



● Introducing Nobivac[®] Puppy DP PLUS

Presenter's name
Date

REVOLUTIONARY
PUPPY PROTECTION



● A Focus on Young Puppies



Agenda



Disease risks and vaccination considerations for young puppies



Introducing Nobivac[®] Puppy DP PLUS



Nobivac[®] Puppy DP PLUS and your clinic

Nobivac[®] Puppy DP PLUS

Experience of Puppy Infectious Diseases in Your Practice

What are the key diseases of concern for puppies in your clinic?

- Parvovirus
- Distemper
- Canine Infectious Respiratory Disease (CIRD)

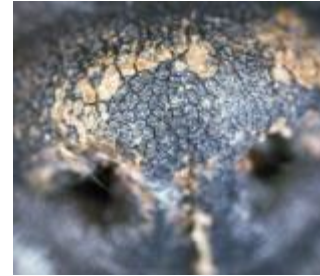


Nobivac:Puppy DP PLUS

Canine Distemper – Clinical Signs

Severe multisystemic viral disease → range of signs:

- Gastrointestinal:
 - Diarrhoea and vomiting
- Respiratory:
 - Nasal discharge, coughing, pneumonia
- Ocular:
 - Conjunctivitis, sudden blindness KCS, corneal ulcers
- Skin:
 - Pustular dermatitis, nasal and/or digital hyperkeratosis (hard-pad)
- Neurological:
 - Seizures and twitching (can follow clinical or subclinical disease)
- Can be fatal in 50–90% of clinical cases



Nasal and digital hyperkeratosis in dog with systemic distemper



(Photographs by Craig Greene © 2004 University of Georgia Research Foundation Inc.)



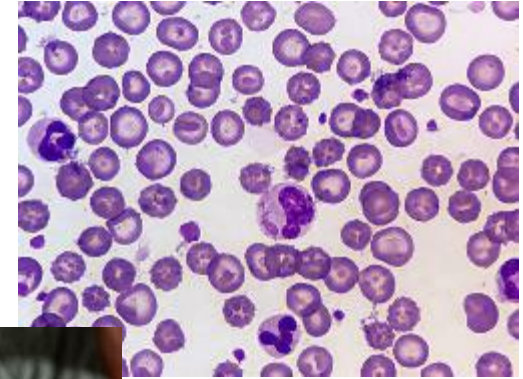
Courtesy of Rosicler Baldo. Used by permission.

Nobivac: Puppy DP PLUS



Canine Distemper – Other Important Aspects

- Highly infectious but fragile virus:
 - Related to human measles virus
 - Doesn't survive well in environment but readily spreads from dog to dog
 - Shed via all secretions/excretions
 - Most frequently seen in three-to-six-month-old unvaccinated pups
- Diagnosis:
 - Clinical signs
 - RT-PCR
- Treatment:
 - Symptomatic and supportive therapy
- Vaccination highly effective



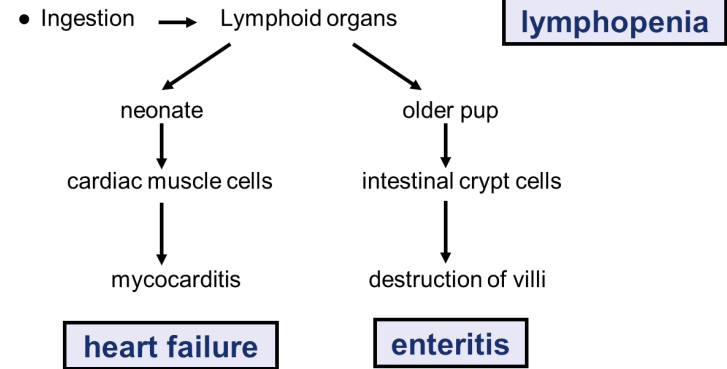
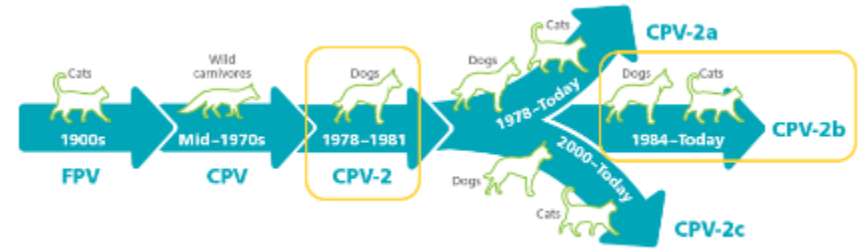
Canine Distemper Virus
cytoplasmic inclusion body



