



Press Pause on the Parvo Panic!

Preventing a Case from Becoming an Outbreak

Disclosures

The speaker is a consultant for Elanco Animal Health.

Learning Outcomes

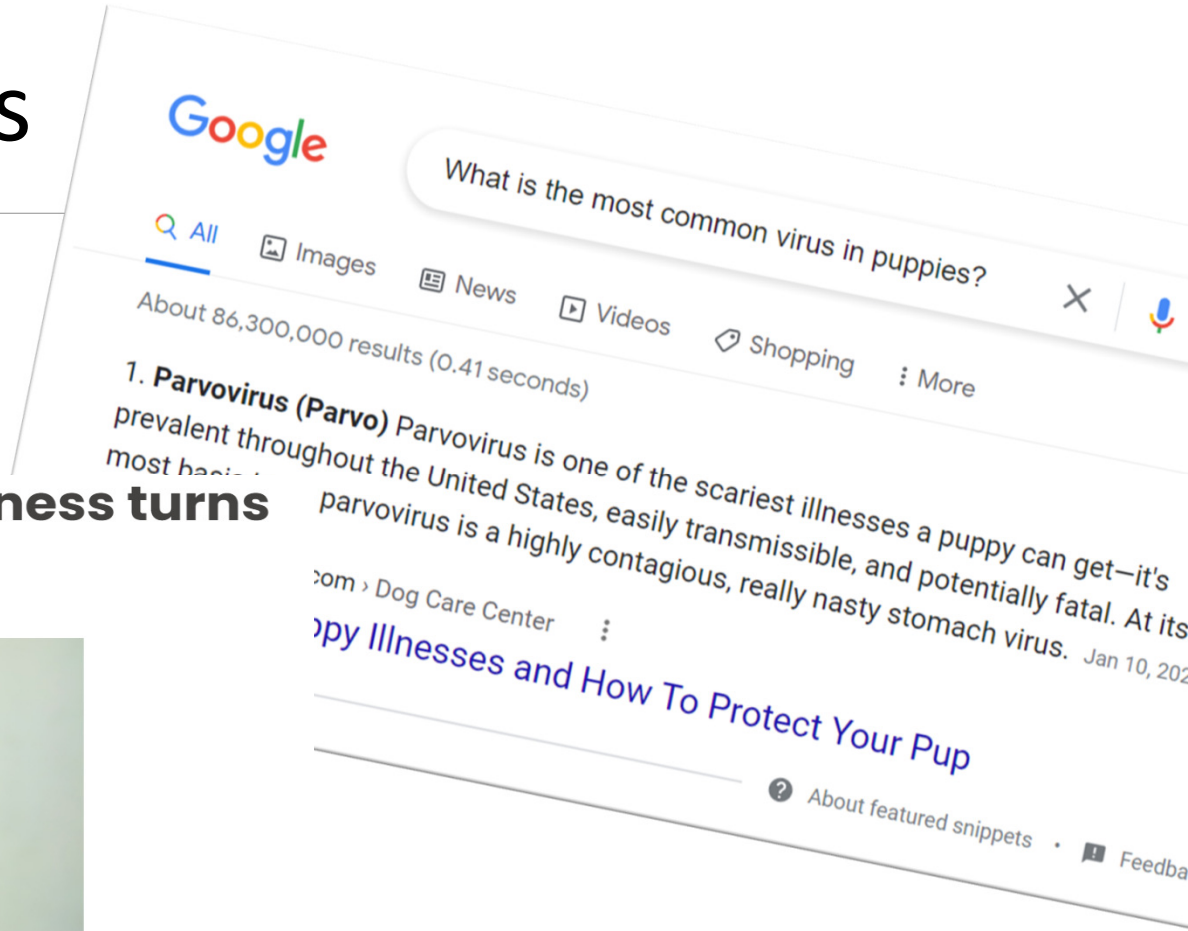


List resources needed to manage CPV in shelters

Identify gaps in preventive care and biosecurity that increase risk

Understand impact of treatment options on disease course

Canine Parvovirus



'Mysterious' Parvovirus-like illness turns out to be . . . well, parvovirus

Tony McReynolds - 8/29/2022



When more than 30 dogs in Northern Michigan died from an undiagnosed illness recently the first news reports called it "mysterious" and "parvo-like."

When poll is active, respond at pollev.com/briandigangi409

Text **BRIANDIGANGI409** to **37607** once to join

When was your last parvovirus case?

