



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?

Sources: (Lappin et al. 2017; Plumb 2015; Sykes 2013)

URI TREATMENT: JUDICIOUS USE OF ANTIBIOTICS

Drug	Dose	Comments
First line antibiotics		Uncomplicated CIRD
Doxycycline	5mg/kg PO q12 or 10 mg/kg PO q24h	Effective against CIRD associated B bronchiseptica or Mycoplasma spp. Much preferred over other options in shelters.
Minocycline	5mg/kg PO q12h	Similar to doxycycline
Amoxicillin-clavulanate	11 mg/kg PO q12h	Effective against CIRD caused by secondary commensals, including Pasteurella, Staphylococcus, and Streptococcus species. Ineffective against beta-lactamase bacteria, including most B. bronchiseptica isolates. Ineffective against Mycoplasma spp.
Second line antibiotics		For use in non-responsive or cases progressing to pneumonia. Preferably based on culture and sensitivity of endotracheal wash or bronchoalveolar lavage samples. Culturing nasal swabs not recommended.
Azithromycin	5-10mg/kg PO q 24 h for 3-7 days (dosing varies greatly between sources)	Primary bacterial pneumonia including Mycoplasma spp. Also treats Neospora pneumonia in puppies.
Enrofloxacin	5-20mg/kg PO, IM, IV q24h	Effective against most isolates of B. bronchiseptica and Mycoplasma spp
Marbofloxacin	2.7-5.5 mg/kg PO q 24h	Effective for B. bronchiseptica and Mycoplasma spp and many secondary Gram-positive and Gram negative organisms.



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 16, 2016 9:14 AM AT | Last Updated: Nov 16, 2016 5:21 PM AT

Cats at Moncton shelter stricken by respiratory infection

Stay Connected with CBC News

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

Sep 22, 2015 6



Science News

from research organizations

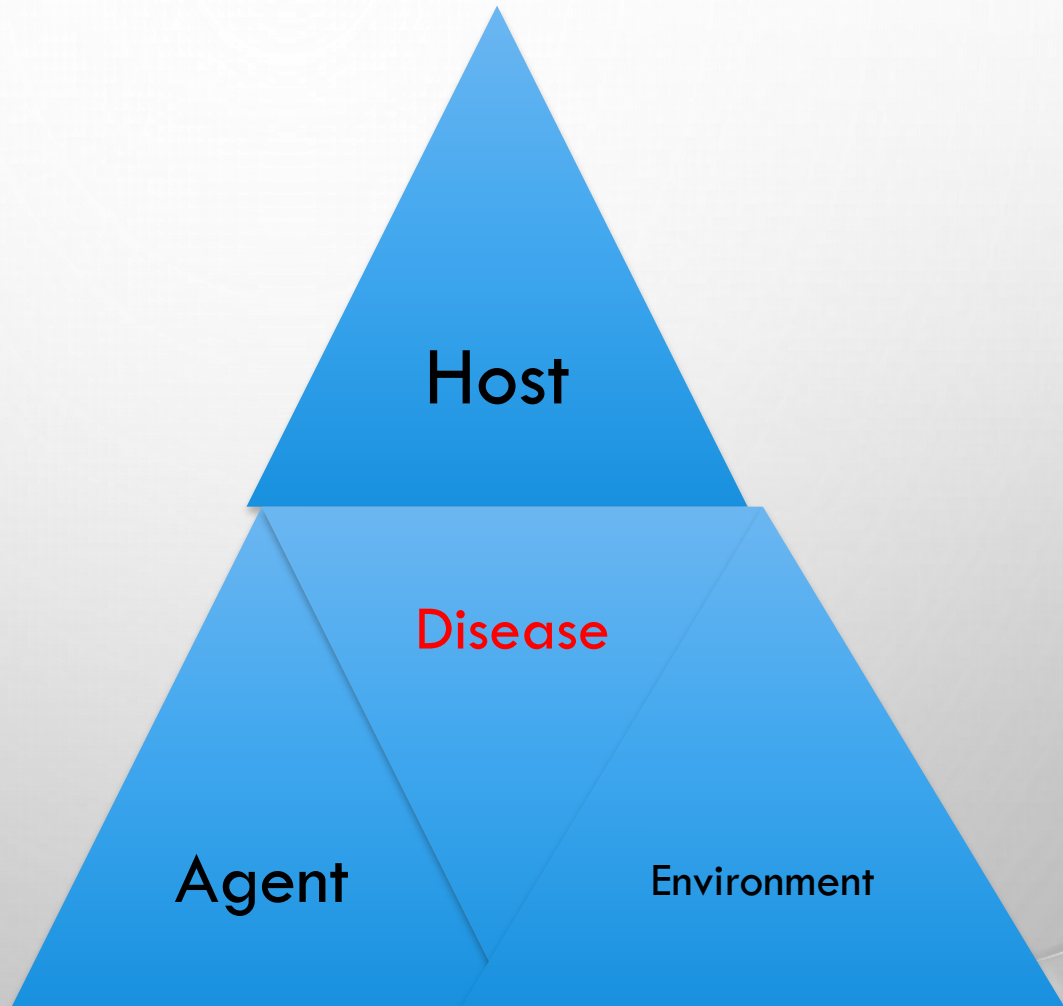
Canine influenza transmitted to cats in Midwestern shelter

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



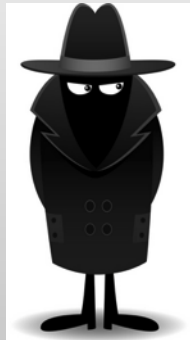
- Age
- Concurrent conditions
- Stress!



Host

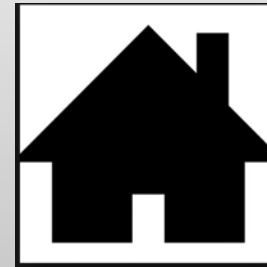
- Immune status
- Vaccine status
- Nutritional status

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



Agent

Disease



Environment

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

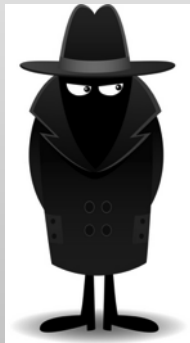
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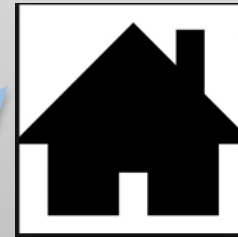
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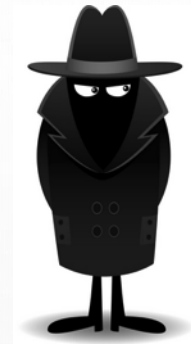
Disease

- **Capacity**
- **Housing**
- Sanitation
- Ventilation
- **Staff training**
- **Communication**
- **Monitoring**



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



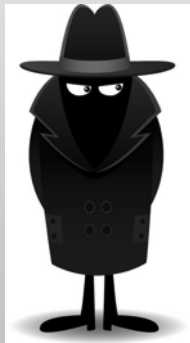
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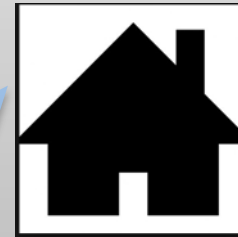
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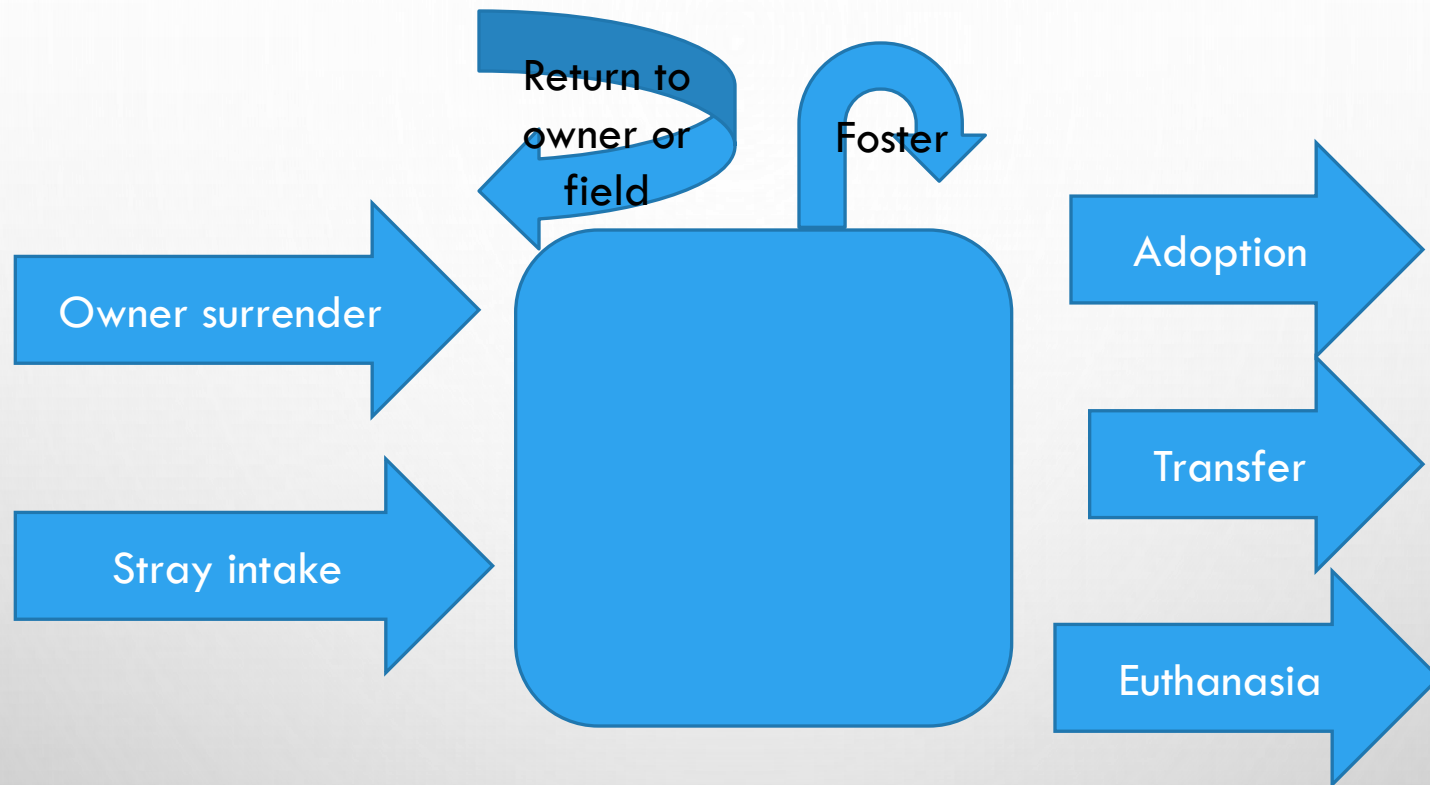


Environment

The background of the slide is a light gray gradient. It is decorated with several realistic water droplets of various sizes, primarily located in the top-left, top-right, and bottom-right corners. The droplets have highlights and shadows, giving them a three-dimensional appearance.

CAPACITY AND HOUSING

THE SHELTER AS A SYSTEM



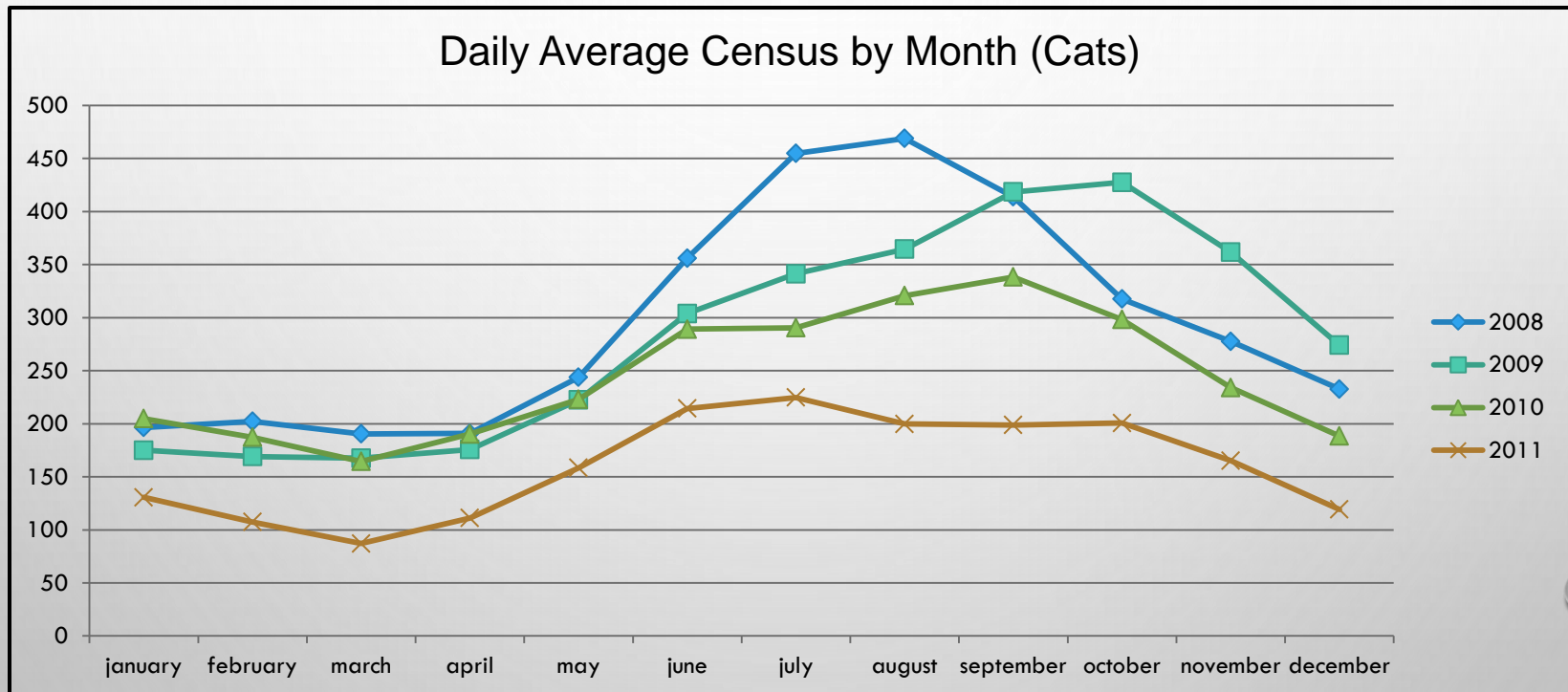
HOW MANY CAN YOU SERVE?



**SOME CATS ARE COOL WITH
WHATEVER. . .**



CAPACITY FOR CARE = HEALTHY HUMANE CARE



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

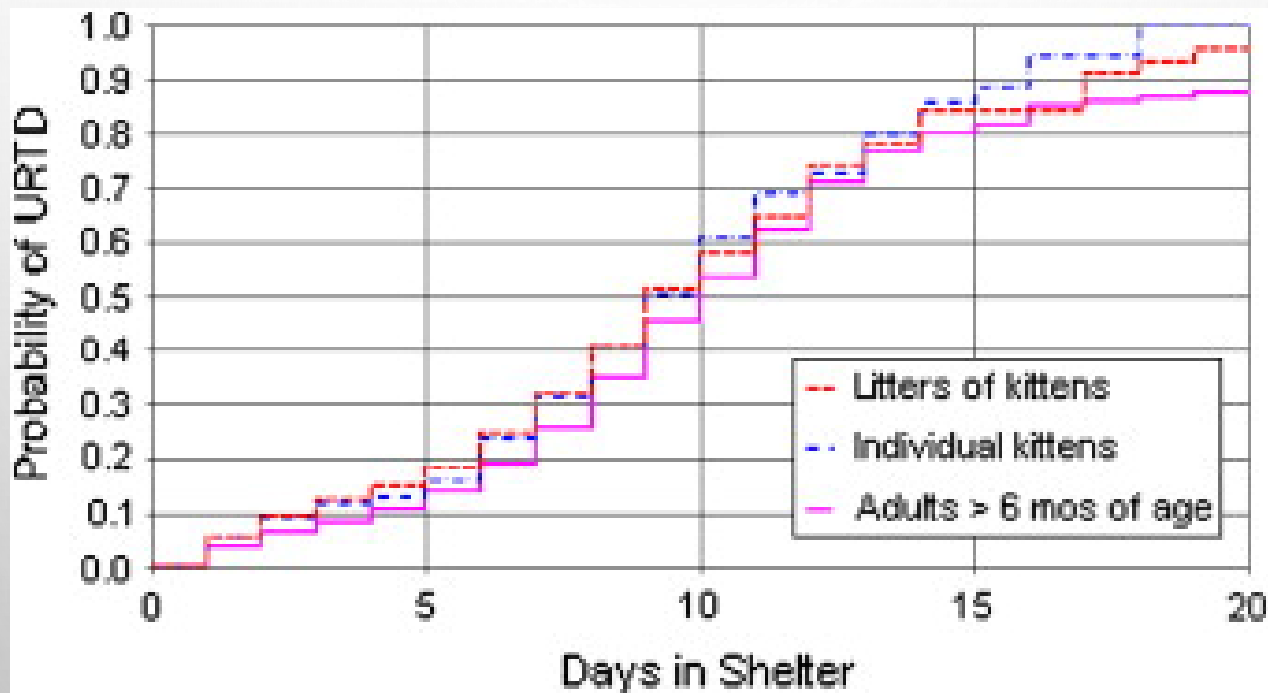
FOR “NORMAL” CATS, ENTERING AN ANIMAL SHELTER



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.

all_URI_CT2	IRR	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
new_cifs_2	.8466349	.1243783	-1.13	0.257	.6348143	1.129134
new_cifs_3	.4896522	.0598454	-5.84	0.000	.3853484	.6221882
mixed	.3275651	.1583542	-2.31	0.021	.1269998	.844875
ln_total_cve	1.179146	.3084261	0.63	0.529	.7061093	1.960057
Movement_1-c	.1891859	.0390889	-8.06	0.000	.1261876	.2836357
Intranasalve	1.463807	.3018267	1.85	0.065	.9771741	2.192782
new_hs_2	1.050590	.4976063	0.10	0.917	.415151	2.650607
new_hs_3	.7965236	.2267483	-0.80	0.424	.4559162	1.391593
new_season_2	.722167	.0468721	-5.02	0.000	.6359025	.8201339
new_season_3	.7874888	.0896001	-2.10	0.036	.6300792	.9842234
new_season_4	.9176195	.1682131	-0.47	0.639	.640656	1.314318
Total_healvs	(exposure)					

Findings:

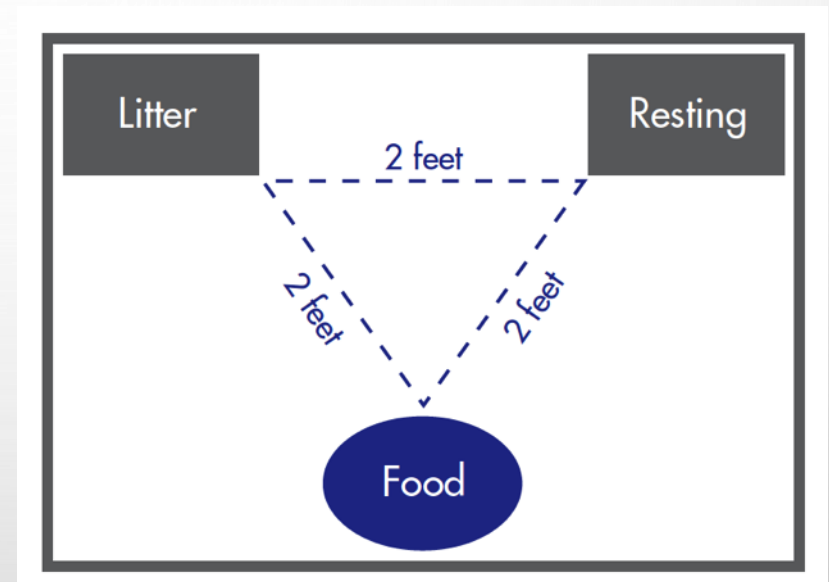
Greater than 9 foot of floor space

All large cages were compartmentalized

Limited movement in the first 7 days of stay

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



UC DAVIS MANUFACTURED 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



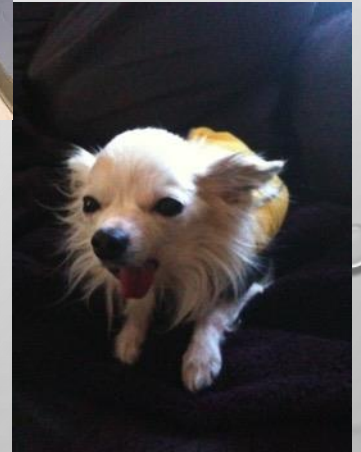
FAQ: COMMUNAL ROOM CAPACITY

- 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



The background of the slide is a light gray gradient. In the top-left and bottom-right corners, there are several realistic-looking water droplets of various sizes, some overlapping. The droplets have highlights and shadows, giving them a three-dimensional appearance.

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

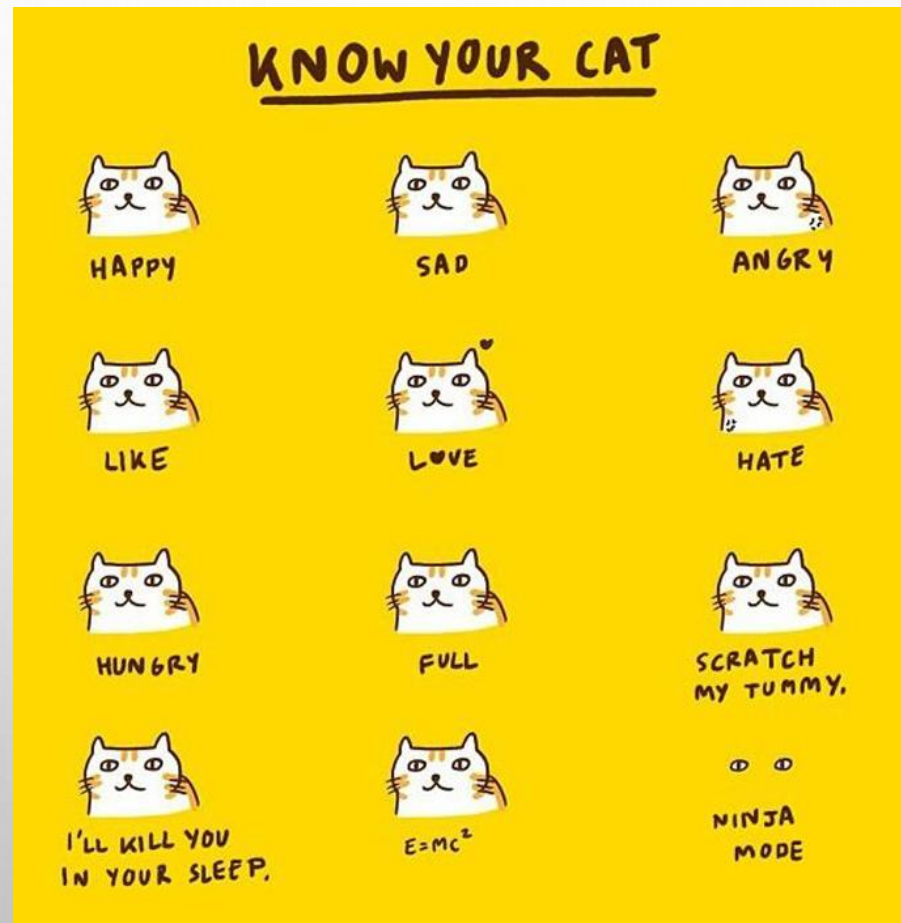
■ BASICS:

- 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



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

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.

Score	Body Postures	Head Postures
1 Relaxed	<p>Activity – sleeping or resting, alert or active, may be playing</p> <p>Body – lying on side, on belly or sitting; if standing or moving, back horizontal</p> <p>Breathing – slow to normal</p> <p>Legs – bent, hind legs may be laid out; when standing extended</p> <p>Tail – extended or loosely wrapped; up or loosely down when standing</p> 	<p>Head – laid on surface or over body, some movement</p> <p>Eyes – closed to open, pupils slit to normal size</p> <p>Ears – normal to forward</p> <p>Whiskers – normal to forward</p> <p>Sounds – none, purr</p> 
2 Alert	<p>Activity – resting, awake or actively exploring</p> <p>Body – lying on belly or sitting; if standing or moving the back is horizontal</p> <p>Breathing – normal</p> <p>Legs – bent; when standing extended</p> <p>Tail – on body or curved back; up or tense downwards when standing; may be twitching</p> 	<p>Head – over the body, some movement</p> <p>Eyes – open normally, pupils normal</p> <p>Ears – normal or erected to front or back</p> <p>Whiskers – normal to forward</p> <p>Sounds – none or meow</p> 
3 Tense	<p>Activity – resting or alert, may be actively exploring, trying to escape</p> <p>Body – lying on belly or sitting; if standing or moving the back of the body is lower than the front ("slinking")</p> <p>Breathing – normal</p> <p>Legs – bent, hind legs bent and front legs extended when standing</p> <p>Tail – close to body; tense downwards or curled forward, may be twitching when standing.</p> 	<p>Head – over the body or pressed to body, little or no movement</p> <p>Eyes – wide open or pressed together, pupils normal to partially dilated</p> <p>Ears – erected to front or back</p> <p>Whiskers – normal to forward</p> <p>Sounds – none, meow, or plaintive meow</p> 

Behavioral Signs of Stress in Cats

SIGNS OF STRESS IN CATS

- VOCALIZING
- TWITCHING TAIL
- PILOERECTION
- FLICKING EARS
- AGGRESSION
- ESCAPE ATTEMPTS
- HIDING
- HYPER-VIGILANCE
- DILATED PUPILS
- MUSCLE TENSION
- PANTING
- SALIVATION

<p>4 Anxious</p>	<p>Activity – alert, may be actively trying to escape Body – lying on belly or sitting; if standing or moving the back of the body is lower than the front Breathing – normal or fast Legs – under body, bent when standing Tail – close to the body; may be curled forward close to body when standing. The tip may move up and down or side to side.</p>		<p>Head – on the plane of the body, little or no movement Eyes – wide open, pupils dilated Ears – partially flattened Whiskers – normal to forward or back Sounds – none, plaintive meow, growling, yowling</p>	
<p>5 Fearful</p>	<p>Activity – motionless, alert or crawling Body – lying on belly or crouched directly on top of all paws, may be shaking; if standing the whole body is near to the ground, may be shaking Breathing – fast Legs – bent; when standing bent near to surface Tail – close to the body; curled forward close to the body when standing.</p>		<p>Head – near to surface motionless Eyes – fully open, pupils fully dilated Ears – fully flattened Whiskers – back Sounds – none, plaintive meow, growling, yowling</p>	
<p>6 Terrified</p>	<p>Activity – motionless alert Body – crouched directly on top of all paws, shaking. Hair on back and tail bushy. Breathing – fast Legs – stiff or bent to increase apparent size Tail – close to body</p>		<p>Head – lower than the body Eyes – fully opened, pupils fully dilated Ears – fully flattened, back on head Whiskers – back Sounds – none, plaintive meow, growling, yowling, hissing</p>	

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



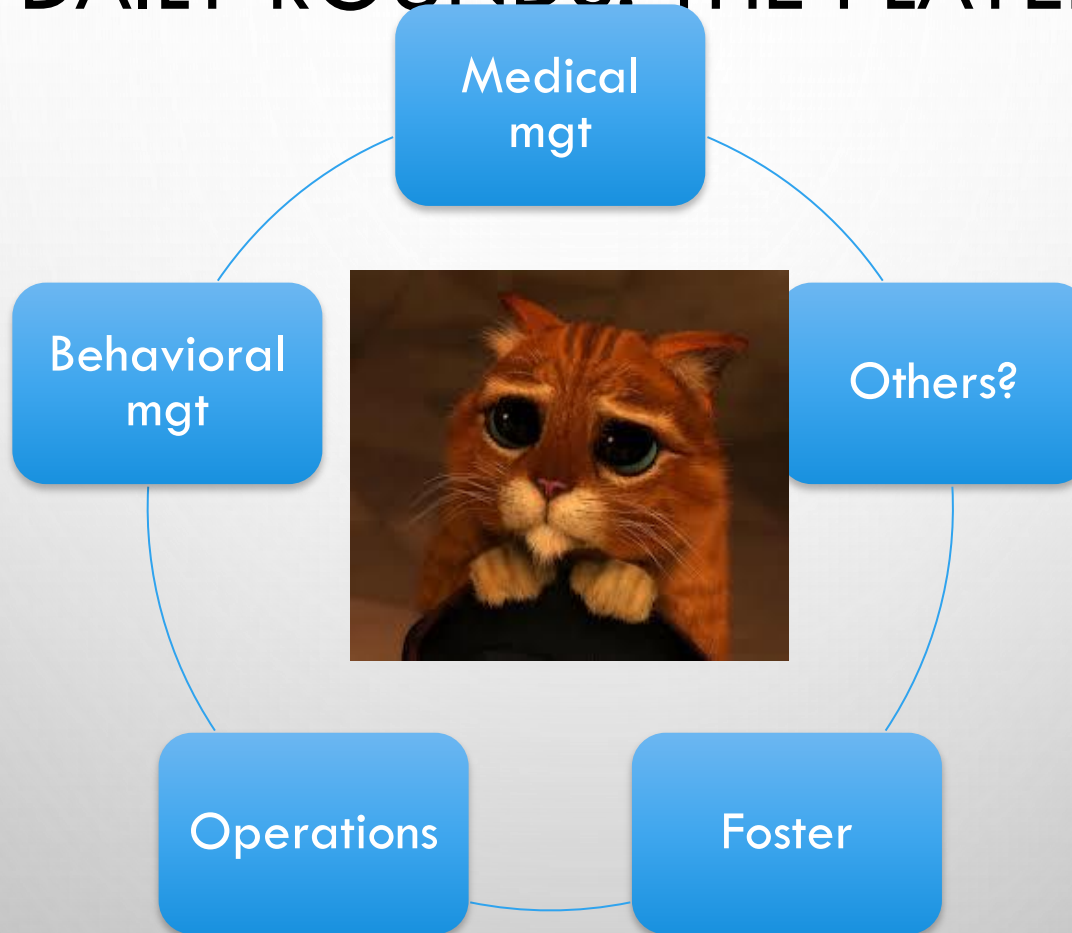
DAILY ROUNDS

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





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



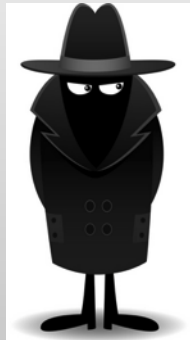
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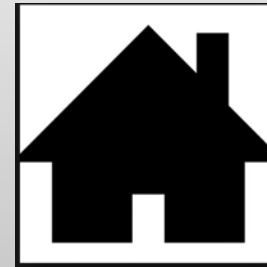
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Disease



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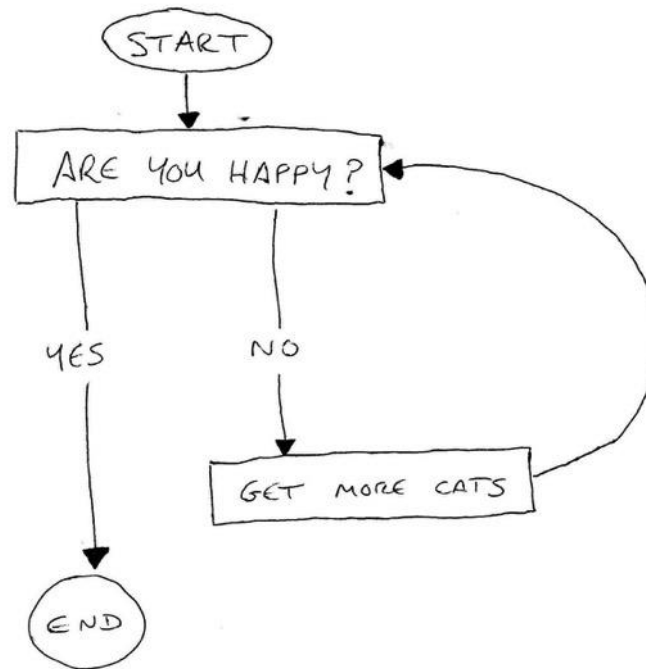
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THANK YOU!



FLOW CHART OF A CAT LADY