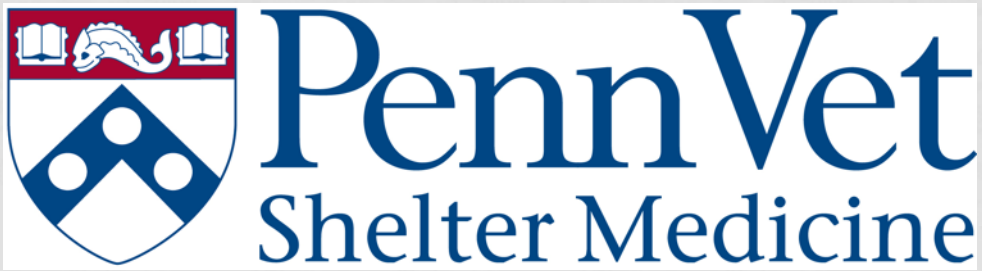


Brittany Watson, VMD/PhD
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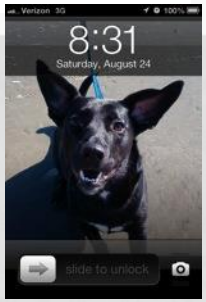
# ANIMAL RESCUE SUMMIT:

## PREVENTION, DECISION-MAKING, AND MANAGEMENT OF DISEASE IN THE RESCUE/SHELTER SETTING

# TOPICS

- Disease Basics
  - Prevention
    - Capacity for Care
    - Design
    - Sanitation
    - Stress Management
    - Surveillance
  - Outbreak Management
    - Assessment and Decision-Making
    - Options for Control
- Parvovirus as an example
- Creating Your Own Management Plan

# WHAT IS SHELTER MEDICINE?




- Surrenders
- Strays
- Overpopulation
- Cruelty

**IN's to Shelter**

**ANIMALS IN TRANSITION**

- Animals actually in the shelter

- Adoptions
- Rescues
- Euthanasia

**OUT's from Shelter**

# WHO IS CLOSEST?

Small Animal

Large Animal

Food Animal

Laboratory Animal/Research

Military/Government/Policy

Zoo/Wildlife

Public Health

Teaching


Public and Community Animal Health
Individual Animal Welfare
Health of the Population

# MAJOR DUTIES OF ABVP SPECIALTY

- Optimize shelter animal physical health
- Optimize shelter animal behavioral health
- Protect community and public health
- Alleviate companion animal homelessness
- Address animal cruelty/abuse/neglect
- Facilitate animal shelter management
- Serve as a resource on animals and public policy
- Advance Shelter Medicine

# BUT I AM NOT A SHELTER!

- Decision Making Process Similar for Any Group Facility
  - Not all the same
  - Rescues part of critical loop
- Considerations for Disease Management *anywhere*
  - What are my facility's profile and capabilities?
  - What are my facility's normal preventative procedures?
  - What is my capacity for care?
    - Facility
    - Staffing
    - Time
    - Financial
    - Welfare

# TOPICS

- What is shelter medicine and how does it relate to other settings?
- Disease Basics
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    - Capacity for Care
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# WHAT WILL WE BE TALKING ABOUT TODAY?

# LET'S DEFINE SOME TERMS

- Biosecurity
- Sanitation
- Cleaning
- Disinfection

# LET'S DEFINE SOME TERMS

- Biosecurity
  - Procedures used to protect humans or animals against disease or harmful biologicals
- Sanitation
  - Use cleaning and disinfectants to inactivate pathgens
- Cleaning
  - Removing all debris from surfaces and washing with detergent (degreaser)
- Disinfection (Inanimate=antiseptic)
  - Removal of all debris, agent to inactivate pathogen, proper application of agent (contact time, dilution, all surfaces)

# REMEMBER…


- Don't Stress Out Your Population
- Be careful when cleaning and concerned for welfare
- Cats Protocols Include Just Spot Cleaning
  - Disinfection each day will cause more stress

# PREVENTION

- Prevention is key
  - ENTIRE STAFF NEEDS TO BE ON-BOARD
    - Includes volunteers and the public
- However, sometimes no matter how extensive your program/protocols are some disease will happen due to host/pathogen/environmental interplay
  - Understand this to help implement ideas to prevent disease spread

# TRANSMISSION OF DISEASE

- What can cause transmission of disease?

# TRANSMISSION OF DISEASE

- Direct
- Aerosols
- Feces
- Urine
- Saliva
- Fomites
- "Pests and Parasites"

# DON'T FORGET ABOUT THE DETAILS

- Transport Vehicles and Crates should be sanitized just as carefully as in your housing
- Cleaning Order is important
  - Who should you clean first?

# CLEANING ORDER


***Different Equipment and PPE for Each Area is Essential!

# WHAT ARE MY CLEANING CHOICES?

## Bleach**

- Cheap, 1:32 dilution (except RW- 1:10), Parvo, Calici
- Inactivated by light, organic debris, no detergent, 10 minute contact time

## Trifectant (potassium Peroxymonosulfate)**

- Kills Parvo and Calici, not RW
- Detergent Properties, 5-10 mins contact time

## Accel (Accelerated Hydrogen Peroxide)**

- Long shelf life, but no research on RW
- Detergent Properties, short contact time 1-10 mins

# FOMITE

- Definition "any object or substance capable of carrying infectious organisms, such as germs or parasites, and hence transferring them from one individual to another"

- Brainstorm the Fomites in Your Rescue Facility

# FOMITES

- Hands, cleaning mops, rags, sponges, pens, stethoscopes, records, clipboards, food and water dishes, cages, toys, leads, vehicles, restraint equipment, medical equipment
- Don't forget the basics- THIS IS WHERE DISEASE IS TRANSFERRED- Not because you don't have a HEPA or UV light
- How could you create protocols to minimize disease transfer?