5 minutes ago

Last week

Last month

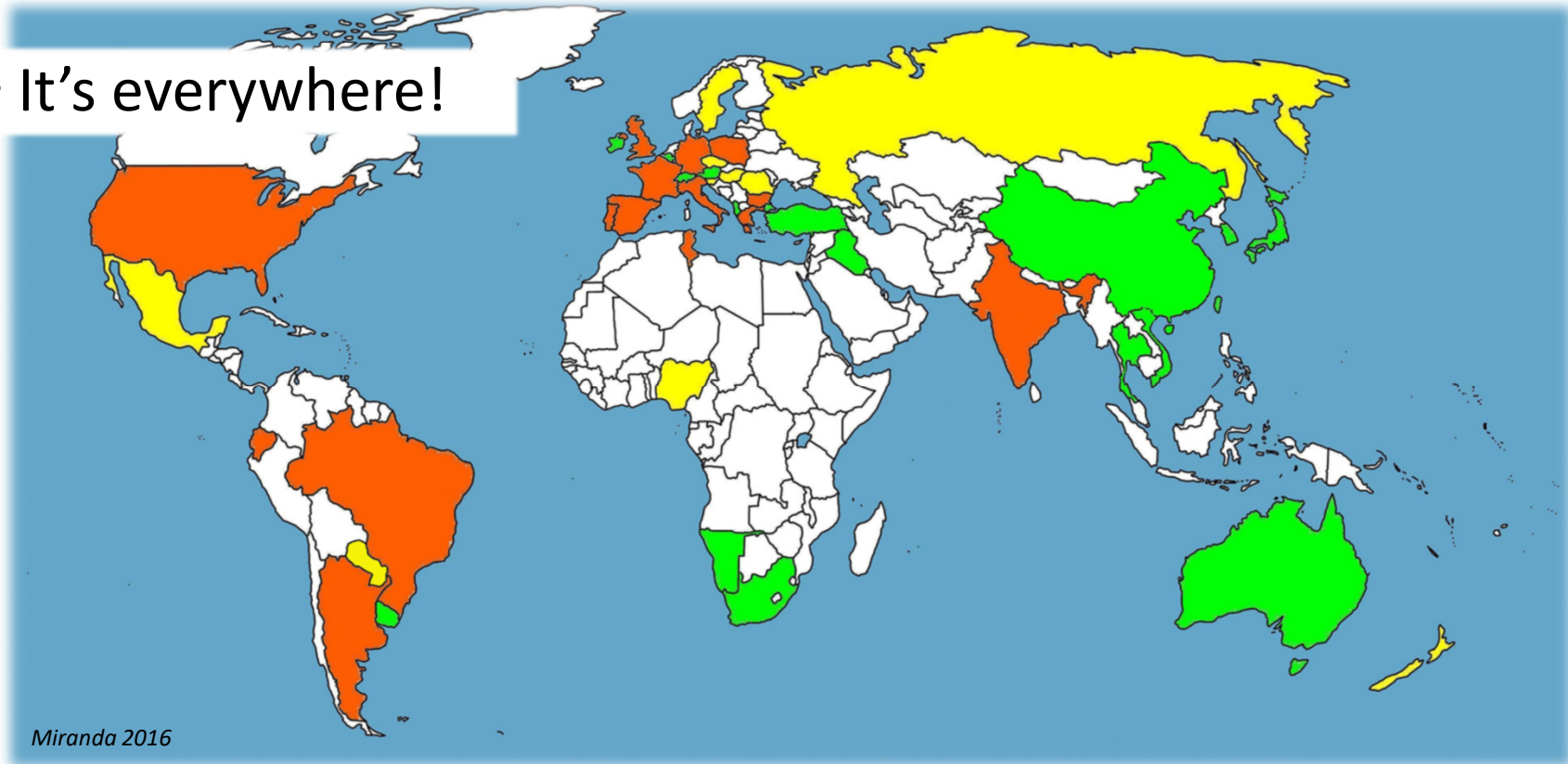
Last year

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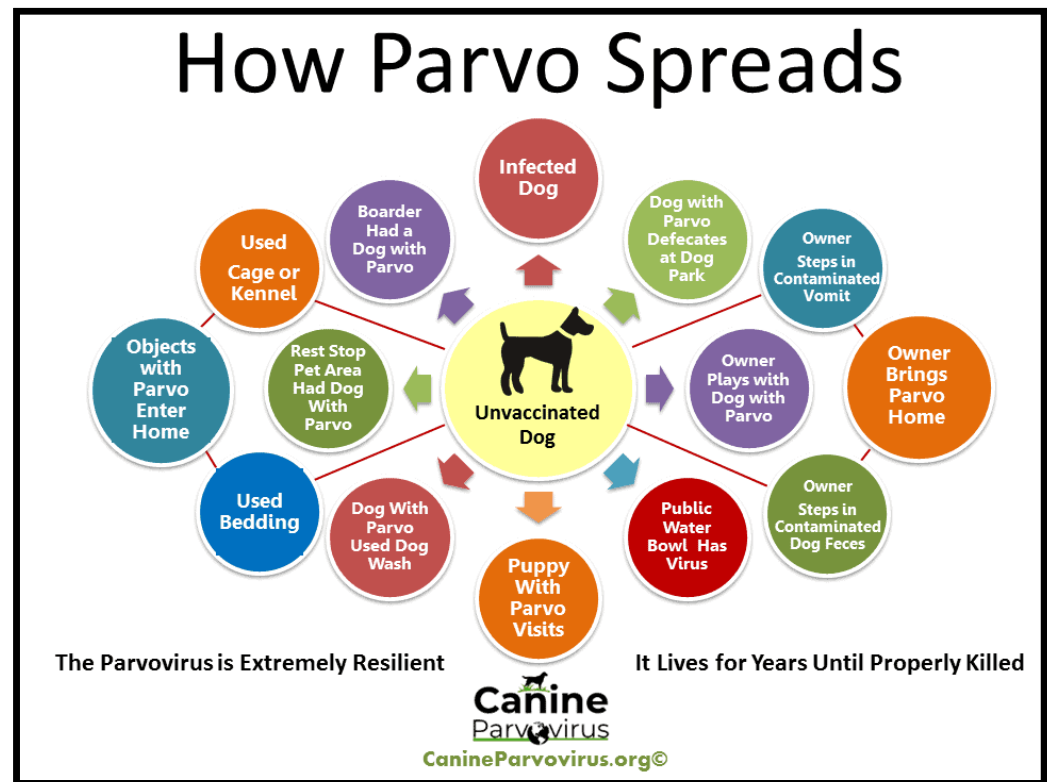
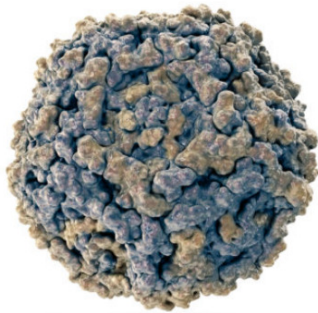
What is the problem?

- It's everywhere!



What is the problem?

- Highly contagious
- Hard to kill



What is the problem?

