Disease Outbreak Response Management

WHAT TO DO AND HOW TO DO IT

JEN DALMASSO, DVM, UC DAVIS DON LOW/CVMA FELLOW – SHELTER MEDICINE, UNIVERSITY OF WISCONSIN FELLOW, CONTRA COSTA ANIMAL SERVICES DEPARTMENT

KATE F. HURLEY, DVM, MPVM – DIRECTOR, KORET SHELTER MEDICINE PROGRAM, UC DAVIS CENTER FOR COMPANION ANIMAL HEALTH

Introductions

Private practice for over 20 years – doing shelter work part time

Full time shelter veterinarian 2 years ago

Public or municipal shelter employee/volunteer?

Private shelter with a facility employee/volunteer?

Private shelter with animal control contact?

Private rescue with no facility employee/volunteer?

Shelter DVM, RVT, or assistant?

Learning Objectives

Empower shelters to identify, diagnose, and manage disease outbreaks

Be aware of the steps of outbreak management

Understand risk assessment for disease and titer interpretation for parvo

Be able to implement clean break under various circumstances

Be prepared to communicate with a variety of stakeholders in the event of an outbreak

Understand the principals to help prevent an outbreak

Disease Outbreak Response Headlines

Catawba shelter kills 87 cats after 2 die of contagious disease

BY CLEVE R. WOOTSON JR. – CHARLOTTE, NORTH CAROLINA

11/10/2014 5:04 PM

Half of animal shelter's cats die in outbreak

Patrick O'Neill*5:39 p.m. EST January 22, 2015*

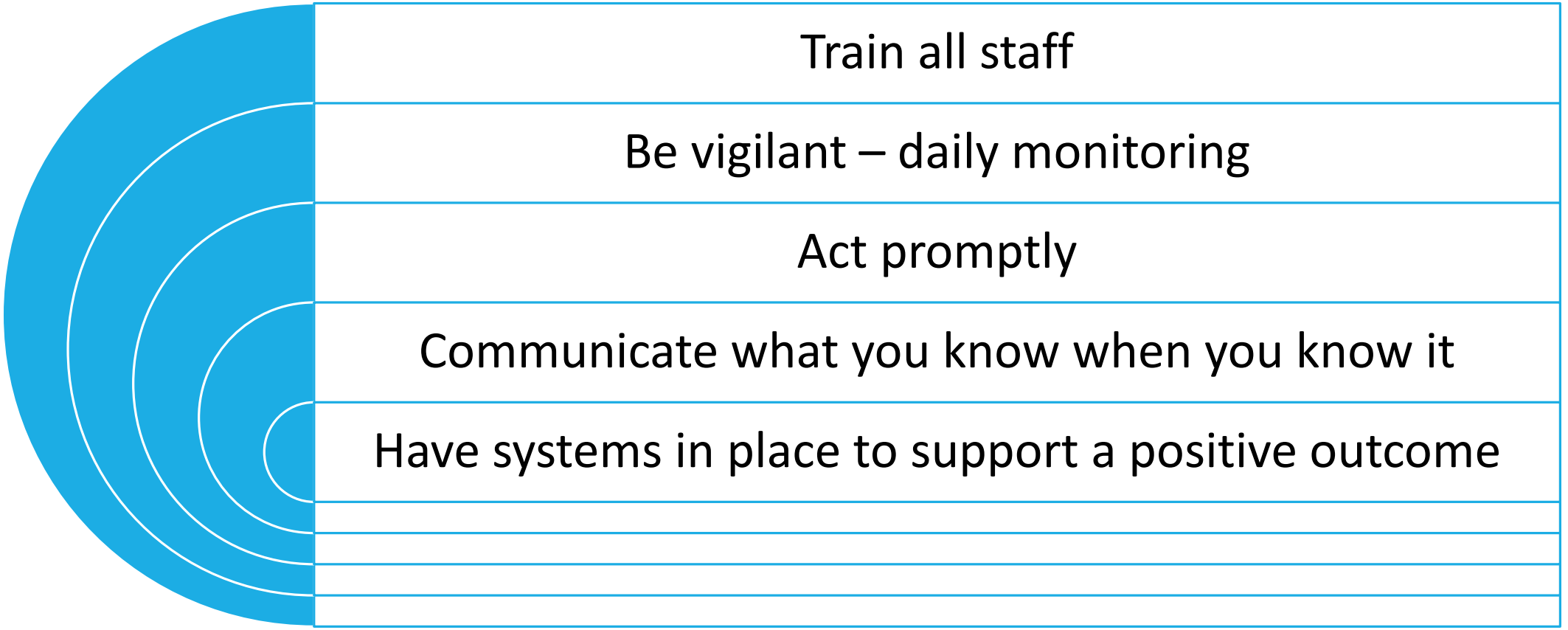
ZANESVILLE, OHIO – Half of the cats at the Animal Shelter Society on Newark Road died after an outbreak of panleukopenia, or pan-luke, in mid-December.