# WAYS TO REDUCE FOMITE RISKS

- Use disposables
- Use dishwashers that reach over 170 degrees F
- Don't aerosolize your housing!
- Clean vents
- Have cleaning equipment available
- Throw away damaged equipment
- Hand sanitizers (ONLY 70% effective)

# CAPACITY FOR CARE

- NOT JUST CAGE NUMBERS
- "how many animals a shelter can safely and humanely manage by counting cages and evaluating the use of space and resources"

- Actual Calculations Available online
  - Uses assumptions from NACA and HSUS
    - 15 mins to clean and feed animals- this should be done within three hours

# CALCULATION

- Courtesy of Lila Miller

- Animals in Shelter per day *15 mins per animal= #minutes needed
- Minutes needed/60=Hours needed
- Hours needed/3=Staff Needed Per day

- Example: 150 Shelter Animals=13 staff members!

- Can adapt the same calculation for your rescue!
  - Also helpful to understand what a foster parent can handle
    - FULL TIME CLEANING FOR 3 hours
      - 20 rescue animals= 1.6 people- 2 people
    - If only 1 hour to clean= #animals *15/60/1
      - 10 rescue animals = 2.5 people

# DESIGN

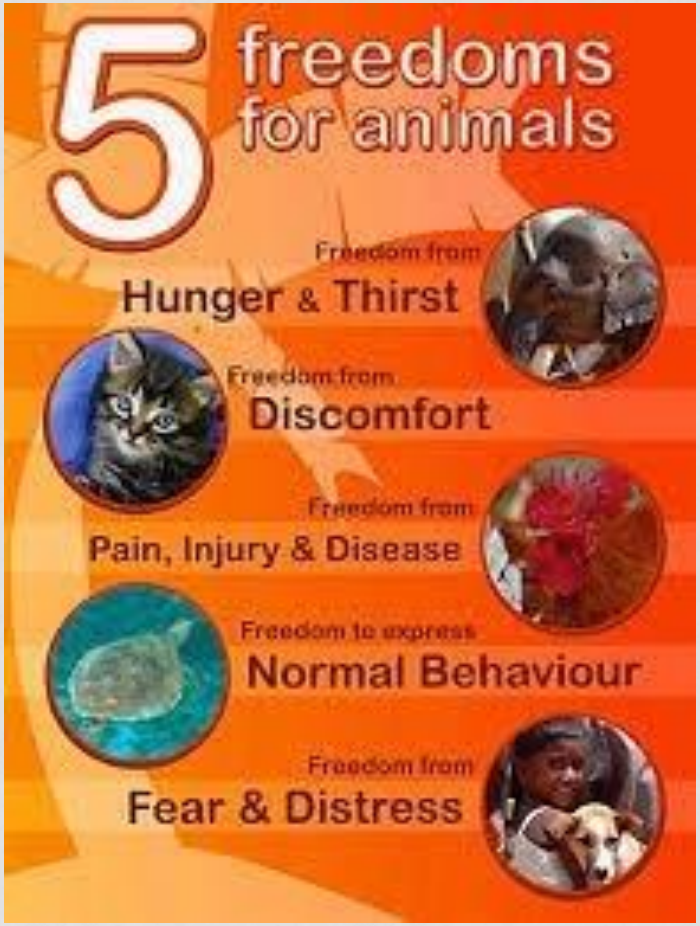
- Integral to biosecurity, capacity for care, and disease prevention
- Often not a choice
  - Part of planning process in a bricks and mortar facility, but we are often stuck with what we have
  - Adjust based on home situations or kenneling situations

# WHAT DO YOU THINK IS IMPORTANT?

# WHAT DO YOU THINK IS IMPORTANT?

- Ventilation
  - Amount, ?Hepa Filters
  - HVAC not always needed-  remember mostly direct/droplet
- Traffic Patterns
- Materials
- Noise
- Housing
- Waste Handling
  - Where is the drain?  Group drain?
- Enrichment Challenges

# FIVE FREEDOMS



# BALANCE

- Play Groups
- Volunteer Exposure
- Enrichment
- Puppy Socialization
- Access to Outdoor Play Yards

- HUGE advantage in rescue

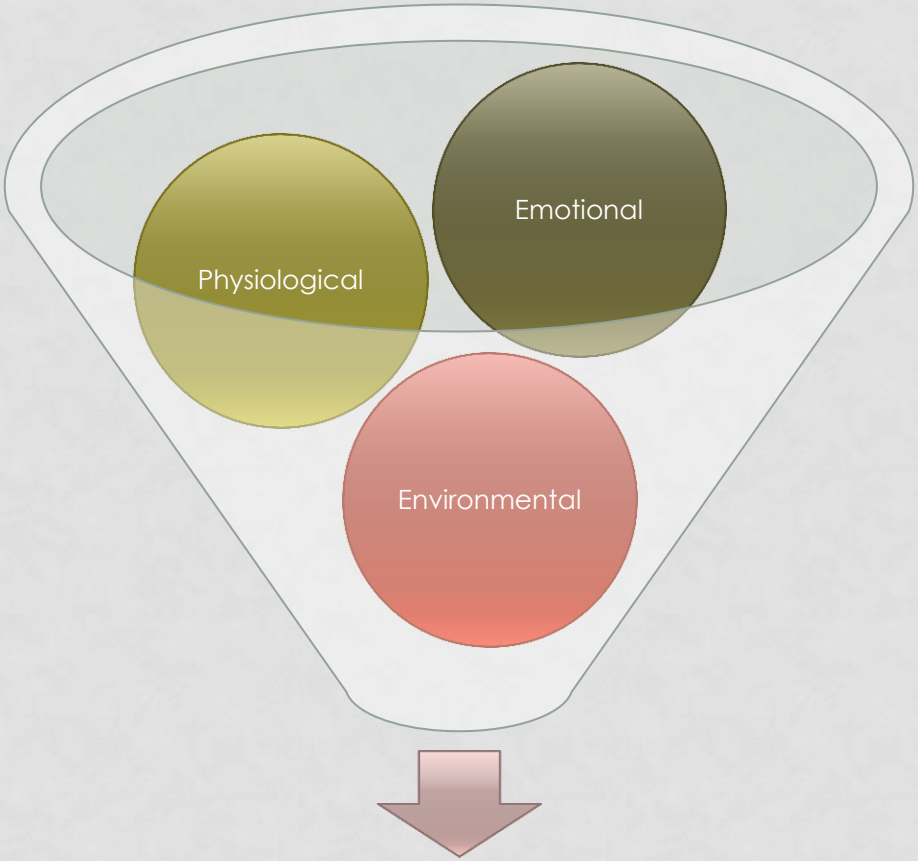
# STRESS

- CRITICAL GOAL FROM WELFARE PERSPECTIVE

- Natural in setting where animals are losing their ability to make decisions and having changes happen in every aspect of their lives
  - You might be the second or third stop for the animal

- Definition:
  - "a state of mental or emotional strain or tension resulting from adverse or very demanding circumstances"

# WHAT COMPONENTS?



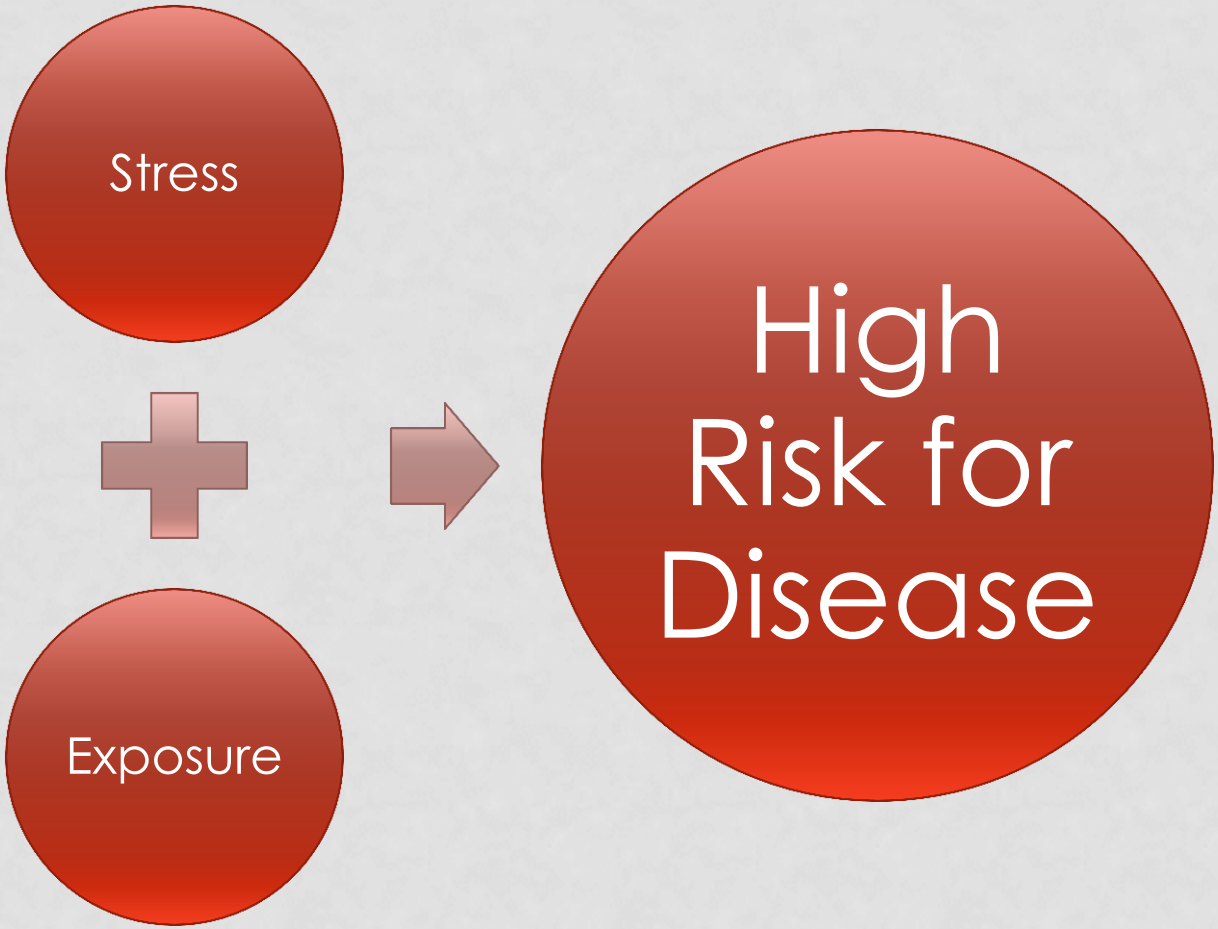
# WHAT COULD YOU DO TO MINIMIZE STRESS?

- Please discuss what you could do to minimize stress in your facility?

# WHAT COULD YOU DO TO MINIMIZE STRESS?

- DON'T OVERCROWD
- Separate by age
- Keep littermates/housemates together
- Minimize Noise
- Enrichment Programs
- Segregate species
- Regular Routine
- Feed appropriate nutrition

# WHY DO WE CARE ABOUT STRESS?



# VACCINATIONS

- Remember vaccines don't prevent 100% of all diseases- herd immunity very important
  - Vaccines that provide excellent protection include panleukopenia, distemper, parvovirus, and rabies
  - In the shelter setting risk of not vaccination outweighs vaccination in almost any scenario
- Handling directions essential
  - Keep refrigerated and unconstituted

# RISK ANALYSIS

- In the shelter setting, "all dogs and cats 4 weeks of age and older should be vaccinated on intake regardless of intake status (stray, owner surrender, rabies quarantine, cruelty, pregnant, lactating, injured or ill)- Canine and Feline Vaccination Guidelines

# TOPICS

- What is shelter medicine and how does it relate to other settings?
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# OUTBREAK MANAGEMENT: PROACTIVE VERSUS REACTIVE

- Anytime you are changing animal populations, even by adding one animal, you are at a higher risk for an outbreak
- Want to prevent using the previous tools we discussed, but outbreaks can happen to the most careful facilities
- Can be devastating and destroy trust in community

# SURVEILLANCE

- Part of Prevention of an Outbreak is identifying disease before it affects the rest of your population
- Examination at Intake is the most important component
  - Exam
  - Vaccination
  - Dewormer
- Rounds, Screenings, Pest Control, and Judicious Euthanasia are all important

# WHAT HAPPENS IN QUARANTINES AND ISOLATIONS?

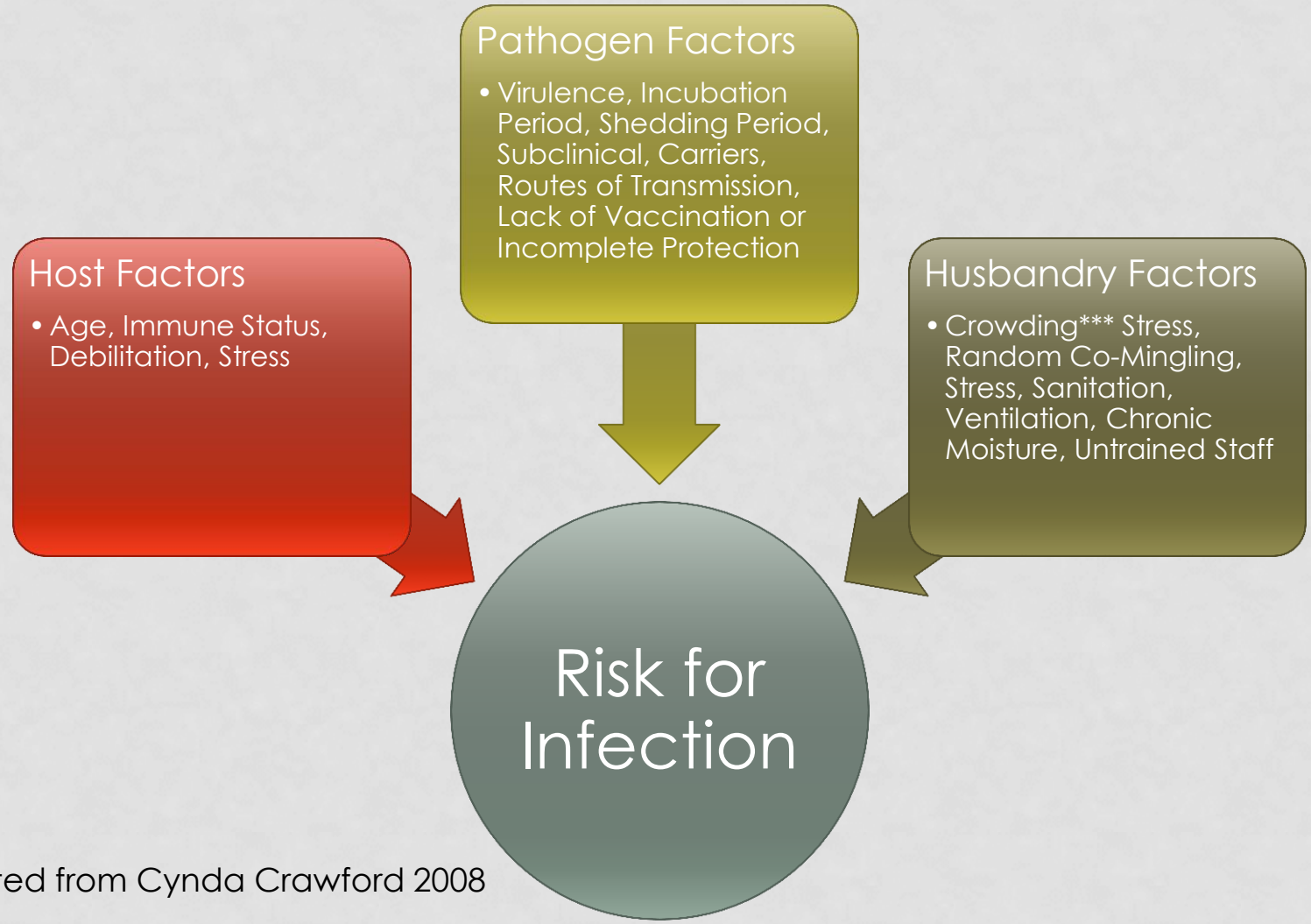
## Quarantine

- "period of observation of apparently healthy animals to watch for appearance of disease symptoms"
- Disease specific
  - Ex. Parvovirus 14 d

## Isolation

- "place where diseased animals may be kept physically separate from healthy animals"
- Should remain until no longer shedding

# RISKS FOR OUTBREAKS




Adapted from Cynda Crawford 2008

# WHAT CAUSES OUTBREAKS?

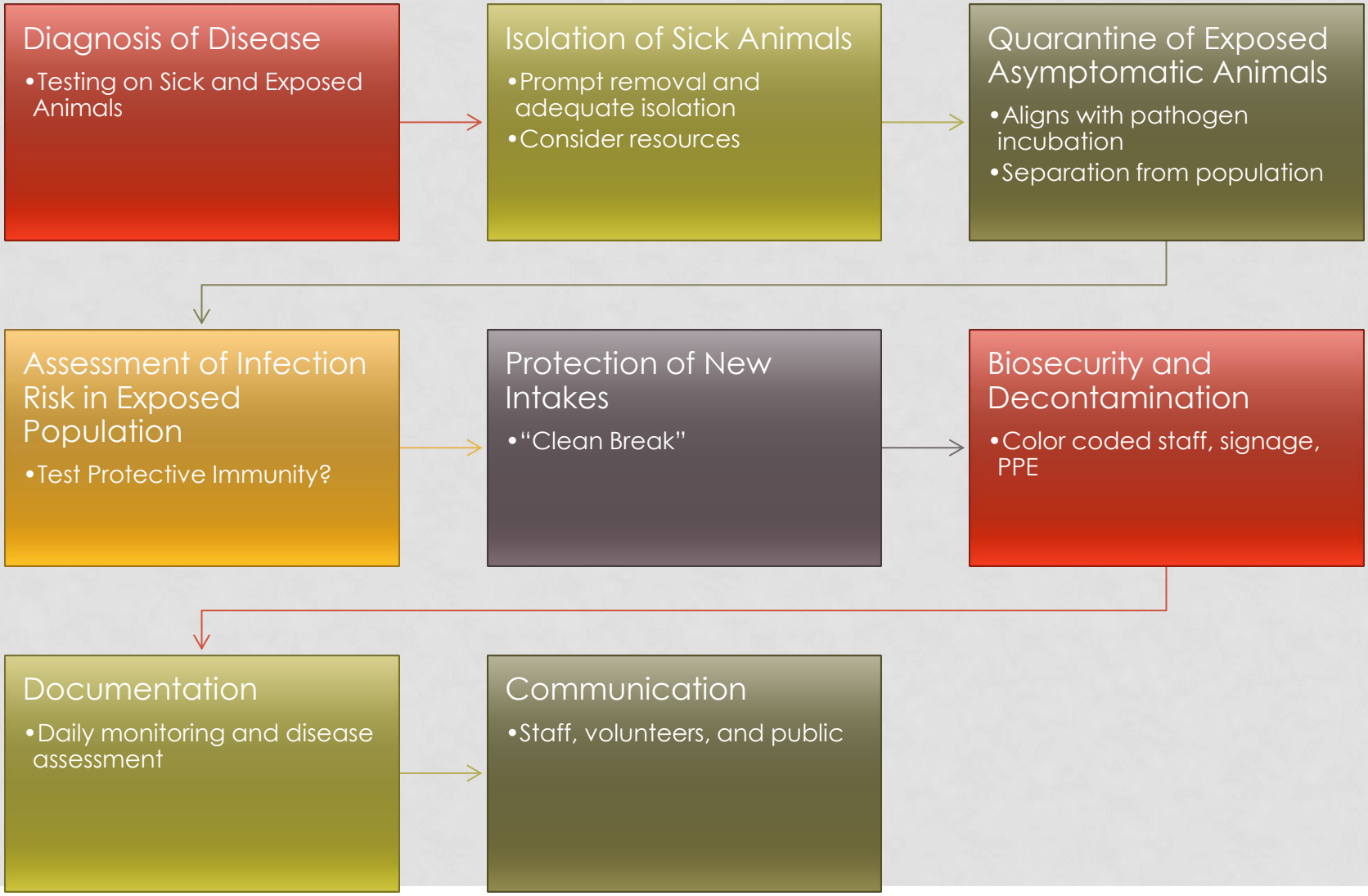
- Parvoviruses
- Respiratory Pathogens

| Dogs | Cats |
| --- | --- |
| • Adenovirus Type 2<br>• Parainfluenza Virus<br>• Distemper Virus<br>• Influenza H3N8 Virus<br>• Respiratory Coronavirus<br>• Pneumovirus<br>• Bordetella bronchiseptica<br>• Streptococcus zooepidemicus<br>• Mycoplasma canis | • Herpesvirus type 1<br>• Calicivirus<br>• Bordetella bronchiseptica<br>• Chlamydophila felis<br>• Mycoplasma felis<br>• Steptococcus zooepidemicus |

# CHART OF PATHOGENS (UF)

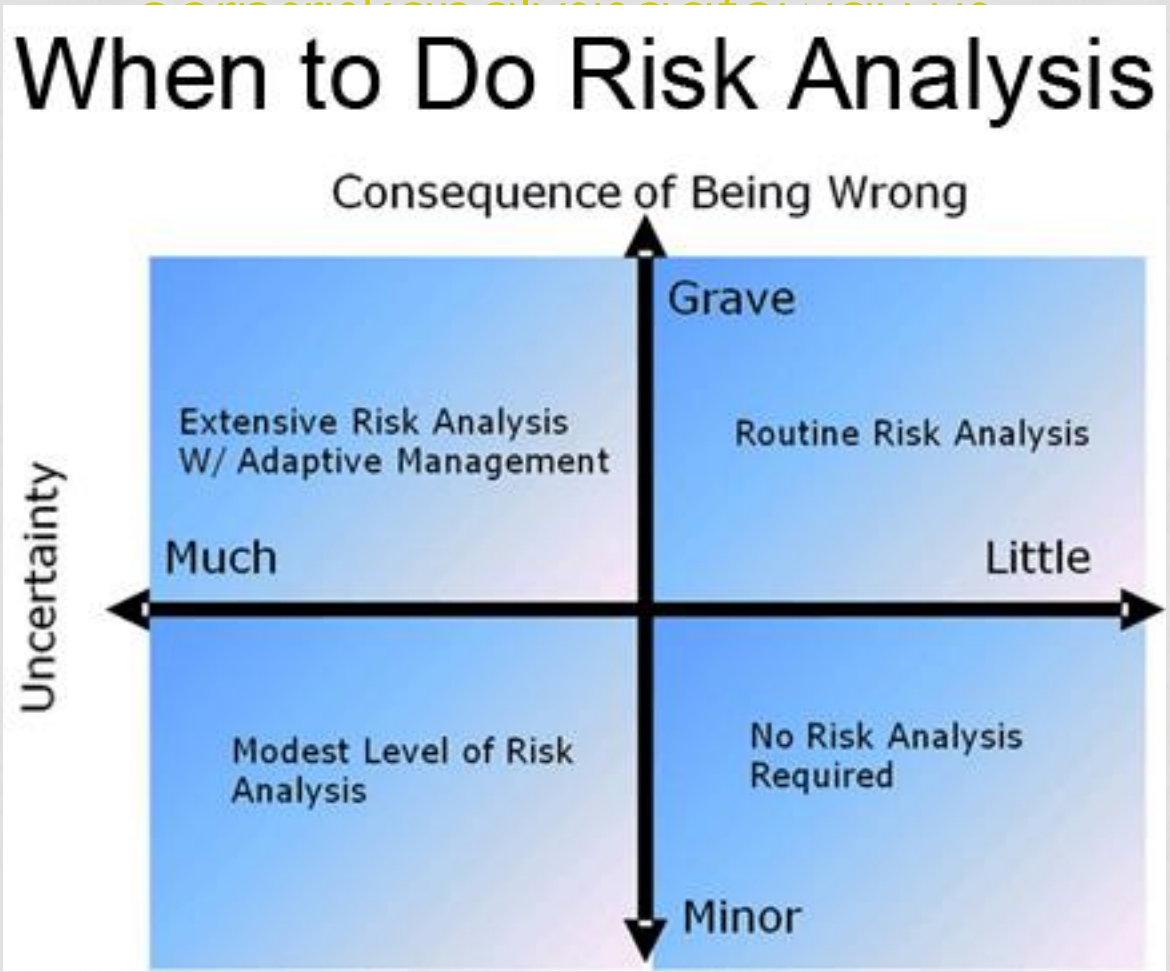
| Pathogen | Incubation period | Preclinical shedding | Shedding period | Subclinical infection | Persistent infection |
|---|---|---|---|---|---|
| **CPiV** | <1 week | yes | 1-2 weeks | yes | no |
| **CAV2** | <1 week | yes | 1-2 weeks | yes | no |
| **CDV** | 1-4 weeks | yes | wks to mo | yes | no |
| **CRCoV** | <1 week | yes | 1-2 weeks | yes | no |
| **CIV** | <1 week | yes | 1 week | yes | no |
| **CnPnV** | <1 week | yes | 1-2 weeks | yes | no |
| **FHV** | <1 week | yes | 1-3 weeks | yes | yes |
| **FCV** | <1 week | yes | 1-3 mo | yes | yes |
| **Bordetella** | <1 week | yes | up to 3 mo | yes | no |
| **Chlamydophila** | <1 week | yes | up to 2 mo | yes | no |
| **Strep zoo** | <1 week | yes | weeks? | yes | ? |
| **Mycoplasma** | <1 week | yes | weeks? | yes | ? |

