

CHARACTERISTICS OF THE SNAP® PARVO TEST

- **SNAP® Parvo** increases the reliability of the result by eliminating variations due to subjective preparation and reading of the sample by the operator.
- No further tests need to be carried out on the sample to reach a definitive diagnosis.
- Each test comes with a swab/conjugate device that makes it easier to collect a sample from the faecal specimen.
- **SNAP® Parvo** does react with CPV-2a, CPV-2b and CPV-2c.
- No crossreaction with the common CPV vaccines

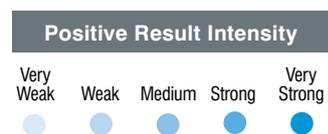
THE IMPORTANCE OF PERFORMING THE TEST

1. A negative faecal test does not rule out a diagnosis of parvovirus disease.
2. **SNAP® Parvo** is a haemoagglutination test (based on ELISA technology), capable of detecting the presence of the antigen in faecal samples. It indicates that the animal has ingested cysts of the Parvovirus, may be actively infected and may eliminate the virus in the faeces.
3. The **SNAP® Parvo** test provides more accurate results than traditional methods used at the vet surgery.

POSITIVE TEST PARVOVIRUS

NEGATIVE TEST

Positive results may vary
in colour intensity.



1. Wipe a swab across the faecal sample and replace the swab in the tube. Break the plastic valve stem inside the reagent bulb and allow the conjugate to flow out.



2. Squeeze and release the bulb three times to mix the sample and the conjugate.



3. Squeeze the bulb to dispense 5 drops into the sample well.



4. When the sample FIRST appears in activation circle, push the activator button firmly.

When to use SNAP® Parvo

SNAP® Parvo is a basic diagnostic test for any animal presenting with diarrhoea

SNAP® Parvo is a routine test at annual check-ups, especially for patients at a high risk of infection and contagion.

IDEXX
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PARVOVIRUS DISEASE

The aetiological agent of parvovirus disease is a non-enveloped DNA-virus of the family *Parvoviridae*, whose genome is made up of linear, single-chain DNA, present as a single copy. Parvovirus is one of the smallest viruses identified in nature.

Two different parvovirus strains may be found in dogs: **CPV1** and **CPV2**. CPV1 is non-pathogenic and is related with other strains of parvovirus. CPV2 causes gastroenteritis and myocarditis, and is related to feline parvovirus. Since the emergence of CPV2, three different antigenic variants arose consecutively, (CPV-2a, CPV-2b and CPV-2c) of which the former two have replaced the original CPV-2 completely. The disease spread worldwide within a few years of its first appearance, due to its high resistance to inactivating agents such as heat and pH.

Like all CPV parvovirus strains, CPV2 is extremely immunogenic. Antibodies appear in the circulation 4 days after infection and persist for 2 years. Protection of the puppy is dependent on humoral immunity (both active and passive) and not local immunity.

Canine parvovirus disease, a form of haemorrhagic gastroenteritis, is a serious contagious and infectious viral disease, which attacks puppies during the first few months of their lives.



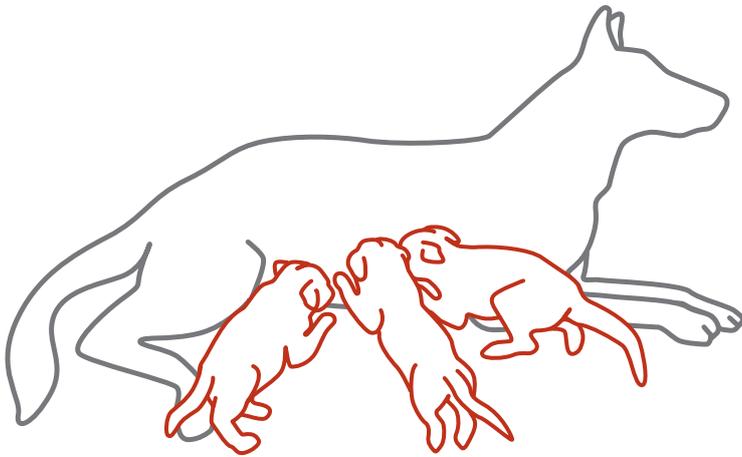
SNAP® Parvo

- Easy
- Reliable
- Safe
- Fast

CONTAGION

The disease is transmitted to healthy animals either by direct contagion from an infected animal eliminating the virus in its faeces, vomit or urine, or by indirect contagion through contaminated objects or food. Clinically, puppies are normally infected before the age of 5-6 months. There is an extremely high fatality rate in dogs contracting the disease during the first few weeks of their lives, but this tends to diminish in older puppies. As prophylactic hygiene measures are not sufficient to eradicate the disease, prophylactic vaccination is essential. This is currently available as an attenuated virus capable of giving the animal a satisfactory level of immunity.

Despite the undisputed success obtained by veterinary research, many puppies succumb to infection - including some that have been subjected to regular vaccination - especially in a kennel environment. This may be attributed to the fundamental role maternal antibodies play in interfering with vaccination. It is a known fact that maternal antibodies, transmitted through the placenta or colostrum, protect the young offspring against infectious diseases. In the case of canine parvovirus, many studies have been conducted to determine the interference that these antibodies may cause to a puppy's response to vaccination.



Canine parvovirus type 2 (CPV-2) appeared as a pathogen of dogs in the 1970s¹. In 1979 a mutated strain, to be known as CPV-2a, was identified and within one year it had become the predominant type. CPV-2a was followed by CPV-2b in 1987 and in 2001 CPV-2c was first reported in Italy².