- Treatment is
 - Expensive
 - Intensive
 - Time-consuming



Resources

Facility

- Isolation
- Dedicated supplies

Staff

- Vet support
- Number
- Training

Time

- Monitoring
- Treatment
- Healthy pop

Money

- Staff
- Supplies
- Referral

Canine Parvovirus
Treatment Resource
Assessment Algorithm



Resources - Facility

- Facilities

*Separate isolation areas **must** be provided for animals with different highly contagious diseases....*

For example, dogs with parvovirus infection need to be separated from those with respiratory disease.



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Who belongs in isolation?

A puppy with vomiting and diarrhea

A puppy that came into the shelter on the same day as a parvovirus puppy

Every puppy that comes into the shelter

A puppy that has only received one parvovirus vaccine

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Isolation

- Who?
 - Animals diagnosed with or showing signs of contagious illness
- Why?
 - Prevent further transmission
 - Allow for individual care



Isolation



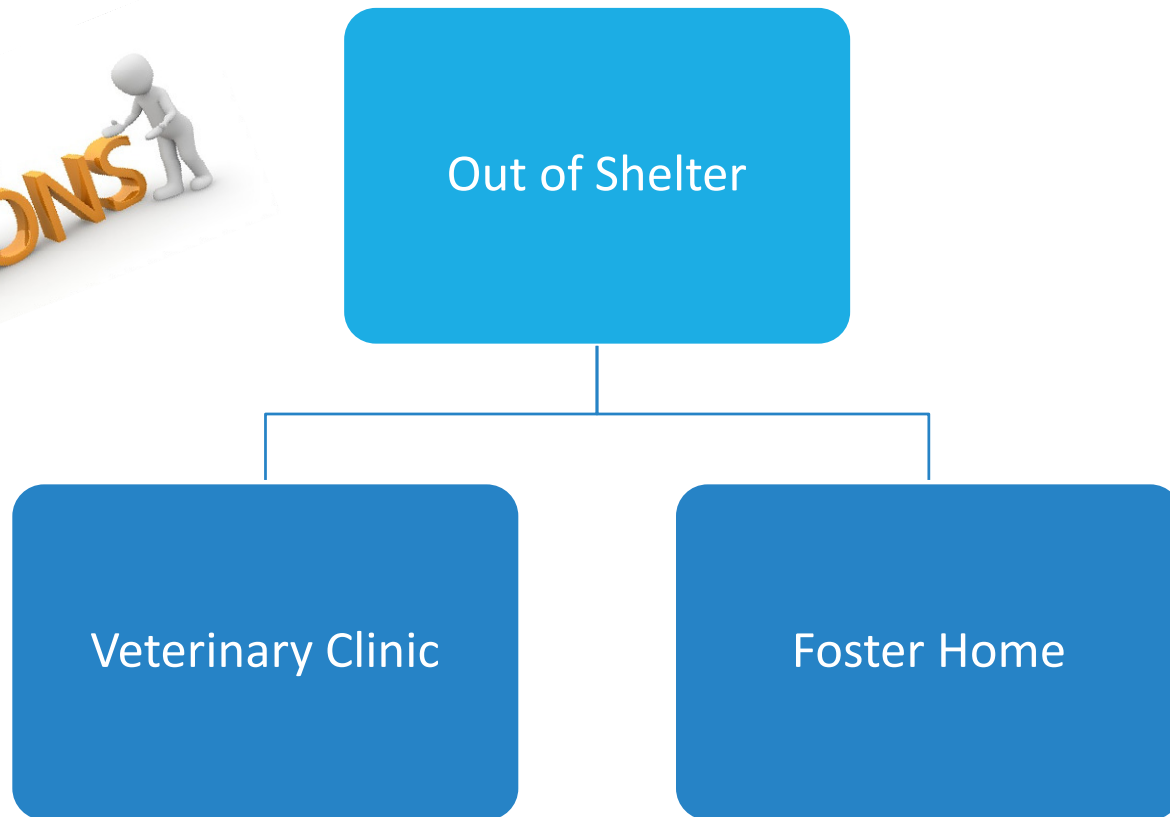
In Shelter

Physically separate space
(*Aerosols*)

Designated area

Isolate in place

Isolation



Isolation

- How?
 - Strict biosecurity
 - Designated staff, equipment, supplies
 - Personal protective equipment
 - Sanitation
 - Mode of transmission
 - Respiratory – Aerosol (Dogs), Fomite (Cats)
 - Gastrointestinal – Fomite, vector
 - Dermatologic – Fomite, vector, environment



Isolation Options



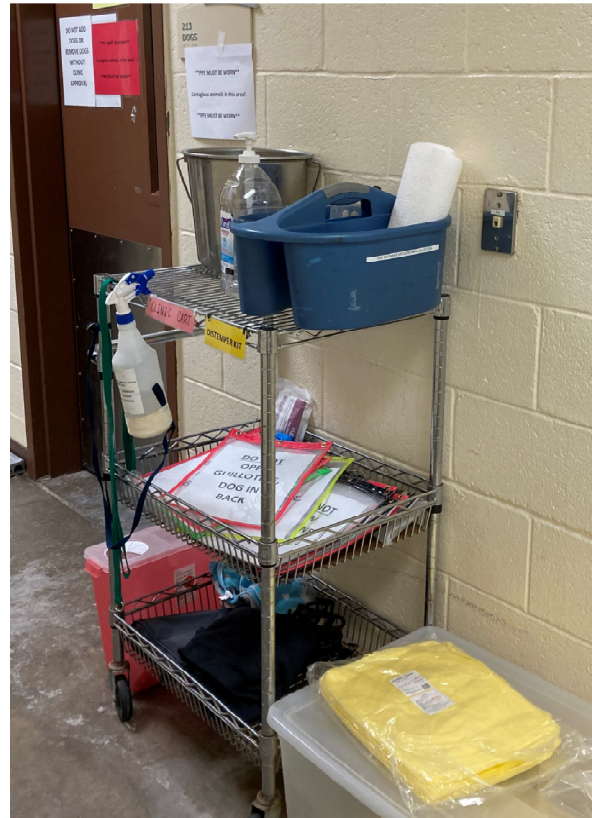
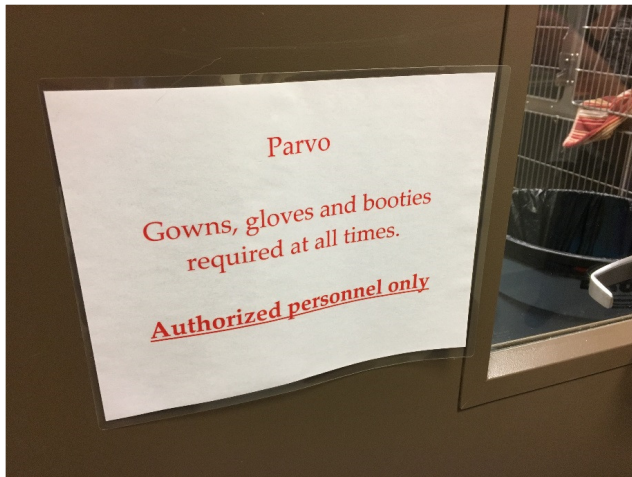
Isolation Options



