Why are Shelters at Increased Risk for Disease Outbreaks?

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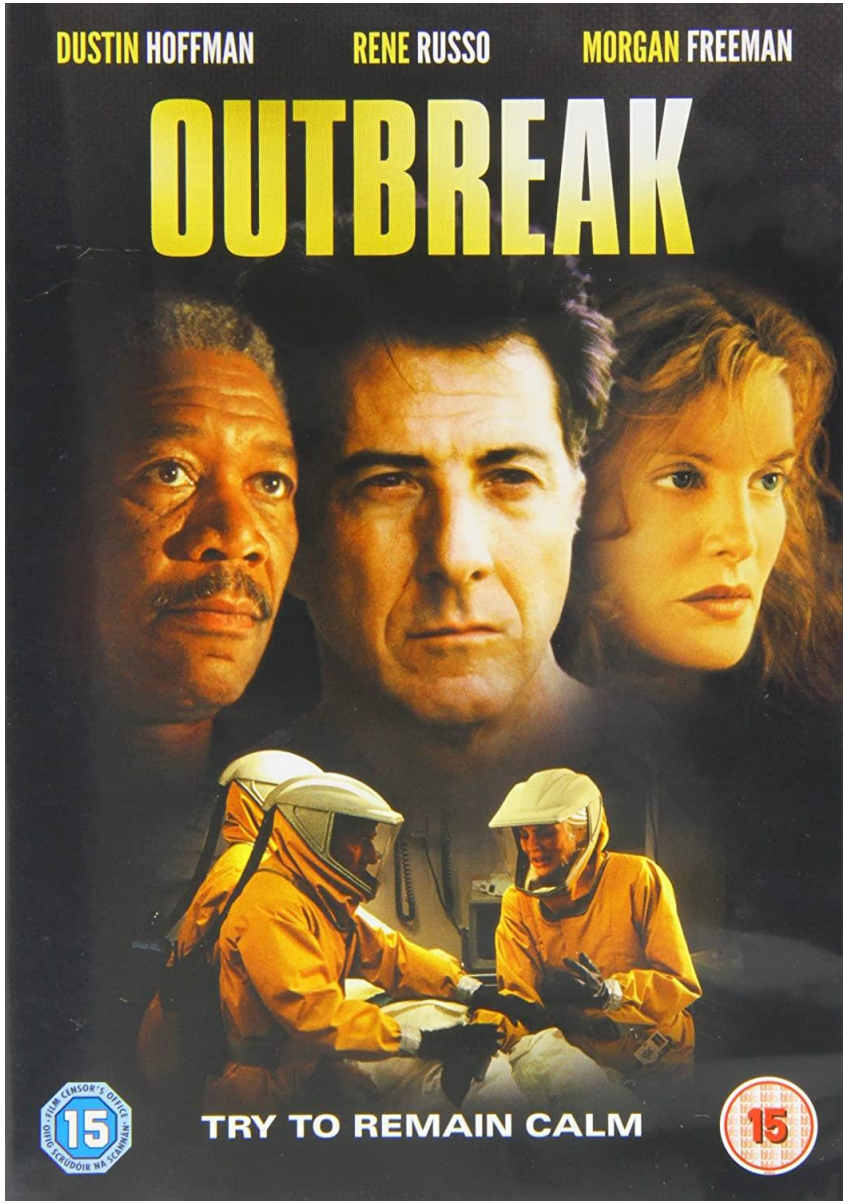
Chair in Shelter Medicine



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All Too Common Headlines

Shelter Cats Face Euthanasia After Virus Outbreak

Bridgette Bornstein
Reporting

(WCCO) St. Paul A fast-spreading virus has already killed more than 100 cats at a popular animal shelter, and staff members say many more will have to be euthanized if they are not adopted today.

An outbreak of feline distemper killed about 130 cats at The Humane Societ for Companion Animal's shelter in St. Paul since mid-June.

"This is particularly virulent strain o The Humane Society for Companion healthy and within 24 to 48 hours ca

Illness causes Adams County shelter to stop accepting dogs for 2 weeks

By Anthony Cotton
The Denver Post
POSTED: 01/21/2015 08:07:40 PM MST

An increase in the number of dogs exhibiting an upper respiratory illness has forced the Adams County Animal Shelter to suspend canine intake for two weeks, it was announced Wednesday. According to the shelter, tests by an outside laboratory revealed that one dog at the facility tested positive for bacteria called strep equi zooepidemicus, which causes hemorrhagic pneumonia and can cause death. "Strep Zoo," as it is commonly called, is increasingly common in animal shelters.

Dogs Euthanized, Adoptions Suspended, After Distemper Outbreak

January 9, 2012 6:19 PM

MIAMI (CBSMiami) – All dog adoptions at Miami-Dade County Animal Services have been suspended following an outbreak of Canine Distemper.

