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
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
Parvo Timeline

Management challenge: May be contagious before symptoms start and for a period of time after they resolve.
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 → 4-6 WBCs per field or less
- At 40x → 1-3 WBCs per field or less

https://www.cliniciansbrief.com/article/blood-smear-preparation
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
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?

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

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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 in-hospital treatment for parvoviral enteritis. Diligent supportive care and monitoring are still required to optimize treatment of dogs with parvoviral enteritis in an outpatient setting.”

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
Crowding

- Increased length of stay
- Increased disease transmission
- Increased animal stress
- Increased staff stress
- Decreased welfare
- Declining capacity for care
- Decreasing customer service
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
Disinfection Resources

http://aspcapro.org/webinar/20170711/shelter-sanitation-1

http://www.aspcapro.org/webinar/20170718/shelter-sanitation-2
Vaccination

• Parvo is considered to be a vaccine-preventable 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
This is a core vaccine – don’t assume they are protected!

Maternally-derived Antibody Interference

AKA – why puppies need so many vaccines!

Antibody level vs. Age (in weeks)
Help! We have Parvo!

- Stop the spread!
- Diagnose & Isolate
- Assess Risk
- Decontaminate
- Communicate
- Document
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
CPV Titer, No Clinical Signs

Positive*:
- Adult: Adopt or transfer without special precautions
- Puppy: Adopt or transfer ASAP with waiver

Negitive:
- Assess exposure, risk (age, vx hx etc), adoptability
  - High risk: consider 14 day quarantine if possible

* Remember that titers may rise faster than development of clinical signs. Low risk ≠ no risk!