Isolation Options



Isolation Options



Resources – Staff & Time

- Population Management

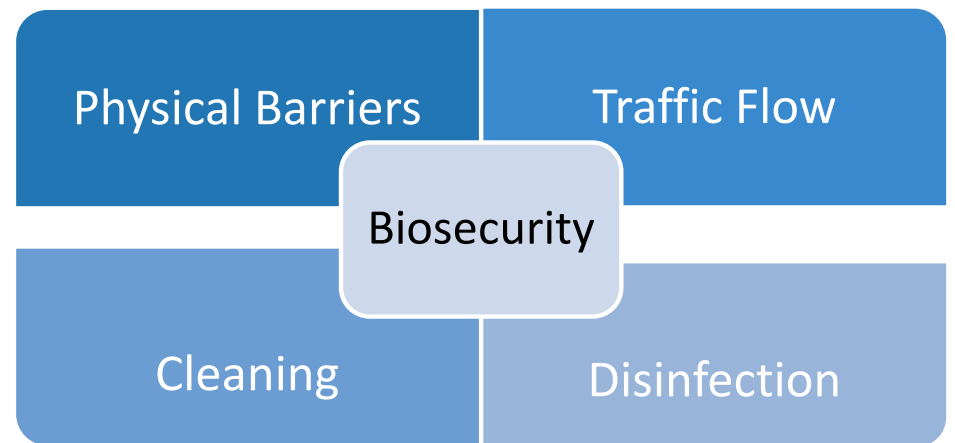
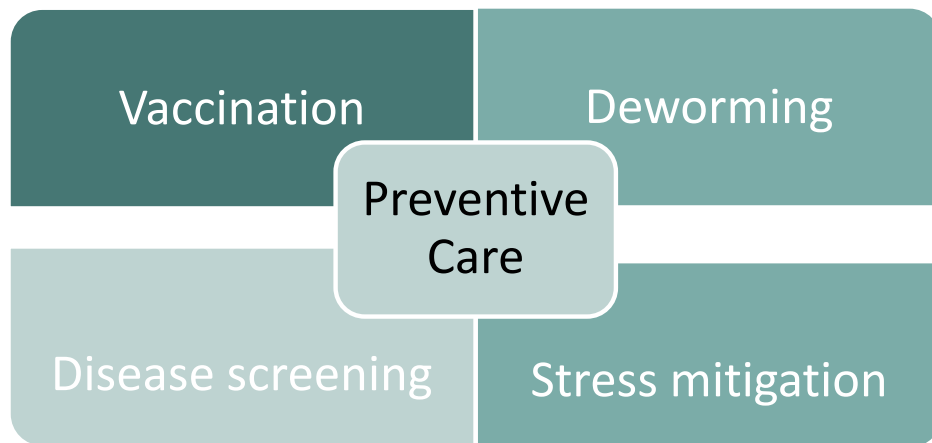
The time and skills of shelter personnel is another critical component of a shelter's capacity for care.

*Trained personnel **must** be scheduled to meet daily animal care needs and efficiently and effectively accomplish each critical task.*

Animals with medical and behavioral challenges may need more care time per day and may also require services from personnel with advanced skills or credentials.



Preventive Care & Biosecurity



Common Mistakes - Vaccination



x Delayed administration

✓ Vaccinate ON or BEFORE intake

x Prolonged boosters

x Counting vaccines

✓ Booster EVERY 2 WEEKS until 20 WEEKS

✓ Number of vaccines is not important

x Storage, handling,
administration errors

✓ Check refrigeration temperatures

✓ Administer within 1 hour of mixing

Common Mistakes - Deworming



x *Not deworming*

✓ Treat for roundworms and hookworms
AT INTAKE starting at 2 WEEKS of age

x *'One and done'
deworming of puppies*

✓ Repeat deworming EVERY 2 WEEKS
until 8 WEEKS (then start monthly)

x *Skipping fecals*

✓ Look for parasites when preventive
deworming is not successful

Common Mistakes – Diagnostics



x *Testing healthy animals
for parvovirus*

- ✓ Only test animals with clinical signs
- ✓ Be aware of vaccination timing

- FALSE POSITIVES may occur
 - In 1 out of every 10 positive test results in healthy puppies
 - Within 1 week of modified live virus vaccination

Common Mistakes – Sanitation



x *Skipping the
“pre” clean*

✓ Cleaning is ALWAYS
required before disinfection

Common Mistakes – Sanitation

x *Relying on a “quat”*

✓ Quaternary ammonium compounds
DO NOT reliably kill parvovirus



TOOLS & JOB AIDS

ASPCA^{pro}

Shelter Disinfectant Quick Reference

Disinfectant	Accelerated Hydrogen Peroxide	Potassium Peroxymonosulfate	Quaternary Ammonium Compounds (Quats)	Calcium Hypochlorite	Regular Household Bleach* (Sodium Hypochlorite)
Effective against non-enveloped viruses?	Yes, dilute 1:32	Yes at 1%	Not according to independent published research	Yes	Yes, dilute 1:32 (1/2 cup per gallon)

Common Mistakes – Physical Barriers

- x *Not using PPE*
- x *Contaminating PPE during use*

- ✓ Use PPE based on the level of risk
- ✓ Put on and remove PPE correctly



Personal Protective Equipment



What 1 or 2 words come to mind when you think about treating parvovirus?

