MEDICAL CONSIDERATIONS FOR TRAP-NEUTER-RETURN PROGRAMS

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Community cats

- Have lived successfully outdoors alongside human society for 10,000 years
- Overpopulation leads to nuisance, environmental, public health, cat welfare concerns
- Veterinarians should take a leadership role in humane cat population management
Medical and surgical considerations
Recently, however, I've become a little frustrated with our liaison. It seems to me that feline leukemia (FeLV) and feline AIDS (FIV) viruses should be a mandatory part of the feral cat intake process. Before undertaking the expense of the castration, ear tip and rabies shot (which we subsidize heftily), they should be tested and euthanized if they turn up positive (if placement is not an option).
What about FeLV and FIV?

- Consider most common source of infections
  - FeLV: Infected mother cats to their kittens
  - FIV: Fighting among adult tom cats
  - Neutering reduces the most common source of infection

- Herd health
  - Feral cat infection rates similar to outdoor pet cats
  - Best use of limited resources
    - “Last year we had 35 positive cats and spent $14,000 on testing alone.”
FeLV/FIV: 18,038 pet and feral cats

(Levy 2006 JAVMA)
# Theoretical 2000 community cats

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
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<tbody>
<tr>
<td></td>
<td>No sterilization</td>
<td>Sterilize 1,000</td>
<td>Sterilize 2,000</td>
</tr>
<tr>
<td></td>
<td>No testing</td>
<td>Remove FeLV+</td>
<td>No testing</td>
</tr>
<tr>
<td>Percent FeLV+</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Adults sterilized</td>
<td>0</td>
<td>1000</td>
<td>2000</td>
</tr>
<tr>
<td>Adults left intact</td>
<td>2000</td>
<td>1000</td>
<td>0</td>
</tr>
<tr>
<td>FeLV+ euthanized</td>
<td>0</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Adults left FeLV+</td>
<td>80</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Kittens born</td>
<td>6000</td>
<td>2880</td>
<td>0</td>
</tr>
<tr>
<td>FeLV+ kittens (75%)</td>
<td>180</td>
<td>86</td>
<td>0</td>
</tr>
<tr>
<td>Total FeLV+ cats</td>
<td>260</td>
<td>126</td>
<td>80</td>
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FeLV/FIV testing recommendations

- Healthy community cats have similar FeLV/FIV infection rates compared to outdoor pet cats
- Neutering eliminates the primary modes of transmission
- Cat welfare and health is more responsive to high-volume neutering than “test and removal”
- Test cats intended for adoption or group housing
- Do not routinely test healthy cats in TNR programs
- Consider using tests as “tie-breakers” in evaluation of unthrifty cats in TNR programs
What about parasites?

- **Operation Catnip study:**
  - 93% had fleas
    - Skin lesions due to fleas ~5%
  - 37% had ear mites
    - Only 23% had dirty ears
  - 3% had ticks
  - 1% had lice
Hookworms in unowned cat populations

![Bar chart showing the percent with positive test for normal and diarrhea conditions in different cat populations (Shelter, Sanctuary, Foster, Free-roaming).]
Parasite treatment in TNR programs

- Cost-benefit for single treatment
- Broad-spectrum topical products
  - Effective against hooks, rounds, ear mites, fleas, sarcoptic or notoedric mange, lice
  - Durability and benefit of single treatment unknown
- Ivermectin
  - 200 mcg/kg SC (longer duration than PO)
  - Hooks, rounds, ear mites
  - Less effective than broad spectrum products
- Topical ear mite preparations
  - Single treatment beneficial but may not cure infestations
  - Clean ears if heavy debris
Parasite treatments in TNR programs

- Ongoing parasite management not practical in most TNR colonies
- Single treatment at time of surgery unlikely to cure infestations
- Transient parasite management may be especially helpful in juvenile and unthrifty cats
- Provide broad-spectrum parasite control at time of TNR to all or only selected cats if cost:benefit ratio is appropriate
- Consider ivermectin SC as a cost-effective alternative
Pack Of Rabid Cats A Threat In Milford Mill Community

April 18, 2013 3:18 PM

(AP Photo/Charles Rex Arbogast)
US 2013: 5,868 rabid animals (247 cats)
US rabies vectors
Why rabies in US cats?

- No “feline variant” of rabies, cats are not a reservoir
- Cats are incidental victims of wildlife rabies variants
- Cats are the most numerous companion animal
- Many pet cats allowed outdoors to mingle with wildlife
- Pet cats are less likely to see veterinarians than dogs
- Many jurisdictions do not require rabies vaccinations for cats
- Many unowned free-roaming cats
- Can trap-neuter-return reduce both cat populations and rabies in the US?
Duration of immunity for rabies vaccination

- Single rabies vaccination protects cats against challenge >4 years
  - Soulebot et al, Cornell Vet, 1981

- Intervet Continuum vaccine
  - Single dose at 12 weeks of age
  - Challenge at 50 months
  - USDA licensing trial
What about vaccination of community cats?

