Coronavirus (COVID-19) in Veterinary and Animal Group Settings: Protecting People and Animals

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Presentation sponsored by: Virox Animal Health
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Presentation sponsored by:
Financial Disclosure

We have commercial relationships with the below, but do not believe that they will influence our presentation.

- AKC-Canine Health Foundation
- American Animal Hospital Association (AAHA)
- Merck Animal Health
- Virox Animal Health™
- Zoetis
A Few Words...

- Audience includes many different sectors of animal health/group setting
- Different situations across North American/world
  - Varying stages of the pandemic
  - Varying approaches to containment/mitigation
  - Some temporary closing/moving to essential services only...will need to evaluate these issues when reopening
- Our goal: provide options and rationale for making the best choices for your business, staff, animals
Coronavirus (COVID-19)

- SARS-CoV-2
- Rapidly spreading (infection of nose, throat, lungs)
  - China December 2019
  - First case USA (travel-related) January 19, 2020
  - First case Canada (travel-related) January 25, 2020
  - World Health Organization declares the outbreak a pandemic
- Most commonly spread person-to-person
  - Close contact with an infected person (respiratory droplets, saliva)
  - Touching something with the virus on it
- Symptoms (within 14 days of exposure)
  - Fever, cough, difficulty breathing
  - More severe outcomes: aged 65+, immunocompromised, underlying medical conditions
- Strong public health messaging and steps to contain/mitigate
Potential Animal-Related Issues

- Animals as sources of infection?
- Animals as reservoir populations?
- Animals as fomites (become contaminated and spread)?

- Management of pets of affected people
  - Isolation, clinical management, shelter surrenders, kennels

- Impact of social distancing on veterinary clinic and shelter operations
- Impact of illness and self-isolation on clinic/shelter operations

- Supply shortages
Coronaviruses

- Many in veterinary and human medicine
  - FIP
  - Canine enteric
  - Severe acute respiratory syndrome (SARS)
  - Middle East respiratory syndrome (MERS)
- Similarities between SARS-CoV & SARS-CoV-2

Wenjie et al., 2020
SARS-CoV-2 (COVID-19)

- Likely animal origin
- Similarities to SARS?
  - Animal host bats?
  - Intermediate hosts?

Cui et al., 2019
SARS-CoV

Genetically diverse coronaviruses

<table>
<thead>
<tr>
<th>Natural host</th>
<th>Intermediate host</th>
<th>Human host</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCoV-NL63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCoV-229E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCoV-OC43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCoV-HKU1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SARS-CoV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEKS-CoV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SADS-CoV</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Spillover to intermediate hosts
- Mild infection
- Severe infection

Cui et al., 2019
SARS-CoV-2 (COVID-19) ¹

- Uses same receptor as SARS-CoV
- Mutation could enhance ability to bind
- Predicts SARS-CoV-2 can effectively bind to receptor (similar to humans) in
  - Non-human primates
  - Pigs
  - Ferrets
  - Cats

¹Wan, 2020
Dog Tests Positive for SARS-CoV-2

- Hong Kong owner with COVID-19
- Healthy dog: consecutive positive tests
- Early serology (antibody test) negative
- Too early to mount immune response?
- Media reports dog died following release from quarantine
- Infected?
- Infectious?
SARS-CoV-2 on Surfaces

• Can persist on surfaces hours to days\(^1\)
  • Aerosols: 3 hrs
  • Copper: 4 hrs
  • Cardboard: 24 hrs
  • Plastic/steel: 2-3 days

\(^1\)N van Doremalen, 2020
Potential Animal-Related Issues

- Animals as sources of infection?
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- Animals as fomites (become contaminated and spread)?

- Management of pets of affected people
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- Impact of social distancing on veterinary clinic and shelter operations
- Impact of illness and self-isolation on clinic/shelter operations

- Supply shortages
Key Steps: Protect Yourself & Others

- Do these
  - Clean hands frequently: soap and water or hand sanitizer
  - Avoiding touching eyes, nose, mouth with unwashed hands
  - Avoid unnecessary personal contact (shaking hands)
  - Cough or sneeze into your elbow or a tissue
  - Do not share food/drink
  - Avoid contact with people who are sick
  - Clean and disinfect frequently touched surfaces/objects
- If you are sick
  - Fever, cough, or congestion/tightness in the chest
  - Stay at home, contact primary health-care provider
Key Steps: Protecting our Community

- Minimize serious illness and deaths
- Minimize societal disruption
- Personal measures
- Cleaning and disinfecting surfaces
- Social distancing
Animals?