# FLOW OF OUTBREAK

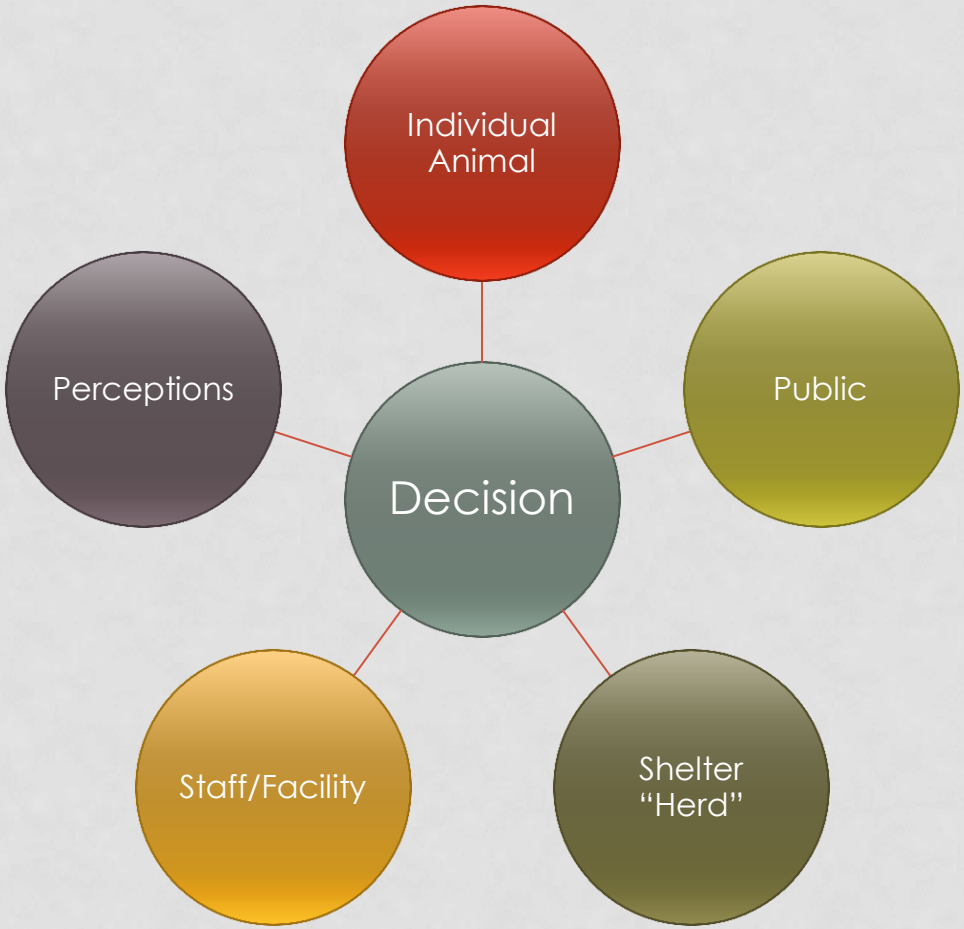


# ASSESSMENT AND DECISION MAKING

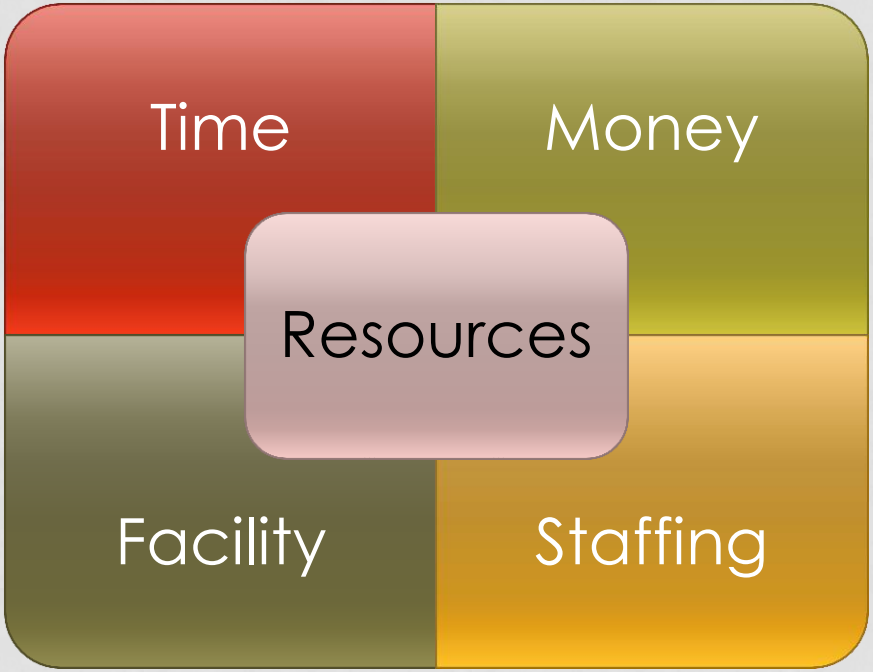
# RISK ANALYSIS

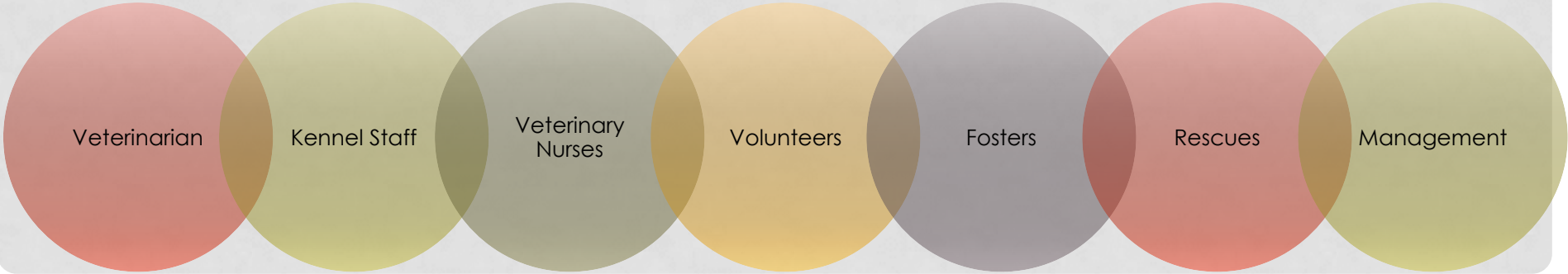


# WHAT TYPES OF RISKS?



# TEAM AND RESOURCE BASED APPROACH: CAPACITY FOR CARE



# SO WHAT DOES THAT MEAN?

All grey- all different

Can't just do the same thing you would do in private practice or in food animal

Must individually look at facility, herd, community, and animal

Multidisciplinary

MUST know gold standard and understand how to best serve herd and individual animal welfare in context of resource available

# RISK ANALYSIS CASES: PARVOVIRUS

- What would you recommend for protocol to treat a parvovirus puppy in shelter setting? What are your concerns? How do they compare to private practice?

- **Facility: Rescue with 30 cages in brick and mortar facility**

- Takes in about 300 animals per year
- The average length of stay in the rescue is 4 weeks
- No isolation area is available in facility
- Staff are volunteer only
- Puppy relatively stable, but positive on snap
- $200 total dollars are available now

# RISK ANALYSIS CASES: WHAT WOULD YOU DO?

- Euthanize Humanely — A
- Treat On-Site — B
- Treat in Foster Home — C
- Send to Private Clinic to Treat — D
- Send to Specialty Clinic to Treat — E

# OUTPATIENT PROTOCOL TREATMENT

(COLORADO STATE, 2013)

- Survival Rates- 90% inpatient and 85% outpatient
- Initial Stabilization
  - For both using standardized fluid volume resuscitation
  - Electrolyte stabilization
- Outpatient