12 dogs euthanized after parvo outbreak at Campbell County Animal Shelter

Posted: Mon 12:28 PM, Mar 02, 2015

CAMPBELL COUNTY, Tenn. (WVLT)- The Campbell County Animal Shelter is recovering from a recent outbreak of parvo.

How Do You Avoid an Outbreak?



How Do You Avoid an Outbreak?

We work with living creatures

Sick animals will enter your shelter

What happens next is up to you

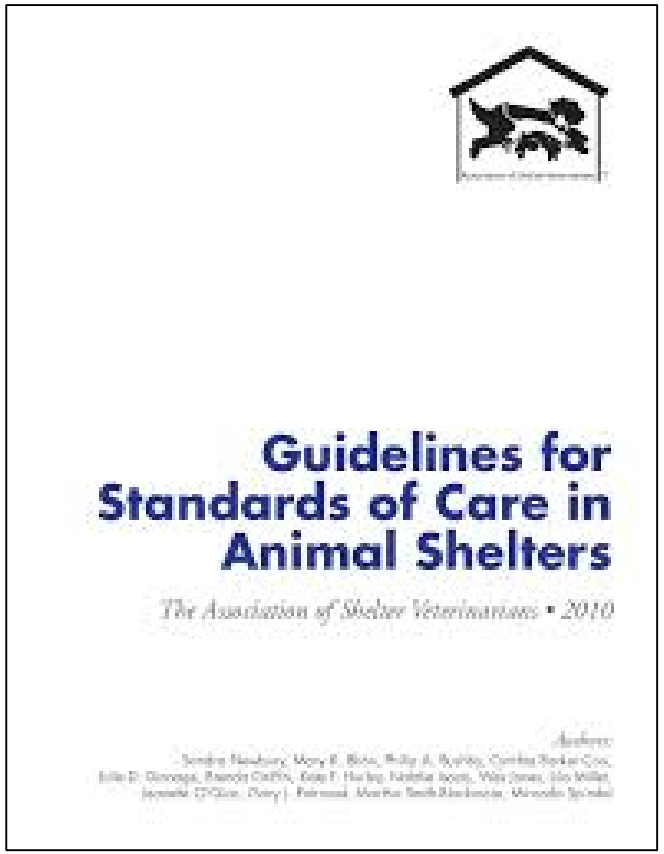
Contributing Factors to an Outbreak

Length of stay

Population density, crowding

Capacity for care

When these concepts are practiced – risk of disease outbreak is reduced



Diagnosing the Outbreak

Outbreaks can look different in different shelters depending upon experiences

How do you know when you have an outbreak in your shelter?

- Numerous animals are showing similar clinical signs
- New cases reported daily
- Potentially multiple locations within the shelter have disease
- Look for patterns – location in shelter, time in shelter, age, vaccine status
- Ask questions – does this make sense?

Diagnosing the Outbreak

Once you have confirmed an outbreak – Time to take Action

“ My shelter is being inundated with CIRDC… It has multiple presentations and clinical signs and can be found in about 50% of the wards in the shelter.”

“ I am trying to formulate a plan to diagnose the disease we have in shelter, or the multiple components of our shelter complex and come up with a plan to slow down the process...”

Outbreak Management in Your Shelter

“Outbreak Response Management” – what is this?

What does outbreak management mean to your shelter?

How prepared is your shelter to handle disease?

