

Outbreak Management & Response

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Goals

- Empower shelters and private practitioners to recognize, diagnose, and manage disease outbreaks.
- Recognize risk factors that contribute to a disease outbreak.
- How to implement a systematic approach in managing and controlling an infectious disease outbreak.
- Formulate a plan for outbreak management using diagnostic tools for assessing disease risk.
- Effectively communicate with different stakeholders (owners/adopters, local vets, staff/volunteers, board members).
- Implement changes to prevent future outbreaks.

H3N2 Dog Influenza Confirmed In Minnesota

May 27, 2015 4:22 PM

Outbreak of parvo shutters local Humane Society

The shelter will not open again until all animals test negative for the virus.

Casey Holder

POSTED: 05/15/2015 04:00:58 PM CDT

77 cats euthanized due to deadly disease outbreak

Rad Berky, WCNC 6:47 p.m. EDT October 29, 2014

14 dogs euthanized after distemper death at Lancaster County SPCA

By Myles Snyder

Published: May 18, 2015, 4:12 pm | Updated: May 19, 2015, 9:18 am

abc

7

EYEWITNESS
NEWS

SECTIONS

TRAFFIC

VIDEO

Chicago & Suburban Cook Co.

No

PETS

MORE THAN 1,700 CASES OF
DOG FLU REPORTED IN COOK
COUNTY



5:08 63°

abc 7

@ABC7Chicago

abc 7

Canine influenza is now being called an "epidemic", prompting dog parks to post warning signs.



Individual Animal Risk Factors

Stress (immunosuppression)

Concurrent disease or parasitization

Unknown health status

Failure to vaccinate on intake

Prolonged length of stay

Environmental Risk Factors

Crowding

Single-compartment housing

Endemic disease in community

Poor sanitation

Random co-mingling

Failure to promptly isolate affected animals

Continuous influx/outflow

Prolonged length of stay

Is it an outbreak?

Sudden rise in incidence of disease

- Clinical signs persisting longer than usual despite normal treatment
- Some animals not clearing
- Unusual clinical signs
- Increased morbidity/mortality
- More concerns/complaints from new owners/community vets

Outbreak Management

1. Diagnosis of Disease
2. Isolation
3. Risk assessment
4. Quarantine
5. Decontamination
6. Clean break
7. Communication – ongoing

ALL HAPPEN SIMULTANEOUSLY!

The way it *really* works...

1. Prepare, stop movement (animals, people, equipment)
2. Identify & characterize the cases: who, when, where
3. Isolate affected
4. Perform a risk assessment & separate animals according to risk
5. Quarantine exposed
6. Develop control & prevention measures – protect unexposed
7. Decontaminate environment

CLEAN BREAK

7. Monitor success & failures
8. Refine plan
9. Communicate findings throughout
10. Establish conclusions, revise operations

Case Study: Guide Dogs for the Blind



Parvo
outbreak in
2010

GDB: Todd

12/28/2010

- 10 week old male lab
- Presented to GDB for V/D
- Fecal & ELISA: Giardia + Coccidia Positive
- Started on IVF & antibiotics
- DA2PP given at 5 weeks & 8 weeks old

12/29/2010

- V/D worsened
- Parvo SNAP: negative
- Bloodwork: leukopenia, anemia, hypoproteinemia
- Transferred to ER clinic

12/30/2010

- Parvo SNAP: positive
 - Died in 36 hours of parvoviral enteritis
- GDB vet clinic shut down to off-site dogs to treat parvo
- 20+ puppies SNAP test positive over weekend

GDB: Co-Infection Risk



Concurrent
coccidia
&
giardia
infections

GDB: Transmission Risk Factors



Damp areas → increased potential for exposure

1. Diagnostic: Point of care fecal ELISA antigen test

Pros:

- Rapid
- User friendly
- Limited to parvo and panleukopenia



Cons:

