FELINE URI: STATE OF THE ART PREVENTION AND TREATMENT

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MADDIE’S SHELTER MEDICINE PROGRAM AT CORNELL UNIVERSITY

2017
I am trying to improve feline respiratory disease protocols. Our LVT created standing orders for our staff to follow, especially there is not a vet in the shelter every day. The respiratory protocol states that if there is clear discharge (ocular and nasal) to isolate and let virus run its course. We have had a nearly impossible time clearing some of these cats: it goes down the pipe until we have cultured herpes, calici, chlamydia, mycoplasma all affected certain animals.

1) What are you doing at the clear URI/early stage? Famciclovir? If so, at what dose and for what duration?

2) Many of these kitties end up on Doxycycline for weeks on end along with ofloxacin eye drops. I was thinking of starting nebulization on these guys. Has anyone done that and are you adding anything (amikacin, baytril, etc)?

3) Is flurbiprofen contraindicated when dealing with the whopping chemosis?

4) What about nose drops? I have a recipe for neo synephrine and amikacin/saline. I made up a 3% amikacin/10% cerenia drops yesterday for some of the really bad ones.

5) The vet who does the surgeries had been seeing some of the medicine cases as well. She said that in cases that were not responsive to doxy, she had done a week of baytril. Is this reasonable?
**URI TREATMENT: JUDICIOUS USE OF ANTIBIOTICS**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First line antibiotics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Doxycycline</strong></td>
<td>5mg/kg PO q12 or 10 mg/kg PO q24h</td>
<td>Effective against CIRD associated B bronchiseptica or Mycoplasma spp. Much preferred over other options in shelters.</td>
</tr>
<tr>
<td><strong>Minocycline</strong></td>
<td>5mg/kg PO q12h</td>
<td>Similar to doxycycline</td>
</tr>
<tr>
<td><strong>Amoxicillin-clavulanate</strong></td>
<td>11 mg/kg PO q12h</td>
<td>Effective against CIRD caused by secondary commensals, including Pasturella, Staphylococcus, and Streptococcus species. Ineffective against beta-lactamase bacteria, including most B. bronchiseptica isolates. Ineffective against Mycoplasma spp.</td>
</tr>
<tr>
<td><strong>Second line antibiotics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Azithromycin</strong></td>
<td>5-10mg/kg PO q 24 h for 3-7 days (dosing varies greatly between sources)</td>
<td>Primary bacterial pneumonia including Mycoplasma spp. Also treats Neospora pneumonia in puppies.</td>
</tr>
<tr>
<td><strong>Enrofloxacin</strong></td>
<td>5-20mg/kg PO, IM, IV q24h</td>
<td>Effective against most isolates of B. bronchiseptica and Mycoplasma spp</td>
</tr>
<tr>
<td><strong>Marbofloxacin</strong></td>
<td>2.7-5.5 mg/kg PO q 24h</td>
<td>Effective for B. bronchiseptica and Mycoplasma spp and many secondary Gram-positive and Gram negative organisms.</td>
</tr>
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</table>

Sources: (Lappin et al. 2017; Plumb 2015; Sykes 2013)
Viral infection sickens more cats than usual at Moncton shelter

A highly contagious strain of upper respiratory infection hits 30 out of 80 rescue cats at the SPCA

By Kashmala Fida, CBC News  Posted: Nov 10, 2016 9:14 AM AT  |  Last Updated: Nov 16, 2016 5:21 PM AT

Cats at Moncton shelter stricken by respiratory infection

Updated: Virus strikes Prince William Animal Shelter; 83 cats euthanized

Sep 22, 2015 · 6

Science News

Canine influenza transmitted to cats in Midwestern shelter

Date: April 1, 2016
Source: University of Wisconsin-Madison

Summary: It may be called canine influenza, but an expert has confirmed that the virus that sickened a large number of dogs in the Midwest last year has now infected a group of cats in the region.
EPIDEMIOLOGIC TRIANGLE

Host

Disease

Agent

Environment
Host

- Age
- Concurrent conditions
- Stress!