Over the weekend, 23 dogs became sick and shelter officials fear it could be distemper. That is because they confirmed 18 cases of the illness more than a week ago.

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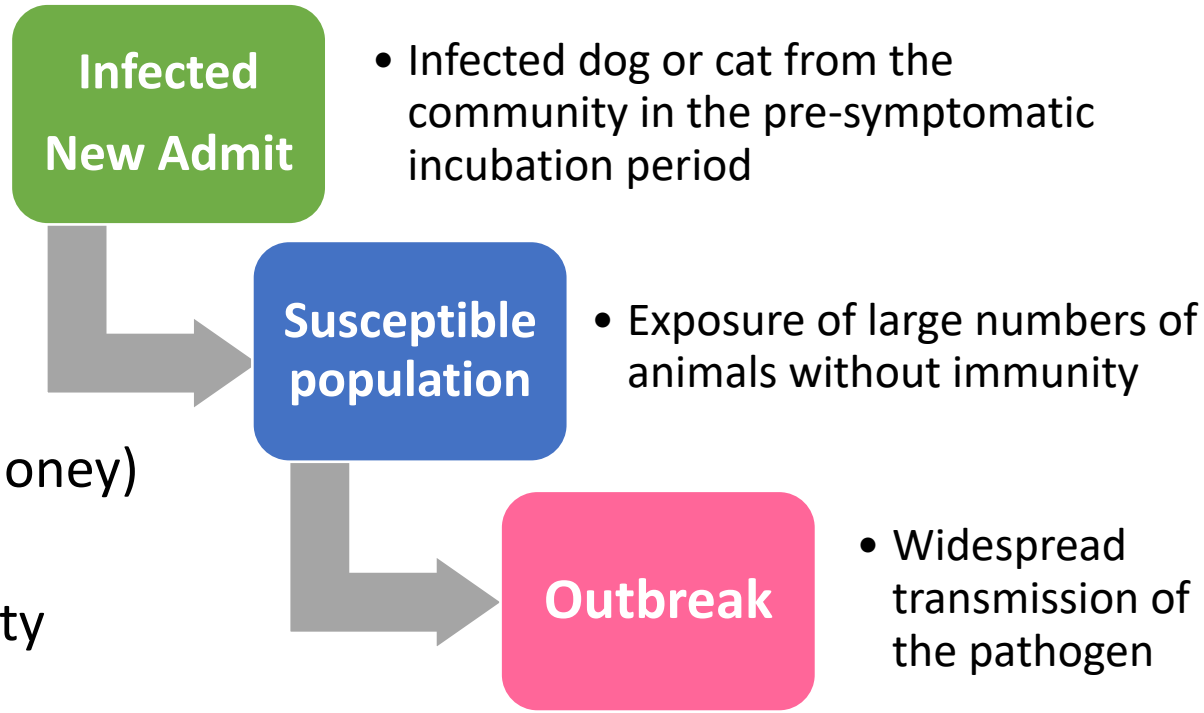
What Defines a Disease "Outbreak"