Steps of Outbreak Management

Steps of Disease Outbreak Management

- Communication – initial
- Diagnosis of Disease
- Isolation
- Risk assessment – High, Moderate, Low
- Quarantine
- Clean break
- Decontamination
- Communication – ongoing

*Steps listed in order but they are actually going on **at the same time***

Communication – Initial at time of Disease Outbreak Identification

News travels fast – way too fast

“Stop, drop and roll”

Be open and honest

- Share the facts
- Share what you know when you know it

“Phone tree” in place to facilitate communication who do you inform, who do they notify next

Update the necessary staff frequently as things change

Diagnosis of Disease

How do you identify the disease in the shelter

- Sampling
- Testing
- Data collection

Initial guess/snap test/intuition

- What does the disease look like?
- What do you think it is?
- Does it make sense?

Diagnosis of Disease

Sampling to diagnose disease in an outbreak

- Number of animals
- Disease stages
- Multiple locations in shelter
- Locations to sample from patient

Diagnosis of Disease

Testing – nothing is perfect – they all have limitations

Testing is based upon clinical signs – some disease is diagnosed in both sick and healthy animals

What does the test detect

- Antigen – the disease itself
- Antibody – the body's response to fight off a particular disease

Diagnosis of Disease

Point of Care test

- Quick – turn around time within minutes
- Easy to use
- Fairly inexpensive - $12-15 per test
- Can get false positive and false negative results

PCR test

- Turn around time 2-3 days
- Done at diagnostics laboratory
- Expensive - $90 and up
- Accurate results – can be challenging to interpret
- Need to do something with animal while waiting for results

Diagnosis of Disease

Confirmation – what disease do we have in the shelter

PCR panels

- Define what diseases you are looking for
- Determine what samples are required
- Check with your lab prior to sample submissions Not all panels are the same

PCR – polymerase chain reactions

- *Extremely sensitive*
- *Very specific*
- Quantitative PCR

Diagnosis of Disease

Necropsy

- Important diagnostic tool
- Collect samples
- Take a look inside

Data collection

- Record keeping and disease tracking
- Record all results - positive and negative
- Location in shelter to track disease
- Date and person performing test

Isolation

Clinically ill and confirmed diseased animals – to isolation

Divide and conquer
- Move ill animal out of general population
- Do so quickly

Necessities to perform isolation
- Physical isolation – depends upon facility
- Appropriate staffing
- Limited personnel access
- Separate supplies for cleaning, feeding, exams
- Personal protective equipment

Isolation

Personal protective equipment – PPE

- Gloves
- Full body including arms and legs
- Boots or shoe covers – **no foot baths**
- Change between puppies and kittens
- Discard protective clothing before leaving area

Isolation

When isolation on site is not humane

- Cages are too small for any length of stay
- Potential for deterioration – physical and behavioral
- Not enough staff to perform necessary husbandry

Options for isolation

- Off site transfer
- Foster
- Creative solutions within a shelter
- Depopulate – last resort and not without ramifications

Isolation

When isolation is just not possible

- Separation is the next best thing
- Most transmission of disease is direct or from people/fomites
- Focus on infectious dose reduction

Risk Assessment

How do YOU think about risk?

Risks of under-reacting

- Loss of life
- Negative impact on staff morale
- Loss of community trust
- Ask questions – does it make sense?

Risk Assessment

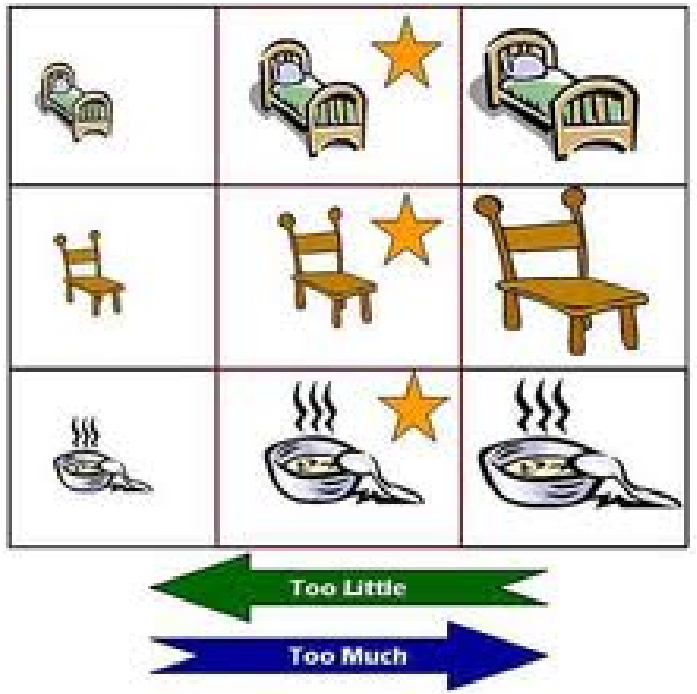
Risks of over-reacting

- Loss of life
- Negative impact on staff morale
- Loss of community trust
- Ask questions – does it make sense?

