

Beyond URI: Coping with Infectious Diseases Encountered in Large-Scale Cat Seizures

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Clicker poll

- What is your primary role in animal welfare?
 - Employed at animal shelter
 - Employed at rescue group
 - Employed in spay/neuter program
 - Veterinarian
 - Veterinary staff
 - Volunteer
 - Other







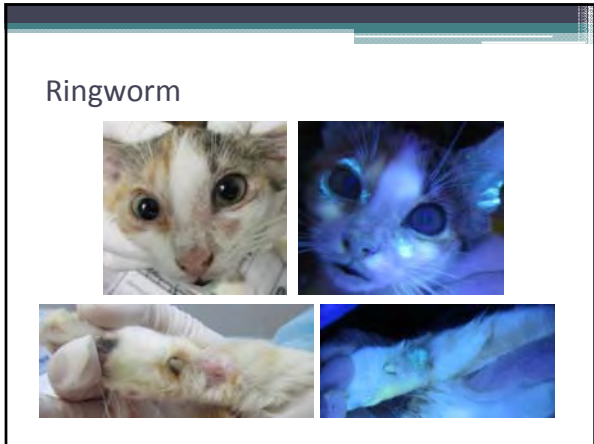
More and bigger responses

- Infectious diseases often affect a majority of the cats
- Some cats may be critically ill
- Historical large-scale euthanasia is being replaced with rehabilitation
- We can't test them all, but we can speculate about cats' diseases
- Infectious disease management at critical intervals
 - Cat intake examinations
 - Care and treatment
 - Adoption and transfer





