

Not Just “Kennel Cough”!

Canine Infectious Respiratory Disease 101



Your Presenter



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Outline

Causes

- Shelter disease
- Pathogens

Diagnosis

- Why
- When
- How

Management & Prevention

- Operations
- Vaccination

What's your diagnosis?



Canine Infectious Respiratory Disease

CIRD is a complex multi-organism infection!

Viruses

- Adenovirus-2
- Distemper
- Influenza
- Parainfluenza
- Respiratory coronavirus
- Canine herpesvirus
- Canine pneumovirus

Bacteria

- Bordetella bronchiseptica
- Klebsiella pneumoniae
- Mycoplasma
- Pasteurella multocida
- Streptococcus equi zooepidemicus

Why is it so complex?

Preclinical Infections

- Infections before signs of illness

Subclinical Infections

- Infections without signs of illness

Carrier States

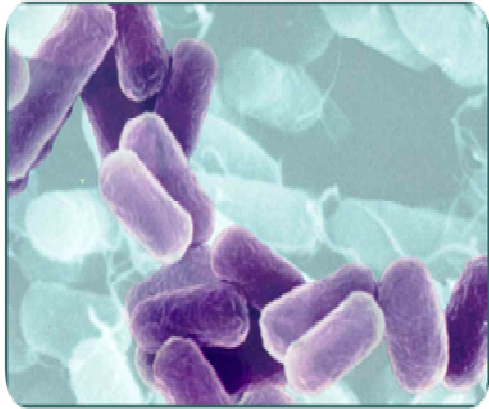
- Chronic infections with or without signs of illness

Shedding Periods

- May peak before signs of illness
- Prolonged duration after recovery

Why is it so complex?

AGENT



- Emerging pathogens
- Aerosol transmission
- Pre/Sub/Chronic shedding

HOST



- Unvaccinated animals
- Non-sterilizing immunity
- Weak or debilitated
- Stress

ENVIRONMENT



- Crowding
- Chronic moisture
- Poor ventilation
- Respiratory irritants
- Environmental enrichment

Common Characteristics

- Viral infections are most common
- Co-infections are common
- Overlapping & non-specific clinical signs