Risk Assessment

Mitigate these risks

- Don’t panic
- Take careful consideration with communication
- Keep information flowing
- Know the how and why to minimize risk



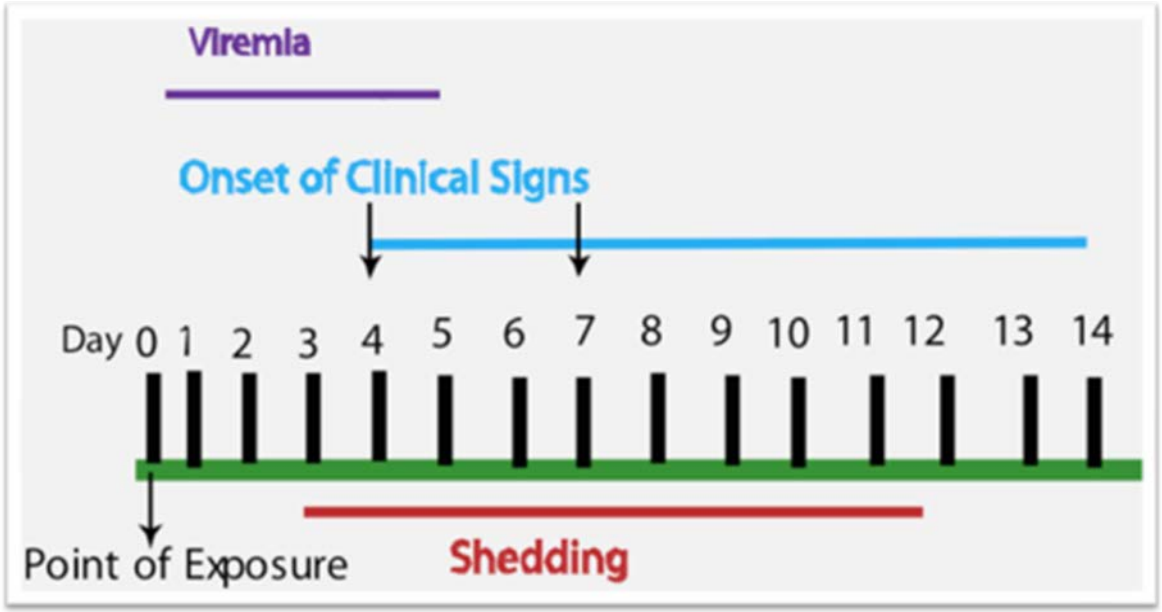
Risk Assessment

Risk Groups – Variable levels of response

Clinical signs consistent with disease
- High risk

Meaningfully exposed
- High risk
- Moderate to Low risk

Not meaningfully exposed
- Variable to Low risk



Dr. Hurley

Risk Assessment – Clinical Signs

Clinical signs consistent with disease – the “sick” population

- Clinically ill animals
- Animals with confirmed disease via testing

High risk

- Individual
- Shelter population

Risk Assessment – Meaningfully Exposed

The “Meaningfully Exposed” population

- Kennel mate, littermate, neighbor
- In same ward, general area in shelter
- Handled, cleaned by same people as diseased animal

Variables determine level of risk

- Animal
- Facility

Risk Assessment – Meaningfully Exposed

ANIMAL RISK

- Age of animal
- Likelihood of exposure
- Vaccine history
- Diagnostic test results
  - Antibody titers for parvo, distemper, panleukopenia
  - Fungal culture for ringworm
  - Help to determine risk levels

FACILITY RISK

- Sanitation practice
- Vaccination practices and vaccine efficacy
- Time to onset – facility acquired versus community acquired disease
- Multiple areas of shelter involved

Risk Assessment - Meaningfully Exposed

High risk
- Unvaccinated dog
- Puppy with negative titer
- Adult dog with negative titer

Moderate risk
- Puppies with positive titer – stayed in shelter so risk increased
- Puppies with positive titer – low risk right now so must act

Low risk
- Vaccinated adult dog
- Adult dog with positive titer

Risk Assessment – Meaningfully Exposed

“Meaningfully Exposed” – High risk

- Quarantine
  - Practical for acute, recognizable disease
  - Difficult for long incubation period or subtle signs
  - Not practical for chronic or ubiquitous conditions
  - Diagnostics for some conditions

“Meaningfully Exposed” – Low risk and Moderate risk

- Adoption
- Adoption with waiver
- Immediate rescue

Risk Assessment – NOT Meaningfully Exposed

The “Not Meaningfully Exposed” population

- Individuals that may have been in building
- No known contact, exposure, or cross contamination

Variables determine level of risk

- Exposure risk
- Animal risk
- Facility risk
- Variable to Low Risk

Risk Assessment – NOT Meaningfully Exposed

"Not meaningfully exposed"

- Exposure risk
  - Proximity in time and space to index case
  - Location within the shelter
  - Timeframe

Risk assessment – NOT Meaningfully Exposed

ANIMAL RISK

- Age of animal
- Likelihood of exposure
- Vaccine history

FACILITY RISK

- Cleanliness – cleaning protocols
- Vaccination practices and vaccine efficacy
- Overall animal monitoring
- Crowding and shelter population
- Extent of documented spread of disease

Risk Assessment – Titer Testing

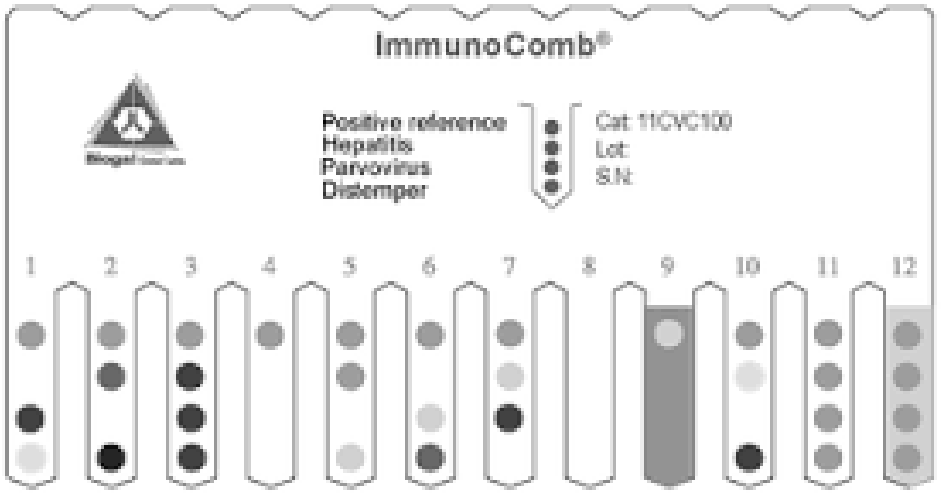
Antibody Titer Testing

- Measure antibody level in body
- For canine parvovirus or distemper, feline panleukopenia
- **Cannot** use on animals with clinical signs
- Caution with juveniles < 5months of age
- In house testing or diagnostic lab

Risk Assessment – Titer Testing

In-house Antibody Titer Testing

- Synbiotic Titerchek (wells) or Biogal Vaccicheck (comb)
- Cost = approximately $15 per test
- Need skilled personnel – tests have multiple steps
- Youtube: “Titerchek”and “Vaccicheck”



Titer Interpretation – Positive is **GOOD**

Positive antigen test	• Clinical signs – disease identified • High risk to self and population
Negative titer Any age dog/cat	• High risk – even if not clinical signs • High risk does not equal disease
Positive titer Juvenile dog/cat	• No clinical signs +/- negative antigen test • Low to moderate risk – vulnerable, act now
Positive titer Adult dog/cat	• No clinical signs • Low risk does not mean “no risk”

Risk Assessment - Animal Summary

Disease Identified	Meaningfully Exposed	Not Meaningfully Exposed

• High risk
• Isolate +/- Treat
• Remove from population
	• High risk
	  • Quarantine
	• Moderate risk
	  • Adopt with waiver
	  • Rescue
	• Low risk
	  • Adopt/Rescue
		• Variable to low risk
		  • Adopt
		  • Rescue
		  • Clean break

