine influenza
- Parenteral killed product, 2 doses 2-4 weeks apart
  - Immunity should not be expected until approximately one week following the second dose
  - Limited benefit unless exposure can be prevented

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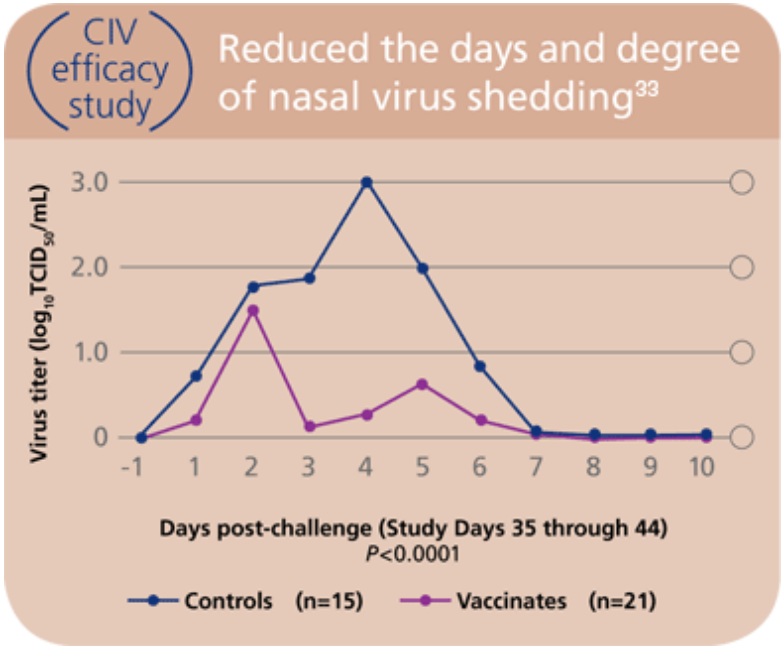
CIV Vaccination

- Vaccine limits the severity and duration of clinical signs, viral shedding but does not prevent infection



- Included in AAHA's 2011 Canine Vaccination Guidelines as a non-core vaccine
  - Recommended for use in certain populations of shelter-housed dogs
  - Transfers to/from, sometimes within endemic shelters or communities
  - Certain higher risk pet dogs

Deshpande MS, Jirjis FF, Tubbs AL, et al. Evaluation of the efficacy of a canine influenza virus (H3N8) vaccine in dogs following experimental challenge. Vet Ther. 2009;10(3):103-112

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Recommendations for Dogs

- Not recommended for routine use in the shelter because:
  - Not a significant threat to the population
  - Inadequate time for immunity to develop
  - Limited efficacy against clinical disease

- Current list:
  - Canine coronavirus
  - Leptospirosis
  - Lyme disease
  - Rattlesnake
  - Injectable *Bordetella*, Parainfluenza

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How Early Can Vaccines Be Given?

The minimum age for a dog/cat to receive vaccines in the shelter is 4 weeks.

