Interventions and observations associated with survival of kittens undergoing treatment for diarrhea

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How To Turn Orphan Kittens into Senior Cats

Open intake municipal shelter
- 11-12k annual animal intake
- 1800 orphan kittens per year
- Robust foster program
- Dedicated rescue/transfer partners
- Mortality of kittens
  - Gastrointestinal
  - Respiratory
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Challenges with orphan kittens

- 74 million “owned” and ~70 million feral cats in the U.S. (AVMA Pet ownership and demographics sourcebook 2012)
- 180 million kittens per year (www.feralcatproject.org)
- 4,000-6,000 U.S. animal shelters (Humane Society of the United States)
- ~21% foster kittens die or are euthanized due to illness before they reach 12-wks of age (Scott FW 1978, Young C 1973, Sparkes AH 2006, Root MV 1995)
- Obvious cause unknown in as many as 50% of kittens (Cave TA 2002, Nutter FB 2004)

Causes of kitten mortality

- Weaning period most vulnerable
  - Stress, failure of passive transfer, crowding, sanitation, diet
  - Infectious disease is most common cause of death
    - 71% viral – esp. panleukopenia
    - 20% bacterial
  - Often die with clinical signs or post-mortem evidence of intestinal disease (Murray JK 2008, Cave TA 2002)

Study objective

- Identify significant associations between empirical treatment interventions and survival of foster kittens with diarrhea
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Shelter Intake Procedure

- Vaccination Feline 1-HCP
- Ponazuril (Marquis)
- Pyrantel Pamoate
- Selamectin Revolution topical
- Brief exam by technician
  - (age, sex, weight, abnormalities)

Diarrhea treatments

- Vitamin supplement
- Probiotics
- Marquis Paste (Ponazuril)
- Antibiotics
  - Metronidazole, Penicillin
- Nutrition
- Supportive care
  - fluids, appetite stimulants, warmth

Interventions and observations associated with survival of orphaned shelter kittens undergoing treatment for diarrhea

- 1,718 orphan kittens relinquished to a large, open-intake, municipal animal shelter (April 2016 and July 2017)
  - unowned, < 12 weeks of age, and < 0.9 kg (2 lbs) body weight
- 172 (10%) kittens underwent treatment for diarrhea
  - 153 (89%) kittens survived to adoption
  - 19 (11%) died or were humanely euthanized
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- Kittens that received a vitamin and mineral supplement were 12.8 times more likely to survive (95% CI 3.1 to 52.5, P = 0.0004)
- Kittens aged 4 weeks were 24.7 times more likely to survive (95% CI 6.8 – 89.8; P < 0.0001)

No impact of Fortiflora on survival
SQ fluids, penicillin G, and tube feeding associated with non-survival
No impact of ponazuril on survival
No impact of metronidazole on survival

Recommendations
- Vaccination on intake at 4 weeks of age
- Pyrantel, Ponazuril
- Easily digestible canned food
- Probiotics ??
- Vitamin and mineral supplement = 12 fold increase in survival
- Supportive care
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Future directions

- Micronutrients
- Diet
- Microbiome
- Gut immunity
- Environment

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