  - SQ Fluids TID, TPR, Cefovicin 8mg/kg once, Maropitant 1 mg/kg SC q24 hr, syringe feed a/d
  - Rescue Protocols
    - Analgesia (20%) Buprenorphine 0.02mg/kg SQ
    - Antiemetic (20%) Ondansetron 0.5mg/kg SQ
  - Electrolyte Supplementation
    - Daily check for BG (75%), potassium (60%), PE
  - Failure of 5% of patients
  - Outpatient is 1/10 the cost of inpatient care
    - $1500-3000 inpatient versus $200-300 outpatient

# TREATMENT AND MONITORING SUMMARY (DIGANGI)

## Inpatient Treatment Protocol

- IV fluids (LRS, Plasmalyte, Normosol)
- IV supplementation of potassium and dextrose as needed
- IV colloids as needed (e.g. Hetastarch, plasma)
- IV antibiotics (e.g. ampicillin, enrofloxacin)
- Injectable antiemetics (e.g. maropitant, ondansetron)
- IV analgesics (e.g. buprenorphine, hydromorphone, morphine)

Once vomiting is controlled,

- Entice to eat
- Anthelmintics (e.g. pyrantel pamoate, fenbendazole, ivermectin)

## Minimum Inpatient Monitoring

- Twice daily physical exam, including body weight and hydration status
- Evaluate complete blood count (or blood smear) every 2 days
- Measure serum electrolytes every 2 days
- Re-evaluate patient and treatment plan whenever condition deteriorates or treatment response is not as expected

## Outpatient Treatment Protocol

- SC or IP Fluids (LRS, Plasmalyte, Normosol)
- Injectable antibiotics (e.g. cefovecin, enrofloxacin)
- Injectable antiemetics (e.g. maropitant)

Once vomiting is controlled,

- Entice to eat
- Anthelmintics (e.g. pyrantel pamoate, fenbendazole, ivermectin)