Common Characteristics

Transmission

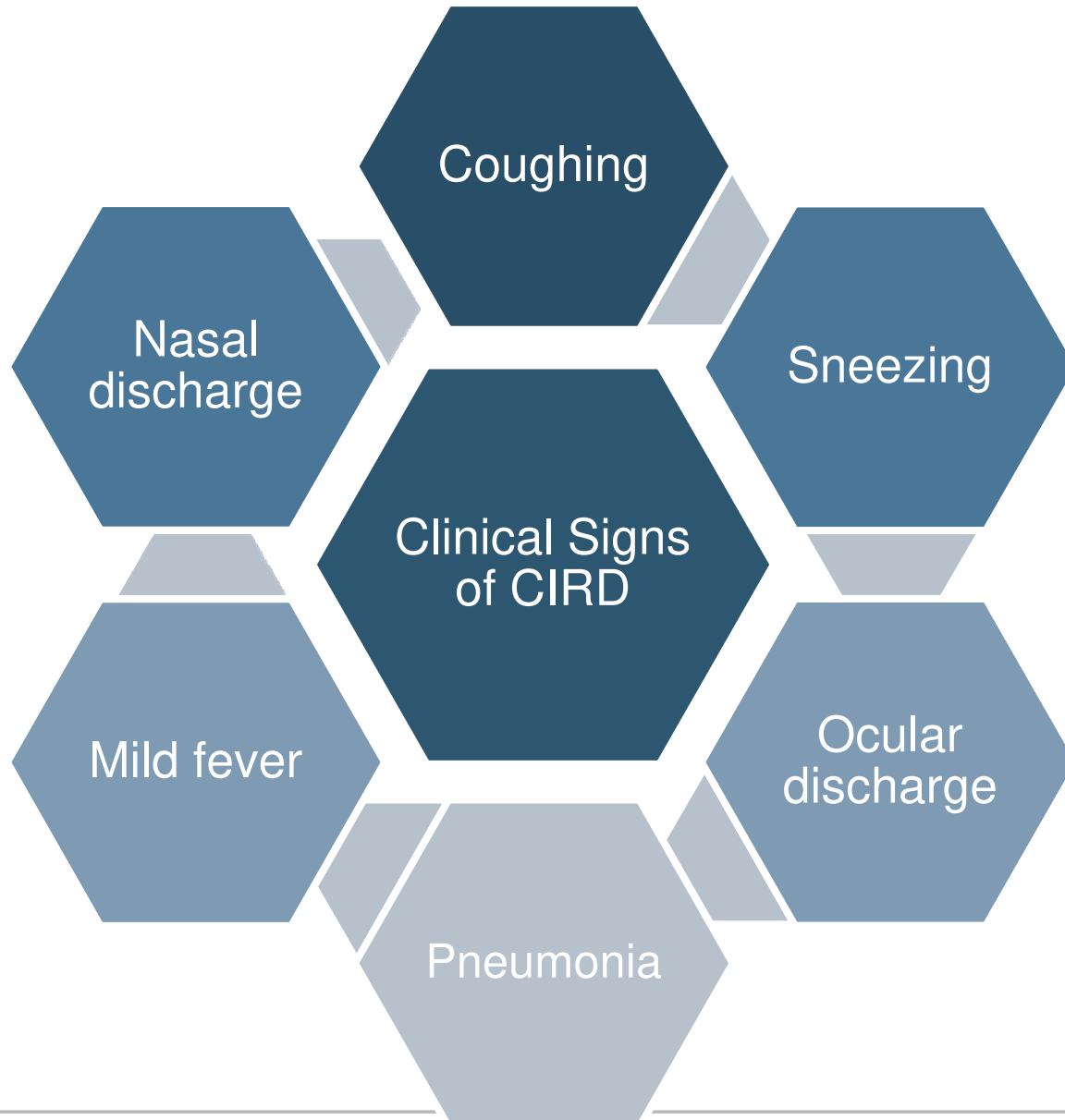
- Aerosol > fomites
- Other routes?
 - Urine (CDV)
 - Feces (CDV, *Strep. zoo.*)

Incubation Periods

- Typical: < 1 week
- Reported: 10-14 days
- CDV: 2-6 weeks



Common Characteristics



Common Characteristics

Distemper

- Multi-system
- Puppies & unvacc. adults
- No response to therapy
- Long incubation period
- Convalescent shedding

Influenza

- Any age
- Any health status
- Any vaccine status
- High morbidity



Common Characteristics



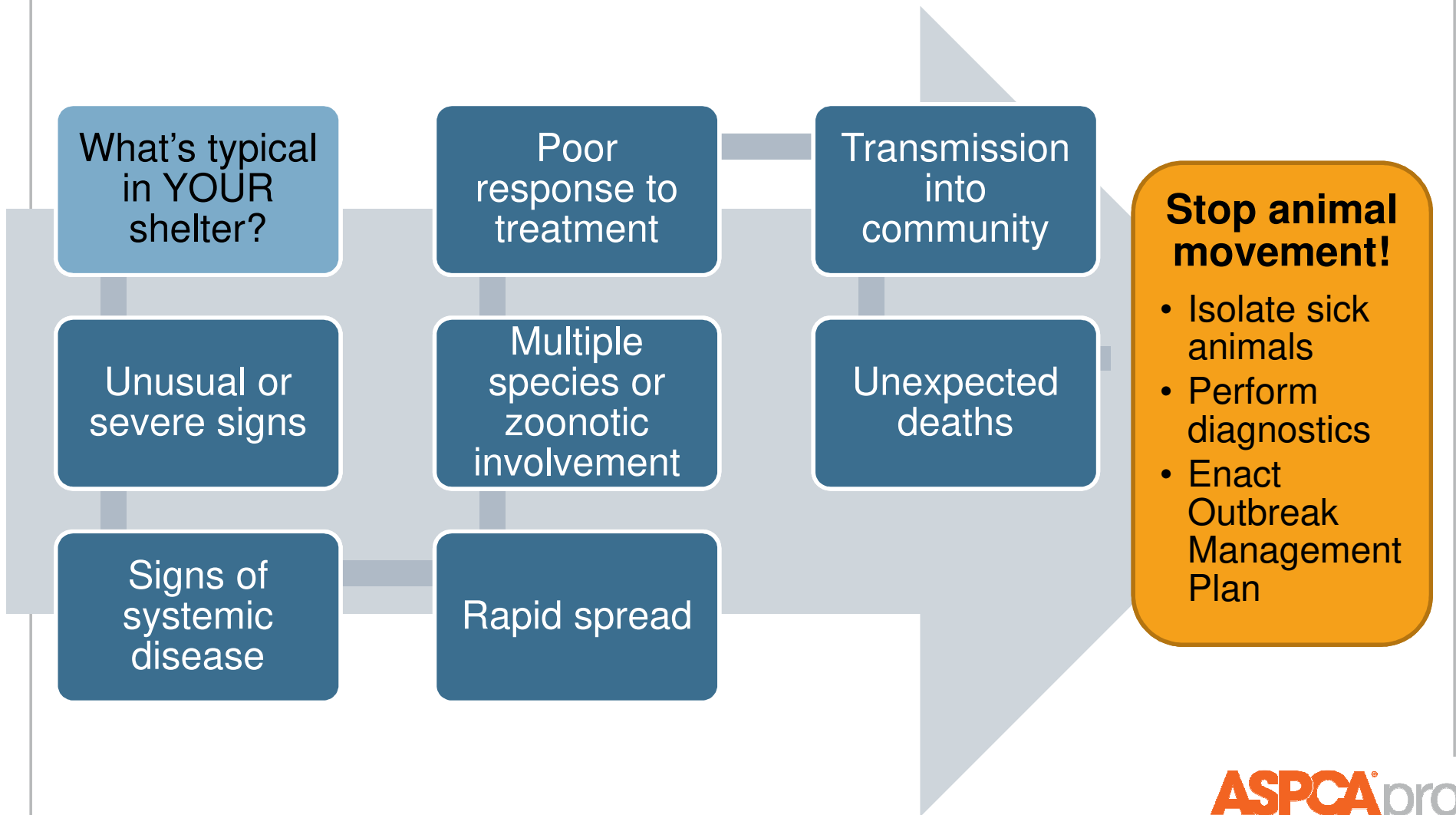
Strep. zoo.

- Severe signs
- Rapid onset
- Hemorrhagic pneumonia
- High mortality

Bordetella

- Chronic infection & shedding if untreated
- Severe in puppies
- Chronic infection
- Small mammals

When should I be *really* concerned?



Stop animal movement!

- Isolate sick animals
- Perform diagnostics
- Enact Outbreak Management Plan


Outbreak Management

- Stop the spread!
- Diagnose & Isolate
- Assess Risk
- Decontaminate
- Communicate
- Document

Diagnosis of CIRDC

Why bother?

- Timely diagnosis impacts health and welfare of population
- Diagnosis directs treatment and management strategies



You cannot use clinical signs alone!

All respiratory pathogens can cause “kennel cough.”

Diagnosis of CIRDC

When do I invest in testing?