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Canine Parvovirus – Overview

- Caused by Canine Parvovirus type 2:
 - CPV-2
 - Nowadays more recent subtypes (CPV-2a, 2b and/or 2c) in field
- Very stable in the environment:
 - Can persist for months/year or more
- In the body, virus targets rapidly dividing cells:
 - Myocardial cells (neonates)
 - Uncommon nowadays
 - Intestinal cells (older pups and adults)





Canine Parvovirus – Impact of Disease

- Clinical signs typically include vomiting and haemorrhagic enteritis:
 - Can progress to shock and collapse
 - Can be very severe with high mortality; severity influenced by:
 - Age; immature animals worst affected
 - Intercurrent disease (esp. intestinal diseases)
 - Gut 'stress', e.g.
 - Weaning
 - Dietary change
 - New environment
- Diagnosis by clinical signs and detection of antigen in faeces
- Treatment mainly symptomatic/supportive:
 - High costs (both financial and emotional)
- Prevention is key:
 - Maternally derived antibodies (MDA)
 - Active immunity (vaccination)





Puppy Vaccination – Timing

At what age do you vaccinate puppies ... and why?

What factors can interfere with effective puppy vaccination?

Owner factors:

- Owner engagement and education
- Breeder engagement

Puppy Factors:

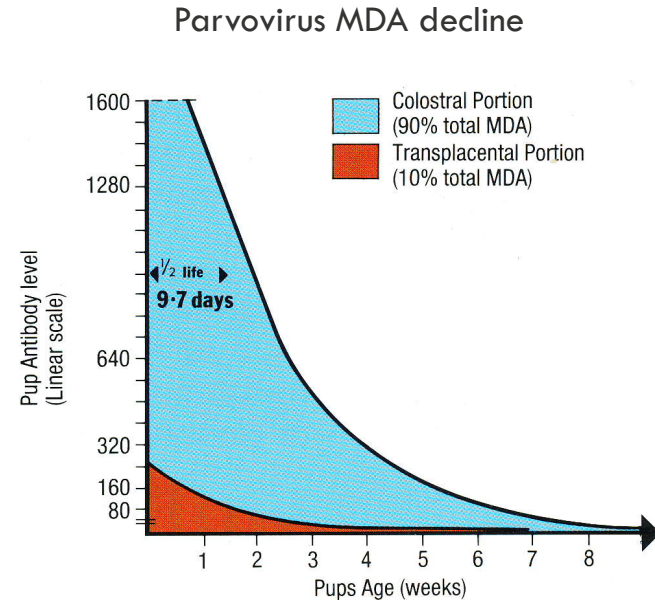
- Age
- Genetics, underlying disease
- Maternally derived antibodies (MDA)



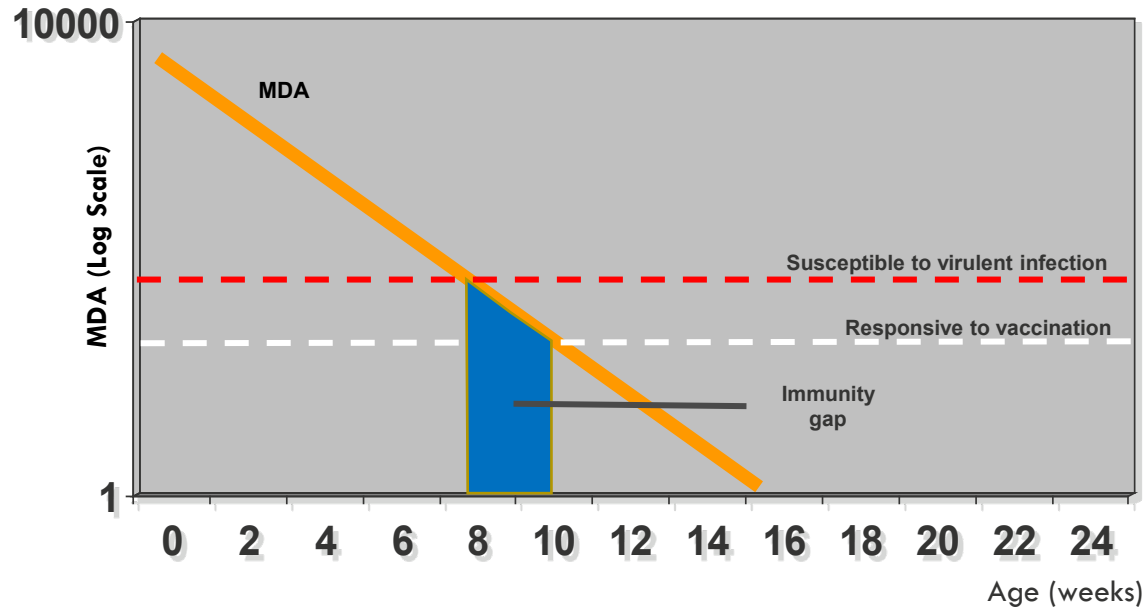
Nobivac® Puppy DP PLUS

An Important Factor – Maternally Derived Antibodies (MDA)

- Pass from dam to neonate mainly via colostrum
- Levels decline exponentially over the first weeks to months
- Important role:
 - To protect the puppy for the first few weeks of life
- Amount obtained by puppy depends on:
 - Level in colostrum
 - Ability of pup to suck in first few hours



Current Vaccines and MDA



Nobivac® Puppy DP PLUS



● Introducing Nobivac[®] Puppy DP PLUS

An innovative breakthrough
in puppy protection

Introducing Nobivac® Puppy DP PLUS



Cap colour:

- Olive/brown
- Same as Nobivac® Puppy DP
- Solvent cap is red

Presentation:

- 1-ml vials
- Pack - 25 doses
- Lyophilised/freeze-dried
- Solvent included in packs

And featuring:

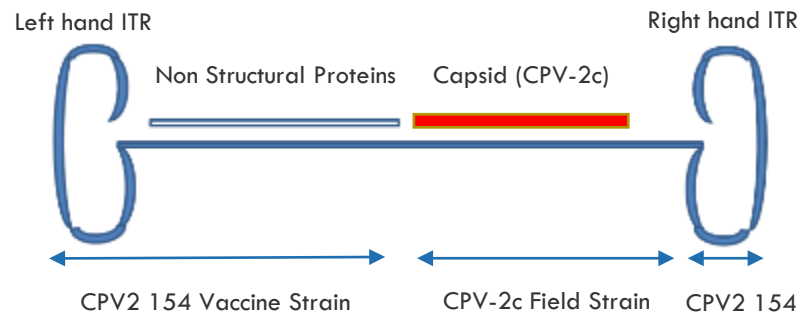
- Our 'spokes puppy'
- A Nova Scotia Duck Tolling Retriever

Nobivac® Puppy DP PLUS

What Does Nobivac[®] DP PLUS Contain?

Nobivac[®] DP PLUS is a live bivalent vaccine comprising:

- Live attenuated canine distemper virus:
 - Onderstepoort strain
 - Same strain as in our existing range
 - High titre ($10^{5.1}$ - $10^{6.5}$ TCID₅₀)
- Live attenuated parvovirus:
 - 630a strain
 - New recombinant strain
 - Derived from the backbone of the existing Nobivac Parvo 154 vaccine virus with a CPV-2c capsid



Nobivac® Puppy DP PLUS – Key Claims / Instructions

Single, 1-ml dose s/c from four weeks of age:

- OOI - CDV 7d; CPV 3d

Basic efficacy claims:

- CDV - Prevention of clinical signs, mortality and virus shedding
- CPV - Prevention of clinical signs, mortality and virus shedding

Efficacy in the face of MDA:

- CDV - Immunity is achieved in animals of four weeks of age with low-to-moderate levels of MDA.
Moderate to high levels of MDA can reduce the efficacy of the product.
- CPV - MDA against canine parvovirus do not interfere with the efficacy of this product.



Nobivac® Puppy DP PLUS

Nobivac[®] Puppy DP PLUS – Key Claims / Instructions

Compatibility:

- Cannot be mixed with any other vaccine
- Safety data, but no efficacy data, to support concurrent use of KC

Safety:

- A small, non-painful swelling (maximum 1 cm diameter) at the injection site is very commonly observed within the first week after vaccination.
The swelling will resolve completely within a few days. Reduced activity can occur within four hours after vaccination.
- Safety has not been established during pregnancy.



Nobivac[®] Puppy DP PLUS

Features and Benefits of Nobivac® Puppy DP PLUS

Features

Earlier protection

No MDA interference*

Fastest OOI

Only vaccine based on Parvo 2c

Innovative technology

Benefits

Peace of mind (pet parents and vets)

Eliminates window of susceptibility*

Enhanced health and wellbeing (pet)

Most current protection/relevant to field strain

Latest science

A new era in puppy protection



Early parvovirus
protection
**WITHOUT MDA
INTERFERENCE**
from four weeks
of age*



Rapid
**ONSET OF
IMMUNITY***



The **FIRST** vaccine
based on the
**LATEST CPV-2c
FIELD STRAIN**



Trusted
**DISTEMPER
PROTECTION**

*For parvovirus protection

Nobivac:Puppy DP PLUS



Nobivac[®] Puppy DP PLUS – Key Studies

Study¹ – Onset of Immunity for Parvovirus

Four-week-old puppies with no pre-existing immunity were challenged with a virulent parvo 2c strain three days after vaccination with a minimal titre dose of Nobivac® Puppy DP PLUS. A group of similar, unvaccinated pups were also challenged in the same manner.

Results:

Vaccinated pups

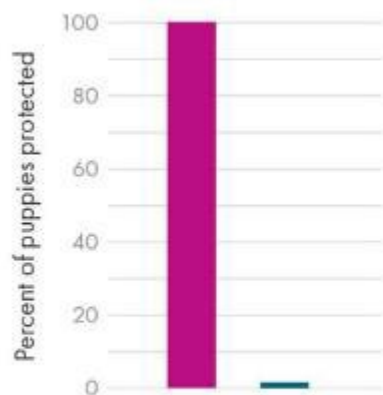
- No mortality and no clinical signs of parvovirus (100% protection)
- No shedding of challenge virus (100% prevention of shedding)

Unvaccinated pups

- All developed typical severe signs of parvovirus four days post-challenge. All were euthanised for welfare reasons two-to-three days later (0% protection)
- All shed challenge virus from three or four days post-challenge (0% prevention of shedding)

Reference: 1. MSD Animal Health Internal Study DP PLUS 001

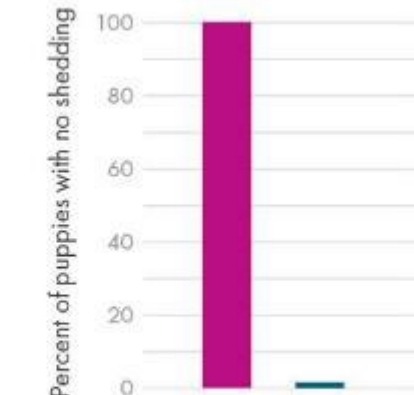
Three-day OOI study



Clinical Signs



DP PLUS



Shedding



Controls

Nobivac® Puppy DP PLUS

Study¹ – Parvovirus Seroconversion in MDA +ve Pups

Four-week-old puppies with moderate-to-high levels of MDA were given a single, minimum titre dose of Nobivac® Puppy DP PLUS and monitored serologically every three-to-four days to record whether an active immune response was stimulated. A control group of unvaccinated pups with similar levels of MDA was also monitored serologically in the same way.

NB- MDA levels ranged from 288 to 1 664 HAI units.

Results:

