

Infection Control Strategies:

Balancing animal needs and
biosecurity

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Across the region

Humane Society criticizes Sacramento's animal shelter

Sacramento's animal shelter doesn't provide enough training to employees, has minimal disease control and animal treatment is poor, according to a report by the Humane Society of the United States.

The Humane Society in the 282-page report released Monday called for a major overhaul in the way the Sacramento facility is run.

The City Council hired the Humane Society to investigate the facility after several residents wrote in with complaints.

The Humane Society report said health care was so bad at the facility that dead animals were found in cages every morning that an inspection team visited.

Employees also do not scan the animals for microchips that may lead them to an owner, and workers have been told not to give tranquilizing drugs to animals before euthanasia because of cost concerns, the report said.

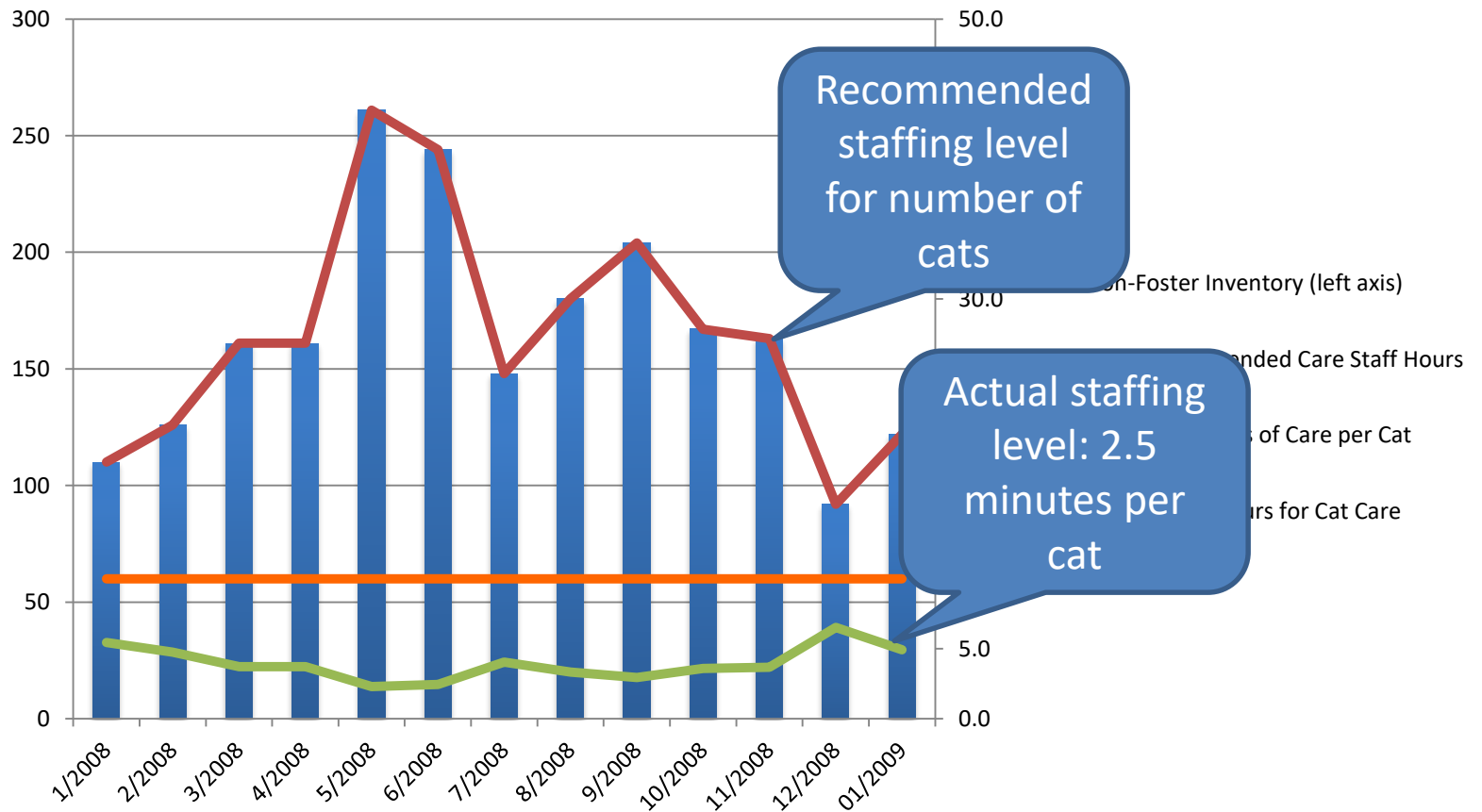
City officials have given no specific changes they will recommend the animal shelter pursue.

— From staff and wire reports.

Minimal disease control...treatment is poor....employees do not scan animals for microchips...

Staffing Math

Staffing for care relative to inventory



The good ol' days

How to Clean a Cat Cage

Cleaning a cat cage is something shelter workers do every day. It's a relatively simple task, but you'll need to take your time and follow the steps in the proper order. Do it hastily and you may do more harm than good. Thoroughly clean each cage at least once a day and do "spot checks" on your cats' accommodations to make sure everything's spotless. A clean cage will minimize the spread of disease and will reflect the level of care that your shelter provides each animal. An improperly disinfected cage invites health problems in cats and may even increase the animals' stress level. Remember also to clean walls, windowsills, and especially floors at least once daily.



1: Make a Move

Remove the cat from the cage and place her in a clean cage or carrier. Ideally, your shelter should set aside one empty cage for every cat in your care, so that each cat can be transferred from the dirty cage to the clean cage every day. If your shelter houses cats in carriers while cleaning, disinfect the carrier after each use to prevent the spread of disease.

2: Empty the Place

Remove every item from the cage, including food and water dishes, litter pan, blanket, and toys. If newspaper is used to line the cage, dispose of it daily. Wash dishes and pans, soak them in disinfectant according to label directions, then rinse and air-dry each item prior to reusing (or use a dishwasher to accomplish the same task). Blankets should be cleaned daily in a washing machine. Toys should be kept with the same cat throughout his stay, and then disinfected or disposed of afterward.



Animal Sheltering

"HOW TO" SERIES

Plan cleaning and other activities with "life-stage groupings" in mind: Clean the cages of kittens first, adult cats second, and sick or injured cats last. Use a separate set of cleaning equipment for each life-stage group or thoroughly disinfect the items after every step.

HOW TO CLEAN A CAT CAGE *continued*



3: Just Add Water and Spray

Now, disinfect the cage. Read the product label carefully and be sure to dilute disinfectants according to the instructions. (Be especially careful to dilute bleach and thoroughly rinse surfaces after its use because bleach may corrode metal cages, ruin clothing, and even irritate cats' nasal passages and upper airways.) Thoroughly apply the solution to all surfaces of the cage, including the cage door.

4: Give 'em the Brush Off

Use a hard-bristled nylon brush to scrub the floor, walls, and ceiling of each cage. Don't forget to scrub and disinfect the front and back of the cage door, hinges, latches, the top of the cage, and the surfaces between cages. The solution needs time to work its magic, so allow it to stand for the time specified by the manufacturer.



5: Dry and Dry Again

Use a squeegee or paper towel to dry the cage as thoroughly as possible, then wait a few minutes to allow the cage to air-dry completely.



6: Add the Finishing Touches

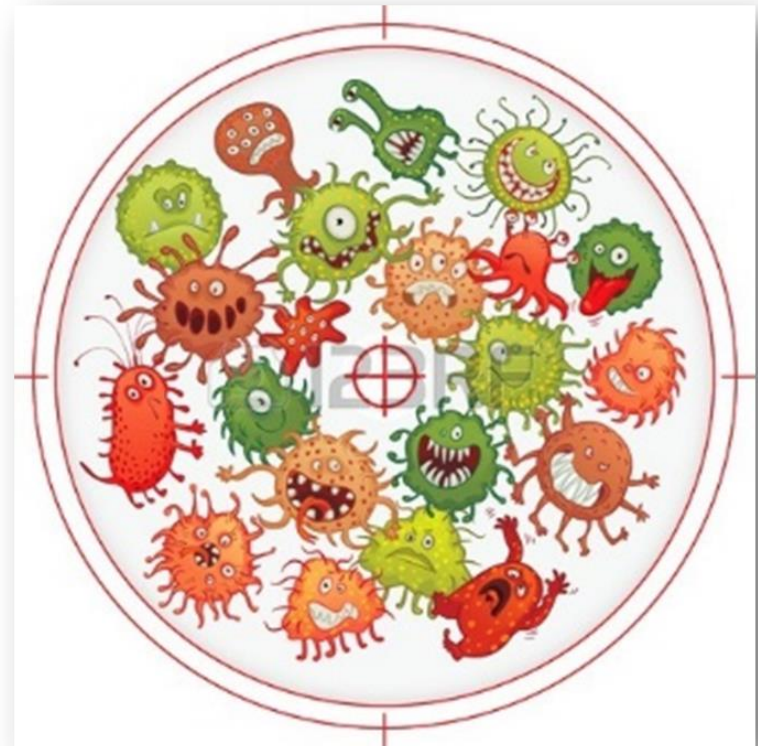
Provide about five or six layers of newspaper, bedding, a clean litter pan, food, fresh water, and a toy.



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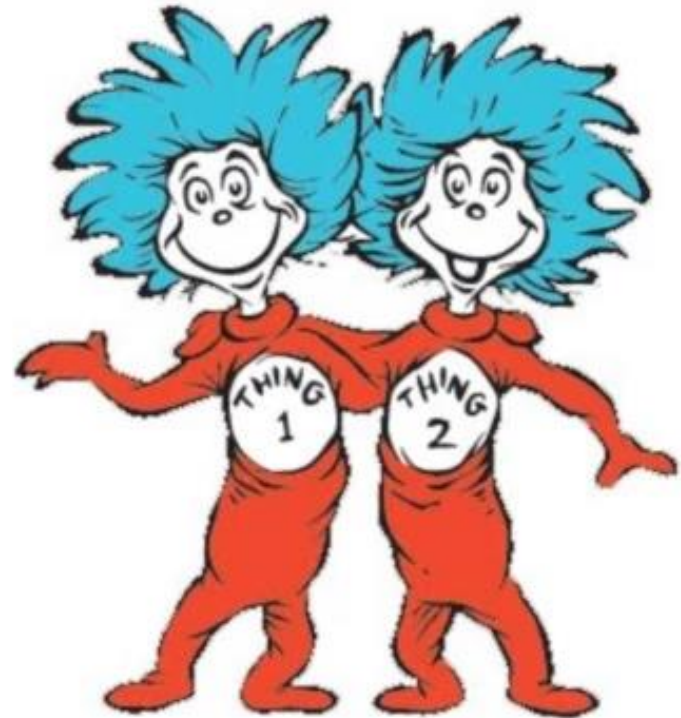
DOSE EFFECT

- Illness happens when **dose** overcomes **immune system**
- **Reduce dose** by reducing amount in environment or spread between animals
- **Increase dose tolerated** by supporting animal immunity and well being
- **Take extra care** when you have a highly virulent bug, the environment is crowded, or everyone is extra stressed



Do a *few* things so you don't have to do *all the other* things

- Right size the population and length of stay
- Ensure high quality housing for all
- Provide friendly interaction that makes sense for the animal
- Vaccinate, monitor, treat and clean strategically
- Relax about most other things!



Environmental and group health risk factors for feline respiratory disease

UC Davis URI Project- Enrollment Questionnaire

17. For a typical healthy cat please estimate the number of moves into a different cage either in the same room or into a different room during the first week of stay? (Do not include moves in and out of the same cage.)

☐ No moves occur. Cat remains in same cage, room/area from intake through day 7.

☐ 1-2 moves

☐ 3-4 moves

☐ > 4 moves

Other (please specify) _____

18. For a typical healthy cat, please estimate how many times it gets moved out and back into its cage for cleaning, socialization, assessments, etc during its first week in the shelter. (Do not include the moves to a new cage. Do not include moves from one side to the other of a double sided cage.)

☐ None

☐ 1-2 moves

☐ 3-4 moves

☐ 5-7 moves

☐ >7 moves

Other (please specify) _____

19. Select enrichments included in cat cages for the first 7 days of shelter stay? (Select all that apply)

☐ Shelf

☐ Soft place to lie on

☐ Toys

☐ Scratching area/post

☐ None of the above

☐ Other

Other (please specify) _____

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UC Davis URI Project- Enrollment Questionnaire

20. Litter box size in inches?(If several different litter box sizes please give size of litter box used in housing area for first week of stay).

Length _____

Width _____

Height _____

21. Do cats in cages have 3 feet distance between litter box and food?

☐ Yes

☐ No

Other (please specify) _____

22. When cats are handled what precautions are taken(on routine basis)to decrease the spread of infectious disease? (Select all that apply)

☐ Individual use gloves changed per individual cat

☐ Individual use clothing changed per individual cat(gown etc)

☐ Clothing(gown etc) used in individual room or area.

☐ Use of hand disinfectant or washing hands after each individual cat is handled

☐ Use of hand disinfectant or washing hands when leaving individual room or area

☐ None

☐ Other

Other (please specify) _____

23. Name and active ingredient of disinfectant(s) used to clean cat cages(Ex: Trifectant, potassium peroxymonosulfate)

24. In general what are your daily cleaning procedures of cages housing cats?

☐ Thorough cleaning, cat is moved to new cage

☐ Thorough cleaning, cat is moved back into same cage

☐ Spot cleaning

☐ Other

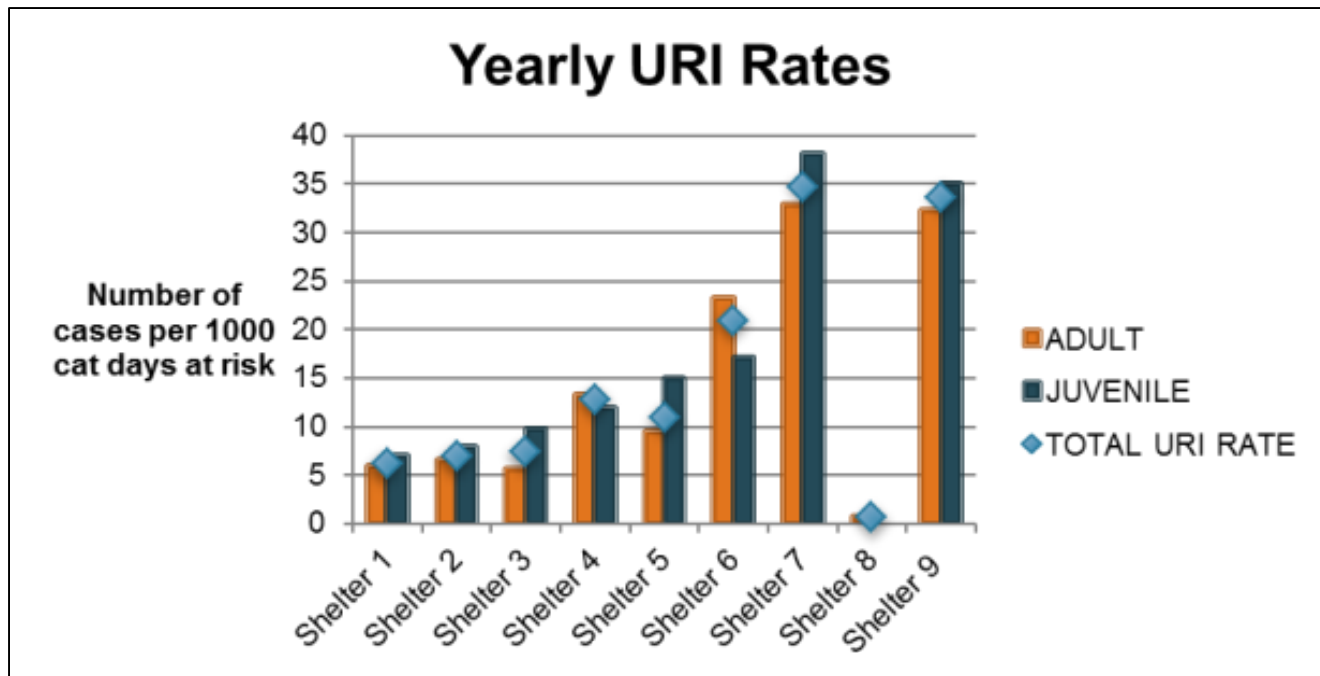
Other (please specify) _____

25. Describe your cleaning protocol for cat cages or email your cleaning protocol.

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49 questions including cage size, material and number, hiding place, handling, infectious disease control, vaccination, feeding, timing of S/N, air quality, natural light, dog exposure

Big differences



From 0.69% to 33% of intake

What mattered most?

Cage size, movement in and out of housing during daily care, and other environmental and population health risk factors for feline upper respiratory disease in nine North American animal shelters

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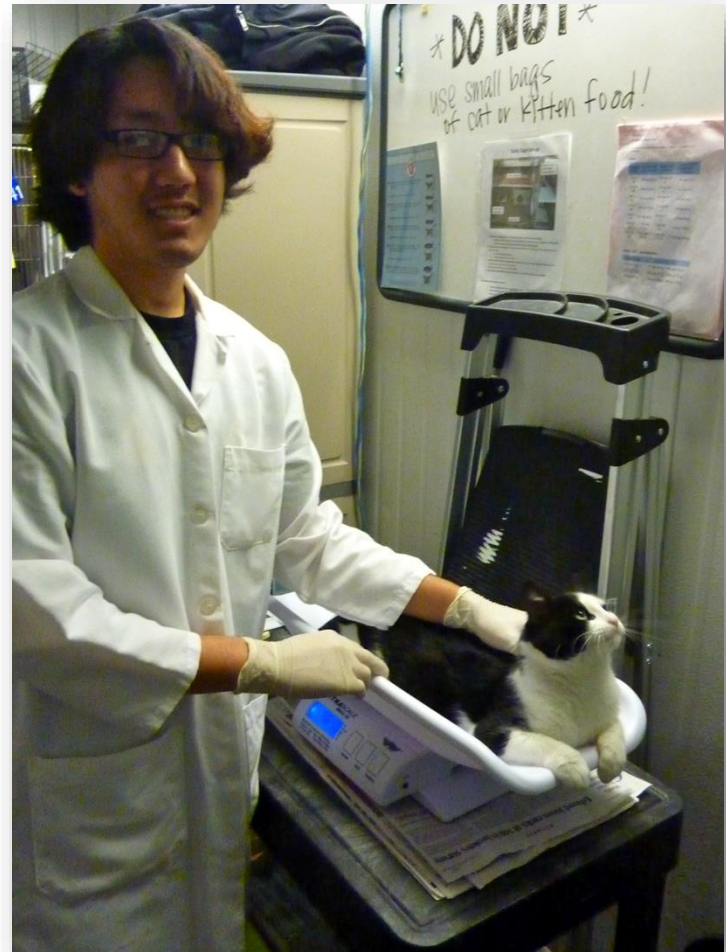
Abstract

Upper respiratory infection (URI) is not an inevitable consequence of sheltering homeless cats. This study documents variation in risk of URI between nine North American shelters; determines whether this reflects variation in pathogen frequency on intake or differences in transmission and expression of disease; and identifies modifiable environmental and group health factors linked to risk for URI. This study demonstrated that although periodic introduction of pathogens into shelter populations may be inevitable, disease resulting from those pathogens is not. Housing and care of cats, particularly during their first week of stay in an animal shelter environment, significantly affects the rate of upper respiratory infection.

More than 8 sq feet, compartmentalized
Limited to no movement, especially in first 7 days

UC Davis Housing Research aka Cage Size Project

- Municipal shelter
- Health adult cats
 - Strays or surrender
 - Handleable
 - Randomly assigned
 - Small 103
 - Large 91



Cage study – Small Cage

- 22" x 28" x 22"
- Hiding Box
- Small litter box
- Food dish
- Water dish
- Scratch pad

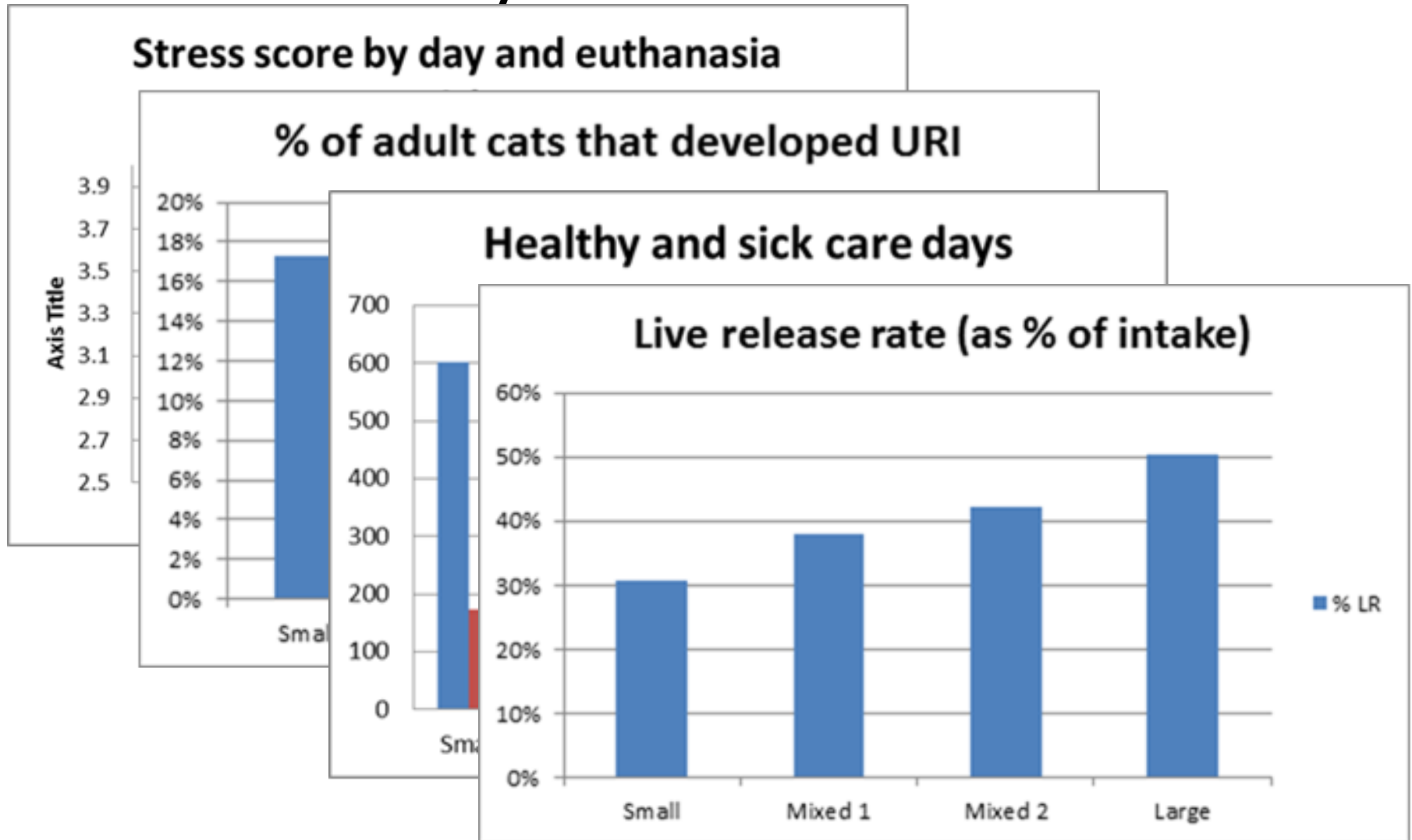


Cage Study - Large Cage

- 48" x 28.5" x 30"
 - 33" wide/15" wide
- Double Compartment
- Two shelves
- Two pass through portals
- Hiding Box
- Small litter box
- Food dish
- Water dish
- Scratch pad

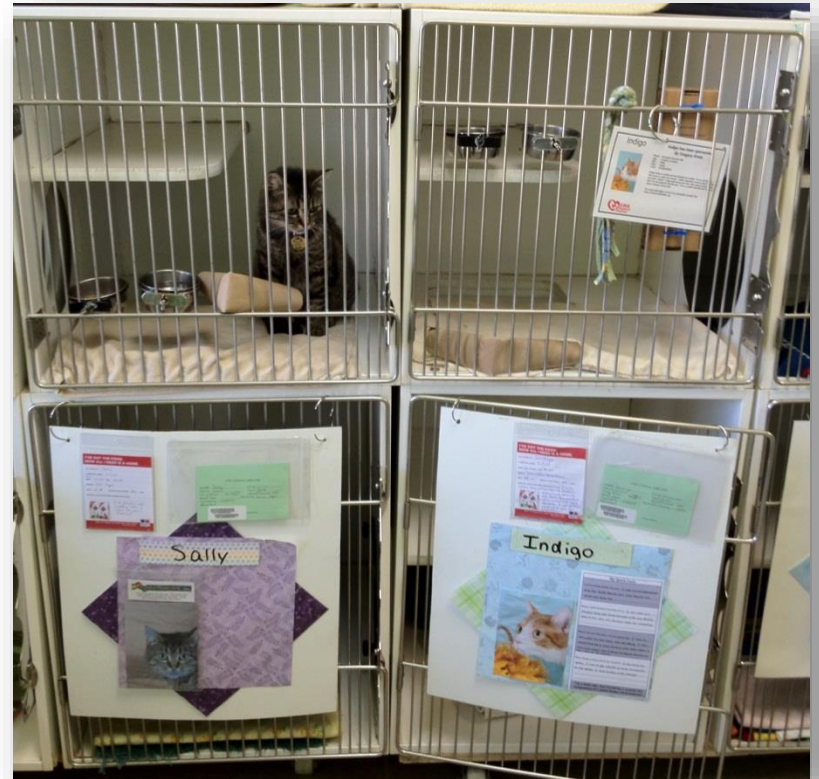


Cage size effect on stress, health, length of stay and live release



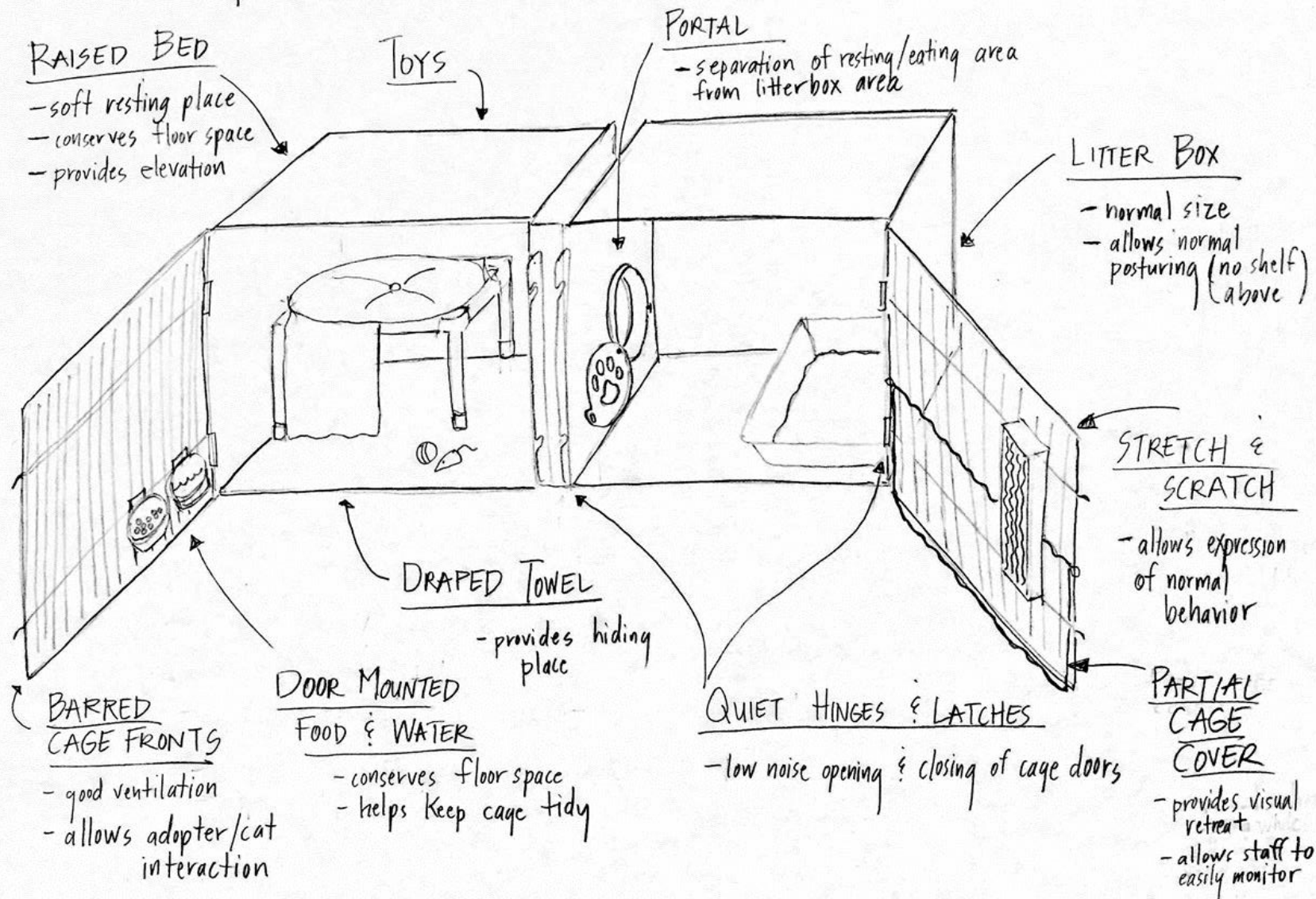
Cat Housing

- Compartmentalized
 - At least 8 ft² per cat

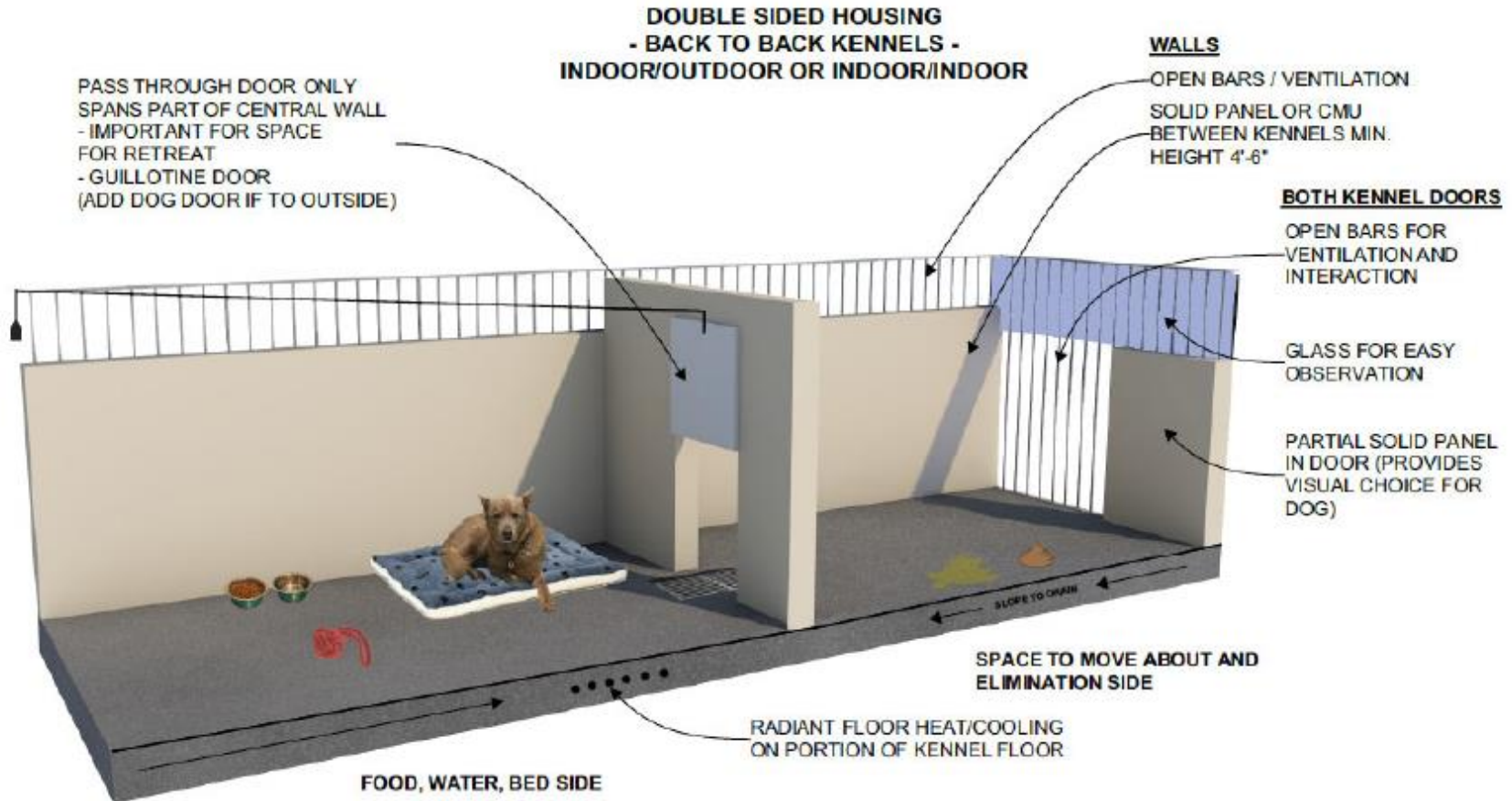




LOW STRESS CAT HOUSING



Low Stress Dog Housing



KENNEL SIZE

WIDTH ~ 4' OR GREATER

- LARGER BREEDS NEED BIGGER KENNELS 5'-6"

- ALLOW PEOPLE ACCESS FOR CARE (7'-6" NOT RECOMMENDED)
 TOTAL LENGTH ~ 8-9' MINIMUM, 10' KENNEL GOOD, 12' KENNEL BETTER

HEIGHT ~6'-8"

- ALLOW PEOPLE ACCESS FOR CARE

FLOORS

- SINGLE DRAIN OR PROPERLY DESIGNED TRENCH DRAIN

- SLOPE TO DRAIN

- RESINOUS EPOXY COATING OR OTHER DURABLE/ CLEANABLE/ DISINFECTABLE FLOOR COVERING (NO SEALED CONCRETE HERE)

The intake exam: getting animals on the right path

- ✓ Trained, detail oriented staff
 - Note, not diagnose
- ✓ Consistent process
- ✓ Adequate space and supplies
- ✓ Real Woods lamp
 - Plug in kind
 - No need to let warm up
- ✓ Documented and flagged for medical



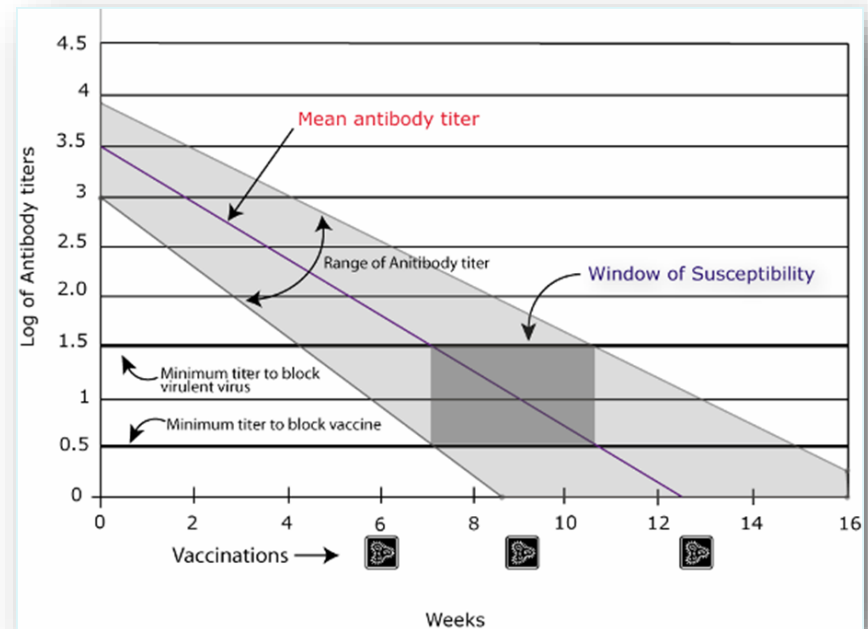
Vaccines: DO

- Vaccinate *immediately*
 - If not sooner!
 - Panleuk protection within 24-72 hours
 - Some distemper immediately
- Vaccinate *everybody*
 - With very few exceptions for severely ill animals, possibly pregnant animals on legal hold or VERY low risk environment
- Start *early*
 - 4-6 weeks old for DHPP/FVRCP
- Repeat *frequently* in youngsters
 - No > than every 2 weeks
 - As long as in high risk environment
- *Continue vaccination* to 5 months of age



Vaccines: DON'T

- Don't vaccinate for diseases that are low risk for in-shelter transmission
 - Except rabies at intake or adoption
- Don't worry too much about adult animals vaccinated > 3-5 days ago
- Don't wait on “boosters” to move juveniles through the system



Biosecurity: DO

- Perform careful exams by trained staff at intake
 - Including good woods lamp exam
- Monitor animal health daily and note concerns
 - Ins, outs and overall demeanor
- Focus on biosecurity between risk groups
 - BEFORE new intakes, youngsters, surgeries
 - AFTER handling sick animals, euthanasia or CLEANING



Biosecurity: Don't

- Don't worry too much about biosecurity between individuals within a population
 - Healthy adult cats
 - Routine URI cats
- Use more caution between kittens, invasive contact (such as medication, examination)



Diagnostic testing: don't?

- Consider not screening for diseases with low prevalence
 - Low prevalence increases false positives
 - Natural history of disease can complicate interpretation
 - FeLV/FIV in healthy cats
- DO test high risk cats, e.g. hoarding seizure, not responding to treatment, bite wounds
- DO have conversations with adopters about veterinary follow up

In typical cat populations with seroprevalence of 1–5%, a majority of positive results reported by most point-of-care test devices would be false-positives. This could result in unnecessary segregation or even euthanasia.

Journal of Veterinary Internal Medicine

ACVIM
American College of Veterinary Internal Medicine
Open Access

Standard Article

J Vet Intern Med 2017;31:521–526

Performance of 4 Point-of-Care Screening Tests for Feline Leukemia Virus and Feline Immunodeficiency Virus

J.K. Levy, P. Cynda Crawford, and S.J. Tucker

Background: More than 3 million cats in the United States are infected with FeLV or FIV. The cornerstone of control is identification and segregation of infected cats.

Hypothesis/Objectives: To compare test performance with well-characterized clinical samples of currently available FeLV antigen/FIV antibody combination test kits.

Animals: Surplus serum and plasma from diagnostic samples submitted by animal shelters, diagnostic laboratories, veterinary clinics, and cat research colonies. None of the cats had been vaccinated against FIV. The final sample set included 146 FeLV+, 154 FeLV–, 94 FIV+, and 97 FIV– samples.

Methods: Prospective, blind comparison to a gold standard: Samples were evaluated in 4 different point-of-care tests by ELISA antigen plate tests (FeLV) and virus isolation (FIV) as the reference standards. All test results were visually read by 2 blinded observers.

Results: Sensitivity and specificity, respectively, for FeLV were SNAP® (100%/100%), WITNESS® (89.0%/95.5%), Anigen® (91.8%/95.5%), and VetScan® (85.6%/85.7%). Sensitivity and specificity for FIV were SNAP® (97.9%/99.0%), WITNESS® (94.7%/100%), Anigen® (96.8%/99.0%), and VetScan® (91.5%/99.0%).

Conclusions and Clinical Importance: The SNAP® test had the best performance for FeLV, but there were no significant differences for FIV. In typical cat populations with seroprevalence of 1–5%, a majority of positive results reported by most point-of-care test devices would be false-positives. This could result in unnecessary segregation or even euthanasia.

Key words: Cats; Diagnosis; PCR; Retrovirus; Virus culture.

Disinfection: DO

- Use a process/product that cleans AND disinfects
 - Broad spectrum including un-enveloped viruses
 - Simple, fast and effective may offset higher \$ cost
 - Accelerated hydrogen peroxide often the best choice
- Clean and disinfect high contact surfaces between uses
 - E.g. exam tables, carriers
 - Get acquainted rooms daily and after known contamination by sick animals



Disinfection: don't

- Don't rotate disinfectant products
- Don't bother with foot baths
- Don't clean housing thoroughly while animals are in residence
 - Puppies are the exception



Feline cage/condo cleaning

- No spraying; single use rag or paper towel with mild detergent or accelerated hydrogen peroxide for wiping up messes
- Leave clean-ish dishes and bedding
- Ok for mildly ill cats too
- Change gloves between risk groups/ between sick cats if different sources/symptoms
 - E.g. multiple transfer sources



Spot cleaning dogs?

- Consider for adult dogs vaccinated > 3-5 days
- No urine or feces on that side of run
- Replace water, soiled bedding
- Replace food if present
- Leave clean-ish bedding in place
- Clean and dry side with urine or feces as needed



Speaking of disinfection, what about ringworm?

