IDEAL VS PRACTICAL SOLUTIONS:

Which Strategies Will Work for Your Animal Shelter in the Face of Disease?”
AGENDA:

Review real cases through the lens of best practice vs. reality for a Municipal Open Admission, Managed Intake Animal Shelter

Key Learnings:

1. Review Epidemiology of Panleukopenia, Parvovirus, Ringworm and Giardia
2. **Best Practice Solutions**
3. **Resource Friendly/Practical Solutions/Strategies**
Best Practice Solutions

- Existing resources
Best Practice Solutions

- Written Protocols/Standard Operating Procedures – can be best practice and/or resource friendly to fit your situation – more exact
- Guidelines – more flexible but outline the necessary steps to ensure proper procedures
- Direction to Staff specific to each situation/case
Practical Solutions

• Know your community animal population – what infectious diseases are prevalent?
• If you can only do one thing make it vaccines!
• If you can do two things – sanitize, disinfect – keep things clean!
• Use simple stress relievers as much as possible – same cage, minimize noise, consistency – schedule and procedures
• Manage intake as much as you can – even if you are open admission
• Keep your population as small as possible - length of stay is important – keep it short – partnerships – foster homes, Rescue Groups; adoption strategies
• Training for Staff – help them understand why and show them how!
Case 1: Parvovirus
Case 1: Parvovirus

• Potentially fatal disease; affects young or unvaccinated dogs; small, non-enveloped DNA virus; requires rapidly dividing cells for replication; extremely stable virus in the environment and is one of the most common causes of infectious diarrhea in dogs

• May 15, 2017 – intake group of 9 dogs under protective custody to TAS North Shelter – 4 adults; 5 puppies (8 wks) – vaccinated, de-wormed (Strongid) and Revolution on intake; 2 adult dogs claimed by Owner

• May 25, 2017 – 6 dogs sterilized (1 adult, 5 puppies)

• May 26, 2017 – final puppy #5 neutered; 1 adult dog and puppy #1 and #2 transferred to another TAS Shelter for adoption

• May 27, 2017 – puppy #5 – vomiting/diarrhea → transferred to E&R Clinic → IDEXX Parvo SNAP positive – admitted to critical care
Case 1: Parvovirus continued...

May 27, 2017:

- All dogs from this group made unavailable, TAS North closed to intake, 2 week DHPP booster protocol initiated, Dx – IDEXX Parvo SNAP test, CBC
- Thorough disinfection of TAS North SNC

May 28, 2017:

- Puppy #3 and #4 begin vomiting/diarrhea – positive IDEXX Parvo SNAP test (all adults and puppy #1 and #2 test negative) – **sick puppies transferred to Emergency Clinic for treatment**
- **TAS Staff working at a Chip Truck event – need to change uniforms and disinfect shoes**
Case 1: Parvovirus
Case 1: Parvovirus continued...

May 30, 2017:

• Puppy #5 improved, responding to treatment – transferred to care of Rescue Group; puppy #3 and #4 improving also transferred to care of Rescue Group

June 1, 2017:

• Puppy #1 and #2 – placed in foster home
• Puppy #1 never symptomatic adopted June 19

June 5, 2017:

• Puppy #2 began vomiting/diarrhea

• June 7, 2017 taken to emergency clinic for treatment – IDEXX Parvo SNAP positive – treated and released – vaccinated and adopted June 21
Case 1: Parvovirus continued...

- At TAS North Shelter remaining dogs being monitored and tested for parvo (IDEXX Parvo SNAP) – all tests negative until a positive test on June 6 - an unvaccinated adolescent dog being held long term for a court case (group of 5 dogs)

- June 8, 2017 dog transferred to emergency clinic for 24 hours supportive care then released and returned to TAS North Shelter, tested parvo negative June 19, vaccinated DHPP June 20 and July 5, 2017

- Remaining 4 court case dogs all tested for parvo and vaccinated twice q two weeks

- Implemented that all long term court dogs must be vaccinated on entry

- Surgery cancelled during closure; TAS North Shelter reopened June 21, 2017
Case 2: Ringworm
Case 2: Ringworm

• Ringworm, or "dermatophytosis", is a fungal infection affecting the skin, hair and occasionally nails of animals (and people). Three species of ringworm fungus most commonly affect cats and dogs; incubation 4 days – 4 weeks

• Factors that increase risk of ringworm: age, species and breed, immune status, pre-existing conditions

• Ringworm is very durable in the environment and can persist on any surface and can infect animals housed in a contaminated environment months and even years later.
Case 2: Ringworm continued...

May 25, 2017
• intake 3 month old Persian kitten to TAS East Shelter

May 26, 2017
• exam by veterinarian – no lesions; **ringworm PCR as precaution due to breed; woods lamp negative**

May 27, 2017
• positive ringworm PCR (Microsporum canis and Microsporum spp. – Positive; Tricophyton spp – Negative)
• Close TAS East Kitten Room; proposed to Rescue Group
Case 2: Ringworm continued...

May 27, 2017 continued...

• Intake 2 other kittens on May 25\textsuperscript{th} placed in same room – these kittens were thin, with no lesions on exam May 26, 2017 – were proposed to Rescue Group and transferred May 27\textsuperscript{th} – notified of positive ringworm PCR result in the room but no direct contact; notified Source of positive result

May 28, 2017

• Intake of the Persian kitten by Rescue Group

• Thorough disinfection of kitten room, vehicle and carrier
Case 2: Ringworm
Case 2: Ringworm continued...

May 29, 2017

- Discovered that the 2 kittens that were in the room with the Persian were from the same Source so there was contact between kittens
- Informed Rescue Group that kittens were from same Source so there was direct contact prior to intake
- Update from Rescue Group January 2019 informing that the kittens never had an issue with ringworm but tested positive for coccidia
Case 3: Ringworm
Case 3: Ringworm

June 27, 2016:
• Intake of 6 kittens and 1 queen with 4 neonates from cat hoarding situation to TAS North Shelter; also cats that Source wants to keep are sterilized on SNYP Mobile Clinic

June 29, 2016:
• Intake of 19 cats/kittens from cat hoarding situation to TAS South Shelter
• 2 immature kittens from this group proposed to Rescue Group

June 30, 2016:
• 2 immature kittens transferred to Rescue Group
Case 3: Ringworm continued...

June 30, 2016 continued...

• Source informs TAS that has taken cats to 2 other Municipalities and they informed her that they suffered ringworm outbreaks due to these cats; Source also admitted that she had contracted ringworm from these cats

• All cats/kittens examined including woods-lamp, samples collected for ringworm PCR

• SNYP Mobile thoroughly disinfected, Owners of pets sterilized on June 27 notified of low risk for exposure – advised to monitor over the next 4 weeks

• TAS North Spay-Neuter Clinic closed to North Shelter cats
Case 3: Ringworm continued...

July 2, 2016:

- Most kittens/cats ringworm PCR positive
- The kittens and one queen with neonates at TAS North are housed in a room with 12 kittens from other Sources – 6 of these kittens are feral
- Kittens/cats proposed to Rescue Group; treatment started and rooms closed; full PPE

July 4, 2016:

- TAS North kittens/cats from hoarding situation moved to TAS South for continued treatment – ability to keep separate from rest of population increased Staffing to ensure treatment
Case 3: Ringworm continued...

July 11, 2016:

• **22 kittens/cats transferred to Rescue Group** also cats that were sterilized on SNYP Mobile transferred to Rescue Group by Owner; rooms at TAS South Shelter thoroughly **disinfected**

July 14, 2016

• 12 kittens remaining at TAS North that were from other sources but housed in same room as kittens from home with ringworm – proposed to Rescue Groups with disclosure of potential for ringworm exposure
Case 3: Ringworm continued...

July 14, 2016 continued...
• All kittens **test ringworm PCR negative** from the group of 12 from different sources; also begin **weekly submissions for fungal culture**
• **Topical treatment** started while await possible transfer to Rescue Group
• Very short staffed so treatment difficult

August 5, 2019
• One kitten tests PCR positive and lesion noted on tail – treatment and monitoring continues
• Rescue Group agrees to accept all kittens in this room, transfer planned for August 17th
Case 3: Ringworm continued...

August 17, 2016

- Rescue group unable to take kittens, transfer delayed to August 31st
- Many Toronto private veterinary clinics contacted to request assistance with treatment – TAS will pay for treatment – no clinics able to help

August 19, 2016

- 6 kittens euthanized – unable to handle due to housed long-term in Shelter without ability to socialize – not enough staffing and due to ringworm risk could not provide that required additional handling

August 31, 2016

- Remaining 6 kittens transferred to Rescue Group
Case 4: Panleukopenia
Case 4: Panleukopenia

- Feline panleukopenia virus (FPV) causes vomiting, diarrhea, and can cause sudden death in cats; transmitted primarily by the fecal-oral route (including through exposure to objects/clothing/hands contaminated with virus from feces); very durable unless inactivated by an effective disinfectant, and can persist in the environment for months or even years.

- The incubation period of FPV is less than 14 days, and cats may shed infectious virus for two to three days before clinical signs are observed. Kittens are at highest risk for this disease, and adult cats with current vaccinations are at very low risk.

- Control is dependent on effective vaccination, keeping cats separate during the time they may be incubating the disease, and careful cleaning and disinfection of all areas in which cats are housed.
Case 4: Panleukopenia continued...

December 23, 2017

- TAS North Shelter admit ~4 year old stray cat – intake procedures completed on entry

December 28, 2017

- Vomiting/diarrhea, weight loss noted – sent to private clinic for diagnostics and supportive care
- IDEXX Parvo SNAP – positive

December 29, 2017

- Not responding to treatment – humane euthanasia elected
Case 4: Panleukopenia continued...

December 29, 2017 continued...

- Room where cat housed closed to further intake, cage where cat was housed disinfected and left empty to repeat disinfection process a few more times
- 2 week interval FVRCP vaccination protocol implemented for all cats in Shelter currently and those newly admitted
- Group of 5 geriatric cats surrendered December 27th and one other cat surrendered December 13th remain in the room – monitor for clinical signs

January 4, 2017

- All 6 cats proposed to Rescue Group accepted for transfer planned for January 9th
Case 4: Panleukopenia continued...

January 9, 2017
• Transfer to rescue group delayed, rescheduled for January 15th

January 15, 2017
• Cats transferred to Rescue Group; repeated disinfection of entire room

January 19, 2017
• Room re-opened; continue with q 2 week vaccination for another month and then reassess
Case 5: Panleukopenia

March 22, 2018
• TAS East Shelter group of 8 cats surrendered from Source with too many cats
• Cats vaccinated on intake; placed in room with no other cats
• 1 cat queened – gave birth to 3 kittens

March 23, 2018
• 7 cats sterilized; 4 cats FIV positive; all cats Giardia Ag positive

March 28, 2018
• 3 cats that were sterilized broke with vomiting/diarrhea, poor appetite; taken to E & R Clinic for treatment and diagnostics – all Panleukopenia PCR positive
Case 5: Panleukopenia continued...

March 28, 2018 continued...

- **Queen and kittens transferred to foster home with instructions to monitor for signs of Panleukopenia**

March 29, 2018

- 3 cats at E & R Clinic transferred to Rescue Group – doing well responding to treatment
- Implement q 2 week FVRCP vaccination for entire Shelter

April 6, 2019

- 2 cats humanely euthanized – could not be handled, FIV positive and Rescue Groups unable to take
- **No further signs of panleukopenia noted – remaining cats doing well; placed up for adoption and room thoroughly disinfected**
Panleukopenia: Lessons Learned

- IDEXX parvo SNAP is off label for *panleuk* – looking for parvo DNA not *panleuk* DNA, although there is some cross-reactivity – clinically have found this test to be very accurate in predicting *panleuk* positive cats, vaccine does not interfere with test

- A snap positive with *panleuk* signs is positive but a snap negative doesn’t mean negative

- *Panleuk* PCR can be positive for a few weeks following vaccination but the cut off is set at a level whereby they feel almost all the positives due to vaccination will be reported as negative
Panleukopenia
Panleukopenia: Lessons Learned 2

- Validation can be run whereby lab can tell you how far above the cut off the positive is – can contact lab to request validation if you have a case where you think the positive might be due to vaccination

- Need to use clinical signs, response to treatment as well as diagnostics – snap tests, PCR, CBC → holistic diagnosis
Case 6: Giardia
Case 6: Giardia

- *Giardia* are single-celled organisms, infectious to many types of animals (including humans); presence in the host intestine can cause diarrhea, though some hosts are symptom-free carriers; rare for *Giardia* from a pet to transmit to a human; dog and cat *Giardia* species are separate and cannot cross from dog to cat

- In the environment, cysts survive in water and soil as long as it is relatively cool and wet; infection is via fecal-oral route

- After infection, it takes 5 to 12 days in dogs or 5 to 16 days in cats for *Giardia* to be found in the host’s stool; diarrhea can precede the shedding of the *Giardia*; infection is more common in kennel situations where animals are housed in groups.
Case 6: Giardia

April 18, 2018

- TAS North Shelter – 15 dogs suddenly have diarrhea +/- blood; 3 rooms affected
- **Investigation** of staff handling dogs; what fed?; how much fed?; expiration dates; location of dogs; play groups/contact between dogs – two are puppies and were mixed with general population
- Direction to Staff – puppy should have been kept separate from the general population as we do with kittens - outdoor areas to be selected carefully or hand walk; puppy should have been in foster
- 5 fecal samples sent for testing ova + parasites + Giardia Ag and IDEXX Parvo SNAP
Case 6: Giardia continued...

Recent challenges in North Shelter:

• Due to ice storm – very limited outdoor space
• One dog room closed due to ceiling leak and ceiling fell due to water damage
• Dog population over capacity because of large dog intake due to court case (35 dogs in Shelter – capacity is 20 – 25 dogs)
• Many long term dogs due to court case

April 19, 2018

• First diagnostic results on a pooled sample from dogs that were group housed (2 per run and play group 6 dogs) – Giardia cysts, Giardia Ag positive – treatment started – metronidazole/fenbendazole/bathing
Case 6: Giardia continued...

April 20, 2018
• Samples not picked up for testing – had to collect again and resend

April 23, 2018
• Samples sent for all dogs that were untested

April 24, 2018
• Concerted effort made to **reduce dog population** – court case dogs (9) proposed to Rescue Group for foster (transferred to Rescue Group May 15); 5 dogs sent to TAS East Shelter

• Test results – for samples sent April 23 – 2 more dogs cyst and antigen +
Case 6: Giardia
Case 6: Giardia continued...

April 25, 2018

- **Repeat O + P + Giardia Ag** sent for first dogs that were tested as a pooled sample on April 18

April 26, 2018

- Results – all negative except one sample positive Giardia Ag

After initial dx April 19 – TAS North Shelter only dealt with 3 positive cases plus the group of 6 that were positive on a pooled sample:

- **Aubrey** – O/S March 28, April 4 went to B&T, April 18 return from B&T, April 22 – cyst and Giardia Ag +, treated, May 2 – cyst and Giardia Ag -, May 4 adopted
Case 6: Giardia continued...

- **Pooka** – (3 mth puppy on entry) PC intake April 5, adopted April 20, returned April 21, April 24 cyst and Giardia Ag +, treated, fostered April 27, May 7 cyst and Giardia Ag -, adopted from foster July 7

- **Joey** – (3 mth puppy on entry) stray intake April 3, April 5 negative O+P (soft stool), fostered sent w tx (fenbendazole), April 16 returned from foster diarrhea, April 18 O + P + Giardia Ag positive, treated, April 25 repeat dx – cyst and Giardia Ag +, treated again metronidazole/fenbendazole/bathing, May 12 cyst negative and Giardia Ag +, May 16 tx w ronidazole, May 18 10 day quarantine due to minor bite to volunteer, May 31 – B & T, June 15 – return from B&T, July 26 O + P – NPS, July 27 – transferred to Rescue Group
Case 6: Giardia
Case 6: Giardia – Lessons Learned

• Giardia now considered part of normal flora in some dog’s guts
• Would be expected normal flora in animal hoarding situation
• Treatment if shedding cysts only or if dog not shedding but symptomatic
• Giardia Ag – very sensitive test
• If positive for cysts and/or symptomatic and treated – recommend repeat O + P only 24 – 48 hours post tx completion
• When house long term dogs that can interact with general population potential for Giardia infection increased
QUESTIONS?