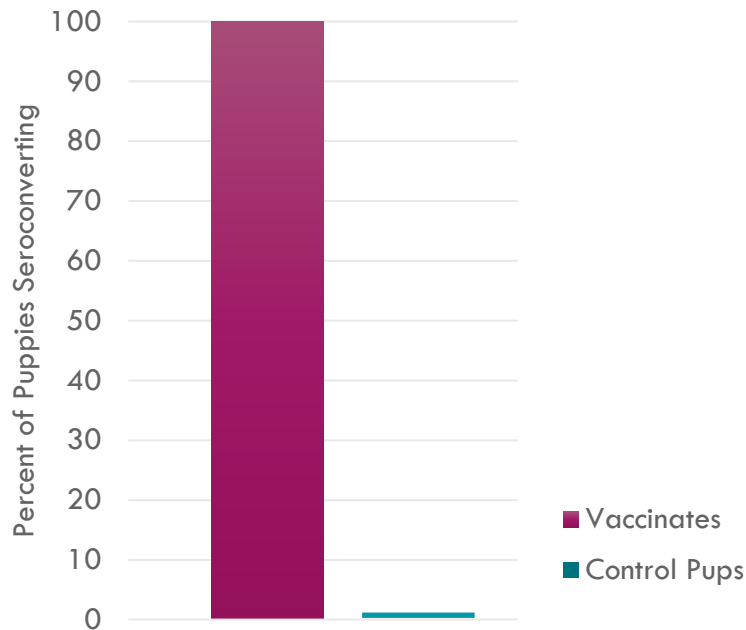
Vaccinated pups

- All responded serologically following vaccination (100% seroconverted).

Unvaccinated pups

- None responded serologically; MDA levels declined at the expected rate (0% seroconverted).

Reference: 1. MSD Animal Health Internal Study DP PLUS 002



Nobivac® Puppy DP PLUS

Study¹ – Comparative Parvovirus Seroconversion in MDA +ve Pups

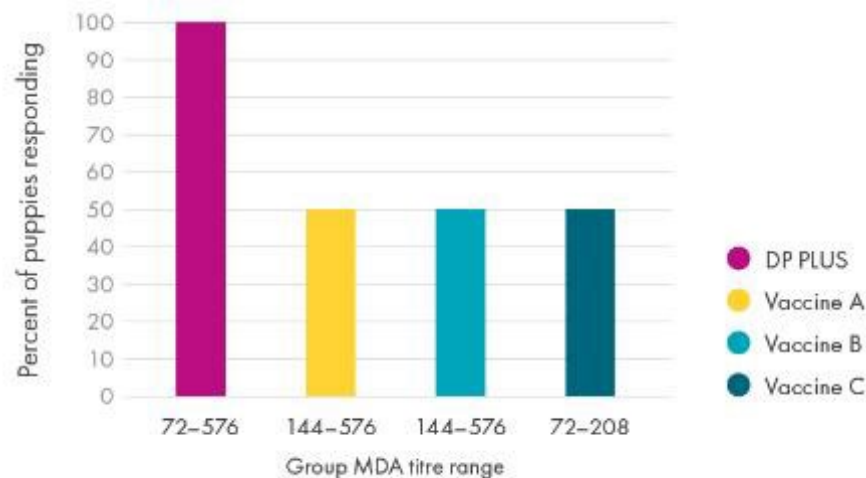
Ability of Nobivac[®] Puppy DP PLUS vs other parvovirus vaccines to stimulate seroconversion in six-week-old puppies in the face of MDA

All pups had parvovirus MDA titres of 72 to 576 HAI units; similar across all groups

Results:

- 100% (5/5) of the Puppy DP PLUS vaccinates seroconverted vs 50% (2/4) of each of the competitors.
- Only Nobivac[®] Puppy DP PLUS stimulated seroconversion in the presence of the highest MDA titres (>400 HAI units).

Comparative efficacy study



Redefining puppy protection

Reference: 1. MSD Animal Health Internal Study DP PLUS 003

Nobivac[®] Puppy DP PLUS



● **Nobivac[®] Puppy DP PLUS
in Your Clinic**

In Summary – Why You Should Offer NEW Nobivac® Puppy DP PLUS

- Creating a new standard in puppy protection:
 1. NEW innovation and science
 2. Dramatically improves the ability to overcome CPV MDA
 3. Rapid OOI; early and more reliable parvo protection for four-legged family members
 4. Only vaccine based on parvo 2c strain
 5. Trusted distemper protection
- Offering peace of mind for pet parents and for your clinic



Early parvovirus
protection
**WITHOUT MDA
INTERFERENCE**
from four weeks
of age



Rapid
**ONSET OF
IMMUNITY**



The **FIRST** vaccine
based on the
**LATEST CPV-2c
FIELD STRAIN**







Trusted
**DISTEMPER
PROTECTION**



**Protect puppies earlier and with
more confidence than ever before!**

Nobivac® Puppy DP PLUS

Nobivac[®] Puppy DP PLUS Protocol – Improved Early Protection

	4-6 WEEKS	8 WEEKS	10 WEEKS	12 WEEKS	14 WEEKS	16 WEEKS
Puppy DP PLUS						
L6						
KC						

DHP



KC



L6





How to Integrate Nobivac® Puppy DP PLUS in Your Clinic

- Drive conversation with breeders and young puppy owners.
- Develop a vaccination plan for puppies that engages the whole team:
 - Targeted disease education
 - Understand the benefits of Nobivac® Puppy DP PLUS.
 - Discuss managed socialisation with clients.
- Utilise support from MSD Animal Health