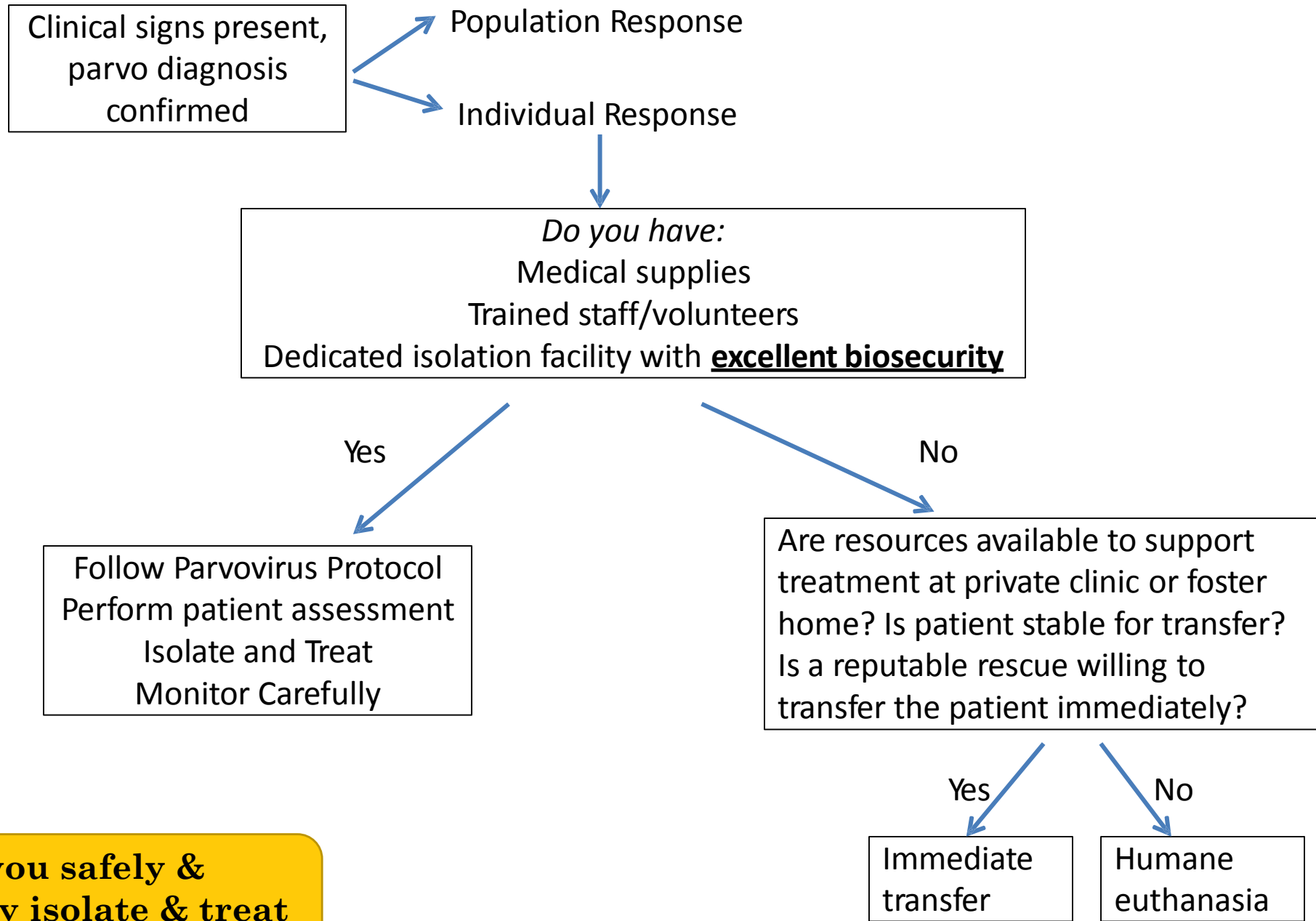
- Technical error
- Intermittent viral shedding



2. Isolation of sick animals

- *Single most important step*
- **Reduces transmission & infectious dose**
- **Is on-site isolation & biosecurity adequate?**
- **If not, then consider off-site options**





**Can you safely &
adequately isolate & treat
on-site?**

2. Isolation Space

- Separate building > same building, separate air flow > same building, restricted access (at least 25 ft distance)
- Easily disinfected with dedicated equipment
- Sufficient staffing for monitoring & care
- Ideally, separate staff w/ PPE
 - Full length gowns, booties, gloves
 - Change clothes after handling affected animals
- No crossover with juveniles and new intakes



Personal Protective Equipment



Dedicated boots, not footbaths!