- Extension of personal measures
- If person diagnosed with COVID-19, while ill
  - Avoid close contact with animals
  - Practice good cough/sneeze etiquette
  - Have someone else care for animals
  - Limit animal's contact with other people and animals
- Social distancing with owners
Protecting Staff and Clients

- Owners with confirmed/suspect COVID-19
- Animals from confirmed/suspect COVID-19 households
Resources: You are Not Alone

All resources can be found at https://rescuedisinfectants.com/covid-19/
Multiple Domains to Address in Animal-Person Settings

- Environmental Disinfection
- Hand Hygiene Contact Precautions (PPE)
- Animal/Owner Procedures
- Surveillance
Hand Hygiene and Personal Protective Equipment

- Alcohol-based hand sanitizer or soap and water
  - Reinforce importance
  - Before/after patient contact
  - Esp after owner contact, before eating/drinking, before touching face

- PPE
  - Dedicated clothing (washed at least daily)
  - Disposable/washable gowns
  - Gloves
  - Masks
PPE
OW TO SAFELY REMOVE PERSONAL PROTECTIVE EQUIPMENT (PPE)

**SAMPLE 1**

Here are a variety of ways to safely remove PPE without contaminating your clothing, skin, or mucous membranes with potentially infectious materials. Here is one example: Remove all PPE before exiting the patient room except a respiration and the respirator. Remove the respirator after leaving the patient room and closing the door. Remove PPE in the following sequence:

**GLOVES**

Outside of gloves are contaminated.

- Wash your hands or use an alcohol-based hand sanitizer.
- Use a gloved hand, grasp the palm area of the other gloved hand and pull off first glove.
- Hold removed glove in gloved hand.
- Slide fingers of ungloved hand under remaining glove at wrist and pull off second glove over first glove.
- Discard gloves in a waste container.

**GOGGLES OR FACE SHIELD**

Outside of goggles or face shield are contaminated.

- Wash your hands or use an alcohol-based hand sanitizer.
- Use a gloved hand, grasp the palm area of the other gloved hand and pull off first glove.
- Hold removed glove in gloved hand.
- Slide fingers of ungloved hand under remaining glove at wrist and pull off second glove over first glove.
- Discard gloves in a waste container.

**GOWN**

Gowns and sleeves are contaminated.

- Wash your hands or use an alcohol-based hand sanitizer.
- Untangle gown, taking care that sleeves don't contact your body when reaching for ties.
- Pull gown away from neck and shoulders, brushing inside of gown only.
- Turn gown inside out.
- Fold or roll into a bundle and discard in a waste container.

**MASK OR RESPIRATOR**

Front of mask/respirator is contaminated — **DO NOT TOUCH**!

- Wash your hands or use an alcohol-based hand sanitizer.
- Drop bottom ties or straps of the mask/respirator, then the ties at the top, and remove without touching the front.
- Discard in a waste container.

**WASH HANDS OR USE AN ALCOHOL-BASED HAND SANITIZER IMMEDIATELY AFTER REMOVING ALL PPE**

IF HANDS COME CONTAMINATED AND IMMEDIATELY AFTER REMOVING ALL PPE

**USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION**

- Keep hands away from face
- Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand hygiene

**SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)**

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. **GOWN**
   - Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
   - Fasten in back of neck and waist

2. **MASK OR RESPIRATOR**
   - Secure ties or elastic bands at middle of head and neck
   - Fit flexible band to nose bridge
   - Fit snug to face and below chin
   - Fit-check respirator

3. **GOGGLES OR FACE SHIELD**
   - Place over face and eyes and adjust to fit

4. **GLOVES**
   - Extend to cover wrist of isolation gown
Cleaning & Disinfection

• Must first be clean and dry before disinfected
• Disinfection
  • Product
  • Dilution
  • Contact time
# Disinfection