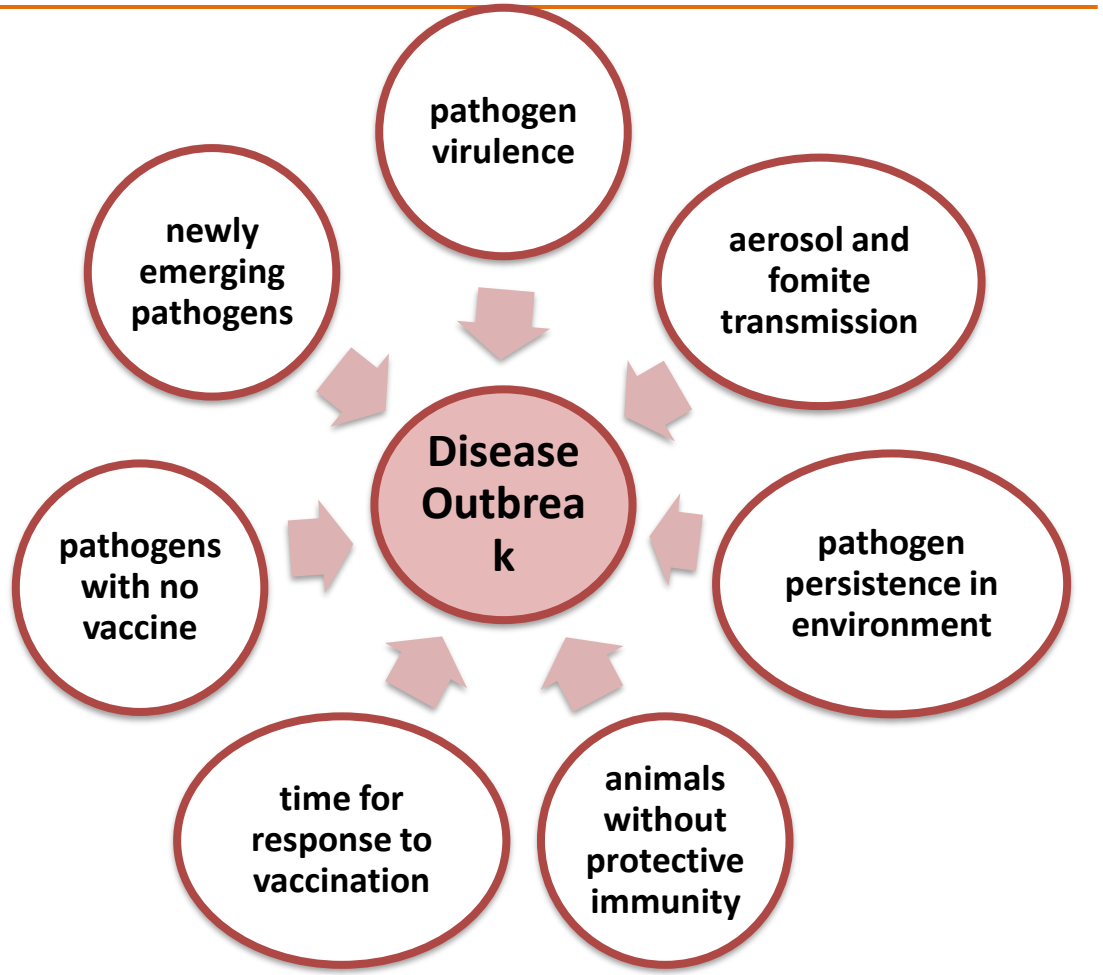
- Unusual, new, or hard to contain disease: an outbreak can be just 2 cases
- Common or endemic diseases: an outbreak is many more cases above the "normal" baseline
- Triggers for recognition and call to action:
  - Higher than expected number of cases
  - More severe or prolonged disease than expected
  - Deaths
  - Failure of usual containment procedures to stop transmission
  - Complaints from adopters, rescue groups, veterinarians

Disease Outbreaks

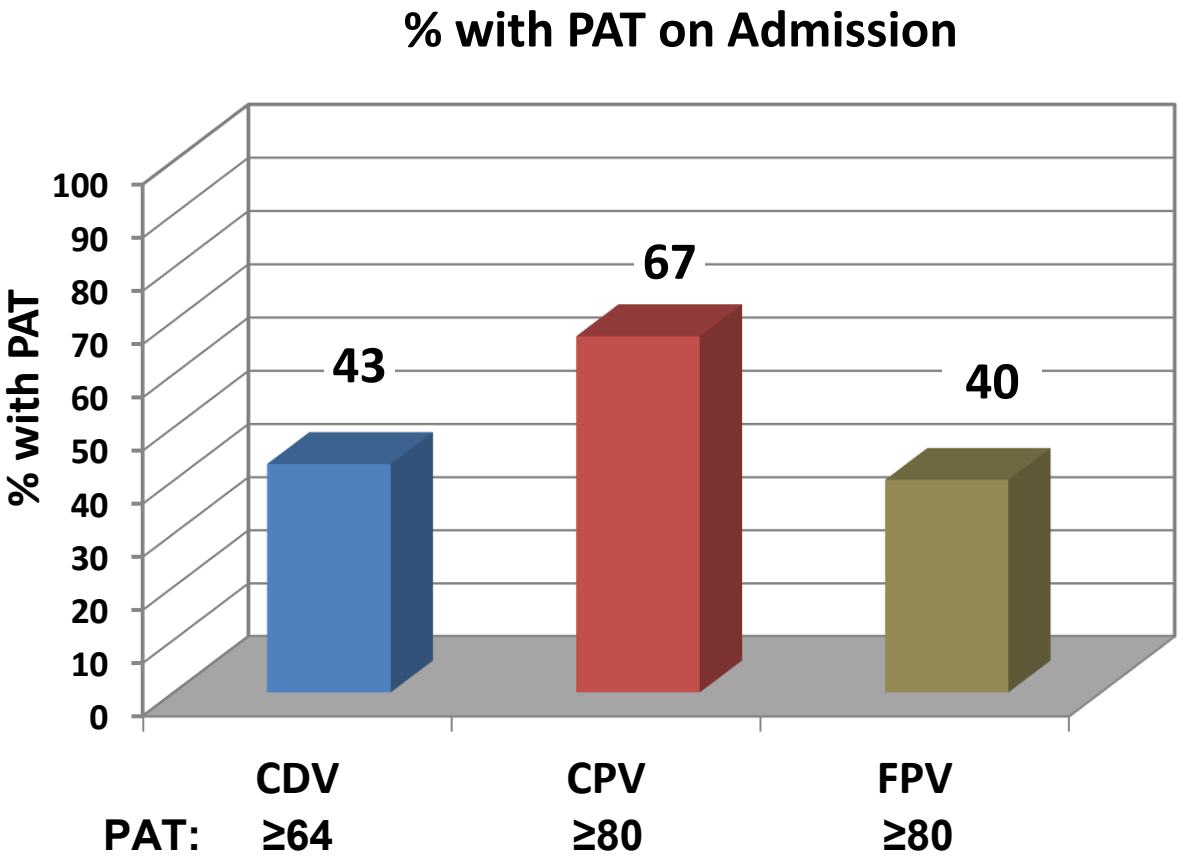
- Every shelter is at risk for a disease outbreak
- Disease outbreak impacts
  - Decreased live outcomes
  - Paralyzed shelter operations
  - Financial costs
  - Resource reallocation (staff, space, money)
  - Low staff morale
  - Damaged reputation in the community
  - ***Decreased life-saving capacity***



Risk Factors



Pre-Existing Immunity



	% with PAT on Admission		
Age	CDV	CPV	FPV
< 6 mo	17	36	34
1 to 2 yr	48	76	54
> 2 yr	75	89	64

431 dogs and 347 cats

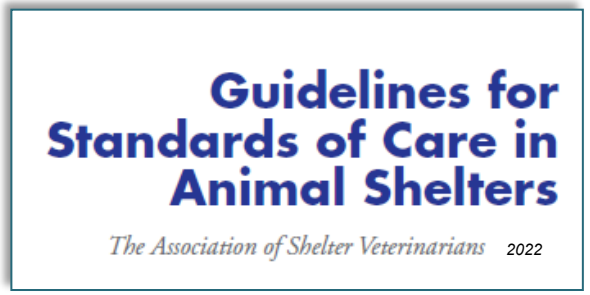
Lechner. *JAVMA* 2010; 236:1317-1321
DiGangi. JAVMA 2012; 241:1320-1325

Why are Shelters so Vulnerable?

- Risk cannot be eliminated by even the best operational practices
  - Animals with no or incomplete immunity
  - Time required for response to vaccination
  - No vaccines for some diseases
  - Newly emerging diseases

Outbreak Management

- Depopulation
  - Euthanasia of sick and exposed animals to halt disease spread
  - No longer an acceptable practice
  - Still happens due to lack of information and resources



ASV Position Statement on Depopulation

"All other avenues must be fully examined and depopulation viewed as a last resort."