High morbidity

Increase in incidence

Severe disease

Complaints

Routine Surveillance



Diagnosis of CIRDC

PCR

- Conjunctival, nasal, oropharyngeal swabs
- Collect during early infection (<7 days)

Culture & Sensitivity

- Bacterial pathogens
- Indicate suspicion of *Strep. zoo.*

Necropsy

- Unexpected deaths
- CIRDC outbreak

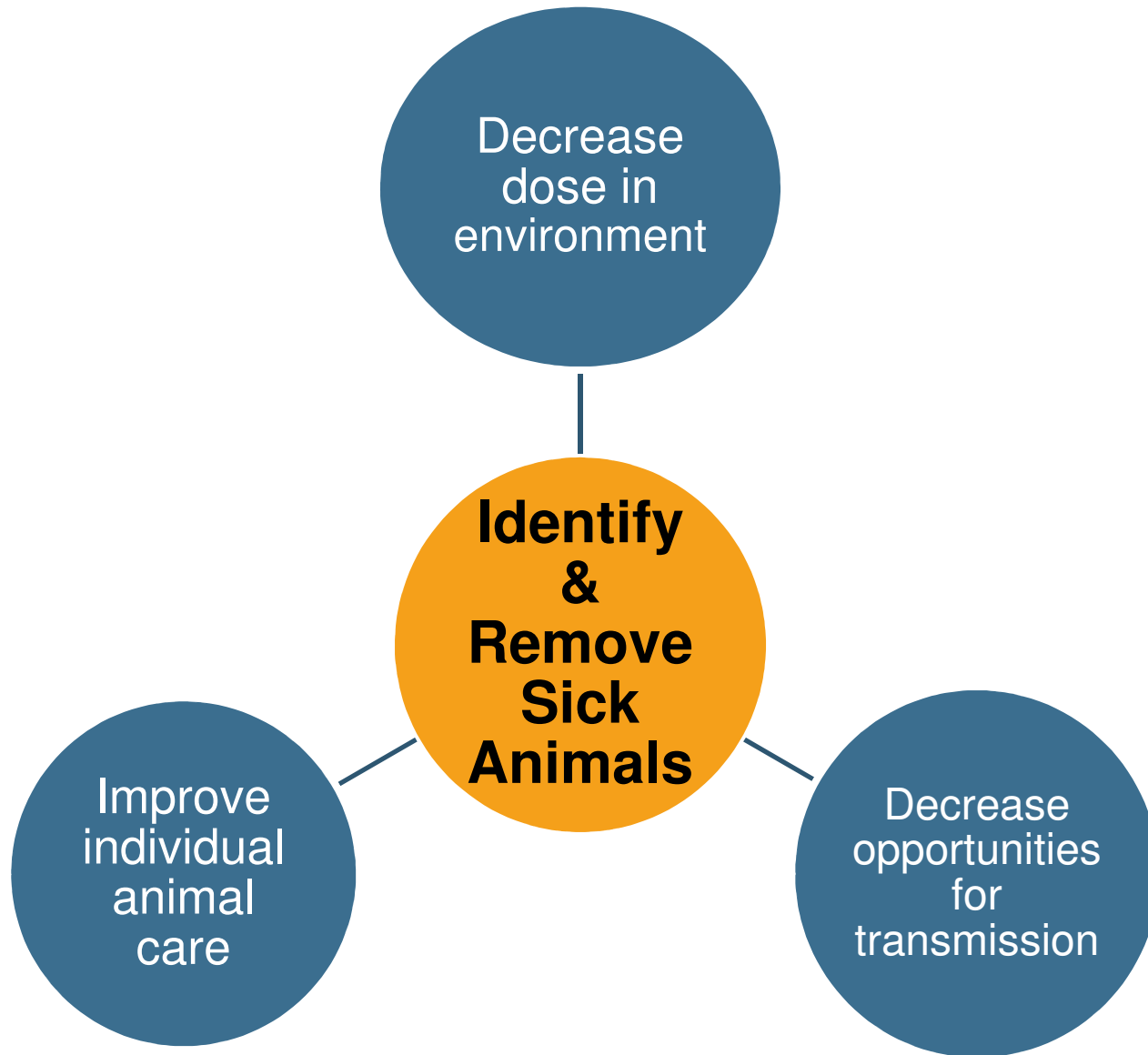


Management & Prevention

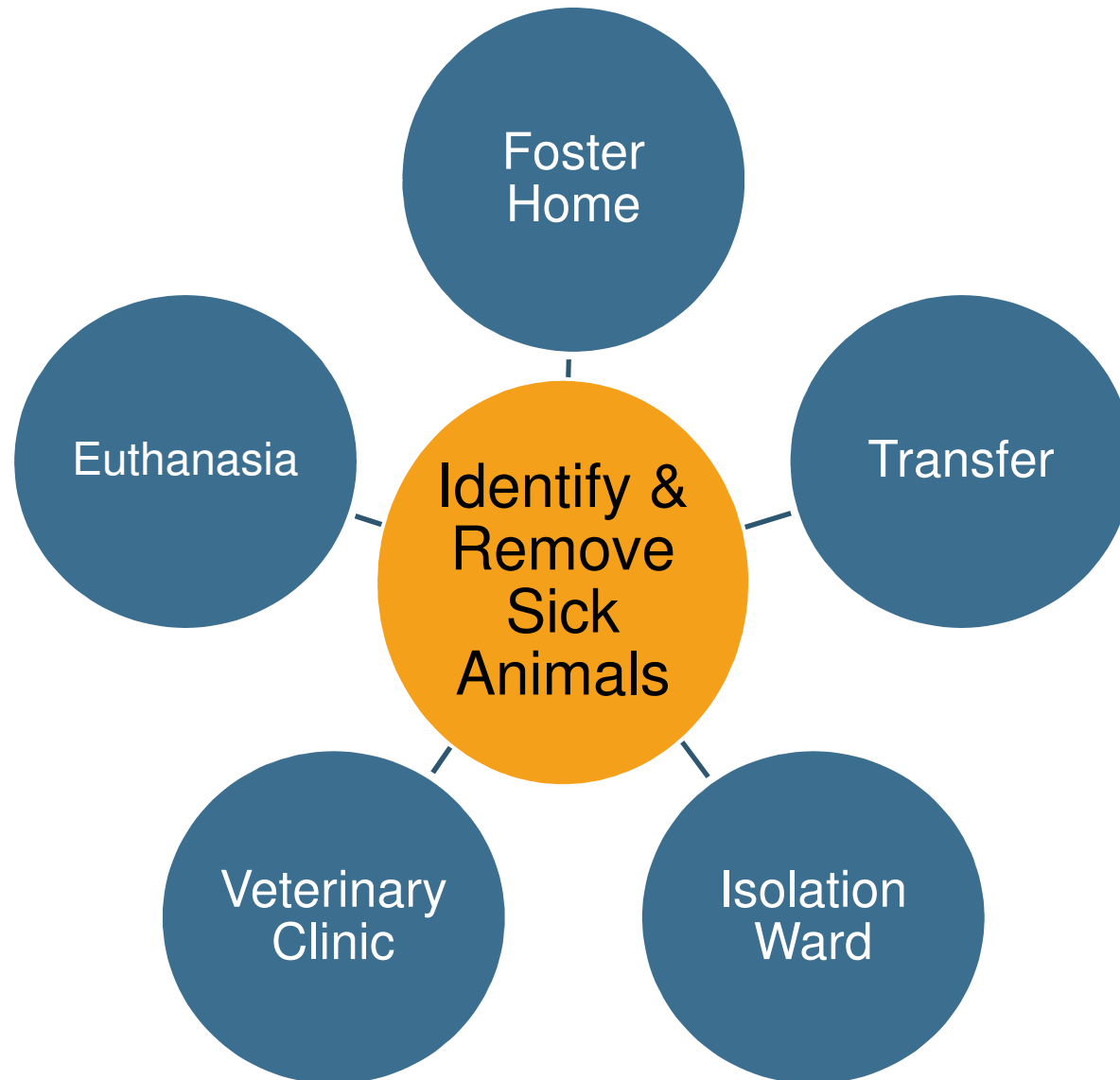
- Identify & remove sick animals
- Identify exposed animals & monitor for illness
- Review SOPs
 - Cleaning & disinfection
 - Animal movement & housing
 - Vaccination
- Proactive community outreach