Risk Assessment – Shelter Factors

Low risk shelter

- Protocols followed for cleaning, intake exam, vaccination
- Trained staff
- Daily monitoring
- Appropriate supplies and equipment
- Population fits capacity of shelter

Moderate risk shelter

- Protocol breaks
- Staff not adequately trained
- Infrequent animal monitoring
- Adequate supplies
- Exceeds capacity for care

High risk shelter

- No protocols
- Untrained staff
- No regular monitoring of animals
- Lack of supplies and equipment
- Exceeds capacity
- Extended length of stay

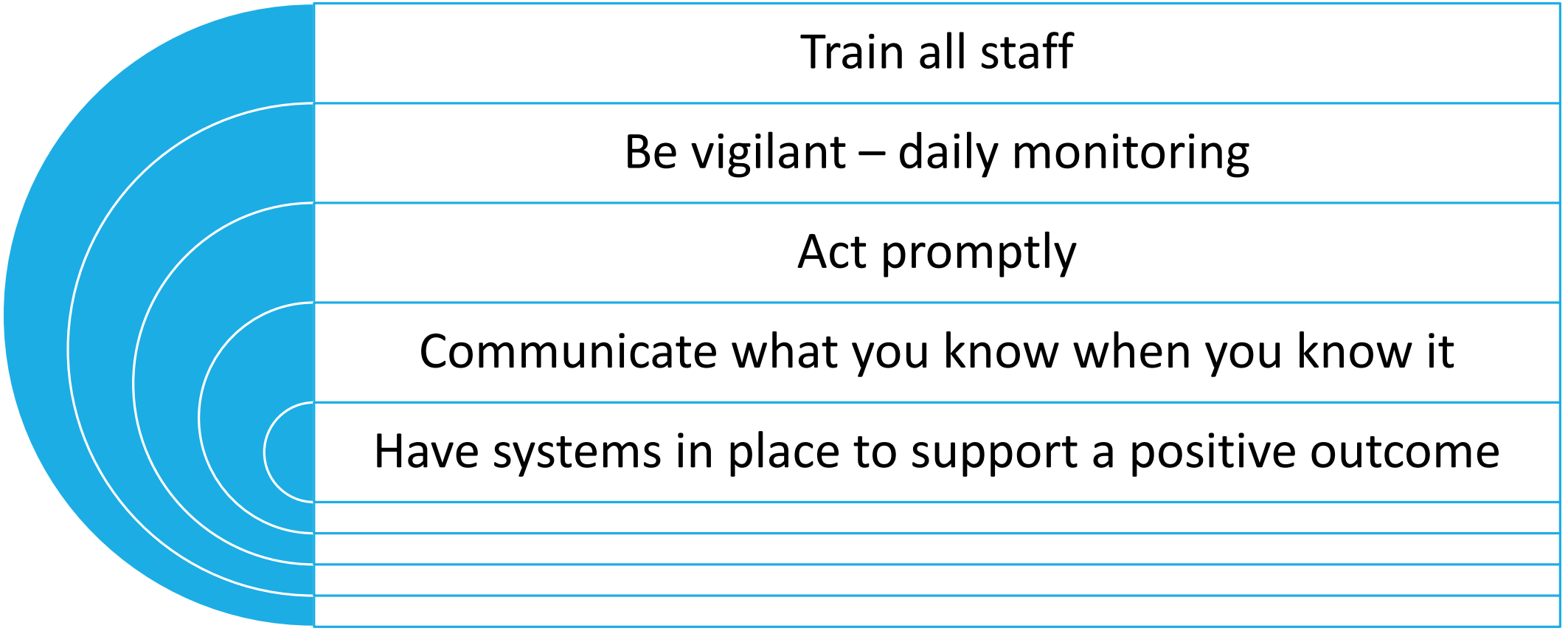
Risk Assessment – Why do it

Be certain to do the individual animal risk assessments

- They may make the difference between what can and cannot be done
- If you do not know the risk – you cannot make a plan for that individual
- If you know the risk – you can make a plan for that animal

“Risk assessment helps turn the impossible into the possible”

Risk Assessment – To Avoid the Outbreak



Quarantine

Whenever possible consider alternatives

- Do Individual risk assessment
- Be sure that quarantine is what the animal needs