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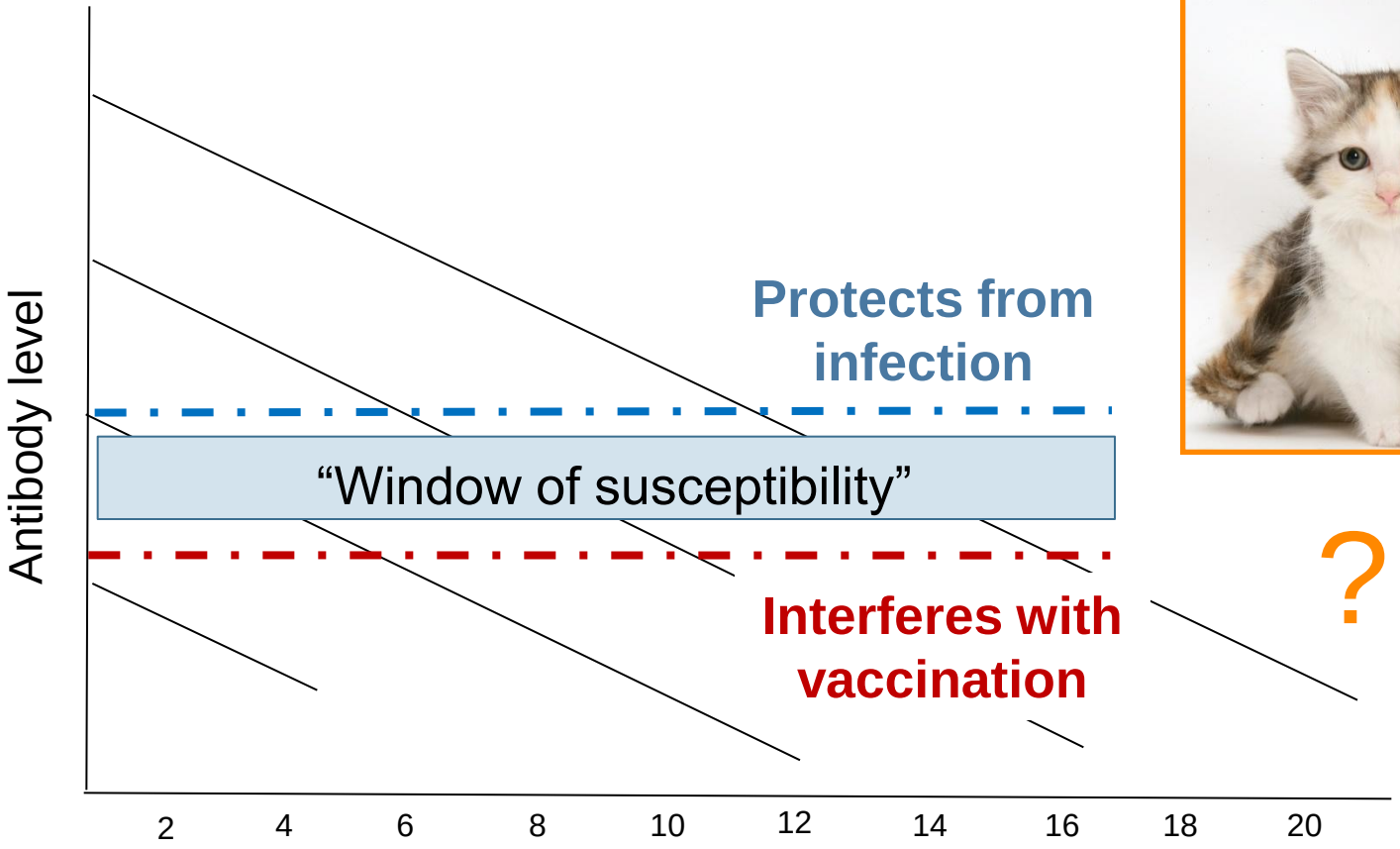
Maternal Antibody Interference

AKA – why puppies and kittens need so many vaccines!