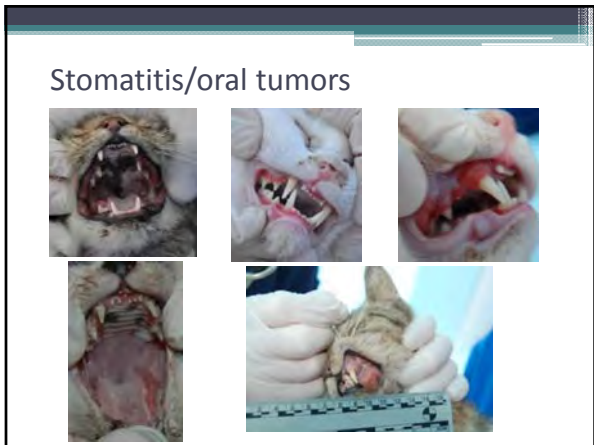


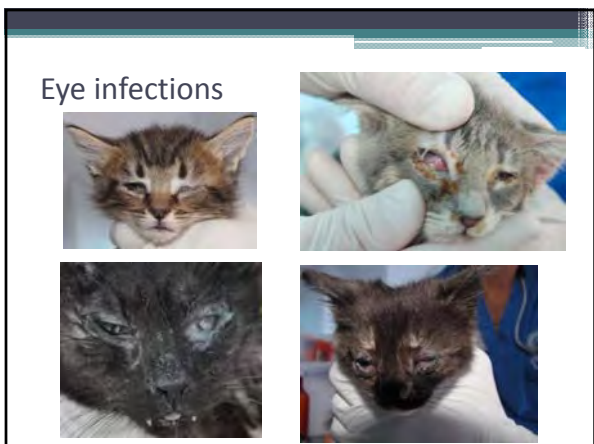


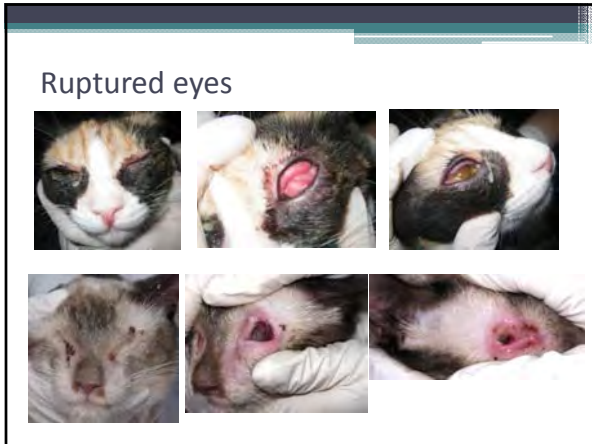


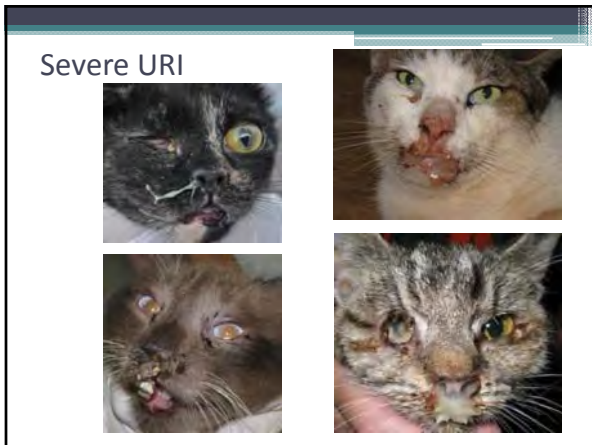


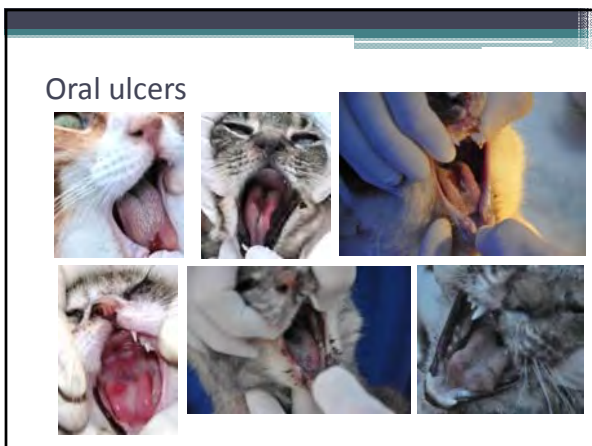












Respiratory pathogens in 4 large-scale cat seizures

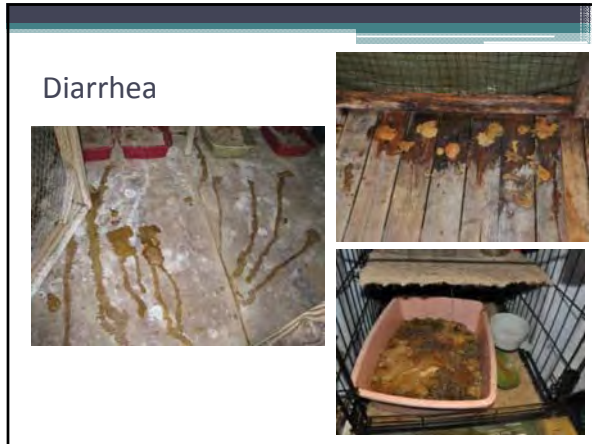
Source	No. cats	FHV	FCV	C. felis	Bordetella	M. felis	S. zoo
Seizure	68	28%	76%	31%	25%	75%	56%
Source	No. cats	FHV	FCV	C. felis	Bordetella	M. felis	
Shelter	140	49%	23%	5%	28%	34%	
TNR	124	10%	45%	14%	2%	52%	

Newly emerging disease:
Streptococcus zooepidemicus in shelter dogs

- Sudden death with respiratory hemorrhage in dogs
 - “Kennel cough”
 - Often also have distemper or canine influenza
- Outbreaks controlled with antibiotic treatment of every dog in shelter

Newly emerging disease:
Streptococcus zooepidemicus in shelter cats

- Outbreaks of fatal URI in shelter cats
 - Nasal discharge
 - Cough
 - Death
 - Found in nasal passage, lungs, brain
- Is this why URI turns fatal in crowded shelters and hoarding cases?



Intestinal pathogens in 4 large-scale cat seizures

Source	No. samples	T. foetus	Crypto	Giardia	FPV	FCoV	Cocc	Rnds	Hooks
Seizure	70	38%	11%	56%	0	86%	8%	16%	11%
Source	No. samples	T. foetus	Crypto	Giardia	FPV	FCoV	Cocc	Rnds	Hooks
Shelter	112	0%	7%	6%	15%	46%	28%	6%	6%
TNR	127	1%	11%	9%	0	30%	13%	13%	70%

In massive operation, volunteers labor to save 700 neglected cats

By Leonora LaPeter Anton, Times Staff Writer
In Print: Friday, March 2, 2012

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From left, volunteers Jenn Miller-Most and Billie Lambert, and animal protection investigator Francisca Rapier lift a cat out of an anti-ringingworm dip Thursday at the temporary treatment shelter the ASPCA has set up in Jacksonville. ?