Management & Prevention

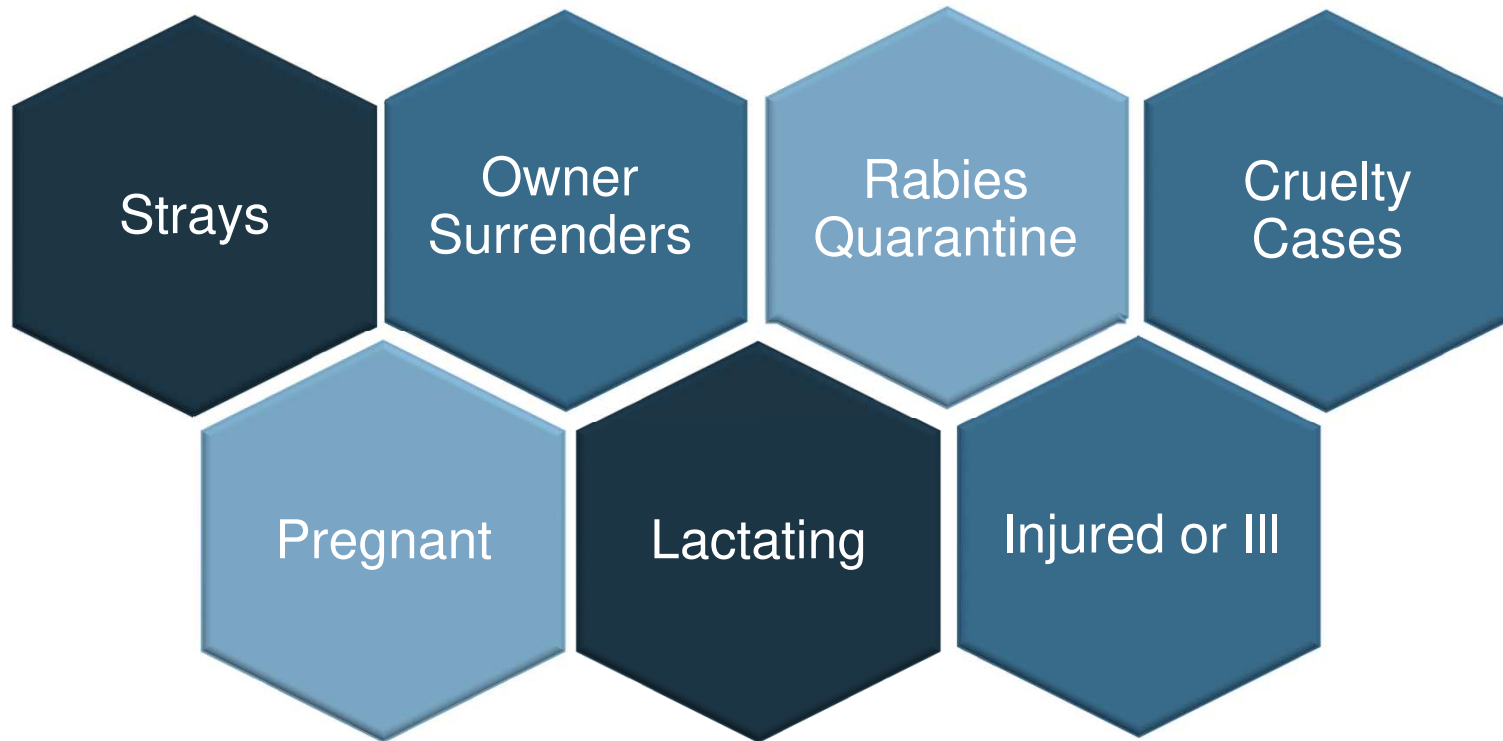


Management & Prevention



Vaccination

Vaccinate all dogs at intake!