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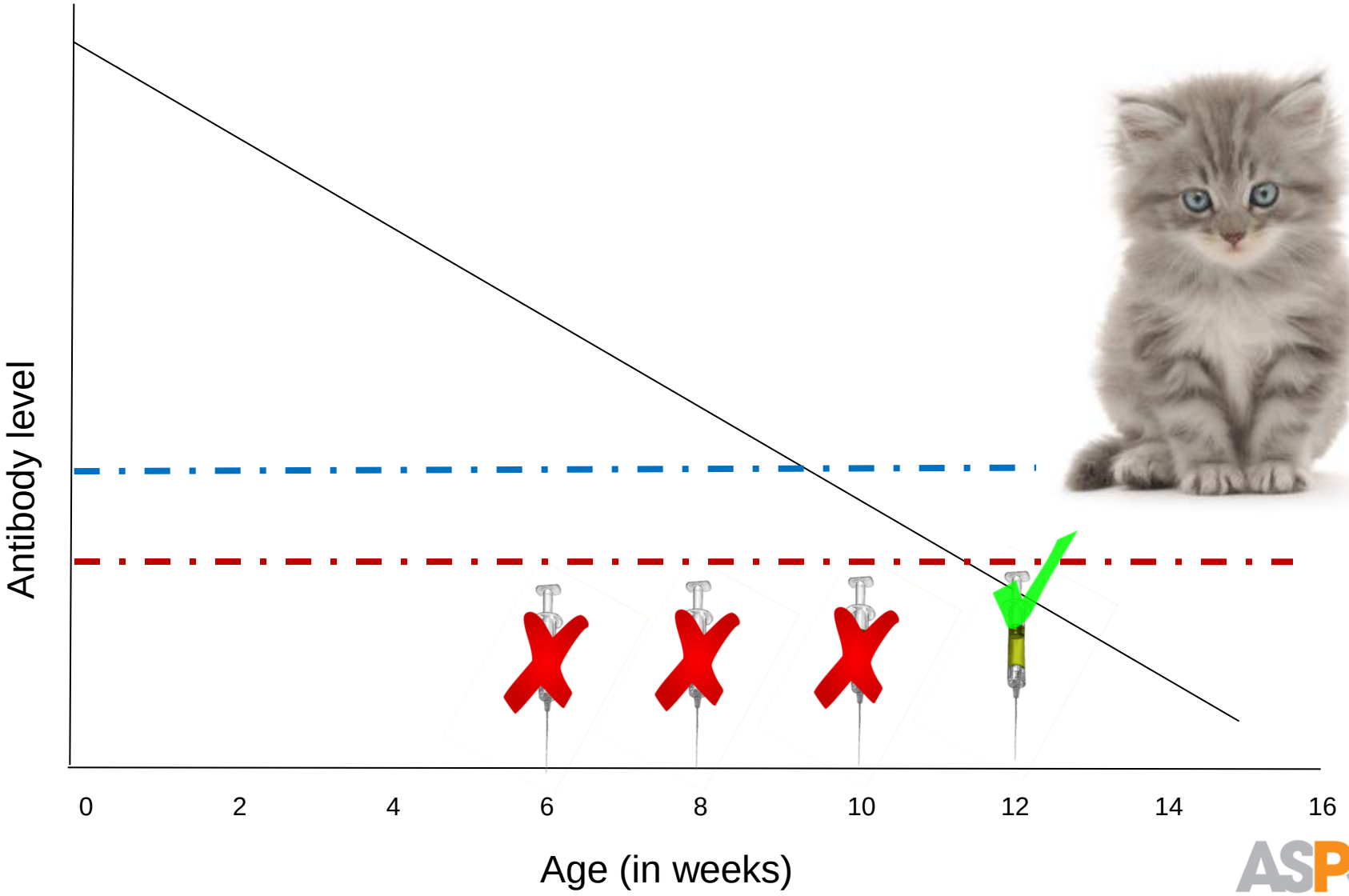
Maternal Antibody Interference



Vaccine Type Comparison

	MLV	Killed
Advantages	Rapid onset of immunity Sustained immunity from 1 dose Better able to breakthrough MDA May immunize others	Safe in immunocompromised Stable in storage
Disadvantages	Requires careful handling Less stable in storage Theoretical risk in pregnancy Potential for reversion to virulence Concerns with immunosuppression	Slow onset of immunity Requires multiple boosters May be highly adjuvanted Reduced degree of protection Poor breakthrough of MDA

Adapted from: Sykes JE. *Canine and feline infectious diseases*. Elsevier Health Sciences, 2013.

Vaccine Type Comparison

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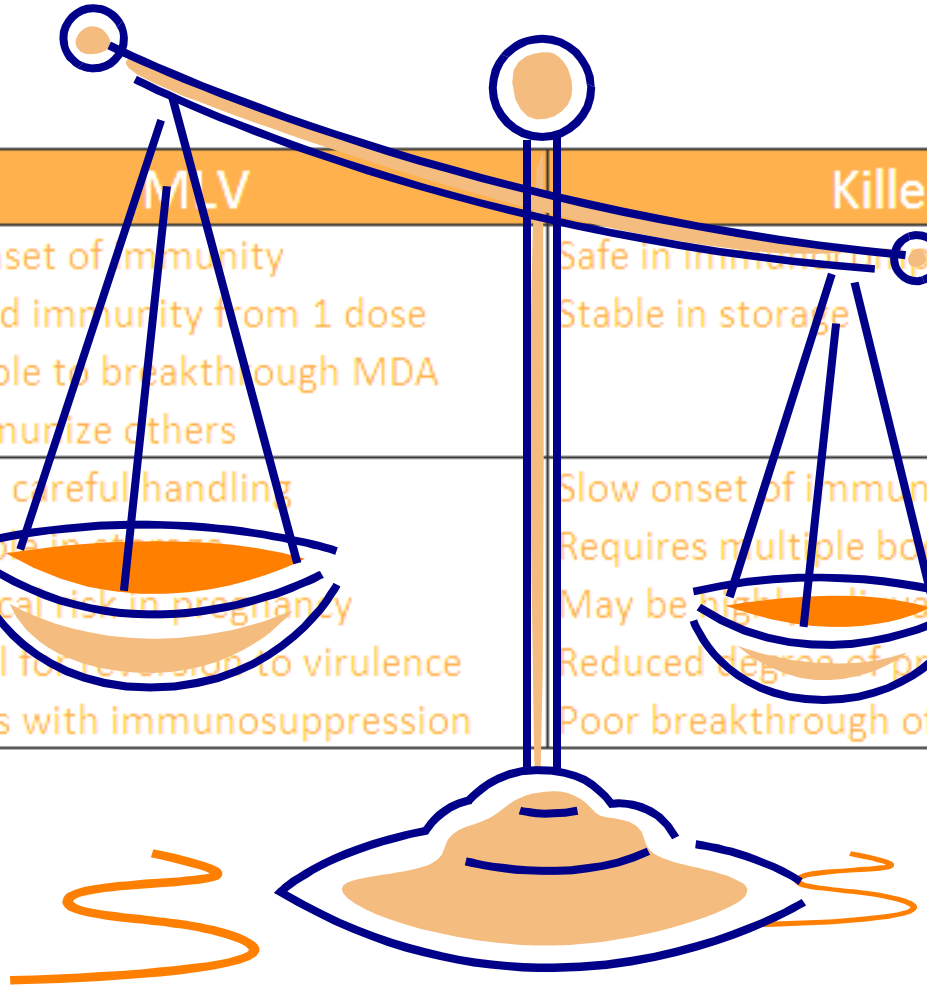

Adapted from: Sykes JE. *Canine and feline infectious diseases*. Elsevier Health Sciences, 2013.

Handling and Administration

- Give as close to time of intake as possible, or before if at all possible
- Must be kept refrigerated from time of arrival until time of administration
- Must be mixed up fresh – do not mix and keep in the fridge for later use

- Weigh exposure risk vs. vaccination risk
  - Rule of thumb: too sick to vaccinate = too sick to stay in the shelter