Nobivac:Puppy DP PLUS



● Effects on Puppy Socialisation

Factors Affecting the Best Start for Puppies



Individual's risk of exposure to disease



Timing of puppy vaccination and MDA interference



Delayed socialisation

Benefits of Early Protection



For your clinic:

- Optimised protection against potentially fatal diseases
- Early engagement with pet owners



For your clients and their puppy:

- Peace of mind and protection
- Enjoy the benefits of earlier, controlled socialisation



For breeders:

- Optimised protection from the start
- Driving reputation and value



Summary



THE NEW STANDARD OF PUPPY CARE



Early parvovirus protection
**WITHOUT MDA
INTERFERENCE**
from four weeks
of age



Rapid
**ONSET OF
IMMUNITY**



The **FIRST** vaccine
based on the
**LATEST CPV-2c
FIELD STRAIN**



Trusted
**DISTEMPER
PROTECTION**

Nobivac: Puppy DP PLUS

Thank you, any questions?

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Optional Additional Slides

Study¹ – Field Safety and Efficacy

A study to assess the safety and efficacy of Nobivac[®] DP PLUS (resuspended in tetravalent leptospirosis vaccine) under field conditions

- 89 puppies aged four-to-six weeks
- Over a third were small or miniature breeds
- Range of MDA titres:
 - CPV = 18 to 3328 HAI units
 - CDV = ≤ 4 to 54 VN₅₀



Reference: 1. MSD Animal Health Internal Study DP PLUS 004

BREED	NUMBER
Miniature Pinscher	4
Spitz	20
Bichon	11
Cocker Spaniel	3
Spaniel	7
Husky	3
GSD x Belgian Shepherd	9
German Wirehaired Pointer	6
German Short Hair	9
Dobermann	9
Rottweiler	11

Over 1/3
small and
miniature
breeds



Study¹ – Field Safety and Efficacy

Results:

Safety:

- No clinically relevant systemic reactions
- 17% (15 out of 89 pups) showed short immediate reaction to vaccination (whining and/or scratching)
- Some small, non-painful local swellings seen, which resolved within a few days

Efficacy:

- 99% seroconverted to CDV
- 91% seroconverted to CPV
 - Non-responders had a range of MDA
 - Non-responders were not 'black and tan' breeds
 - Other factors beyond MDA can affect response to parvovirus vaccines in puppies

Reference: 1. MSD Animal Health Internal Study DP PLUS 004

Nobivac:Puppy DP PLUS

Study – Onset of Immunity for Parvovirus – Shedding Results

		Study Day																		
		-1	0 (V)	1	2	3 (C)	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Vaccinates	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Controls	1	-	-	-	-	-	-	-	++	+++	+++	+++	*							
	2	-	-	-	-	-	-	-	+	+++	+++	+++	*							
	3	-	-	-	-	-	-	-	++	+++	+++	+++	*							
	4	-	-	-	-	-	-	-	-	+++	+++	+++	*							
	5	-	-	-	-	-	-	-	+	+++	+++	*								

Viral load estimations (log10 TCID50/swab); + = <3, ++ = 3-6, +++ = >6

* Puppy euthanised on welfare grounds

Study – Onset of Immunity for Parvovirus – Shedding Results

	Study Day																			
	Pup	-1	0 (V)	1	2	3 (C)	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Vaccinates	1	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
	2	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-
	4	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
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	6	-	-	-	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-
	7	-	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
Controls	1	-	-	-	-	-	-	-	+	+	+	+	No data for controls beyond day 8/9							
	2	-	-	-	-	-	-	-	+	+	+	+								
	3	-	-	-	-	-	-	-	+	+	+	+								
	4	-	-	-	-	-	-	-	-	+	+	+								
	5	-	-	-	-	-	-	-	+	+	+									

*PCR demonstrated virus shed was vaccine virus not challenge virus