[Photos by LEAH MELLIS | Times]

Large-scale responses to animal cruelty

- Groups with sheltering expertise
 - Set up a shelter for temporary housing of seized animals
 - Provide care of sheltered animals
- Veterinary responders
 - Medical evaluation of animals after seizure
 - Oversee medical care of animals while in shelter
 - Prepare animals for permanent placement
- Groups with adoption expertise
 - Arrange for adoptions
 - Transfer animals to rescue groups

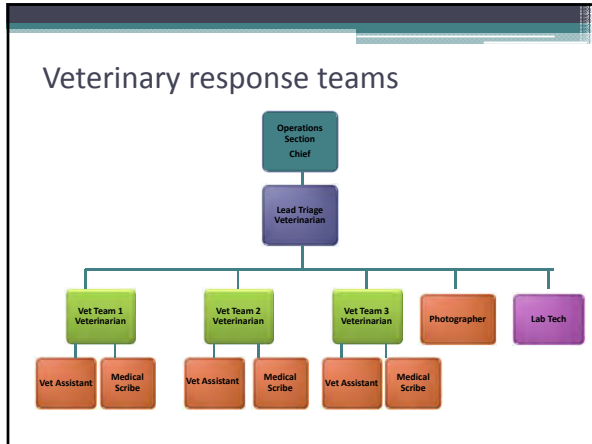
Incident command system

- Framework for organizational efficiency
 - Allows management of multiple organizations
 - Necessary for a well-coordinated response
- Unified command structure
 - Incident commander oversees all responders
 - Section chiefs oversee operations, planning, logistics, and finance – report to the IC
 - Responders in these 4 sections report to their designated supervisor

Incident command system

- The veterinary medical team is under the Operations section of the ICS organizational chart

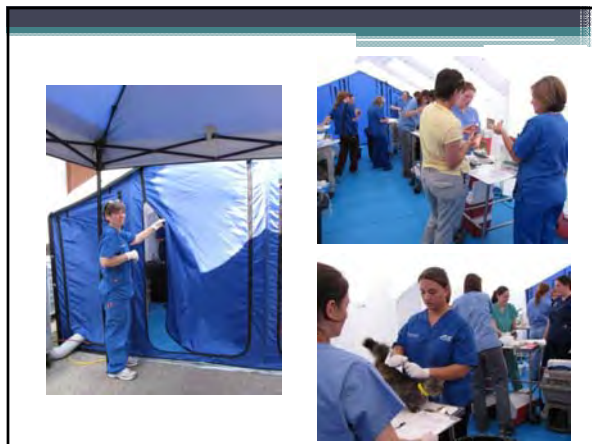
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graph TD; IC[Incident commander] --- P[Planning]; IC --- O[Operations]; IC --- L[Logistics]; IC --- F[Finance]; O --- ST[Shelter Teams]; O --- VT[Veterinary Teams];
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Medical triage and examination

- Plan the work and work the plan
 - Veterinary teams
 - Veterinary protocols
 - Supplies and equipment
 - Critical to success of the entire deployment
- Solid record and census management
- Supports the case and the cats

The top photograph shows a white and blue tent with a white van parked nearby. The bottom photograph shows a long row of blue and white tents.



Veterinary teams

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graph TD
    A[Vet Team 1 Veterinarian] --- B[Vet Assistant]
    A --- C[Medical Scribe]
        
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Veterinary team stations

- Digital camera
- Dry erase board
- Microchip scanners
- Stethoscopes
- Thermometers
- Syringes and needles
- Vaccines
- Parasite treatments
- Medications
- EDTA blood collection tubes
- Black pens
- Sharpies
- Paper towels
- Spray bottle with disinfectant (Trifectant)
- Exam gloves
- Garbage bag

Sample supply calculator for large-scale cat response

	per cat	10% overage	Total	x100 cats
3 ml x 22 g syringe for vaccines	2	0.2	2.2	220
3 ml x 22 g syringe for medications (2%)	0.2	0.02	0.22	22
1 ml x 25 g syringe for FELV/FIV test	1	0.1	1.1	110
1 ml x 22 g syringe for sedation	0	0	0	0
1 ml x 25 g for reversal	0	0	0	0
1 ml x 22 g for ivermectin	0	0	0	0
IDEXX SNAP tests	1	0.1	1.1	110
Ponazuril ml	1	0.1	1.1	110
Strongid ml	1	0.1	1.1	110
Ivermectin ml	0	0	0	0
Revolution	1	0.1	1.1	110
Baytril 22.7 mg tabs (7/cat x 5%)	0.35	0.035	0.385	38.5
Bayril 22.7 mg/ml inj (7/cat x 5%)	0.05	0.005	0.055	5.5
Doxycycline 50 mg/ml (7/cat x 5%)	0.05	0.005	0.055	5.5
Convenia ml (1 ml/cat x 10%)	0.1	0.01	0.11	11
Penicillin BP inj ml (1 ml/cat x 10%)	0.1	0.01	0.11	11
BNP ointment (1/cat x 5%)	0.05	0.005	0.055	5.5
Terramycin ointment (1/cat x 5%)	0.05	0.005	0.055	5.5

Weight kg	Weight lb	Baytril 22.7mg Tablet	Baytril 22.7mg/ml mL SQ	Convenia mL SQ	Strongid mL PO	Ponazuril 75-mg/ml mL PO	Prasiquantel mg mL SQ/IM	Meloxicam 1.5mg/ml mL PO	Tramadol 10mg/ml mL PO
0.3	0.6	0.25	0.1	0.0	0.1	0.1	0.2	0.0	0.1
0.5	1.1	0.25	0.1	0.1	0.1	0.2	0.2	0.0	0.2
0.8	1.7	0.25	0.2	0.1	0.2	0.3	0.2	0.1	0.3
1.0	2.2	0.25	0.2	0.1	0.2	0.4	0.2	0.1	0.4
1.5	3.3	0.50	0.3	0.2	0.3	0.7	0.2	0.1	0.6
2.0	4.4	0.50	0.4	0.2	0.4	0.9	0.2	0.1	0.8
2.5	5.5	0.50	0.6	0.3	0.5	1.1	0.4	0.2	1
3.0	6.6	0.50	0.7	0.3	0.6	1.3	0.4	0.2	1.2
3.5	7.7	0.75	0.8	0.4	0.7	1.5	0.4	0.2	1.4
4.0	8.8	1.00	0.9	0.4	0.8	1.8	0.4	0.3	1.6
4.5	9.9	1.00	1.0	0.5	0.9	2.0	0.4	0.3	1.8
5.0	11.0	1.00	1.1	0.5	1.0	2.2	0.6	0.3	2

Biosecurity

- Goal: reduce contamination between animals and protect personnel from exposure to zoonotic pathogens
- Reality check: likely to be extensive cross-contamination between animals already
- Practical compromise
 - Wear disposable exam gloves and change between cats
 - Clean exam table with disinfectant between cats

Safety first

- Secure area to prevent cat escape
- Safe handling equipment on hand (towel, net, cat bag)
- Fractious cats may require sedation for safe handling
 - e.g. TTD cocktail IM (Telazol, torbutrol, dexdomitor)
 - Partial reversal with atipamezole (Antisedan)



Forensic medical evaluation

- Cats brought in carriers to the examination areas
- Verify each cat has a collar with unique ID number
- Record number on med evaluation form



Digital photographs

- Dry erase board with case #, cat ID, date, ± vet name
- 4 views (front, right and left side, top)
- Close up of lesions
- Camera card provided to lead investigation agency



Microchip scan

- Use a global microchip scanner
- Implant new chip if no pre-existing chip
- Record chip # on med evaluation form



The image shows two forms from a shelter medicine program. The left form is a detailed intake form for a cat, including fields for name, sex, age, breed, and various health and behavioral observations. It also includes a diagram of a cat's body with numbered points for physical examination. The right form is a 'Shelter Treatment Sheet' with columns for 'Date', 'Time', 'Treatment', and 'Response', and a section for 'Vital Signs' with a grid for recording data over time.