- What proportion of feral cats is susceptible to infectious diseases?
- Is a single dose of vaccine delivered at time of surgery effective?
  - No boosters
  - Stress of capture, transport, anesthesia, surgery
- Immune responses under anesthesia and stress
  - Wildlife
  - Livestock shipping
  - Acute vs. chronic stress
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UF TNR vaccination study

Feral cats trapped for surgery
FVRCP & rabies given post-op
Microchipped and ear tipped
Returned to colony next day
Re-trapped for serum collection 2-3 months later
Response of feral cats to FPV vaccination at time of TNR

- FPV neutralizing antibody titer by HAI at Cornell University (protective titer $\geq 40$)

- Protective titers induced in 90% of feral cats 2-3 mo later

Fisher et al, JAVMA, 2007
Response of feral cats to rabies vaccination at time of TNR

- Rabies virus neutralizing antibody titer by RFFIT at Kansas State University (adequate titer $\geq 25$)

- High titers induced in 98% of feral cats 2-3 mo later

Fisher et al, JAVMA, 2007
Vaccine recommendations

- Feral cats have high risk of natural virus exposure to fatal FPV
- Rabies is rare, but substantial public health issue
- Most feral cats do not have protective antibody titers against fatal diseases
- Feral cats have excellent serological responses when vaccinated once at the time of sterilization surgery
- Feral cat sterilization programs should consider rabies vaccination required and FVRCP vaccination highly recommended
What about perioperative antibiotics?

- Generally not considered indicated for “clean” surgeries
- To be most effective, antibiotics best given before incision
- However . . .
  - Wound infection rate in vet teaching hospital (Vasseur 1988)
    - Antibiotics reduced infection rate in 1,100 clean surgeries
  - Wound infection rate in human patients (Bowater 2009)
    - Antibiotics reduced infection rate in >20,000 clean surgeries
- Consequences of wound infections in community cats?
- Best practice is ?
Standard Operating Procedures

- Limits interruption and distractions in the clinic
- Reduces misunderstandings
- Keeps focus on the clinic mission
- Standard responses to different situations
  - Scope of care
  - Who decides
  - Who pays
We're saving cats -- find out how you can help!

Donate Now!

Our Gainesville Clinics

About Our Program
Click here to learn more about Operation Catnip and our monthly spay/neuter clinics for community cats in Gainesville and Alachua County.

Operation Catnip

Virtually everyone working in the field of feline welfare agrees that the number of cats born each year exceeds the number of homes available, and that targeted trap-neuter-return programs are vital to reduce the number of homeless cats.

Directed by veterinarians and carried out by volunteers and veterinary students, Operation Catnip saves and improves the lives of free-roaming community cats, and lessens their impact on our environment.
“Efficient surgical initiatives that meet or exceed veterinary medical standards of care in providing accessible, targeted sterilization of large numbers of cats and dogs to reduce their overpopulation and subsequent euthanasia.”

--Veterinary Task Force to Advance High-Quality, High-Volume Spay/Neuter, 2016
Continuous quality improvement

- Invest in strategic planning
- Recruit effective board of directors
- Follow written operating policies and procedures
- Keep detailed records and statistics
- Review progress toward mission
- Review efficiency of resources & personnel
- Investigate poor outcomes
Vet student clinical training opportunities

Pre and post-surgery
- Anesthesia
- Physical examination
- Surgical preparation
- Vaccines, medications
- Recovery
- Open to pre-vet and vet students

Surgery
- Castrations
  - Requires completion of sophomore surgery course
- Spays
  - Requires completion of surgery course + VCOP or spay/neuter externship
- Open to junior and senior veterinary students
Student surgical coaching and assessment

- Student to coach ratio: 5:1
- Students prepare for surgery with online SOPs, procedure videos, and quiz (summative assessment)
- Individualized student surveys drive tailored coaching
  - Pre-surgical survey expressing concerns and learning goals
  - Post-surgical survey reflecting on accomplishments and challenges
- Surgical evaluation of observed surgical skills, ability to take direction, improvement, and concern for patient (formative assessment)
All-cause mortality in 31,513 cats

Female cats (49, 0.3%)
- Surgical mortality: 11
- No cause found: 24
- Underlying conditions: 14

Male cats (21, 0.2%)
- Surgical mortality: 0
- No cause found: 7
- Underlying conditions: 14
Findings

- Mortality on the day of surgery was strongly associated with intrinsic conditions of the feline patients and not with the surgeon’s stage of professional training.
- The “town-gown” UFCVM-Operation Catnip collaboration provides a safe opportunity to increase student surgical skills and to serve the community without increasing the cost of education.
Patient selection

- Mission-driven
- Suitable for level of care provided
  - MASH, outpatient, injectable anesthesia, physiological support
- Health status
  - Risk to patient
  - Risk to other patients
  - Only chance for care?
What about pregnant cats?
What about pregnant cats?
What about pregnant cats?
What about lactating cats?
What about cats in unmanaged colonies?
Euthanasia – who decides?
Follow-up care

- Hours and availability
- Must provide access to urgent care in emergencies
  - Re-visit or emergency clinic
- Care for sub-acute to chronic surgical complications
  - Revisit or contract out
- Whether to offer ongoing well-care
  - Subsidized care to target clients
  - Income stream to support spay/neuter clinic
Scope of services
What would you do?
What’s your diagnosis?
Barron is a playful little purr machine, born outside to a feral mom but socialized by neighborhood children. His caregivers brought him to Operation Catnip to be neutered last Sunday, and while he was recovering from surgery they noticed that he was straining to urinate. Barron needs emergency surgery to have a catheter placed followed by reconstructive surgery to repair an unusual urethral tear. Barron is expected to make a full recovery but only if we can raise the funds for the procedures and his round-the-clock care. His condition would have been fatal were it not for his caregivers bringing him to OC and for watching after him so closely. If Barron pulls through, his caregivers have promised him (and their 9 and 10 year old daughters)
Maddie’s® Shelter Medicine Program is underwritten by a grant from Maddie’s Fund®, The Pet Rescue Foundation (www.maddiesfund.org), helping to fund the creation of a no-kill nation. levyjk@ufl.edu