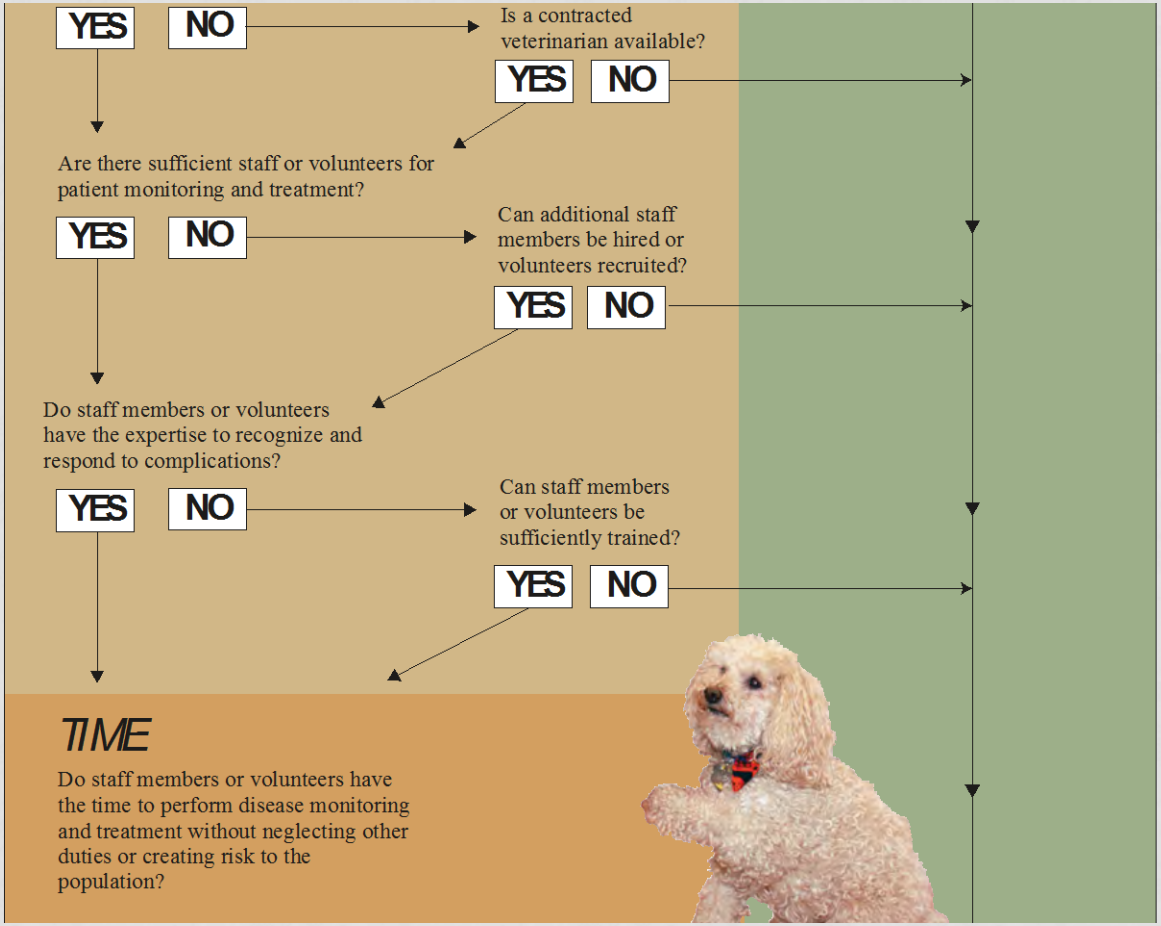
## Minimum Outpatient Monitoring

- Once daily body weight, hydration status
- Once daily check-in with veterinary staff (e.g. phone call)
- Physical exam every 3–5 days
- Re-evaluate patient and treatment plan whenever condition deteriorates or treatment response is not as expected

# PROS AND CONS OF TYPES OF PARVO TREATMENT IN FOR THE SHELTER

| Route | Pros | Cons |
|---|---|---|
| Outpatient | Less costly<br>Minimizes risk to shelter population<br>Improved mental well-being | Patient monitoring may be lacking<br>Increases risk to community pets & foster homes<br>Requires trained, experienced foster homes<br>Inappropriate for severely affected patients |
| Inpatient | Improved patient monitoring<br>Decreases risk to community pets<br>Enables treatment of severely affected patients | Requires designated isolation unit<br>More costly<br>Increases risk to shelter population<br>Requires trained, designated nursing staff |

# ALGORITHMS AS A TOOL FOR TREATMENT



## FACILITY

Is an appropriate isolation unit available?

YES NO

Does it contain equipment designated for use solely within the isolation unit?

YES NO

Can such equipment be purchased?

YES NO

## STAFF

Is there a veterinarian on staff?

YES NO

Is a contracted veterinarian available?

YES NO

Are there sufficient staff or volunteers for patient monitoring and treatment?

YES NO

Can additional staff members be hired or volunteers recruited?

YES NO

Do staff members or volunteers have the expertise to recognize and respond to complications?

YES NO

Can staff members or volunteers be sufficiently trained?

YES NO

## TIME

Do staff members or volunteers have the time to perform disease monitoring and treatment without neglecting other duties or creating risk to the population?

YES NO

Can additional staff members be hired or volunteers recruited?

YES NO

## MONEY

Are there sufficient financial resources in the medical budget for appropreate disease monitoring and treatment?

YES NO

Can fundraising initiatives support the cost of treatment?

YES NO

Are there financial resources for treatment at a private veterinary clinic?

YES NO

**Consider shelter-based treatment protocol.**

**Consider treatment at a private veterinary clinic.**

**Consider humane euthanasia.**

www.maddiesinstitute.org

# LET'S DO YOUR OWN DISEASE OUTBREAK PLAN

Follow topics below to help you create plan for your own rescue

# DISEASE OUTBREAK PLAN WORKSHEET

## Disease Outbreak Plan: Normal Facility Capabilities

- Facility Name:
- Mission:
- Facility Profile:
- Capacity for Care:
- Veterinary Capabilities:

## Disease Outbreak Plan: Disease Prevention and Detection

- Disease:
- Disease Profile:
- Prevention:
- Regular Biosecurity Plan:
- Detection Plan:

## Disease Outbreak Plan: Disease Outbreak and Management

- Capacity for Care:
  - Facility Assessment
  - Staffing Assessment
  - Time Assessment
  - Financial Assessment
  - Welfare Assessment
- Biosecurity Plan:
- Quarantine/Isolation Plan:
- Welfare Assessment Plan:
- Training Plan:
- Communication Plan:
- "End of Outbreak" Determination:

# RESOURCES


- Lila Miller- 2016 Lecture at Penn Vet
- Lila **Miller** and Kate Hurley. **Infectious Disease** Management in Animal **Shelters**. Ames, Iowa :Wiley-Blackwell, 2009.
- Cynda Crawford. Management of Disease Outbreaks in Animal Shelters. University of Florida. 2013.
- Glenda Dvorak. Disinfection 101. Center for Food Security and Public Health. Iowa State University. Ames, Iowa. 2008.
- Cynda Crawford. Strategies for Managing and Controlling Infectious Disease in Shelters. University of Florida. 2008.

# QUESTIONS?