Parvo Basics

Understanding, preventing, and managing canine parvovirus infections in animal shelters





Your Presenter



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Canine Parvovirus

- May cause severe, potentially fatal illness in dogs
 - Highly contagious, easily spread, environmentally resilient virus



 Current circulating variants: CPV-2b + 2c



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Who gets Parvo?

• ANY unvaccinated dog of any age



- Puppies, co-infected dogs more susceptible to severe disease
- Breed susceptibility vs. commonly infected breeds



Parvovirus – Transmission

Spread mainly through feces, also vomit and other bodily excretions

- Direct contact
- Fomites & environmental contamination
- Aerosolization during cleaning

Highly resistant in the environment – persists for up to a year

- Sanitation with parvocidal products
- Limiting access to certain areas





What happens when they get sick?

- Virus attacks rapidly dividing cells
 - Vomiting, diarrhea, dehydration & electrolyte problems from damage to intestinal cells
 - Decreased ability to fight infection from bone marrow damage
- Other serious complications possible but less common





Clinical Signs of Parvo Infection

Symptoms usually develop 5-7 days after exposure, but range is 2-14 days:

- Vomiting
- Diarrhea, often bloody
- Inappetance
- Dehydration
- Lethargy, weakness







Diagnosis

Consistent symptoms and history

In-house parvo tests

- Look for viral antigen in the feces all strains
- False (+) or (-) results may occur
- Interference from recent vaccination possible but unlikely





Diagnosis



Complete blood count or smear

- At $10x \rightarrow 4-6$ WBCs per field or less
- At $40x \rightarrow 1-3$ WBCs per field or less

http://todaysveterinarypractice.navc.com/in-clinic-hematology-the-blood-film-review/ https://www.cliniciansbrief.com/article/blood-smear-preparation



Diagnosis

PCR testing

Necropsy

- Segmental enteritis is classic finding on gross exam
- Parvo test can still be used on GI tract
- Samples for molecular testing and histopath



Image from Greene's Infectious Diseases of the Dog and Cat



Treatment Considerations







Treatment

Careful consideration necessary when deciding to treat:

- Ability to provide humane level of care
 - Supplies, space/housing, staffing
- Ability to protect the remaining population
- Retain focus on prevention
- Prognosis depends on severity of symptoms and response







http://www.maddiesfund.or g/assets/documents/Institu te/CPV%20Chart-Print-



Treatment

Treatment remains largely supportive:

- Address any concurrent issues
- Correct dehydration, hypoglycemia, electrolyte imbalances
- Address hypoproteinemia
- Prevent sepsis
- Stop vomiting
- Early nutritional support
- Alleviate pain and discomfort





Outpatient Treatment?

Veterinary Emergency



Original Study

Journal of Veterinary Emergency and Critical Care 27(1) 2017, pp 52–65 doi: 10.1111/vec.12561

Evaluation of an outpatient protocol in the treatment of canine parvoviral enteritis

Emilee C. Venn, DVM, MS, DACVECC; Karolina Preisner, DVM; Pedro L. Boscan, DVM, MSc, PhD, DACVA; David C. Twedt, DVM, DACVIM and Lauren A. Sullivan, DVM, MS, DACVECC

Abstract

Objective – To compare 2 treatment protocols (standard in-hospital versus modified outpatient) in affecting the duration of treatment or survival of dogs with parvoviral enteritis.

Design - Prospective, randomized study.

Setting - University teaching hospital.

Animals – Client-owned dogs with naturally acquired parvovirus were randomized to receive either an inpatient (n = 20) or outpatient (n = 20) treatment protocol.

Interventions – Both groups received intravenous (IV) fluid resuscitation and correction of hypoglycemia at hospital admission. Following stabilization, basic inpatient interventions included administration of IV fluids, administration of cefoxitin (22 mg/kg IV q 8 h), and maropitant (1 mg/kg IV q 24 h). Basic outpatient interventions (provided in-hospital) included administration of subcutaneous (SC) fluid (30 mL/kg q 6 h), administration of maropitant (1 mg/kg SC q 24 h) and cefovecin (8 mg/kg SC once). Using daily electrolyte and glucose evaluations, dextrose and potassium supplementation was provided intravenously (inpatients) or orally (outpatients) as indicated. Rescue criteria were used in both groups for analgesia and nausea. All dogs were syringe fed a commercial canine convalescence diet (1 mL/kg PO q 6 h) until voluntary appetite returned. Measurements and Main Results – Protocol success, defined as survival to hospital discharge, was 90% (18/20)



Outpatient Treatment?

"An outpatient protocol may be a reasonable alternative for dogs that cannot receive standard inhospital treatment for parvoviral enteritis. <u>Diligent</u> <u>supportive care and monitoring are still required</u> to optimize treatment of dogs with parvoviral enteritis in an outpatient setting."

Venn EC, Preisner K, Boscan PL, Twedt DC, Sullivan LA. Evaluation of an outpatient protocol in the treatment of canine parvoviral enteritis. J Vet Emer Crit Care. 2017 Jan 1;27(1):52-65.



After Treatment...

- Pups generally recover after 3-10 days of treatment...(5-7 typical)
- Viral shedding typically stops within 2 weeks
- Once clinically recovered, SNAP test (or PCR)
- Bathe and dry thoroughly
- Vaccinate as usual
- Rehome ASAP





Preventive Strategies

- Operate within your capacity for care
- Reduce length of stay
- Recognize and respond to illness promptly
- Maintain excellent sanitation procedures
- Follow recommended vaccination protocols



Population Management

- Operating beyond capacity for care is a major risk factor for disease outbreaks
- Longer lengths of stay increase risk of disease exposure







Excellent Sanitation Procedures

- Appropriate techniques and products
 - Product, application, dilution, contact time
- Use housing as intended
- Dedicated staff
- Labeled, dedicated equipment
- Use PPE when needed
- Minimize risk with order of cleaning
- Diligent hand sanitation
- Restricted access to hard-to-sanitize surfaces/areas







Vaccination

- Parvo is considered to be a vaccinepreventable disease
- Basic vaccine reminders:
 - Give as close to time of intake as possible, or before
 - Keep refrigerated
 - Mixed fresh before use





Parvo Vaccination

- DA2PP at or prior to intake starting at 4-6 weeks of age
 - For adults: booster 14 days later
 - For puppies: repeat every 14 days until 18-20 weeks old
- Weigh risk of exposure vs. risk of vaccination
 - Rule of thumb: too sick to vaccinate
 = too sick to stay in the shelter



https://www.aaha.org/guidelines/canine_vaccination_guidelines.aspx



Parvo Vaccination

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



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.



Maternally-derived Antibody Interference

AKA – why puppies need so many vaccines!



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Help! We have Parvo!

- Review individual animal risk
 - Location, age, vaccination
- Make decisions for individual animals:
 - Treatment, quarantine, adoption, euthanasia



Canine Parvo Titers

- Helps to clarify susceptibility and risk
 - Guidance, not absolutes
- Must limit use for dogs without current or historical clinical signs – distinguish protection vs. infection