Since that time CPV-2c has been spreading across Europe, Asia and North America^{3,4}, replacing CPV-2b completely in Italy and CPV-2a in Germany, Spain and other countries. It is currently rare in the UK with the 2a and 2b strains remaining predominant³. CPV-2c causes similar clinical signs as the previously known strains, including mucoid or haemorrhagic diarrhoea, leukopenia, and lymphopenia.

In recent scientific publications, a great deal of attention has been given to the "new canine parvovirus": strain CPV-2c. This virus has a single nucleotide substitution that changes one amino acid in ►

1. Kelly WR. An enteric disease of dogs resembling feline panleucopaemia. *Aust Vet J* 1978;54:593.
2. Buonavoglia, C., V. Martella, A. Pratelli, M. Tempesta, A. Cavalli, D. Buonavoglia, G. Bozzo, G. Elia, N. Decaro, and L. Carmichael. 2001. Evidence for evolution of canine parvovirus type 2 in Italy. *J. Gen. Virol.* 82:3021-3025.
3. Decaro, N., C. Desario, D. D. Addie, V. Martella, M. J. Vieira, G. Elia, A. Zicola, C. Davis, G. Thompson, E. Thiry, U. Truyen, and C. Buonavoglia. 2007. Molecular epidemiology of canine parvovirus, Europe. *Emerg. Infect. Dis.* 13:1222-1224.

SNAP[®] Parvo

Disease	Species	Storage	When to perform the test	Sensitivity
PARVOVIRUS	Canine	2-25°C	4-8 days after exposure	100% (CI 94.0 – 100%)

*ATWB = anticoagulant-treated whole blood

PATHOGENESIS AND CLINICAL SIGNS

After an incubation period of about 5-6 days, the parvovirus gives rise to fever, depression, vomiting and often bloody diarrhoea. The animal dies within 48-72 hours of the onset of these symptoms. The standard disease presents as an intestinal form. In addition to this, a cardiac form characterised by sudden death following nerve conduction problems was initially commonplace, but is now rare.

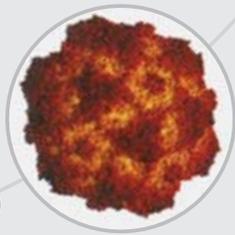
Intestinal form

This affects newly-born puppies or those during weaning (the change in food causes a rapid turnover of the intestinal epithelium). This form causes depression, anorexia and fever on the third day. Infected animals experience vomiting and bloody diarrhoea and may also suffer from temporary leucopenia. The ileum and the jejunum are the areas most frequently affected. Congestion of the mesenteric lymph nodes with petechiae also occurs.

Puppies suffering from parvovirus disease have a very guarded abdomen, are reluctant to move and appear hunched.

Cardiac form

This causes a non-suppurative acute inflammation of the heart muscle in newly-born puppies. It is now an extremely rare form, as it only occurs in those born from non-immune mothers. It causes sudden symptoms, breathlessness, dry vomiting, rapid death, not always followed by enteritis and it sometimes appears a few weeks after the animal has recovered from the intestinal form. It causes acute heart failure, with dilatation of the cardiac chambers, pulmonary oedema, hepatic congestion, hydrothorax and ascites. Some whitish striae may appear on the heart.

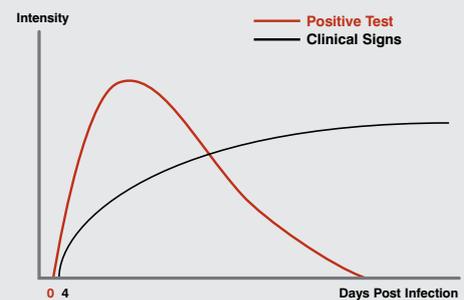


▶ the capsid protein^{3,5}. The research to date shows that all currently available vaccines protect against all known strains of CPV, including the CPV-2c strain⁴. Furthermore, it is not possible to distinguish CPV-2c from CPV-2b or -2a isolates based on clinical signs or the IDEXX SNAP[®] Parvo tests.

There is no evidence, nor reason to believe, that the IDEXX SNAP[®] Parvo test would react differently to the various strains of CPV-2. Furthermore, preliminary analysis of two independent studies confirms that there is no significant difference in the sensitivity and specificity of the SNAP[®] Parvo test for the three subtypes (2a, 2b and 2c)^{6,7}.

4. Larson LJ, Schultz RD. Do two current canine parvovirus type 2 and 2b vaccines provide protection against the new type 2c variants. *Vet Ther*. 2008 Summer;9(2):94-101.
5. Kapil S, Cooper E, Lamm C, Murray B, Rezabek G, Johnston III L, Campbell G, Johnson B; Canine Parvovirus Types 2c and 2b Circulating in North American Dogs in 2006 and 2007 *JCM*, Dec. 2007, p. 4044-4047 Vol. 45, No. 12
6. Data on file, IDEXX Laboratories, Inc.
7. Laurie J. Larson, Mariela Quesada, Eiman Mukhtar, K. Krygowska, and Ronald D. Schultz. Evaluation of a CPV-2 Fecal Parvovirus ELISA (SNAP[®] Fecal Parvo Test[®]) from CRWAD PROCEEDINGS of the 88th Annual Meeting

Course of infection



The antigen shedding starts 3-4 days after infection and lasts for approximately 10 days.

Specificity	What does the test detect?	Sample	Amount of sample/ conjugate mix	Time to result (min)
100% (CI 98.0 – 100%)	Antigen	Faeces	5 drops	8