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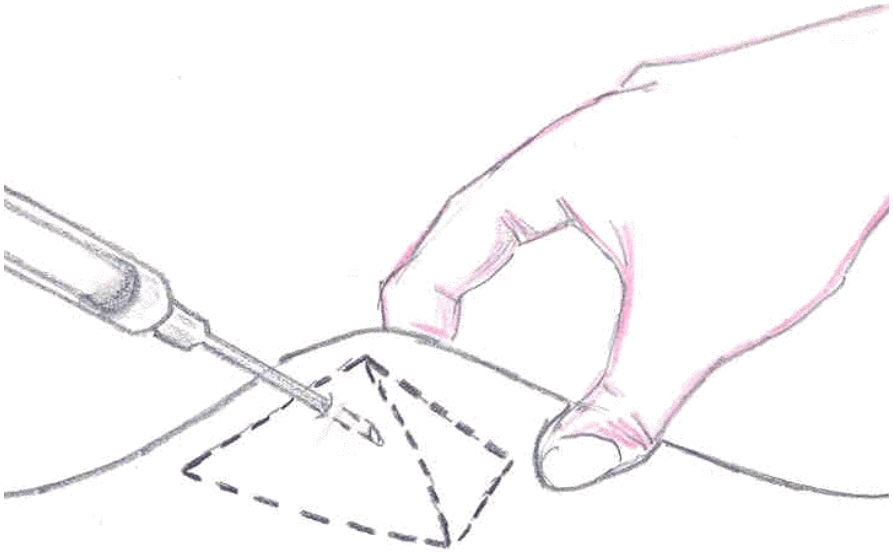
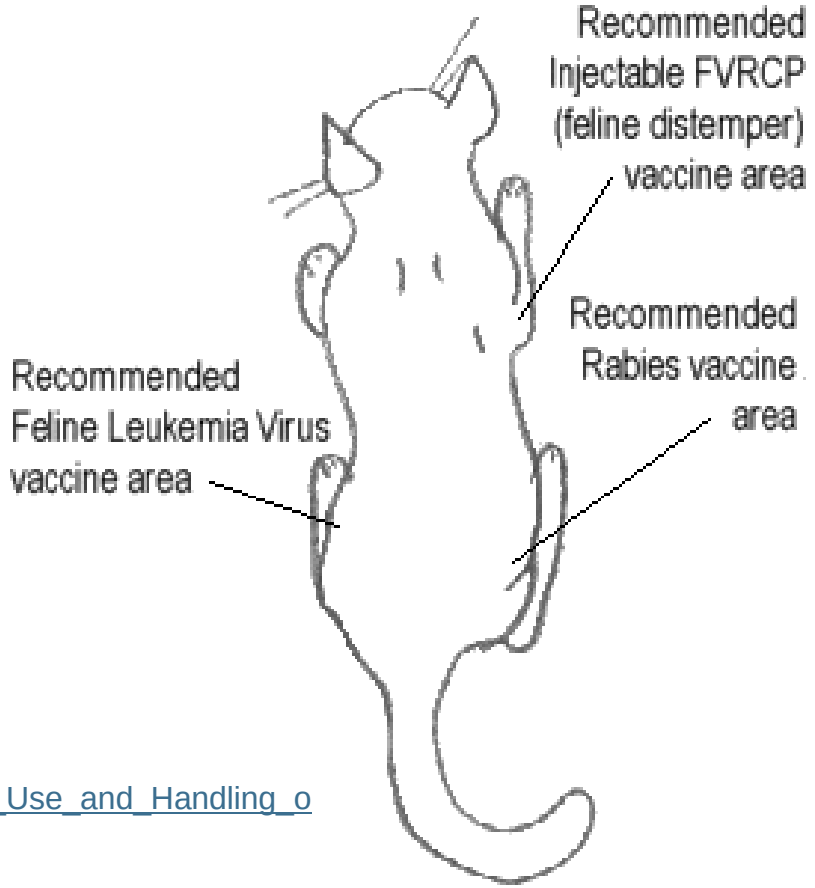
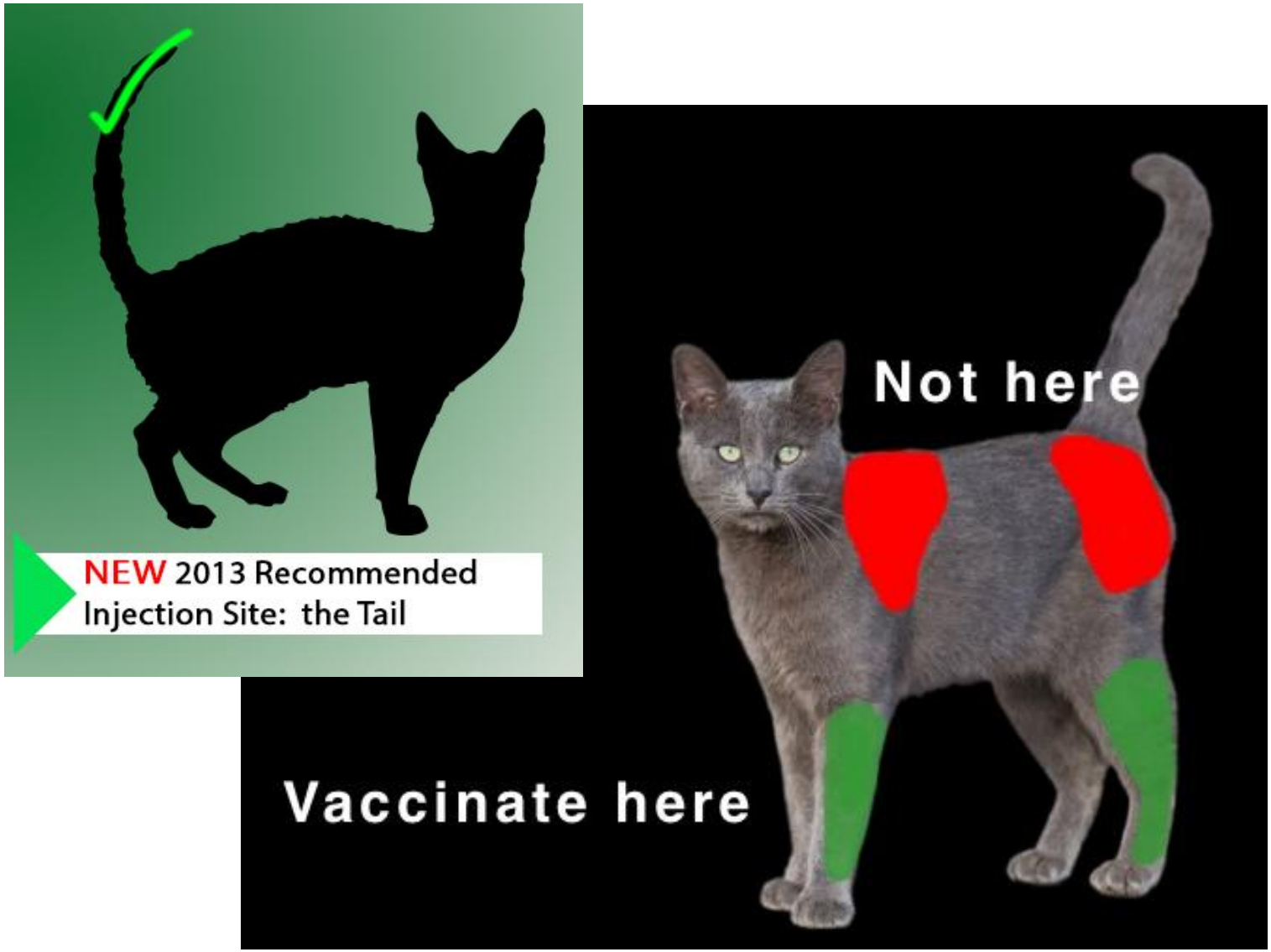
Vaccine Placement





http://www.maddiesfund.org/Maddies_Institute/Articles/Proper_Use_and_Handling_of_Vaccines_in_Animal_Shelters.html

Vaccine Placement



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Record Keeping

- Each vaccination MUST be documented in animal's individual medical record

- What to record:
  - Date of administration
  - Name of person giving vaccine
  - Product name, manufacturer, lot or serial number, expiration date*
  - Route, location of administration
  - Any complications
    - Also report to the manufacturer and USDA's Center for Veterinary Biologics

Adverse Reactions

- Adverse events are usually mild
- Must have written protocols for how to handle

- Local: pain, swelling, irritation, hair loss, at injection site; sarcoma formation rare

- Systemic: fever, lethargy, facial swelling, hives, redness, itching, salivation, v/d, difficulty breathing, collapse, death
  - Other hypersensitivity reactions
  - Vaccine-induced disease

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Your very own protocol!

- National guidelines provide a starting framework

- Develop program-specific SOPs with a veterinarian, considering:
  - Risks and benefits
  - Diseases endemic to your area
  - Potential for exposure
  - Available resources

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What about vaccinating…

?

Vaccination vs. Titer Testing

Any Questions?