May be the least desirable option for long term holding

- Meeting the 5 freedoms

For long term hold – recommend foster care when animal has good prognosis

Quarantine

Meaningfully exposed animals – high risk to quarantine

Divide and conquer
- Move exposed animal out of general population
- Do so quickly

Necessities to perform quarantine
- Physical space
- Appropriate staffing
- Separate supplies for cleaning, feeding, exams
- Personal protective equipment

Quarantine

Personal protective equipment – PPE

- Gloves
- Full body including arms and legs
- Boots or shoe covers – **no foot baths**
- Change between each animal
- Discard protective clothing before leaving the area

Quarantine

When quarantine on site is not humane

- Cages are too small for any length of stay
- Potential for deterioration – physical and behavioral
- Not enough staff to perform necessary husbandry

Quarantine

Options for quarantine

- Off site transfer – rescue
- Foster
- Creative solutions within a shelter
- Creative solutions off site – warehouse, barn
- Be sure areas can be sanitized
- Depopulate – last resort and not without ramifications

Quarantine

Depopulation is a last resort

From the ASV guidelines

“Before depopulation is undertaken, many factors including transmission, morbidity, mortality, and public health must be taken into account. All other avenues must be fully examined and depopulation be viewed as a last resort (ASV position statement on infectious disease outbreak management, 2008).”

Quarantine

Time frame

- 2 weeks for parvo, panleukopenia
- 6 weeks for distemper

If disease breaks out in quarantine

- Don’t panic
- Reassess each individual animal’s risk
- Always restart for puppies and kittens

Quarantine

Intake quarantine – not recommended

Intake assessment is recommended

- Faster way to get animals moving through the shelter process towards adoption
- More efficient
- Less expensive when factor in animal care days

Clean Break

For animals not meaningfully exposed and incoming new animals

House in separate area away from exposed animals

- Minimizes risk of exposure
- Prevents disease transmission

()

Clean Break

Key function in outbreak management

Be creative

- Clear visual separation and separate supplies for the populations
- Ideally physical separation of populations
- Separate air spaces
  - Dogs = 25 feet
  - Cats = do not need separate air space
- Need teamwork and clear communication with staff

Clean break

How to decide when to mix populations

- Not meaningfully exposed with new animals
- Depends on the shelter facility risk
- Want a “cleaner” clean break

Decontamination

Straight forward approach

- Clean properly
- Disinfect all surfaces
- **Clean + Disinfect = Sanitize**

Clean three times

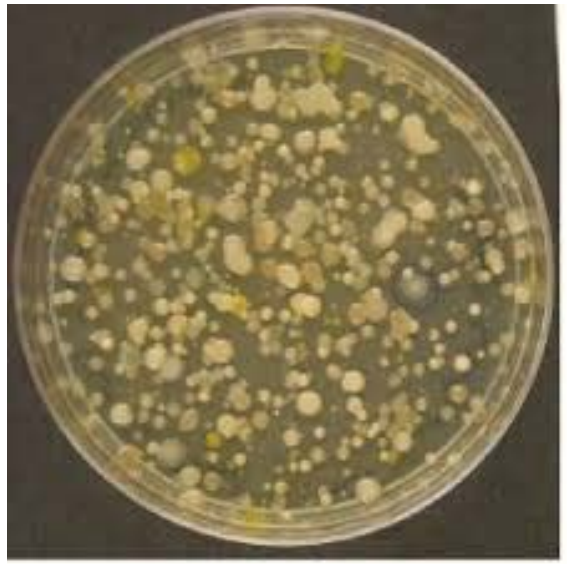
Use a proven virucidal agent that is effective against pathogen of greatest concern

Dry, dry, dry everything

Decontamination

Evaluate effectiveness in environment

- Dermatophytes – environmental fungal culture
- Bacterial culture – if growths, bugs are there
- Disinfectant test strips – appropriate concentrations being used especially if using central dispenser
- Dry erase marker +/- a side of guilt
- Physical observation – if something does not seem right, investigate