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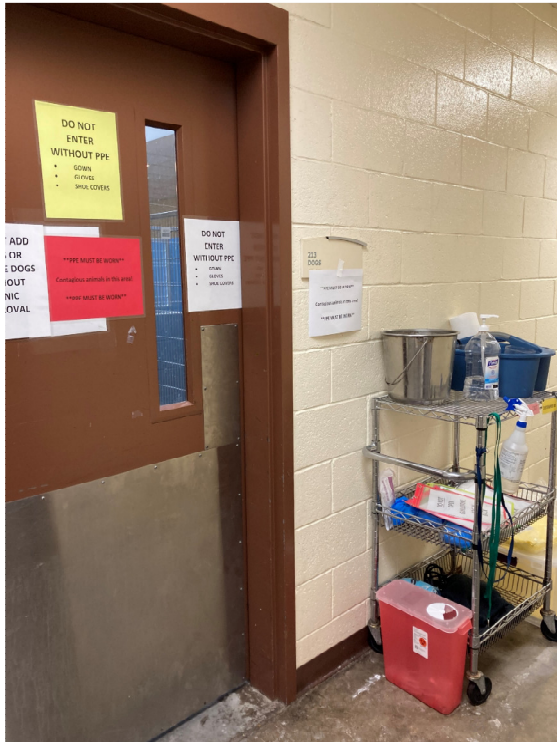
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Canine Parvovirus

- Treatment by the Book
 - 33 steps
 - 20 medications
 - 13 diagnostic tests



Canine Parvovirus



- In-hospital vs. outpatient
 - 90% vs 80% survival
 - No difference in treatment duration
- Private practice
 - 75% survival
 - Cost \$300-400
- Shelter-based low-cost clinic
 - 83% survival
 - Avg. 3.8 days on SC fluids
 - Cost <\$500

In-Shelter Canine Parvovirus Treatment

- Survival
 - 87% overall
 - 97% > 5 days
- Details
 - ~\$56 supplies + 9 hrs. labor
 - Low weight, males at higher risk



austin pets alive!

Parvo Puppy ICU

The first of its kind in the nation, Austin Pets Alive!'s Parvo Puppy ICU provides care and rehabilitation to puppies that contract parvovirus.



In-Shelter Canine Parvovirus Treatment

What is the parvovirus test result?

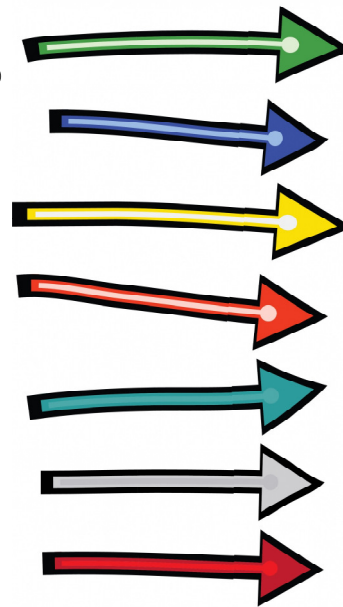
Do they have clinical signs?

Do they have bloody diarrhea, pale gums, or can't stand?

Do they weigh >5 lbs.?

In-Shelter Canine Parvovirus Treatment

- What is the parvovirus test result?
- Do they have clinical signs?
- Do they have bloody diarrhea, pale gums, or can't stand?
- Do they weigh >5 lbs.?



Intravenous

Subcutaneous

Exposed
Treatment

Treatment for Canine Parvovirus

- ✓ Fluids
- ✓ Antibiotics
- ✓ Anthelmintics
- ✓ Anti-nausea medications
- ✓ Pain management
- ✓ Enteral nutrition



Treatment for Canine Parvovirus

Mixed results...

- N-acetylcysteine
- Antivirals
- Hyperimmune plasma

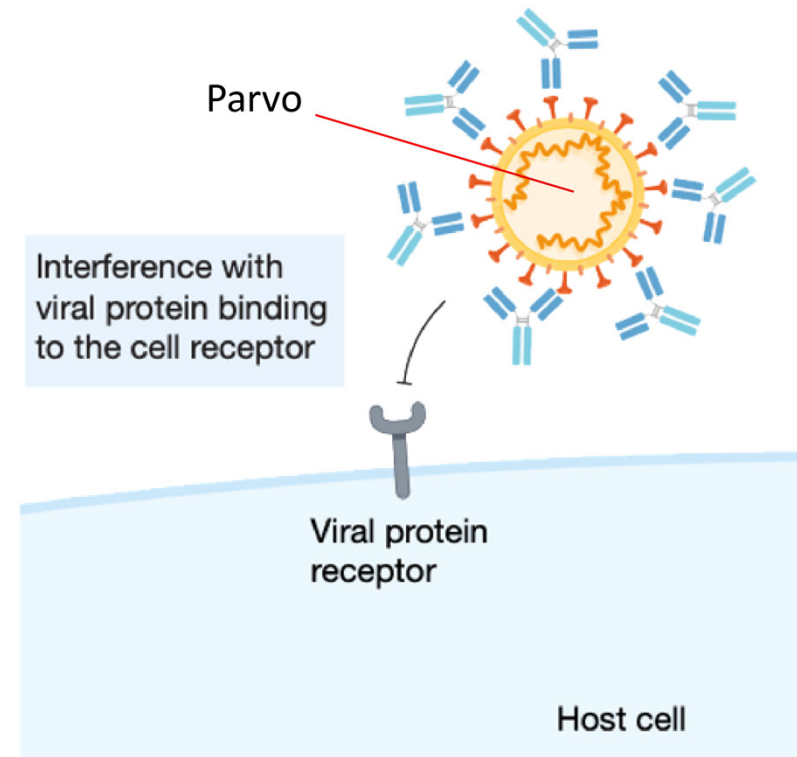
Novel and effective...

- Canine parvovirus monoclonal antibodies
- Oral recuperation fluids
- Fecal transplantation



Canine Parvovirus Monoclonal Antibody

- How does it work?
 - CPMA binds to virus
 - Inhibits entry into host cell

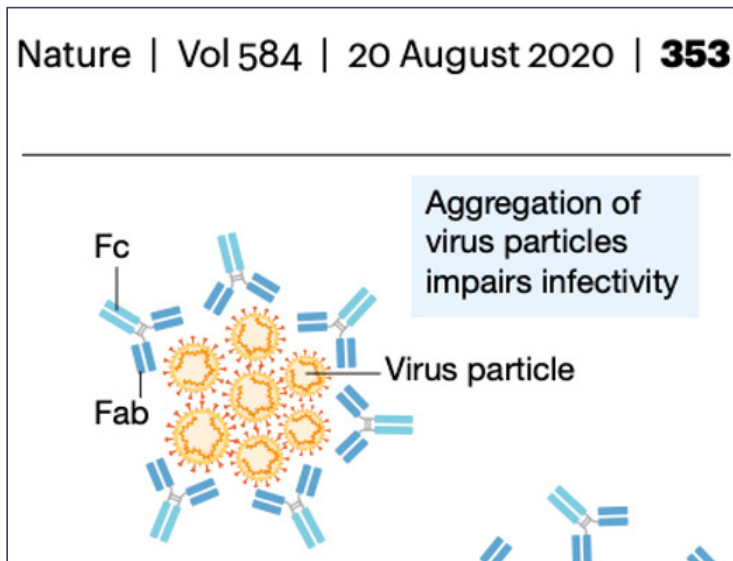


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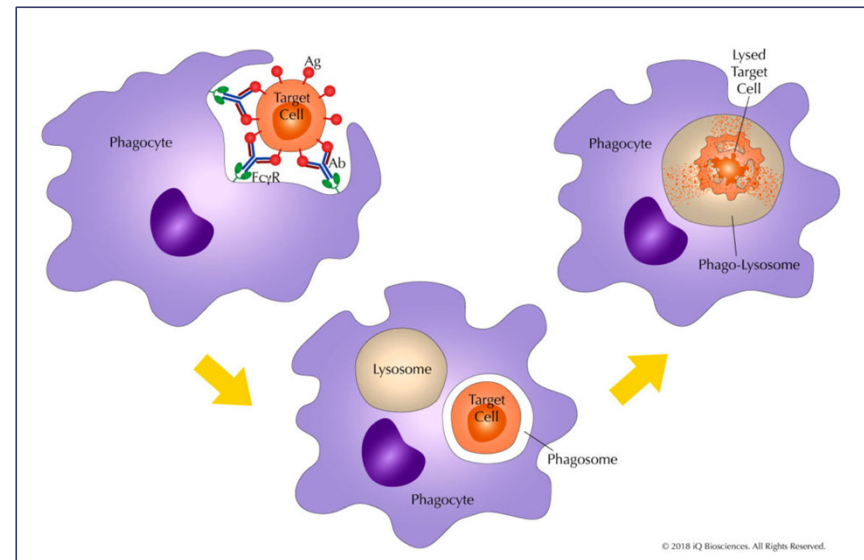


Hypothesized Activity

- Aggregates, sequesters, destabilizes virus particles



- Phagocytosis



Efficacy of CPMA



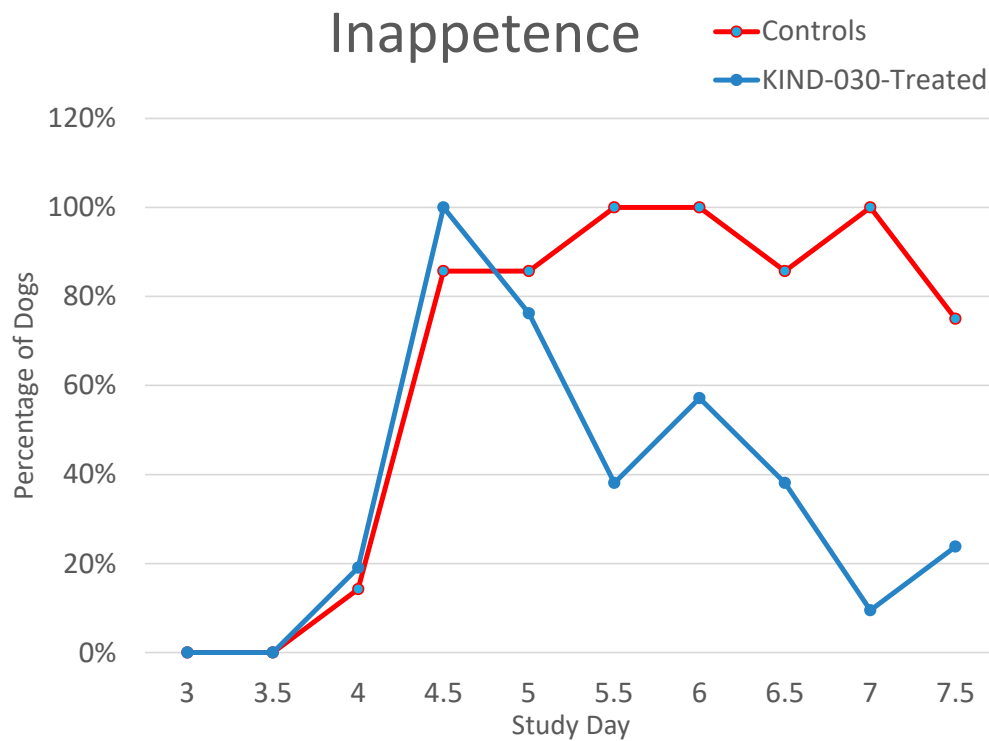
- 8-week-old puppies challenged with CPV
(*N = 21 treated; 7 control*)
- Treated with IV CPMA alone on Day 4