Disease

Agent

- Virulence
- Transmission routes
- Carrier state
- Incubation period
- Shedding
- Vaccines and treatment

Environment

- Capacity
- Housing
- Sanitation
- Ventilation
- Monitoring
- Staff Training
- Communication

Immune status
- Vaccine status
- Nutritional status
- Host
  - Environment
  - Agent

### Stress
- Age
- Concurrent conditions
- Immune status
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- Nutritional status

### Disease
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### Agent

### Environment
URI AGENTS

VIRAL

- **FELINE HERPES VIRUS (FHV-1)**
  - MAJORITY OF ENDEMIC URI
- **FELINE CALICIVIRUS (FCV)**
  - SPORADIC OUTBREAKS
- **INFLUENZA** (RARE)
  - H1N1 (DOGS AND CATS, SWINE ORIGIN)
  - H7N2 (NYC ACC)

BACTERIAL

- **BORDETELLA BRONCHISEPTICA**
  - SPORADIC
- **CHLAMYDOPHILIA FELIS**
  - RARE
- **MYCOPLASMA SPP**
  - SECONDARY MOST COMMONLY
  - STREP ZOO.
AGENTS

INCUBATION
• EXPOSURE → CLINICAL SIGNS
• OFTEN < 1 WEEK
  • BETWEEN 2-14 DAYS

SECRETIONS

SHEDDING
Clinical Signs/Shedding most efficient when clinical signs are present
• Variable length weeks to months

TRANSMISSION
• DIRECT CONTACT: SICK → SUSCEPTIBLE
• DROPLET
• ENVIRONMENTAL CONTAMINATION
  • FOMITES!
TESTING

• RESPIRATORY PANELS
  • PCR TECHNOLOGY – CAN IDENTIFY BASED ON SMALL AMOUNTS OF AGENT
  • OROPHARYNGEAL SWABS
  • COMPLICATED INTERPRETATION

• BENEFITS
  • KNOWLEDGE
  • PERHAPS PROGNOSIS

• WHY NOT DO IT ON EVERYONE?
• HOW DOES IT CHANGE WHAT YOU DO?
TESTING IN SHELTERS: WHEN IS IT WORTH IT?

- UNUSUAL CLINICAL SIGNS: TYPE OR SEVERITY
- UNUSUAL NUMBERS OF CASES
- DISEASE IN VACCINATED, HEALTHY ANIMALS
- UNCLEAR SOURCE
WHICH VACCINES ARE AVAILABLE?

VIRAL

• FELINE HERPES VIRUS (FHV-1)

• FELINE CALICIVIRUS (FCV)

BACTERIAL

• BORDETELLA BRONCHISEPTICA

• CHLAMYDOPHILIA FELIS

• MYCOPLASMA SPP.

• OTHERS
VACCINE PRINCIPLES

• AT INTAKE

• CORRECT PRODUCTS, MODIFIED LIVE AGENTS
  • CATS: FVRCP SQ, IN?

• LIMITATIONS OF KILLED PRODUCTS

• CORRECT HANDLING OF PRODUCTS
  • REFRIGERATION
  • MIXING JUST PRIOR TO USE
  • TRAINED STAFF
VACCINE LIMITATIONS

• VAST MAJORITY OF URI, PROTECTION IS PARTIAL
  • MINIMIZE SIGNS, SEVERITY, SHEDDING

• HERPESVIRUS LATENCY AND REACTIVATION
  • STRESS MEDIATED
  • HOUSING CHANGE INDUCED SHEDDING
  • INTRODUCTION OF NEW CATS
- Age
- Concurrent conditions

**Stress**

- Immune status
- Vaccine status
- Nutritional status

**Disease**

- Virulence
- Transmission routes
- Carrier state
- Incubation period
- Shedding
- Vaccines and treatment

**Agent**

**Environment**

- Capacity
- Housing
- Sanitation
- Ventilation
- Staff training
- Communication
- Monitoring
CAPACITY AND HOUSING
THE SHELTER AS A SYSTEM

Intake → In shelter → Outcomes

- Owner surrender
- Stray intake
- Return to owner or field
- Foster
- Adoption
- Transfer
- Euthanasia
HOW MANY CAN YOU SERVE?
SOME CATS ARE COOL WITH WHATEVER...
CAPACITY FOR CARE = HEALTHY HUMANE CARE