Side note: Quarantine Vs. Isolation

Isolation = physical separation of infected/symptomatic animals from the general population

- Isolation period = pathogen shedding period

Quarantine = physical separation of susceptible animals that have been exposed to an infectious disease but are not yet symptomatic or infected

- Quarantine period = pathogen incubation period
- 14 days for parvoviruses
- **Reset quarantine clock to zero any time another animal tests positive and moves out to isolation**

3. Risk Assessment: Meaningfully Exposed

Animal risk

- Age of animal
- Likelihood of exposure
- Vaccine history
- Diagnostic test results

Environmental risk

- Sanitation practice
- Vaccination practices
- Time to onset - facility acquired vs. community acquired disease
- Multiple areas of shelter involved

3. Risk Assessment: Titer Testing



- Bench-top blood/serum test
- Helps clarify susceptibility and risk
- Use limited to animals without current or historical clinical signs
- Facilitates movement of animals through system
- \$20/dog
- Caution with juveniles < 5months of age
- Alternative to euthanasia

3. Risk Assessment

Very Low Risk

- Adult, fully vaccinated dogs

Low Risk

- Adults & puppies > 5 months old with vaccine on board 8 days prior to first case breaking

Moderate Risk

- Vaccinated puppies under 5 months of age

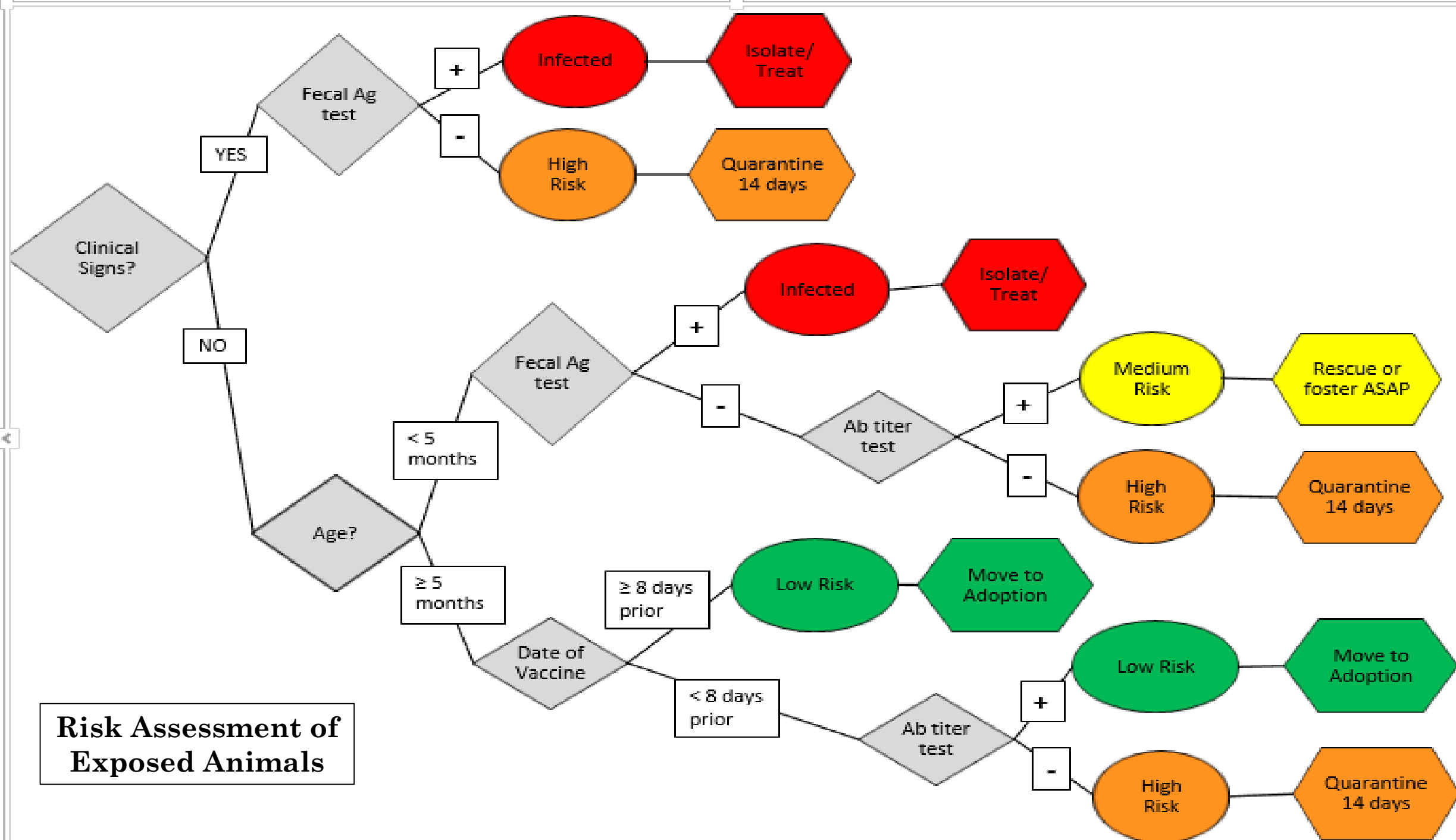
High Risk

- All unvaccinated puppies and dogs or those with vaccine on board < 8 days

Very High Risk

- Littermates of affected animals

Risk Assessment of Exposed Animals



3. Risk Assessment

KENNEL LOCATION	DATE LAST VACCINE	PARVO SNAP DATE/RESULT		SYNBIOTICS PARVO TITER DATE/RESULT		WI TITER RESULTS	Notes
902	1/5/2011	1/5/2011	NEGATIVE	1/6/2011	POSITIVE	640	
902	1/5/2011	1/5/2011	NEGATIVE	1/6/2011	NEGATIVE		clinal parvo
904	1/5/2011	1/5/2011	NEGATIVE	1/6/2011	NEGATIVE	<20	clinal parvo
907	40548	40548	NEGATIVE	40549	POSITIVE	640	
909	40548	40548	NEGATIVE	40549	POSITIVE	1280	
913	1/5/2011	1/5/2011	POSITIVE	1/6/2011	NEGATIVE	<20	snap +
913	1/5/2011	1/5/2011	POSITIVE	N/A	N/A	N/A	
910	40548	40548	NEGATIVE	40549	POSITIVE	640	
912		1/5/2011	POSITIVE	N/A	N/A	N/A	
912	40548	40548	NEGATIVE	40549	POSITIVE	1280	
925		1/5/2011	POSITIVE	N/A	N/A	N/A	

3. Risk Assess & Action Steps

Very Low Risk



Adopt or transfer,
Do not quarantine

Low Risk



Moderate Risk