Lifesaving Strategies for Managing Disease Outbreaks

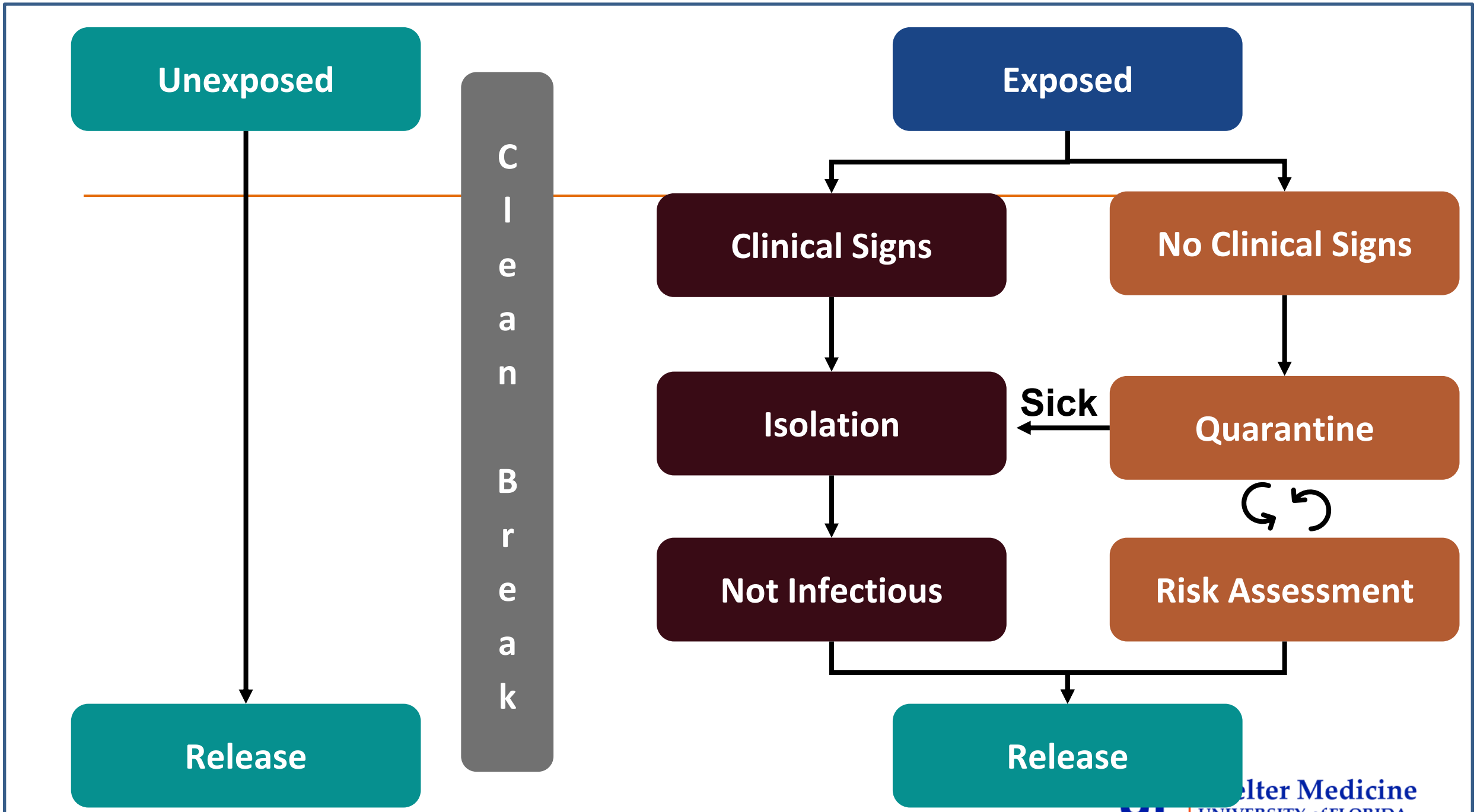
Disease Outbreak Management Goals

- Maximize life-saving
- Minimize disruption of shelter operations
- Achieve the quickest resolution possible
- Be financially responsible

Overarching goal: create an effective break between the infected/exposed population and the unexposed population without resorting to mass depopulation via euthanasia

Strategic Steps for Disease Management

- Diagnosis of the disease
- Isolation of sick animals
- Quarantine of exposed asymptomatic animals
- Assessment of infection risk in exposed animals
- Create a clean break to prevent exposure of more animals
- Biosecurity and environmental decontamination
- Documentation
- Communication


Unexposed
Exposed
Clean Break
Clinical Signs
No Clinical Signs
Isolation
Sick
Quarantine
Not Infectious
Risk Assessment
Release
Release

Diagnosis

Why Test?

- Laboratory diagnosis is necessary for confirmation
  - Pathogens of concern cannot be diagnosed by clinical signs
  - Diseases caused by pathogens of concern mimic other diseases
- Essential for successful intervention strategies
  - Risk for spread to other animals
  - Isolation time for sick animals
  - Quarantine time and risk assessment for exposed animals
  - Biosecurity requirements
- Proper patient management
  - Treatment options and cost
  - Prognosis for recovery
  - Average time to recovery

Why Test?

- Timely diagnosis impacts how many animals remain healthy and adoptable
- No or late diagnosis increases the number of animals that get sick
- Diagnosis directs management strategies to interrupt and resolve disease transmission throughout the population

Who to Test?

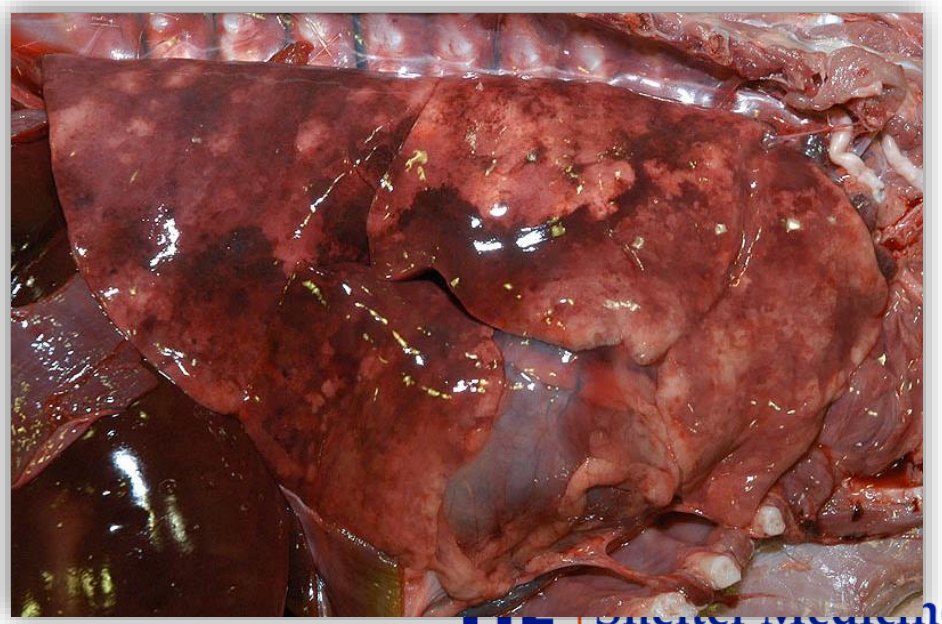
- Acute cases
  - Some pathogens only detectable during first few days of illness
- Exposed cases
  - Preclinical incubation = peak shedding for some pathogens
  - Identification of subclinical infections