Daily Average Census by Month (Cats)

- 2008
- 2009
- 2010
- 2011
MINIMIZING EXPOSURE = DECREASING LOAD AND EFFECTS OF DISEASE

- SEPARATE BY AGE AND OTHER RISK FACTORS
- MINIMIZE STRESS
- DO NOT EXCEED CAPACITY FOR CARE
  - IMPACTS STRESS
  - IMPACTS CLEANING
  - IMPACTS LOAD OF DISEASE

The more you have, the greater the risk
FOR “NORMAL” CATS, ENTERING AN ANIMAL SHELTER

Is akin to being abducted by aliens

SO if there is any way to keep cats out of the shelter for a humane outcome, choose it when you can.
THE LONGER THEY STAY, THE GREATER THE RISK

Dinnage, JD, Scarlett JM, Richards JR. 2009
Microenvironments: inside the enclosure

Ability to enact normal cat behaviors.
Findings:
Greater than 9 foot of floor space
All large cages were compartmentalized
Limited movement in the first 7 days of stay

Hurley, K. Kicking the Snot out our URI. Maddie’s Institute Webinar 2012
FAQ: ENCLOSURE MINIMUM SIZES?

CAGES

• CAT CAGES: THOSE WITH 5.3 SQ FT WERE MORE STRESSED THAN THOSE WITH 11 SQ FT (KESSLER 1999)

• 2 FT TRIANGULATION (ASV GUIDELINES)

• GREATER THAN 9 SQ FEET**

• ROLE OF DIVIDING COMPARTMENTS
INSTALLING PORTALS
To Order: Read important information below before ordering

Orders will be processed through our Vet School book store: Swaggie. Portals $50.00/each, template $50.00. The bookstore can only take credit card orders over the phone. If you want/need to pay in some other manner please call them to discuss your needs for payment. Their phone number is (530)752–3369. Allow 2–4 weeks for delivery on the portals and template.

Please let us know if you have any problems placing orders: dcwagner@ucdavis.edu

FAQ: COMMUNAL ROOM CAPACITY

• 18 SQ FT PER CAT?

• NUMBER OF LITTERBOXES?

• VERTICAL SPACE

• ANSWER: IT VARIES
  • KEY IS MONITORING AND EVALUATION
MACRO-ENVIRONMENT: ENVIRONMENTAL NEEDS

- SPECIES SEPARATION
  - AUDITORY, VISUAL, OLFACTORY
- MINIMAL OTHER ENVIRONMENTAL NOISES, TRAFFIC PATTERNS, ETC
- TEMPERATURES, AIR QUALITY
- HUMAN STRESSORS
ISOLATION HOUSING SHOULD BE SOME OF YOUR BEST HOUSING
ISOLATION WARD VIEWING
STAFF TRAINING, COMMUNICATION AND MONITORING
CONTROLLING TRANSMISSION: ANIMAL TO ANIMAL

DOGS
• HOW FAR DOES A DOG COUGH?
• SO WHAT DOES THAT MEAN?

CATS
• HOW FAR DOES A CAT SNEEZE?
• SO WHAT DOES THAT MEAN?
**CONTROLLING TRANSMISSION: EARLY ID OF SIGNS**

**DOGS**
- COUGH
- NASAL DISCHARGE
- OCULAR DISCHARGE
- RETCHING
- LETHARGY

**CATS**
- CONJUNCTIVITIS
- SNEEZING
- NASAL DISCHARGE
- LETHARGY
- FEVER
CONTROLLING TRANSMISSION: FOMITE CONTROL

- HAND HYGIENE
  - HAND-WASHING
  - GLOVES
  - HAND SANITIZER
    - >65% ALCOHOL

- PROTECTIVE CLOTHING

- CLEANING OF EQUIPMENT
  - EQUIPMENT SPECIALIZATION
LIMIT AGENT IN THE ENVIRONMENT: CLEANING AND DISINFECTION

- BASICS:
  - EVERYONE PLAYS A ROLE
  - SPOT CLEANING BETTER THAN DAILY DEEP CLEANING (IN GENERAL)
  - CLEAN PRIOR TO DISINFECTION
  - IDENTIFY AND TROUBLESHOOT ALL FOMITES!

- PRODUCTS:
  - ACCELERATED HYDROGEN PEROXIDE (ACCEL)
  - POTASSIUM PEROXYMONOSULFATE (TRIFECTANT)
  - SODIUM HYPOCHLORITE (BLEACH)
    - 1:32 DILUTION, 10 MINUTES
  - QUATS (TRIPLE TWO, ROCAL) FOR CALICIVIRUS
MONITORING

KNOW YOUR CAT

HAPPY

SAD

ANGRY

LIKE

LOVE

HATE

HUNGRY

FULL

SCRATCH MY TUMMY.

I’LL KILL YOU IN YOUR SLEEP.

E=MC^2

NINJA MODE
Monitoring
CAT LANGUAGE

INTERESTED

FRIENDLY

ATTENTIVE

RELAXED

TRUSTING

FRIENDLY, RELAXED

CONTENT

CONFLICTED, CAUTIOUS

PLAYFUL

EXCITED

"THIS IS MINE"

ANXIOUS

PREDATORY

WORRIED

FRIGHTENED

THREATENED

TERRIFIED

SUPER TERRIFIED

IRRITATED

DISGUSTED

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# Reading your cat's “body language”

Cats use different body postures to communicate their emotions. Below are some typical postures you may observe in your cat. When observing your cat, try to get an idea of its usual attitude when alone and in contact with other animals, including people. As cats become more anxious about their surroundings, they will try to avoid contact with threats. Their score may change very quickly depending on the seriousness of the threat. The highest scores usually are seen only when escape is not possible.

<table>
<thead>
<tr>
<th>Score</th>
<th>Activity</th>
<th>Body Postures</th>
<th>Body Postures</th>
<th>Head Postures</th>
<th>Head Postures</th>
<th>Head Postures</th>
<th>Sounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>- sleeping or resting, alert or active, may be playing</td>
<td>- lying on side, on belly or sitting; if standing or moving, back horizontal</td>
<td>- breathing - slow to normal</td>
<td>- legs - bent, hind legs may be laid out; when standing extended</td>
<td>- tail - extended or loosely wrapped; up or loosely down when standing</td>
<td>- head - laid on surface or over body, some movement</td>
<td>- eyes - closed to open, pupils slit to normal size</td>
</tr>
<tr>
<td></td>
<td>- alert</td>
<td>- breathing</td>
<td>- legs</td>
<td>- whiskers</td>
<td>- sound</td>
<td>- none, purr</td>
<td>- eyes</td>
</tr>
<tr>
<td></td>
<td>- active, may be playing</td>
<td>- normal</td>
<td>- bent; when standing extended</td>
<td>- normal to forward</td>
<td>- none or meow</td>
<td>- wide open or pressed together, pupils normal to partially dilated</td>
<td>- ears</td>
</tr>
<tr>
<td></td>
<td>- resting, awake or actively exploring</td>
<td>- on body or curved back; up or tense downwards when standing; may be twitching</td>
<td>- whiskers</td>
<td>- normal to forward</td>
<td>- none, meow, or plaintive meow</td>
<td>- eyes</td>
<td>- pressed to body, little or no movement</td>
</tr>
<tr>
<td></td>
<td>- lying on belly or sitting; if standing or moving the back is horizontal</td>
<td>- bent</td>
<td>- ears</td>
<td>- pressed to body, little or no movement</td>
<td>- eyes</td>
<td>- wide open or pressed together, pupils normal to partially dilated</td>
<td>- ears</td>
</tr>
<tr>
<td>2</td>
<td>- alert</td>
<td>- breathing</td>
<td>- legs</td>
<td>- whiskers</td>
<td>- sound</td>
<td>- none, meow, or plaintive meow</td>
<td>- eyes</td>
</tr>
<tr>
<td>3</td>
<td>- tense</td>
<td>- normal</td>
<td>- bent, hind legs bent and front legs extended when standing</td>
<td>- whiskers</td>
<td>- sound</td>
<td>- none, meow, or plaintive meow</td>
<td>- eyes</td>
</tr>
<tr>
<td></td>
<td>- activity or alert, may be actively exploring, trying to escape</td>
<td>- breathing</td>
<td>- pressed to body, little or no movement</td>
<td>- normal to forward</td>
<td>- sound</td>
<td>- none, meow, or plaintive meow</td>
<td>- eyes</td>
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<tr>
<td></td>
<td>- lying on belly or sitting; if standing or moving the back of the body is lower than the front (“slinking”)</td>
<td>- pressed to body, little or no movement</td>
<td>- whiskers</td>
<td>- normal to forward</td>
<td>- sound</td>
<td>- none, meow, or plaintive meow</td>
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<td>- close to body; tense downwards or curled forward, may be twitching when standing.</td>
<td>- pressed to body, little or no movement</td>
<td>- whiskers</td>
<td>- normal to forward</td>
<td>- sound</td>
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Behavioral Signs of Stress in Cats