Transfer with full disclosure,
Quarantine, ideally in foster care

High Risk



Quarantine for 14 days,
Monitor closely

Very High Risk



Bathe, separate into pairs,
Quarantine for 14 days,
Monitor closely

UC-Davis Parvo Simulator

The screenshot shows a web browser window with two tabs: "Parvo outbreak simulator" and "Parvo Simulator". The address bar shows the URL <https://secure.vetmed.ucdavis.edu/public/parvosim/>. The page title is "Parvo Outbreak Simulator".

Greetings and welcome to the world's first online parvo outbreak simulator (to the best of our knowledge). Each time you come to the page, the simulator will generate a new group of dogs representing a fairly typical population at an open intake shelter in the United States. As in real life, finances, space for quarantine and number of spaces available at your friendly local rescue groups are limited. But don't worry - the simulator will always make sure there are enough spaces and sufficient funds for testing and treatment as long as you play the game correctly, and you earn back \$50 in fees for every dog that gets to go up for adoption. To learn more about the simulator, risk assessment and outbreak management, review the Parvo Outbreak Simulator Guide at [The Koret Shelter Medicine Program site](#).

When you arrive at work today (Friday, Feb 14), a shelter technician rushes up to you and tells you a dog in the adoption ward was diagnosed with parvo this morning. The dog had been in the shelter for 9 days, leading you to conclude that it most likely got infected during its shelter stay and that dogs in both the stray holding area and the adoption ward could have been exposed. Below is the census of dogs currently in these two wards. Fortunately, the staff at this shelter are very good about vaccinating immediately on intake, so it's safe to assume the "date arrived" is the same as the date of vaccination. Based on the information about each dog below, choose a testing strategy and outcome for each dog. The goal of the game is to stay within budget, avoid euthanasia, and not place for adoption or send to rescue any dogs with parvo. Once you've selected a testing plan and action for each dog, click "show correct actions" to see what the simulator thinks of your choices. Unlike real life, you can hit refresh and try this as many times as you like.