What Tests?

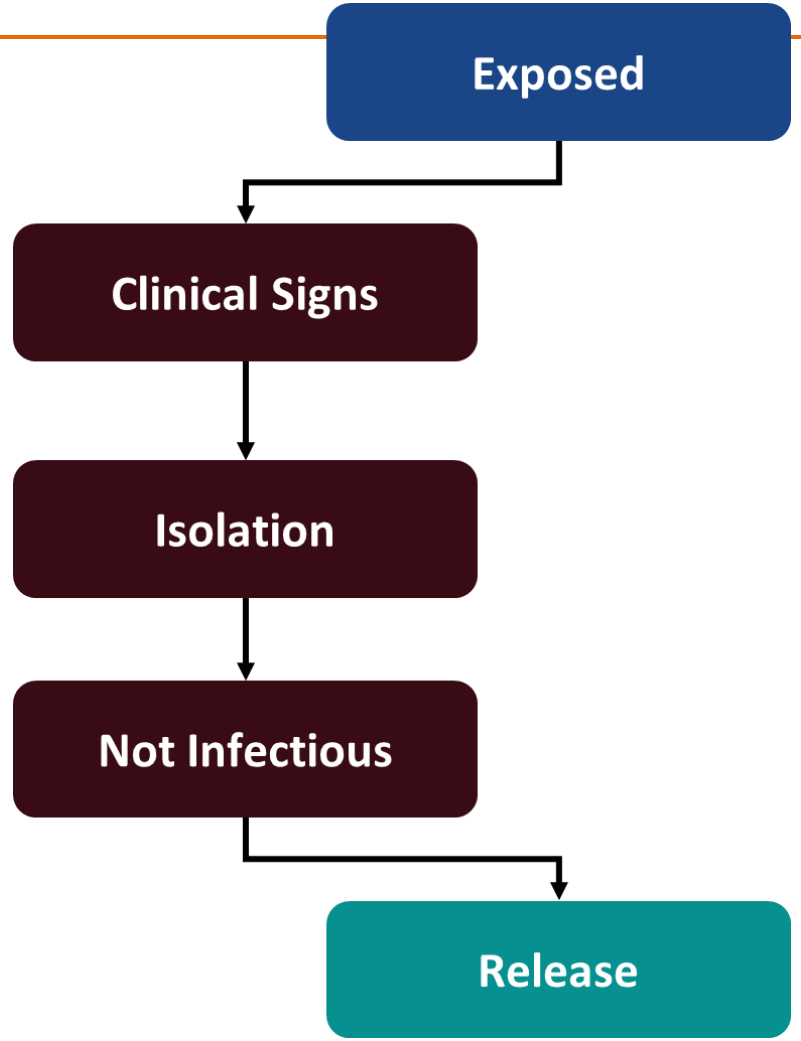
- PCR
  - Viral respiratory pathogens
  - Detects pathogen-specific DNA
  - Very sensitive and specific
  - Requires a reference lab
  - 1- to 3-day turnaround time
- ELISA
  - Parvoviruses
  - Detect pathogen-specific proteins
  - Less sensitive than PCR
  - Point-of-care tests
  - Rapid results (15-20 minutes)

What Tests?

- Necropsy
  - Most valuable for confirming cause of death
  - Tissue collection for diagnostic tests/histopathology
  - Variable turnaround time
  - Costs and logistics are important considerations



Isolation



Isolation of Sick Animals

- Single most important step
  - Physical containment of the pathogen
  - Reduces infectious dose in the general population
  - Reduces transmission to more animals
- Isolation time = pathogen shedding period

In-Shelter Isolation

- Enclosed isolation kennel is best for canine respiratory pathogens

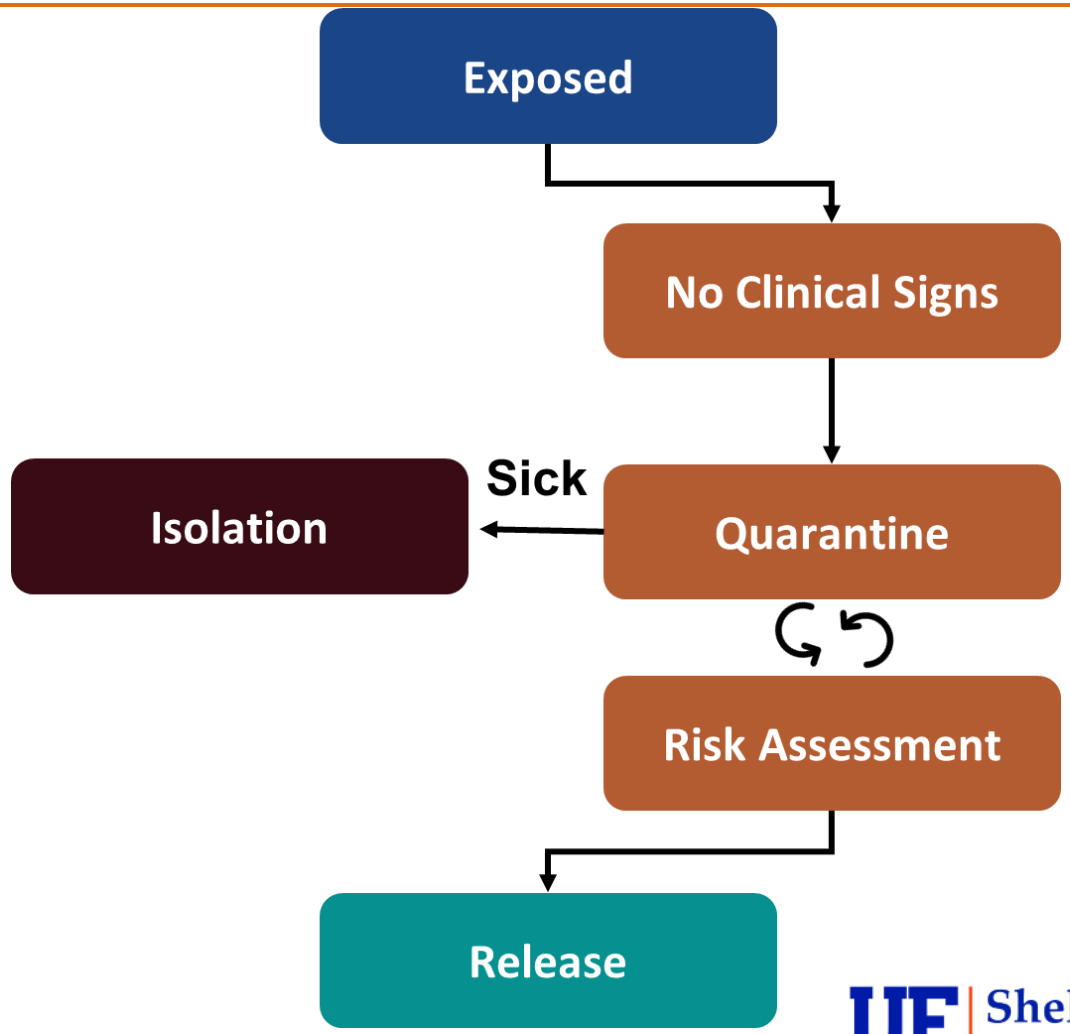
No Dedicated Isolation Space?

- In-run or in-cage isolation with door covers
- Not effective for canine respiratory viruses but OK for parvoviruses

Alternatives to In-Shelter Isolation

- Rent offsite housing (vacant building with power and water)
- Medical foster homes without susceptible pets
- Transfer to another agency with good facilities and medical support
- Disaster response trailers (climate-controlled)

Quarantine


Exposed
No Clinical Signs
Sick
Isolation
Quarantine
Risk Assessment
Release

Quarantine of Exposed Animals

- No clinical disease – why?
  - Pre-clinical incubation period
  - Subclinical infection
  - Immune to infection
  - Not infected
- Must be considered an infectious risk pending assessment
  - Separate enclosed housing
  - No animals in or out
  - Quarantine time = pathogen maximum incubation period