Efficacy of CPMA



- All dogs tested positive by time of treatment
- 15/21 dogs had clinical signs at time of + test
- 6/21 dogs developed signs within 12 hrs of + test and treatment

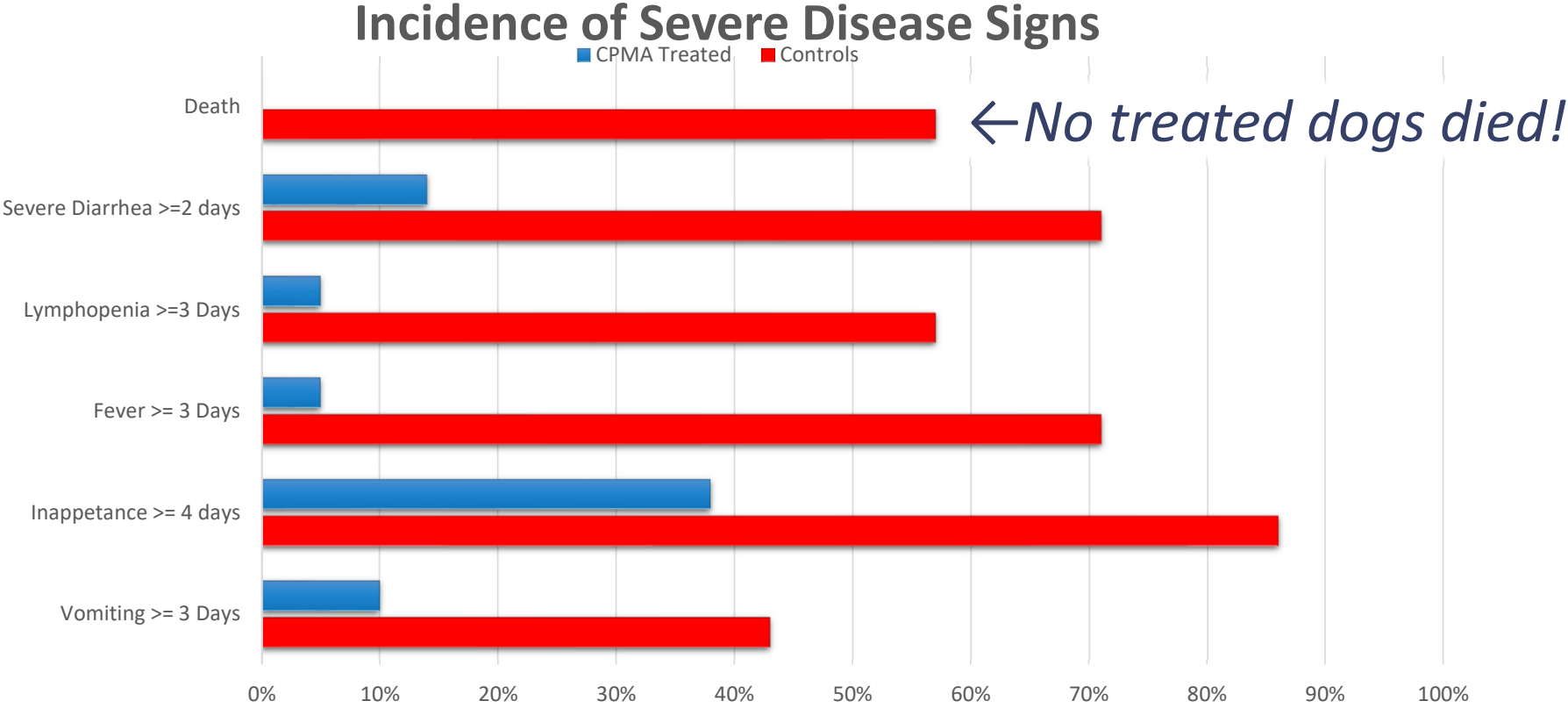
Efficacy of CPMA



SHORTER time to resolution of

- Vomiting
- Lethargy
- Inappetence

Efficacy of CPMA



CPMA Field Safety

- Client-owned, healthy dogs
- No deaths
- Significantly faster times to resolution of:
 - Vomiting
 - Lethargy
 - Inappetance