Money		Rescue		Quarantine	
Money Spent	0	Num Rescue Slots	3	Num Quarantine Cages	15
Available Funds	300	Used Rescue Slots	0	Used Quarantine Cages	0

Patient	Date Arrived	Signalment	Clinical Signs	SNAP Test	Antibody Titer	Action	Correct Action	Animal Status
Case 1	2/2	Adult	GI Signs	Run Test \$15	Run Test \$15	SELECT		
Case 2	2/11	Puppy	Healthy	Run Test \$15	Run Test \$15	SELECT		
Case 3	2/2	Adult	Healthy	Run Test \$15	Run Test \$15	SELECT		
Case 4	2/12	Adult	GI Signs	Run Test \$15	Run Test \$15	SELECT		

At the bottom of the browser window, there is a taskbar showing two open documents: "parvo outbreak sim....docx". A "Show all downloads..." link is visible on the right.

<http://www.sheltermedicine.com/documents/parvo-outbreak-simulator-guide>

3. GDB - Risk Assessments

- Puppies separated into three different populations:
- SNAP + → Kennel 5
- SNAP – / Titer – → Puppy Kennel
- SNAP – / Titer + → Grooming Kennel
- Recovered + → Kennel 5
- Clinically ill puppies treated on-site or area E-clinics

4. Quarantine

- 2 weeks for parvoviruses
- 6 weeks for distemper
 - Impractical, inhumane within shelter
 - Strain on capacity for care
- Seek off-site quarantine
 - Adopt out of quarantine-foster home with full disclosure
- Risk assessment via titer testing for distemper is most useful process here



4. GDB - Quarantine

- Bathed prior to moving to new kennel
- Housed 2-3 per kennel
- Each kennel treated as separate quarantine unit
- Separate barrier clothing for each kennel
- 14 day quarantine
 - Reset with each new case



5. Decontamination



5. Decontamination



Sanitation for Parvo



Hand hygiene is key!



GDB- Disinfection Protocol Change



ACCEL:

- Combo cleaner/disinfectant
 - Short contact time
- Non-toxic, non-corrosive
 - Effective against non-enveloped



6. Clean Break

- For animals not meaningfully exposed & incoming new animals
- Divert intake as much as possible
- DO NOT TAKE PUPPIES
- Vaccinate on intake = MUST
- House in separate area away from exposed animals
 - Minimizes risk of exposure
 - Prevents disease transmission
- Includes people, animals, equipment
- Look for common points of contact



7. Communication

- Staff
- Donors
- Volunteers
- Fosters / Puppy Raisers
- Community
- Area Clinics
- Emergency Clinics

INFO FOR NEW DOG ADOPTERS - -PARVOVIRUS-

WHAT YOU SHOULD KNOW ABOUT CANINE PARVOVIRUS

Congratulations on your new dog! The shelter staff has worked very hard to ensure the health of your dog but with so few animals vaccinated in our community, the chance for spreading disease amongst our pets is increased—especially in shelters where large numbers of animals are housed. Canine Parvovirus, or Parvo as it's more commonly known, is sometimes found in dogs adopted from shelters. Parvo is a very serious and contagious disease so please familiarize yourself with the following information.



Did you know?...

- Parvo is **HIGHLY** contagious and potentially fatal to “at risk” dogs –puppies under ten months old and dogs that have not been vaccinated are most at risk.
- Parvo generally affects the dog’s intestinal tract and in rare cases, the heart. *Symptoms of Parvo can include bloody diarrhea, depression, fever, eventual dehydration, loss of appetite and lethargy.*
- Parvovirus is transmitted through the feces and vomit of infected dogs. Parvo is **VERY** hardy and can live on some surfaces for many months. It can easily be spread from dog to dog via “carriers” called fomites like the hands, shoes or clothing of anyone who comes into contact with the virus.
- Like many pet illnesses, Parvovirus can have a lengthy incubation period and animals may be harboring the disease. This means the pet may have contracted the disease and appear perfectly healthy until the symptoms suddenly appear.

When should you seek treatment?



- You should always take your new dog to a veterinarian within 2 days of adoption, for a routine health check. However, if any of your dogs develop bloody diarrhea, fever, lethargy or loss of appetite, you should make an appointment with a veterinarian immediately.

Can Canine Parvovirus be prevented?

YES! Regular vaccinations are **KEY** to prevention and puppies especially need to see a veterinarian to protect them from this serious and potentially deadly disease. *Remember, there is NO cure for Canine Parvovirus. Your dog MUST be vaccinated against Parvo to prevent them from getting this deadly disease.* Regular vaccinations are the best way to ensure your dog leads a happy, healthy life. Call Animal Care Services at 207-4PET for info on low cost vaccination resources.



www.SALicenseYourPet.com
www.SALicenciaSuMascota.com

7. GDB: Communication

Guide-Dogs
FOR THE BLIND

Login | Register

Home **PIZ** About :: Programs :: Donate :: Volunteer :: Events :: Education ::

Home > About > Parvovirus on GDB Campus

PARVO ON GDB CAMPUS



Guide Dogs for the Blind is currently experiencing an outbreak of the Canine Parvovirus on its San Rafael, California campus.

How you can help:

1. GDB's veterinary staff is focused on keeping our puppies healthy. Please do not call our clinic with questions concerning the outbreak. For general questions, please email information@guidedogs.com and we will get back to you. You may also call our general number 415-499-4000 if you have concerns about a GDB dog/puppy. For all other general information about Parvo, please contact your local veterinarian.
2. Read our [FAQ on Parvo](#) and educate yourself on how to keep your own pets from contracting the disease.
3. Support GDB. We depend on you.

Thank you for your interest and concern!

Latest update on the Canine Parvovirus Outbreak at GDB

- Daily email blasts
- Daily blog entries
- Facebook posts
- Website updates
- News media
- Direct phone call
- Staff daily pow-wow

GDB – Final Tally

- ✓ 51 puppies exposed
- ✓ 43 puppies treated for parvo
 - ✓ 5+ days hospitalization each
 - ✓ 5 area E-clinics utilized
- ✓ 8 puppies died
- ✓ 100+ hours of staff overtime
- ✓ \$180,000+ spent on outbreak



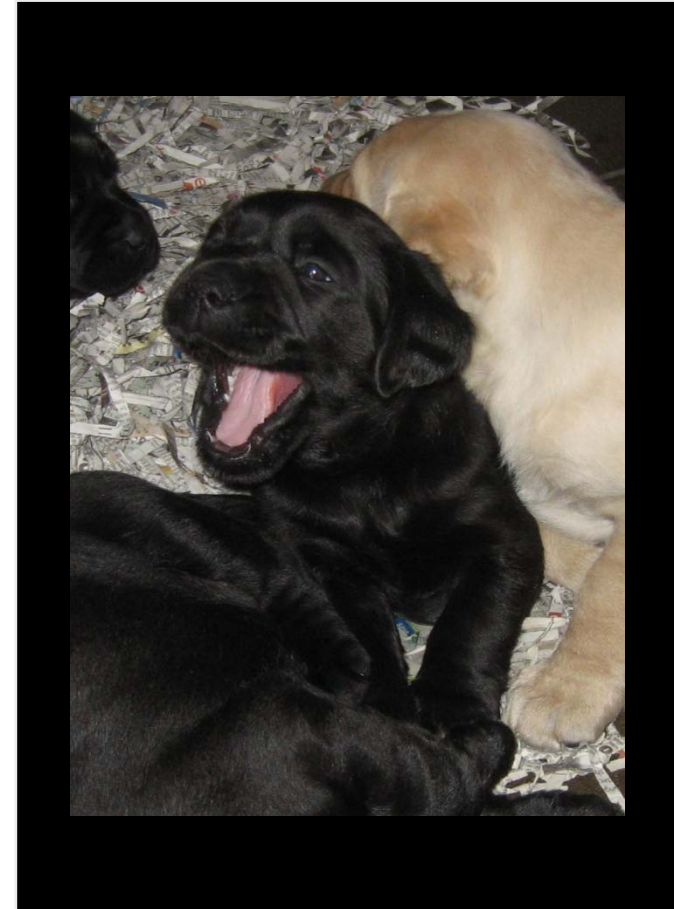
GDB: Capacity & LOS Changes

BEFORE:

- Higher than average puppy population (100 puppies)
- All affected puppies during outbreak >8 weeks age

AFTER:

- Avg: 60 puppies, limit: 80 puppies
- Try to limit LOS to 8 weeks of age



GDB: Monitoring Protocol Changes



BEFORE: No parvo outbreak in 20 years;
likely gone
undiagnosed

AFTER: First signs of
puppy diarrhea
→ fecal float, giardia
test, parvo SNAP test

GDB: Intake & Flow Through Changes

BEFORE:

- Took in puppies from outside
- High influx/outflux/movement of puppies, adult dogs, & people

AFTER:

- 99.9% of puppies are bred/whelped on-site
- Outside puppies don't come through puppy kennel & have short LOS
- Plans to move puppy kennel near to whelping kennel & creation of puppy medical area

GDB - Vaccination Protocol Change



BEFORE:

Vaccinated up to
16 weeks of age

AFTER:

Vaccinating up to
19-20 weeks of age

GDB- Puppy Socialization Changes



BEFORE:

Socialized/co-mingled puppies in outdoor, grassy area

AFTER:

- Paved area only for adults
- Littermates housed in small groups
- Puppy Zones: volunteers come into puppy kennels for socialization

Outbreak Management Cycle

Recognize:

Susceptibility
Risk factors
Diagnostic toolkit

Prevent:

Vaccination
Protocol review
Disease surveillance

Respond:

Clean break
Risk assessment
Sanitation
Collaborative
resources



Resources:

www.sheltermedicine.com

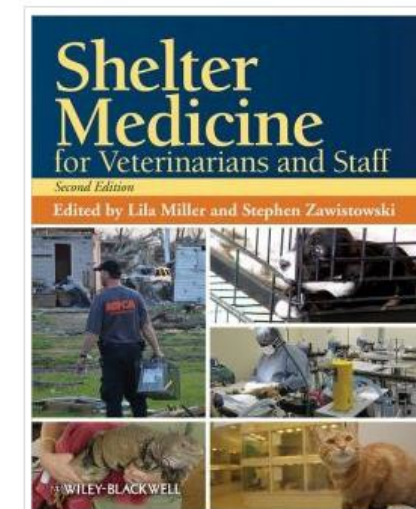
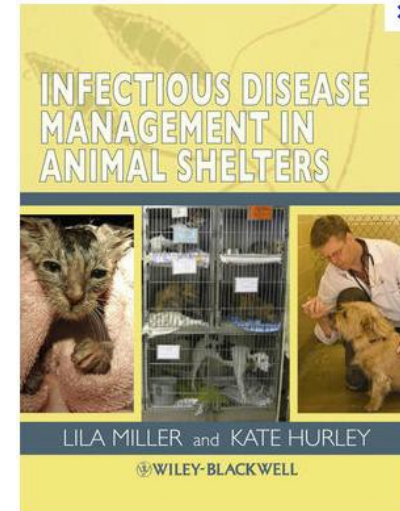
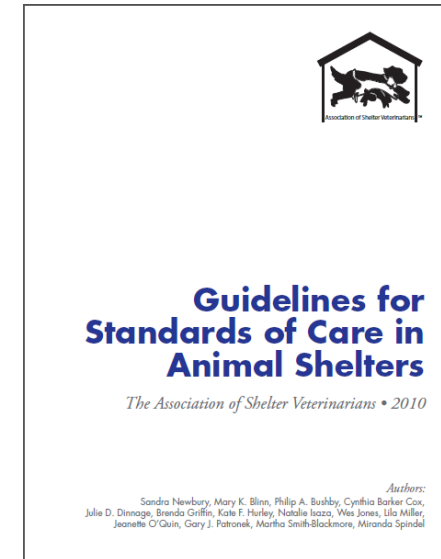
www.sheltermedicine.vetmed.ufl.edu

www.animalsheltering.org

www.maddiesinstitute.org

www.sheltervet.org

www.aspcapro.org



Thank you!!
Questions?

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