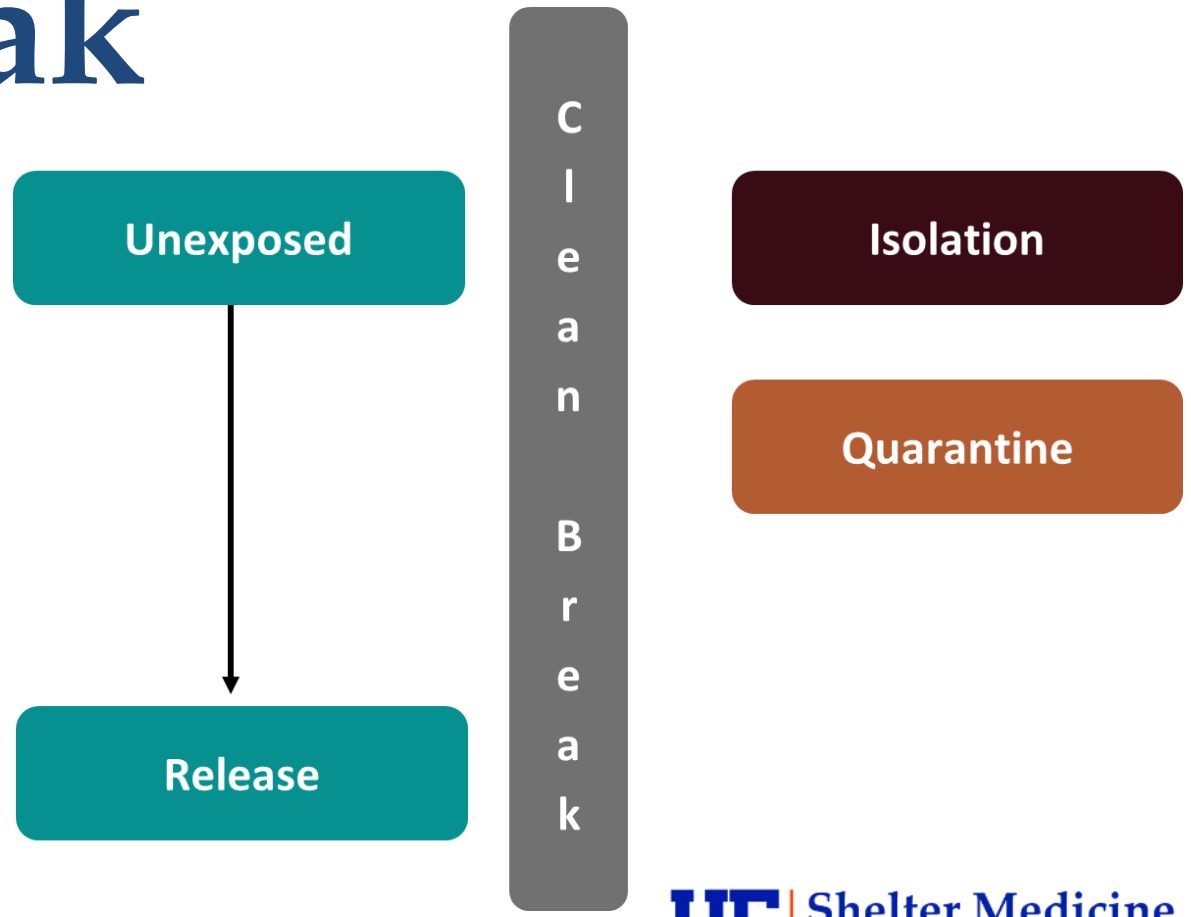
Quarantine of Exposed Animals

- Monitor for clinical signs twice daily
  - Promptly remove sick animals to isolation to reduce infectious dose in environment
  - Restart the quarantine clock after every new clinical case
- Restarts can extend the quarantine time for weeks or months
  - Enormous strain on housing and staffing capacity
  - Extends the response time and prolongs resolution
- Effective quarantines can save lives and increase staff morale

Risk Assessment

- Determine risk of infection for each quarantined animal
- Humane and cost-effective method for quickly moving animals out of quarantine
- 3 strategies
  - Test for infection
  - Test for immunity
  - Age and vaccine status at time of exposure
- Although no risk assessment is 100% accurate, when interpreted appropriately these approaches can predict in most cases which animals are safe to release and which animals are at risk and must stay in quarantine.

The Clean Break



Create a Clean Break

- Protect new animals from exposure
  - Best option: no admission of new animals
  - Better option: separate building for housing new admits
  - Good option: separate ward for new admits
  - Bad option: one end of the general population housing (canine respiratory viruses)
- The cornerstone for stopping further spread of infection
- Biggest challenge for municipal shelters

Intake Diversion Strategies

- Private nonprofit shelters
  - Stop all admissions pending outbreak resolution

- Municipal shelters
  - Divert intake to a partner shelter
  - Stop intake of surrendered pets
  - Restrict intake to minimum legal requirement (injured strays, bite quarantine, dangerous dogs) – “must admits”
  - Use temporary offsite housing for “must admits”
  - Foster homes for “must admits”
  - Transfer puppies and kittens directly to foster or rescue
  - Focus on population management practices for release of “clean” animals

When is the Outbreak Over?

- By convention, the outbreak is declared over when a period of ***twice the maximum incubation time*** has elapsed without new cases