- Vocalizing
- Twitching Tail
- Piloerection
- Flicking Ears
- Aggression
- Escape Attempts
- Hiding
- Hyper-Vigilance
- Dilated Pupils
- Muscle Tension
- Panting
- Salivation

Available at pawsintraining.com
ALL THE SAME THINGS APPLY TO CATS IN URI WARD

STRESSORS

• AUDITORY
• VISUAL
• OLFACTORY
• PHYSICAL
• TACTILE
PLAY AND ENRICHMENT

• HUMAN INTERACTIONS TAILORED TO PERSONALITY OF THE CAT
  • SHY CATS
  • PLAYFUL CATS
• ENRICHING SMELLS
• BUBBLES, TOYS, CATNIP
• QUIET TIMES
• NATURAL LIGHT CYCLES
• MUSIC, VOICES RADIO
• ISOLATION PROTOCOLS AND PEOPLE
DAILY ROUNDS
NOTE: THIS IS NOT THE SAME AS MEDICAL ROUNDS, INVENTORY, OR A STAFF MEETING

• TEAM APPROACH TO PROBLEM SOLVING WHERE THE INDIVIDUAL CARE MEETS POPULATION MANAGEMENT
• MONITORING
• COMMUNICATION
DAILY ROUNDS: THE PLAYERS

Medical mgt

Behavioral mgt

Others?

Operations

Foster
DAILY ROUNDS: THE SKINNY

• PHYSICAL WALK-THROUGH THE SHELTER WITH A STOP AT EACH CAGE

• EXAMINE AND TAKE ACTION
  • WHO ARE YOU?
  • WHAT CONDITION ARE YOU IN?
  • WHAT DO YOU NEED RIGHT NOW?
  • WHAT IS THE PLAN FOR YOU?
  • WHAT CAN WE DO TODAY TO FACILITATE THAT PLAN?
PATIENT 1

- WHO ARE YOU?
- WHAT CONDITION ARE YOU IN?
- WHAT DO YOU NEED RIGHT NOW?
- WHAT IS THE PLAN FOR YOU?
- WHAT CAN WE DO TODAY TO FACILITATE THAT PLAN?
PATIENT 2

- WHO ARE YOU?
- WHAT CONDITION ARE YOU IN?
- WHAT DO YOU NEED RIGHT NOW?
- WHAT IS THE PLAN FOR YOU?
- WHAT CAN WE DO TODAY TO FACILITATE THAT PLAN?
DAILY ROUNDS HELPFUL HINTS

• SACRED TIME
• EFFICIENT MOVEMENT
• STAY ON TASK
• CREATION OF A TASK LIST/ ACTION ITEMS
• A SYSTEM: COLOR-CODED CARDS, STICKERS
• DESIGNATE A LEADER
• DIVIDE INTO TEAMS FOR VARIOUS BUILDINGS IF YOU MUST
Host

- Age
- Concurrent conditions
- Stress!

Agent

- Virulence
- Transmission routes
- Carrier state
- Incubation period
- Shedding
- Vaccine coverage

Environment

- Immune status
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Capacity
- Housing
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Disease
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THANK YOU!

Flow Chart of a Cat Lady:

1. Start
2. Are you happy?
   - Yes → Get more cats → End
   - No → Get more cats

Diagram: [Flow Chart Image]