Body weight and condition score

- Use a baby scale
- Purina scale (1-9) for body condition score

A photograph showing a person wearing white gloves holding a small tabby cat on a white baby scale. The person is carefully positioning the cat on the scale's platform.

Complete physical exam

- Temperament (friendly, shy, fractious)
- Age based on dentition
- Sex (intact vs. neutered)
- Body temperature
- Evaluate all body systems

Two photographs showing a veterinarian performing a physical exam on a cat. The left photo shows the cat being held on a table while the vet uses a stethoscope. The right photo shows the cat being held while the vet examines its mouth and teeth.

Photographic documentation

- Document poor body condition, wounds, diseases



Vaccination

- FVRCP + FeLV (distal left hindleg)
 - Cats ≥ 1 mo old
- Rabies (distal right hindleg)
 - Cats ≥ 3 mo old
- Put peelable labels from vaccine vials on medical evaluation form




Parasite treatment

- Pyrantel pamoate PO for roundworms/hookworms
- Ponazuril PO for coccidia
- Ivermectin injection if unable to give PO
- Praziquantel (Droncit) SQ for tapeworms
- Revolution or Advantage Multi topically for fleas, ear mites, intestinal parasites, heartworms




Retroviral testing

- Blood collection for FeLV/FIV test
 - EDTA tube (in case needs recheck later)
 - IDEXX SNAP Combo test performed on-site



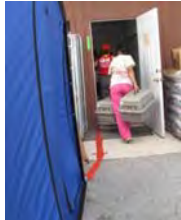
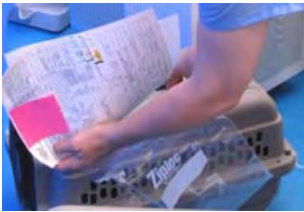
Retroviral testing



No. cats	FeLV	FIV
1,940	8%	8%

Completed evaluation

- Return cat to carrier for transport to shelter
- Put medical evaluation form and treatment sheet in large baggie attached to carrier



Diagnostic testing

- All cats tested for FeLV/FIV
- Individual severely ill cats tested to guide their treatment
- All cats examined for ringworm (Wood's lamp, toothbrush culture if lesions)
- Sample of cats with diarrhea and URI tested with PCR panels to determine prevalence of diseases in the population
- Forensic pathology results must be transmitted to the treatment team

Management: segregation


- Many populations are already highly cross-contaminated
- Short-term cases
 - Individual housing
 - Segregate URI, ringworm, juveniles, ferals
- Long-term cases
 - Group housing by sex, age, health status

Management: Treatment

- Standardize intake treatments to cover common infectious diseases
 - Strongid, ponazuril, praziquantal, selemectin
 - Antibiotics for all cats if Strep zoo suspected?
 - Lime dip plus itraconazole or terbinafine for ringworm
- Standardize diagnostic and treatment protocols for common conditions
 - Diarrhea, URI, conjunctivitis, wounds, hair loss

Treatments

- Initiate treatment for URI, wounds, pain
 - URI: doxycycline or baytril
 - Wounds: Convenia
 - Pain: Meloxicam and Tramadol
- Complete a treatment sheet with orders for continuation of care in the shelter
- Use daily monitoring cards to monitor health and behavior status
- Veterinary rounds twice daily



Management: adoption and transfer

- **Lead agency:**
 - Start treating infectious diseases early in preparation for adoption
 - Inform adopters, transfer partners, and veterinarians what diseases are present and precautions needed
- **Transfer partners:**
 - Segregate cats transferred in from cruelty cases
 - Consider retesting with PCR and FeLV/FIV in case of status change
 - Consider intake lime sulfur dip as ringworm preventive

Management: resources

- **Large cases can exceed local resources**
 - Can cost >\$1 million
 - May require dozens of personnel daily for months
 - Need space for humane housing of cats
 - Adoption and transfer capacity may be strained
- **National charities can help**
 - ASPCA, HSUS have field response teams to assist local authorities
 - Other national agencies can assist with temporary sheltering
 - PetSmart Charities can provide "shelter in a box"
 - PetSmart Charities has emergency response grants