- Restricting vaccination is ineffective and can lead to endemic disease
- Vaccination delay of just 1 day can increase risk



AAHA Canine Vaccination Guidelines

Revised 2017

Canine Distemper, Adenovirus-2, Parvovirus

- MLV or Recombinant; +/- Parainfluenza
- Dose at or before intake
- Start at 4 weeks of age
- Puppies: repeat every 2-3 weeks until 18-20 weeks
- Adults: repeat once in 2-3 weeks

Bordetella bronchiseptica + Parainfluenza

- Intranasal; +/- Adenovirus-2
- Dose at intake
- Start at 3-4 weeks of age

Vaccination

Bordetella bronchiseptica

- Intranasal > Oral > Injectable

Intranasal

- Parainfluenza
- Avirulent live
- Single dose
- Begin at 3 weeks
- Duration 12-14 mo.

Oral

- No Parainfluenza
- Avirulent live
- Single dose
- Begin at 8 weeks
- Duration unknown

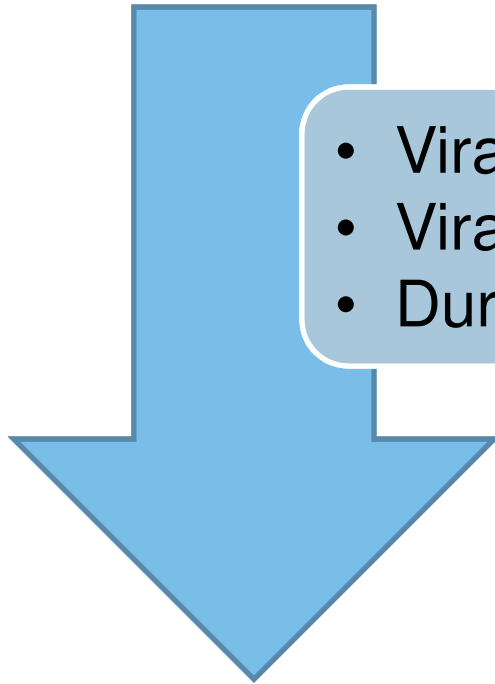
Injectable

- No Parainfluenza
- Killed product
- 2 doses
- Begin at 8 weeks
- Duration unknown

Vaccination

Canine Influenza Virus

- Induces protection after 2 vaccinations
- May still become infected, develop mild signs, shed virulent virus



- Viral replication in lungs
- Viral shedding
- Duration of clinical disease

Vaccination

Consider CIV vaccination when...

- ✓ Long-term housing + suspected or confirmed infections
- ✓ Ability to provide 2 doses, 2-4 weeks apart, prior to exposure
- ✓ Intake from endemic area
- ✓ H3N2 vs. H3N8



Disease Prevention = Population Management



What's Your Diagnosis?

CANINE RESPIRATORY PCR

| Test | Result |
|---------------------------------|-----------------|
| BORDETELLA PCR | NEGATIVE |
| CANINE ADENOVIRUS TYPE 2 | NEGATIVE |
| <u>CANINE DISTEMPER VIRUS</u> | <u>POSITIVE</u> |
| CANINE HERPES VIRUS | NEGATIVE |
| K9 PARAINFLUENZA VIRUS 3 | POSITIVE |
| CANINE INFLUENZA PCR | NEGATIVE |
| <u>K9 RESP CORONAVIRUS PCR</u> | <u>POSITIVE</u> |
| H1N1 INFLUENZA RealPCR | NEGATIVE |
| <u>MYCOPLASMA CYNOS PCR</u> | <u>POSITIVE</u> |
| <u>S EQUI ZOOEPIDEMICUS PCR</u> | <u>POSITIVE</u> |



Key Points

Take canine respiratory disease seriously!

Vaccinate all dogs on intake.

Take action to mitigate risk in your shelter.