Many over-the-counter cleaning products labeled as fungicidal against *Trichophyton mentagrophytes* are effective against *Trichophyton* spp. and *Microsporum canis* when the surface is properly prepared

Mechanically remove debris, including hairs & spores



Wash with a detergent until visibly clean and rinse with water



+/- Follow up with a disinfectant

Most important part of decon

Behavioral care: DO

- Provide housing that meets basic needs of MOST animals
 - Include non-cage, non-group option at least for evaluation
- Monitor daily and note concerns
 - Ins, outs and overall demeanor
- Include multiple sources of behavior info in record
 - Owner/finder report, staff and volunteer daily observations



Behavioral care: don't

- Don't waste precious hours doing formal assessments that may not be predictive
- Dog bottlenecks can impact everyone



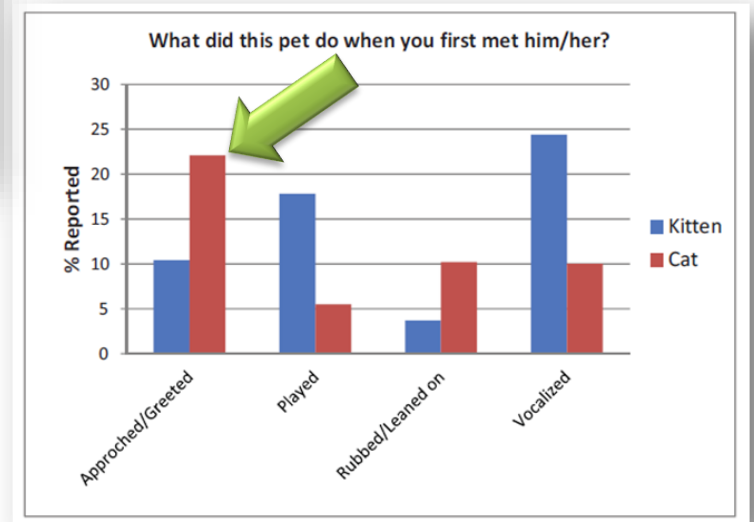
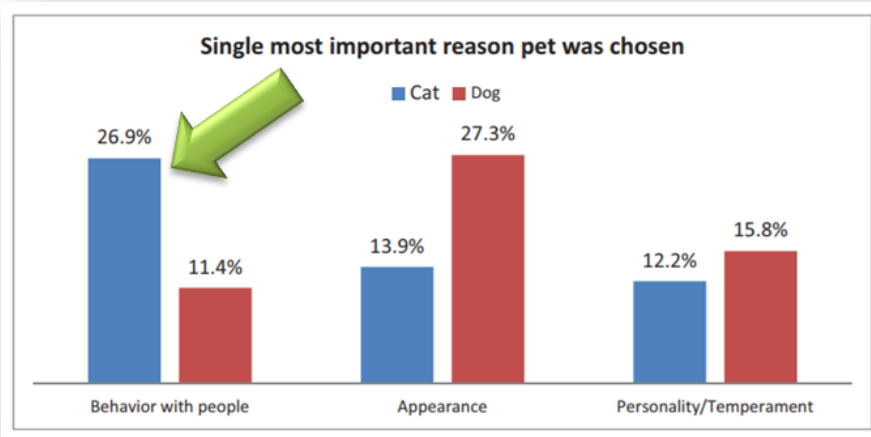
Disease control and behavioral care

- DON'T keep the public away from animals as a means of disease control
- Provide hiding spaces and monitor for rowdiness
- Quiet rooms or foster care for shy cats



CABGS: Cat asses behind glass syndrome

What matters to adopters?

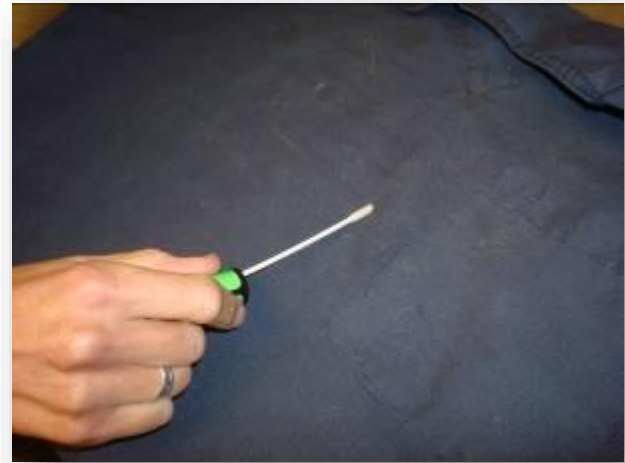


“Behavior” most important factor in cat selection by adopters and
“Approached/greeted” most important behavior for adopters of adult cats

Putting things in perspective



Putting things in perspective



Test/Site:
Limit: 0
RLU: 66899

Test/Site:
Limit: 5000
RLU: 2362640
Result: Fail

35 times as much contamination on scrub top versus hand!

LET PEOPLE PET THE KITTEHS!!!



Playgroups



- Allow for enrichment and assessment
- Shows adopters what they love to see
- May increase certain risks while dramatically reducing others
- Think back to infectious dose

Laundry



- Don't mix dirty and clean
- Don't overload machines
- Remove large particles, clumps of poop
- Hot water if possible
- Bleach (4 oz/load) w/detergent **or**
- Accelerated hydrogen peroxide 1 oz./gallon of washer capacity
- Dry completely

DO:

- Train staff to recognize that something isn't normal
 - System for reporting
- Clear system for follow up evaluations
- Continual Education
 - Feedback system for staff who have found problems



DON'T:

- Don't prevent contact by potential adopters with friendly, healthy animals
- Don't completely block visual contact between animals most of the time
- Don't fret about airborne disease transmission in cats
- Don't worry about using only stainless steel or other perfectly impervious materials



Speaking of spaying...

- Consider spay/neuter/adopt for kittens at *robust* 1.5 pounds
 - Especially if foster care is stretched
 - A home is often better than even a good shelter nursery
 - No scientific basis for 2 lb tradition
 - Weight/week rule is not exact
 - 1.5 lbs often 8 weeks
 - Capitalize on max cuteness and bypass foster in some cases



Check out the
ASV Spay/neuter
guidelines!

Questions?



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