Canine Parvovirus Monoclonal Antibody



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Oral Recuperation Fluids

Topics in Companion Animal Medicine 31 (2016) 68–72

Review Article

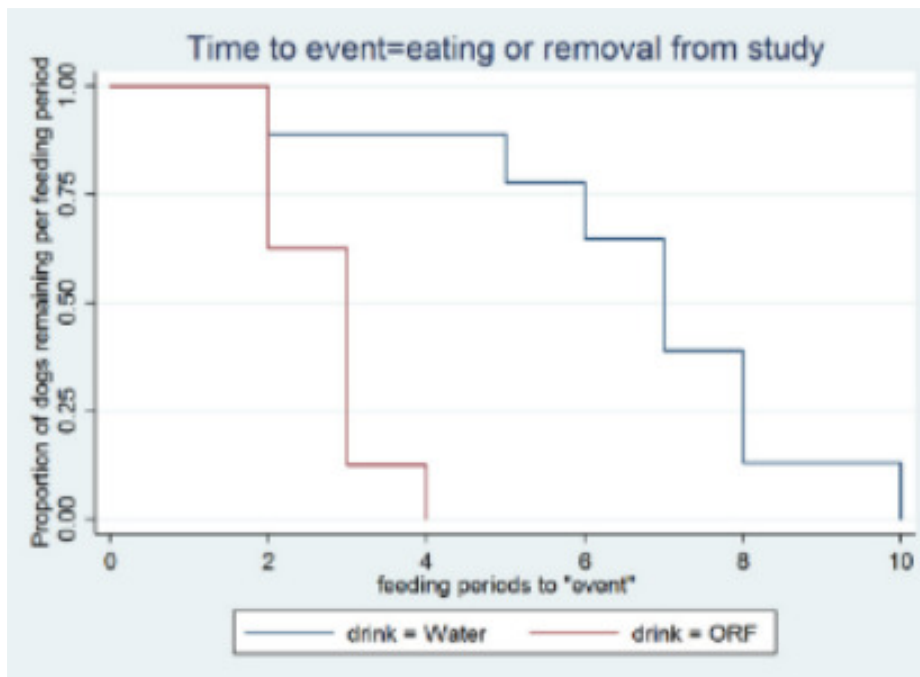
Palatability and Clinical Effects of an Oral Recuperation Fluid During the Recovery of Dogs With Suspected Parvoviral Enteritis



Reut Tenne, DVM, MPH^a, Lauren A. Sullivan, DVM, MS, DACVECC^{a,*},
Elena T. Contreras, DVM, MS^a, Francisco Olea-Popelka, DVM, MSc, PhD^a,
David C. Twedt, DVM, DACVIM^a, Jeffrey Fankhauser, DVM^{b,1}, Logan Mastrianna, BA^{b,1},
Michael R. Lappin, DVM, PhD, DACVIM^a

- 28 dogs with CPV, not eating or drinking
- Fluids, anti-emetics, antibiotics, gastrointestinal diet
- Offered water or ORF 2x per day





Oral Recuperation Fluids




- Palatability
 - 29% drank ORF
 - 32% drank water
- ORF Effects
 - More rapid appetite return (*1-3d vs. 1.5-5.5d*)
 - Greater calorie intake

Fecal Transplantation

Journal of Veterinary Internal Medicine Open Access **ACVIM**
Association of Veterinary Internal Medicine

Standard Article |  Open Access |   

Fecal microbiota transplantation in puppies with canine parvovirus infection

Giorgio Q. Pereira, Lucas A. Gomes, Iago S. Santos, Alice F. Alfieri, J. S. Weese, Marcio C. Costa 

First published: 20 February 2018 | <https://doi.org/10.1111/jvim.15072> | Citations: 61

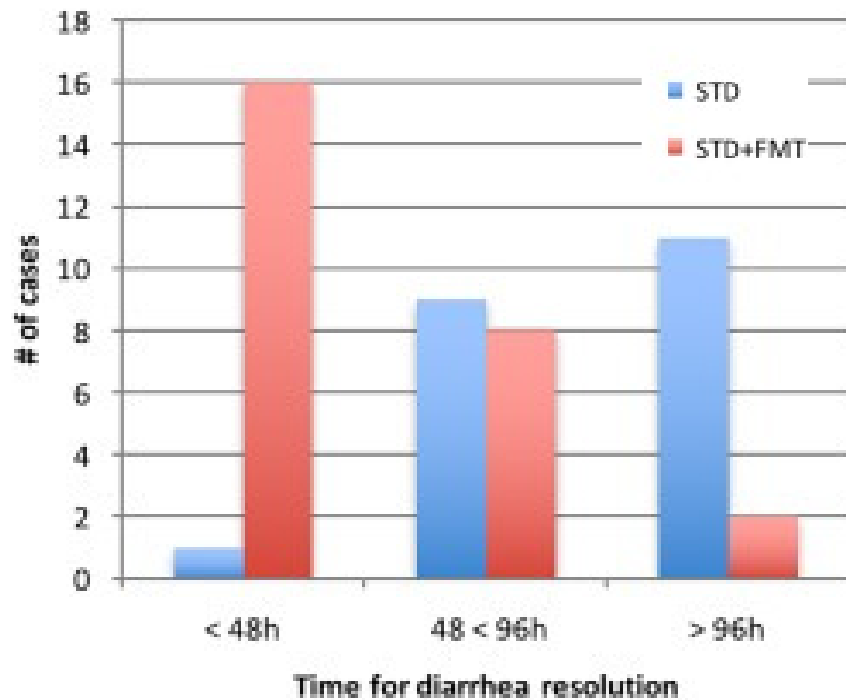
- 66 dogs, 2-12 mos., CPV+
- Fluids, anti-emetics, antibiotics, +/- fecal transplant

Fecal Transplantation

- Donor
 - Healthy, 6 yo, APBT
 - Commercial diet, UTD vaccines, deworming
 - CBC, chemistry, fecal normal
 - Neg. CPV, CDV, *Ehrlichia*
- Transplantation
 - 10 g diluted in 10 ml NaCl
 - Introduced anally with urethral catheter
 - Lying on side with pelvis raised x 2 minutes
 - Repeated every 48 hrs until resolution of diarrhea



Fecal Transplantation



- Faster diarrhea resolution (*48 hrs.*)
- Shorter hospitalization (*3d vs. 6d*)
- Mortality 21% vs 36% (*No diff.*)

Which of these treatments would you be most likely to try?

Canine Parvovirus Monoclonal Antibody

Oral Recuperation Fluids

Fecal Transplantation

I want to try them all!

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Key Takeaways



- Assess your resources, align your protocols



- Don't forget the basics: preventive care & biosecurity



- Focus treatment on speeding up clinical recovery



Thank you!
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