Communication – Ongoing through Disease Outbreak Response

Who needs to be notified – if you think they need to know, tell them

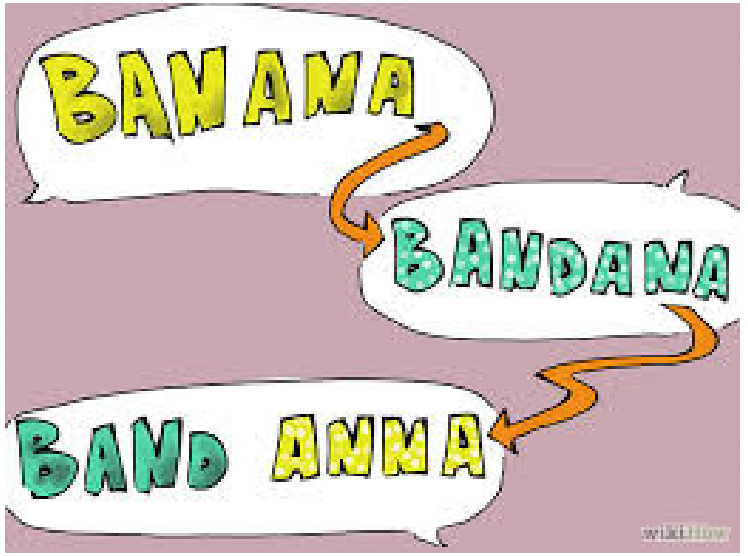
- Veterinary/medical staff
- Husbandry/kennel staff
- Shelter management and operations
- Volunteers
- Public relations/ media
- Other local animal shelters
- Rescue partners
- Community veterinary facilities
- Potential adopters
- Public

Communication – Ongoing through Disease Outbreak Response

Fundamental Component to Outbreak Management

Poor communication – things can go wrong

- Barefoot in the puppy pen
- CIRDC information sheet still in sealed envelope at recheck



Communication – Ongoing through Disease Outbreak Response

Good plans are set into action but…

- If not properly communicated things can and will go wrong
- Make sure staff is doing what has been instructed
- Explain why they are doing what they are doing
- Their job performance is vital to outbreak success
- Need to have good communication with all shelter staff

Communication – Ongoing through Disease Outbreak Response

Ideas for planning ahead

- Shelter policies should be thoughtfully written and discussed
- Protocols should be written, evaluated, and reviewed
- Resources available as guides

Take a Leadership Role

- Shelter may be first place a new disease is recognized
- Large, changing population
- Other facilities may be affected

Communication – Ongoing through Disease Outbreak Response

All staff need to be on the same page at the same time – regular updates!

Have a written protocol in place

- Many resources with examples available
- Know what your shelter protocols are
- Evaluate effectiveness
- Review and discuss them regularly with staff

/

Communication – Ongoing through Disease Outbreak Response

Talking points

- Don’t be afraid to ask for help
- You are not alone
- We have all been through it
- Many resources now available

Communication – Ongoing through Disease Outbreak Response

Once the storm has passed…

“We would never wish an outbreak on anyone, however…the best changes come after an outbreak has been cleared. This is the time to use the recent experience to make the necessary positive, forward changes that your shelter needs.”

How Do You Avoid an Outbreak?

Review steps

Once you have worked through an outbreak

- Evaluate what worked, what did not work
- What changes need to be made to protocols
- What did you learn that could help to minimize the risk of the next outbreak

The success of the next outbreak response is in your control

Summary

Prevention measures to avoid an outbreak

Identify outbreak and confirm disease

Divide and conquer

Risk assessment – Keep it simple

In house titer testing – You can do this!

Be creative in isolation/quarantine options

Communication is key to success

Don’t panic – There is a process to manage a Disease Outbreak

Resources

UC Davis Koret Shelter Medicine Program – www.sheltermedicine.com

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

University of Florida Maddie's Shelter Medicine Program – www.sheltermedicine.vetmed.ufl.edu

Association of Shelter Veterinarians – www.sheltervet.org

American Society for the Prevention of Cruelty to Animals Professional content – www.aspcapro.org
www.animalsheltering.org

www.maddiesfund.org/canine-parvovirus-treatment-algorithm.htm

Infectious Disease Management in Animal Shelters by Lila Miller and Kate Hurley, Wiley-Blackwell, 2009

Shelter Medicine for Veterinarians and Staff by Lila Miller and Stephen Zawistowski, Wiley-Blackwell 2013

Photos retrieved from Google Images

Thank You!! Questions??

JenDalmassoDVM@gmail.com