## TABLE 7. Antimicrobial spectrum of selected disinfectants* (Modified from Linton 1987, Block 2001)

<table>
<thead>
<tr>
<th>Agent</th>
<th>Ethy alcohol isopropyl alcohol</th>
<th>Formaldehyde</th>
<th>Ammonia</th>
<th>Chlorhexidine Chlorhexidine</th>
<th>Hypochlorite Bleach</th>
<th>Hydrogen Peroxide</th>
<th>Phenol</th>
<th>Commercial Ammonium Compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mycoplasmas</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Gram-positive bacteria</td>
<td>++</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
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<tr>
<td>Gram-negative bacteria</td>
<td>++</td>
<td>++</td>
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<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
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<tr>
<td>Pseudomonads</td>
<td>++</td>
<td>++</td>
<td>±</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>±</td>
</tr>
<tr>
<td><strong>Enveloped viruses</strong></td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>++</td>
<td>+</td>
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<tr>
<td>Chlamydia</td>
<td>±</td>
<td>+</td>
<td>+</td>
<td>±</td>
<td>+</td>
<td>+</td>
<td>±</td>
<td>-</td>
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<td>Non-enveloped viruses</td>
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<td>-</td>
<td>++</td>
<td>+</td>
<td>±</td>
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</tr>
<tr>
<td>Fungal spores</td>
<td>±</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>±</td>
<td>-</td>
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<tr>
<td>Acid-fast bacteria</td>
<td>+</td>
<td>++</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>±</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>Bacterial spores</td>
<td>-</td>
<td>+</td>
<td>±</td>
<td>-</td>
<td>++</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Coccidia</td>
<td>-</td>
<td>+</td>
<td>±</td>
<td>-</td>
<td>-</td>
<td>±</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

++ Highly effective; + Effective; ± Limited activity; - No activity

[https://www.wormsandgermsblog.com/resources-pets/](https://www.wormsandgermsblog.com/resources-pets/)
Environmental Cleaning and Disinfection

You’ve got THESE

But don’t forget THESE
Policies, Screening Tools, Patient/Owner Flow

- Personnel illness
- Screening tools
  - Sick patients
  - COVID-19 owners – symptoms, recent international travel
- Social distancing
  - Waiting areas, contact with owners
- Limit contamination of work environment

IDENTIFYING HIGH-RISK PATIENTS:
Questions to Ask When Making Appointments

Species: Canine Feline Other: Age: 
Has the patient...
(Check all boxes that apply.)
☐ Been recently adopted or purchased? Date of acquisition: 
☐ Visited a boarding kennel, dog park, day care facility, or animal shelter in the past week.
☐ Attended a dog/cat show of any kind in the past week?
☐ Traveled to another area or country in the past week?
☐ Been exposed to other animals who are ill?
  o What were their clinical signs? 
☐ Had a multi-drug resistant infection?
  o What kind of infection? Urinary Skin/Ear Bone Not sure
In the past 24 hours, has the patient...
☐ Vomited?
☐ Had three or more loose stools?
☐ Had episodes of bloody diarrhea?

aaha.org/biosecurity
Protecting Staff and Clients

- Owners with confirmed/suspect COVID-19
- Animals from confirmed/suspect COVID-19 households
Precautions for Exposed Animals, COVID-19 Owners

All resources can be found at https://www.cliniciansbrief.com/covid-19-updates
Precautions for Exposed Animals, COVID-19 Owners

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Testing Animals

- SARS-CoV-2 PCR available from multiple labs
- Little indication for routine diagnostic testing

- Testing best reserved for organized surveillance testing of contacts of infected people

- If there’s enough reason to test, it should be assumed the animal is infectious (respiratory PPE)
What About Exposed Animals?

- Bathing?
  - With what?
- Quarantine?
  - When, how long?
Other Related Setting Issues

• Impact of illness and self-isolation on clinic/shelter operations

• Supply shortages
Social Distancing

- Reducing direct human-human contact
- Reducing cross-contamination
- While causing as limited disruption as possible
Social Distancing Cont’d

• Veterinary clinics (and other settings)
  • Close waiting room
    • Drop off admission and/or admissions from vehicles
    • Communicate with owners by phone/computer
  • Screen (travel and resp disease history) owners
  • Telemedicine
  • Cohorting staff groups
  • Electronic payment only
  • Limiting need for signatures (or disinfecting pens)
  • Arranging food/drug delivery
  • Requiring pre-order for any items picked up from the clinic

• Ensuring personnel are social distancing outside of work!
Questions?
Where to Buy Rescue:
Where to Buy Prevail: