For Pet's Sake: Being the animal advocate in animal-assisted interventions

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The Healing Power of Dogs

Canines bring comfort to Newtown survivors and others in crisis.

Therapy dogs help the sick

December 21, 2011 6:35 AM

Pet therapy dogs bring normalcy and comfort to an otherwise sterile environment. CBS News correspondent Debbye Turner Bell reports on this new field of study and how it changed the life of a young girl with a rare neurological disease.

Therapy dogs help calm people under stress

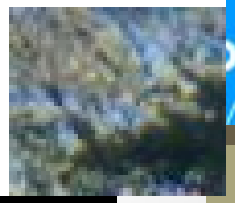
Patricia Montemurr

A growing num
prisons and juv
shows the emo

Therapy dogs change lives

10/09/2009

Everyone thinks their dog is special. But Joseph Landsman has a purebred Alaskan Malamute named Renegade who is truly a life-changer.



Service and therapy dogs save lives and hearts

Katrena Mitchell can be reached at bcs4kat@aol.com.

Posted January 13, 2013 at 3 a.m.

But what about the animal?

Benefits for animals

- Homes, veterinary care and preventive health (Shore, 2005; Delta Society, 2002)
- Shelter animals and human interaction
  - Reduced cortisol levels (Coppola, 2006; Hennessy, 1997; Hubrecht, 2003; Bergamasco, 2010)
  - Positive effects on social behavior and temperament (Bergamasco, 2010; Horvath, 2008)
- Increased B-endorphin, oxytocin, prolactin, dopamine; Decreased blood pressure (Odendaal, 2003)

Special consideration for therapy animals

- "No other canine-related event, no sport nor competition requires a dog to enter the intimate zones of unfamiliar humans and remain there for several minutes of petting and hugging" (Butler, 2004)
- Immoral, exploitative (Zamir, 2006)
- Little self-control over their social lives (Fejsakova 2009)
- Fatigue and "Burn-out" syndrome (Heim, 2000; Iannuzi, 1991)
- Acquisition of infectious disease (Lefebvre 2009)

Animal perspective of AAI

- Infectious disease
- Mental/behavioral health
- Animal health and welfare recommendations

Table I Number of isolates of potential zoonotic pathogens in a sample of dogs that visit hospitalized people in Ontario ($N=102$)

Micro-organism	Source of sample	Number positive
Ancylostoma caninum	Faecal flotation	1
Campylobacter spp.	Polymerase chain reaction on faeces	0
Clostridium difficile	Faecal culture	58
Cryptosporidium spp.	Copro-antigen test	0
Extended-spectrum cephalosporinase *E. coli*	Faecal culture	3
Extended-spectrum beta-lactamase *E. coli*	Faecal culture	1
Giardia duodenalis	Copro-antigen test	7
Group A streptococci	Pharyngeal swab culture	0
Malassezia pachydermatis	Aural swab culture	8
Methicillin-resistant *Staphylococcus aureus*	Culture of faeces, nasal swab	0
Microsporum canis	Toothbrush culture	0
Pasteurella canis	Oral swab culture	22
Pasteurella multocida	Oral swab culture	7
Pseudomonas aeruginosa	Aural swab culture	0
Salmonella spp.	Faecal culture	3
Toxocara canis	Faecal flotation	2
Trichophyton mentagrophytes	Toothbrush culture	1
Vancomycin-resistant enterococci	Faecal culture	0

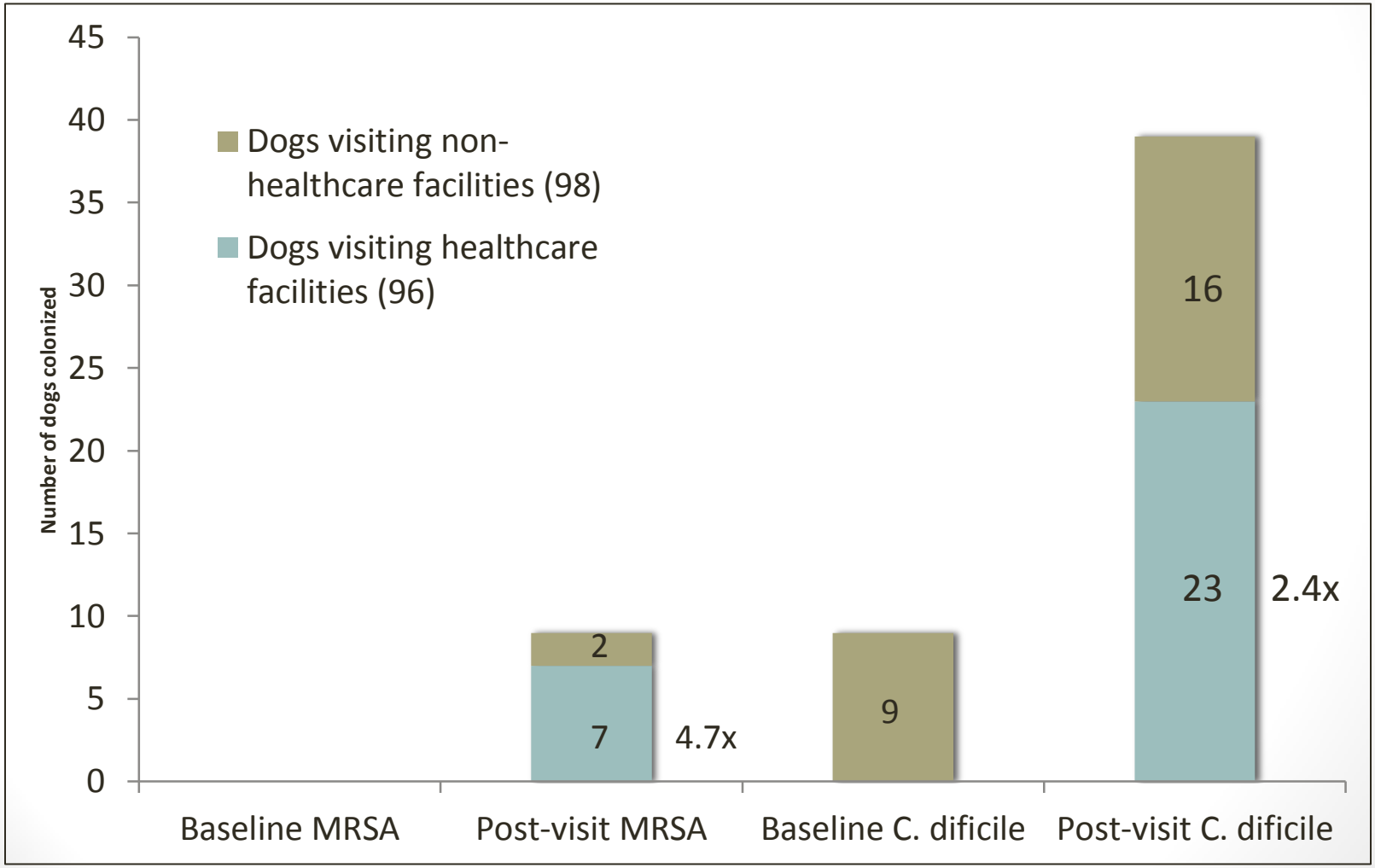
E. coli, *Escherichia coli*.

Lefebvre SL, Waltner-Toews D, Peregrine AS, et al. Prevalence of zoonotic agents in dogs visiting hospitalized people in Ontario: implications for infection control. *Journal of Hospital Infection* 2006;62:458-466.

MRSA

- Asymptomatic colonization with MRSA has been reported in 3–11% of patients on hospital admission and up to 15% of healthy health-care workers (Shopsin 2000)
- MRSA found in 1 dog (Enoch 2005)
- Animals in long term care may acquire MRSA (Coughlan 2010)

Prevalence of MRSA and *C. difficile* in 194 dogs



Lefebvre SL, Reid-Smith RJ, Waltner-Toews D, et al. Incidence of acquisition of methicillin-resistant Staphylococcus aureus, Clostridium difficile, and other health-care-associated pathogens by dogs that participate in animal-assisted interventions. *J Am Vet Med Assoc* 2009;234:1404-1417

Risk Factors?

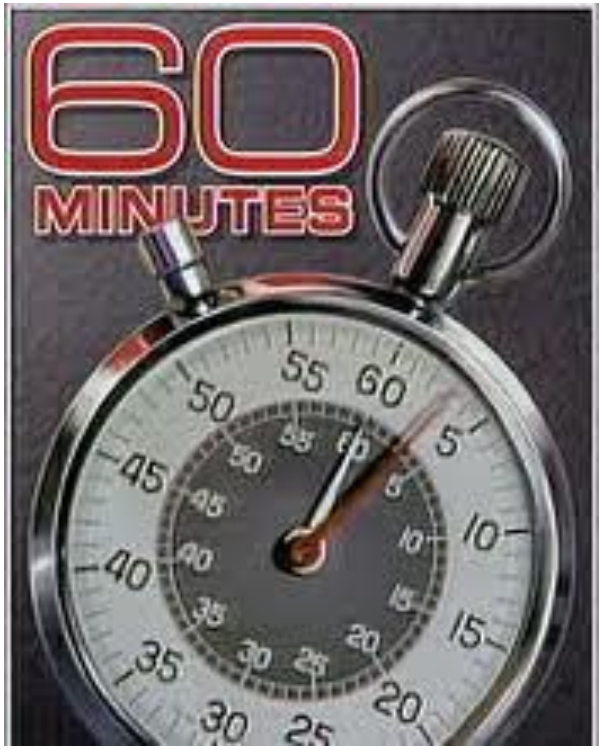
Lefebvre SL, Reid-Smith R, Boerlin P, et al. Evaluation of the Risks of Shedding Salmonellae and Other Potential Pathogens by Therapy Dogs Fed Raw Diets in Ontario and Alberta. *Zoonoses Public Health* 2008;55:470-480

Screening?

- Routine screening for specific, potentially zoonotic microorganisms, including group A streptococci, Clostridium difficile, vancomycin-resistant enterococci, and MRSA, is not recommended (Lefebvre 2008)

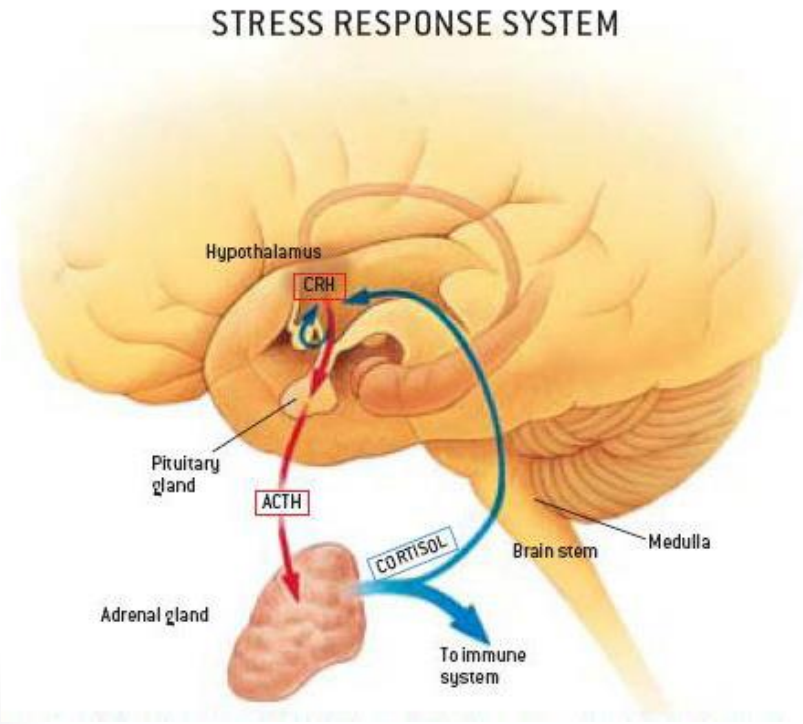
Guidelines

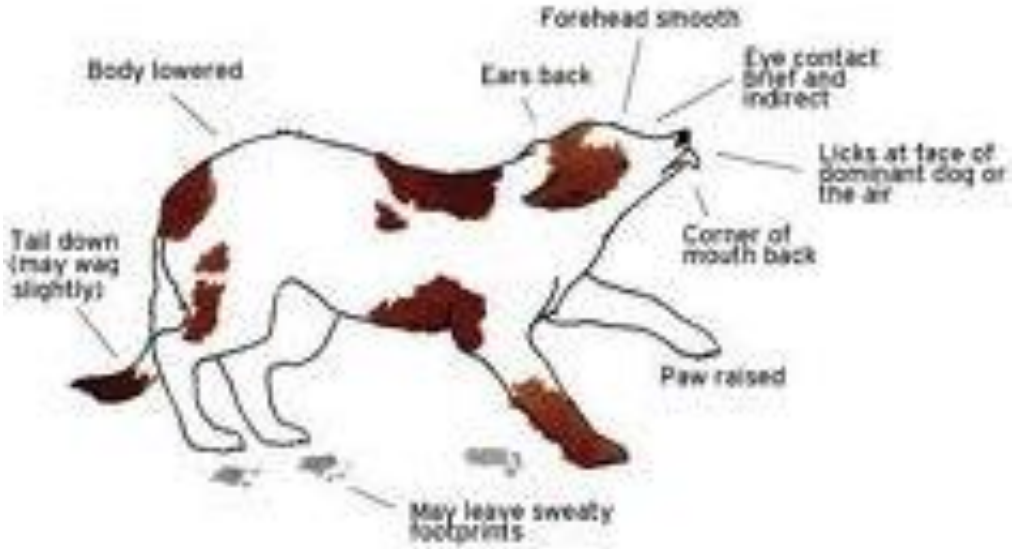
(Ianuzzi, 1991)



How do we measure animal welfare?

- Cortisol
- Behavior





Therapy dog studies

Cortisol

- Levels were significantly higher on days of therapy compared to control days (Haubenhofer & Kirchengast, 2006)
- Significant elevation of cortisol between start of and one hour after a therapy session (King et al., 2011)

Behavior

- Absence of observed stress behavior in dogs during AAA/AAT (Ferrara, Natoli, & Fantini, 2004)
- Increase in frequency of behavioral signs of stress after a 2 hour therapy session (King, et al., 2011)

Research Objectives

- To measure salivary cortisol and behavior in registered AAA dogs as a function of time in 3 separate settings: the home, neutral, and a 60 minute animal-assisted activity session.
- To investigate if there a relationship exists between cortisol and stress associated behavior

Design

- Evaluated in three settings
- Randomized order
- At least one day between settings
- Completed within two weeks

Home

- Most frequently inhabited room of dog's house

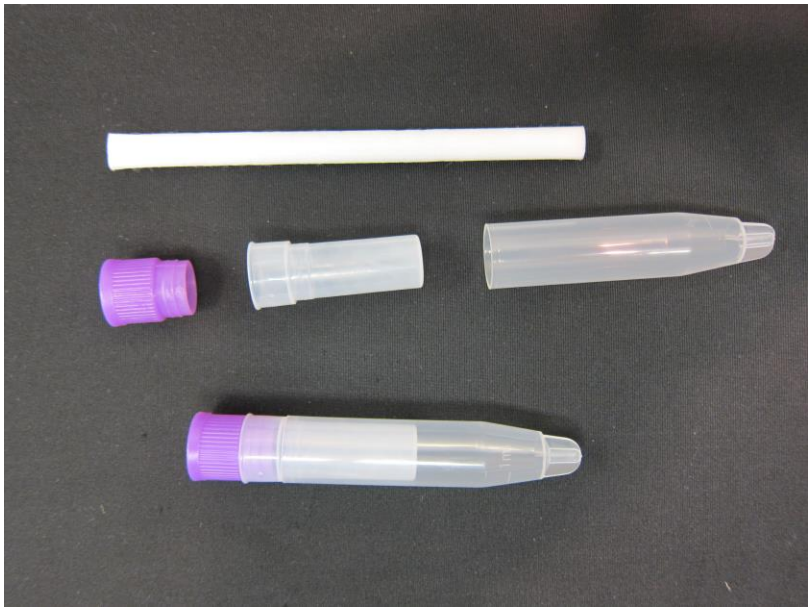
AAA

- College dormitory "study break"
- 40 college students
- 8 dogs

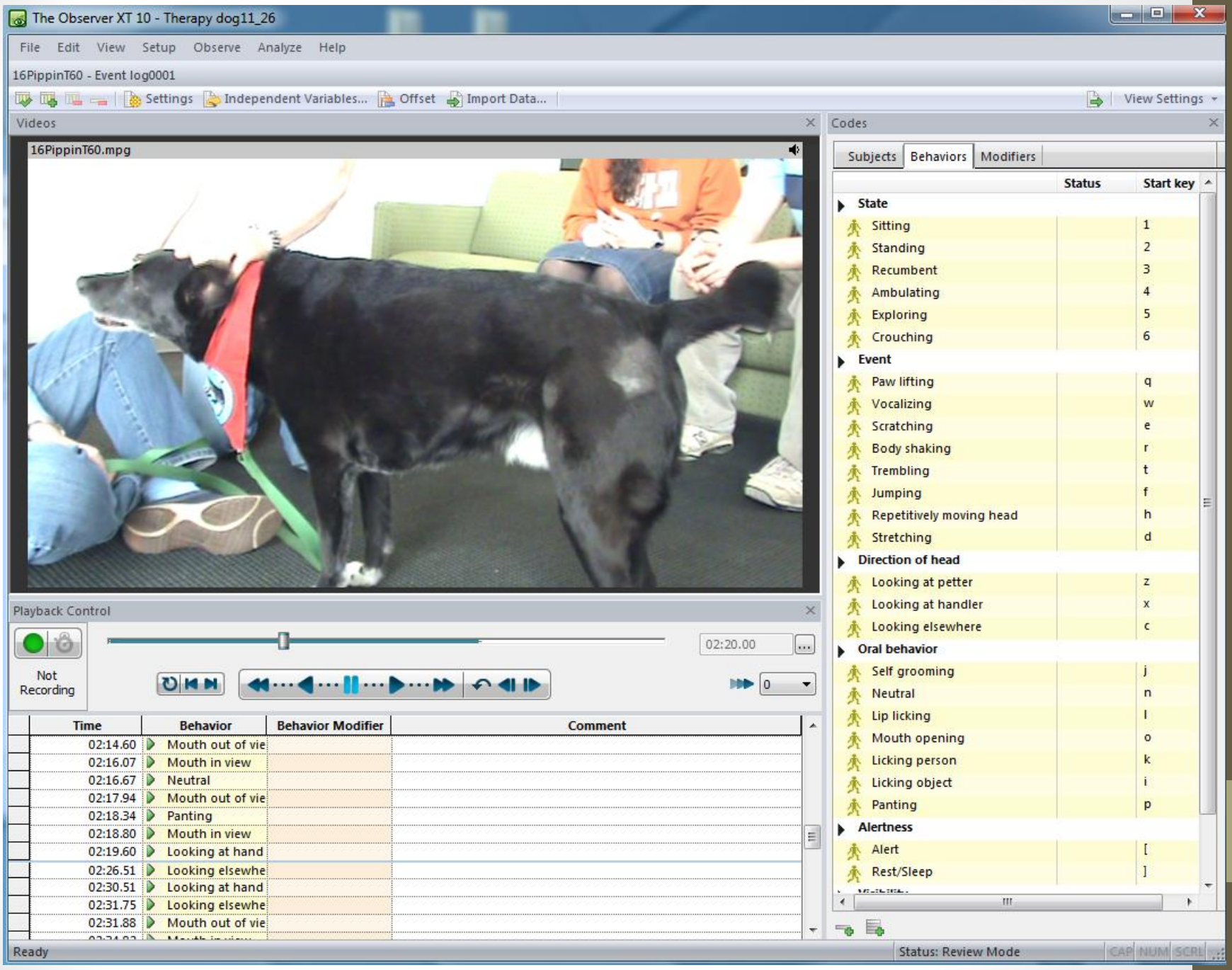
Neutral

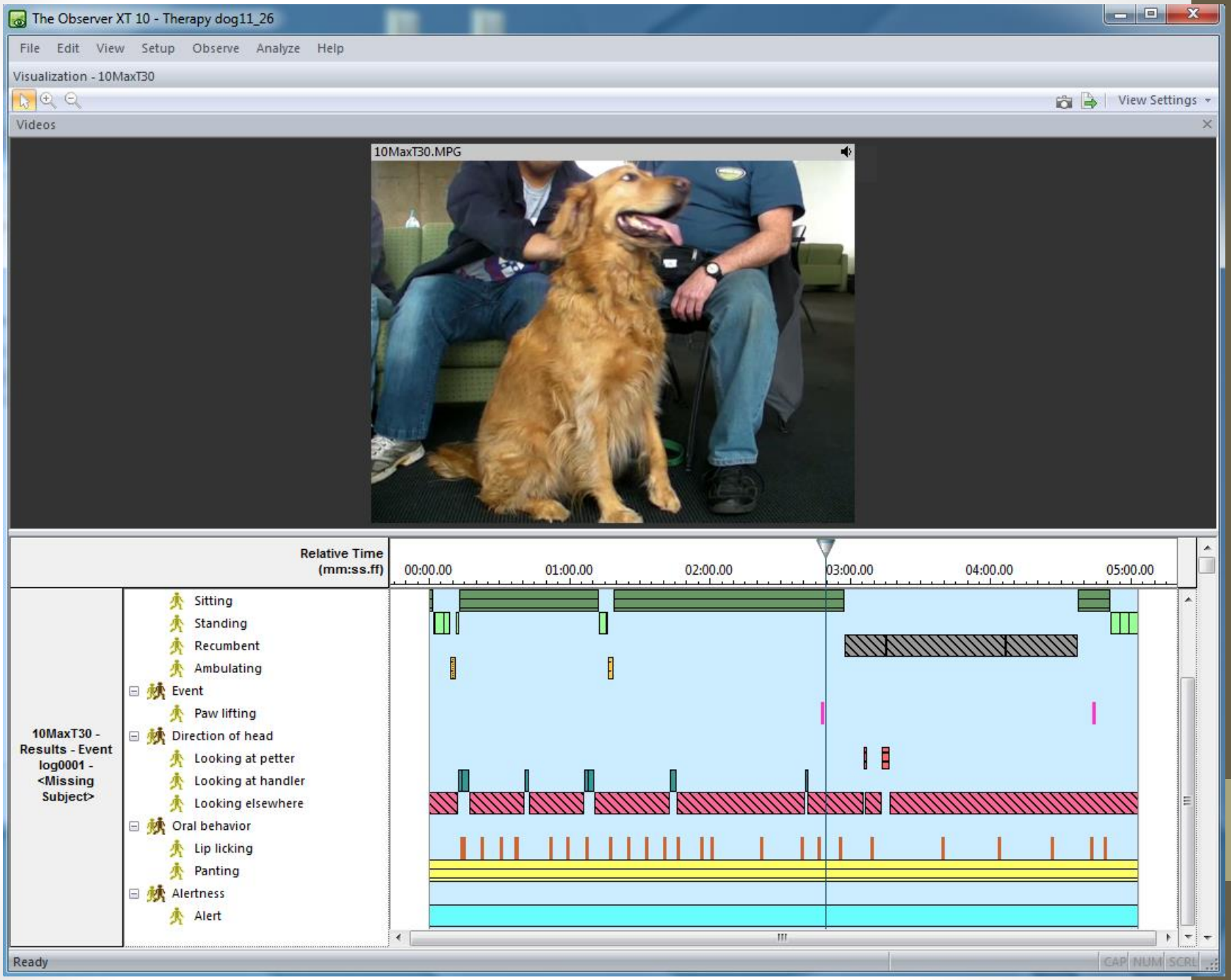
- Room in vet school away from clinic
- No direct stranger interaction
- 2 dogs

Saliva collection & analysis



Cortisol ELISA (Salimetrics, Inc., State College, PA)

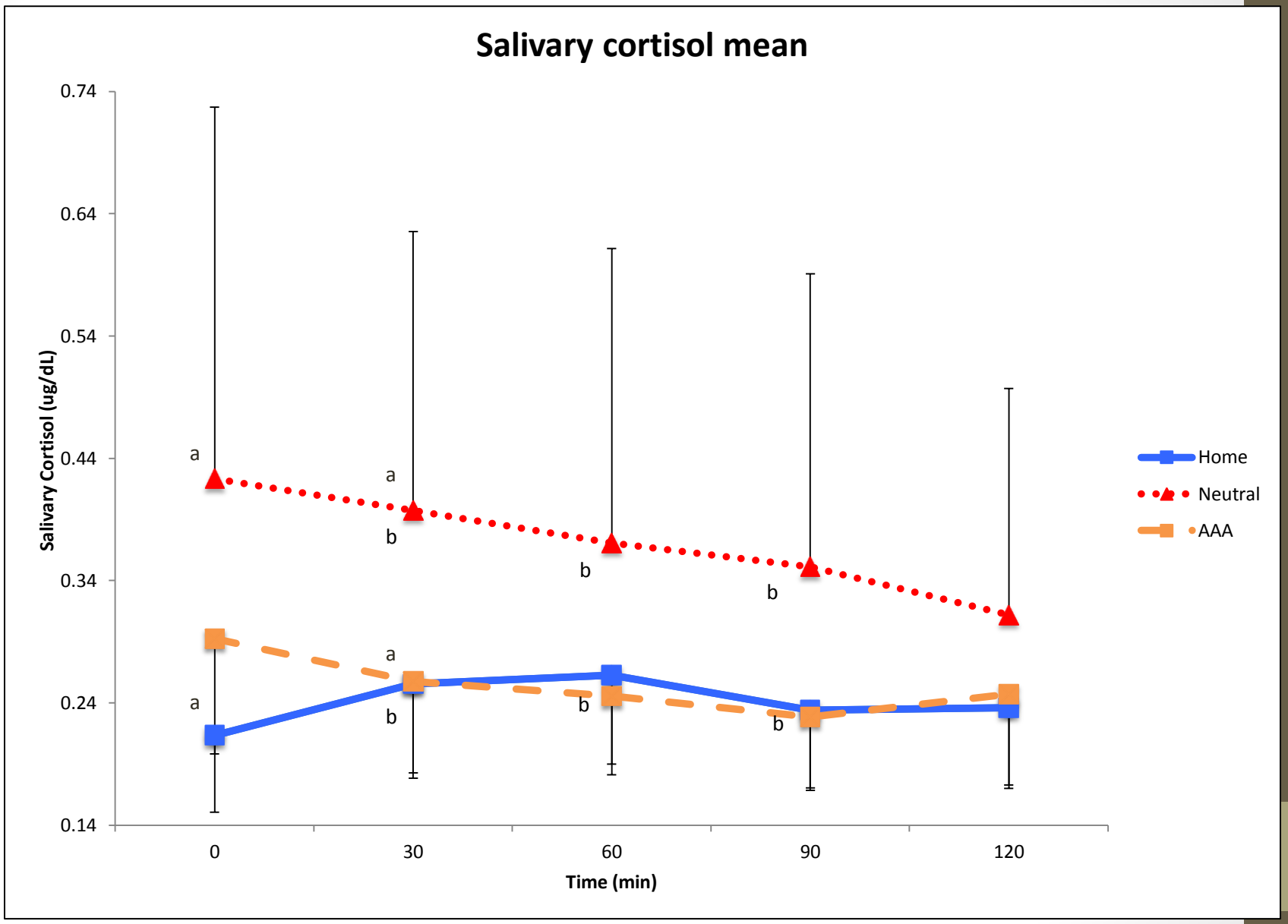

The Observer XT 10 - Therapy dog11_26
File Edit View Setup Observe Analyze Help
16PippinT60 - Event log0001
Settings Independent Variables... Offset Import Data... View Settings
Videos
16PippinT60.mpg
Codes
Subjects Behaviors Modifiers
Status Start key
State
Sitting 1
Standing 2
Recumbent 3
Ambulating 4
Exploring 5
Crouching 6
Event
Paw lifting q
Vocalizing w
Scratching e
Body shaking r
Trembling t
Jumping f
Repetitively moving head h
Stretching d
Direction of head
Looking at petter z
Looking at handler x
Looking elsewhere c
Oral behavior
Self grooming j
Neutral n
Lip licking l
Mouth opening o
Licking person k
Licking object i
Panting p
Alertness
Alert [
Rest/Sleep]
Playback Control
Not Recording
02:20.00
Time Behavior Behavior Modifier Comment
02:14.60 Mouth out of vie
02:16.07 Mouth in view
02:16.67 Neutral
02:17.94 Mouth out of vie
02:18.34 Panting
02:18.80 Mouth in view
02:19.60 Looking at hand
02:26.51 Looking elsewhe
02:30.51 Looking at hand
02:31.75 Looking elsewhe
02:31.88 Mouth out of vie
Ready
Status: Review Mode
CAP NUM SCRL


The Observer XT 10 - Therapy dog11_26
File Edit View Setup Observe Analyze Help
Visualization - 10MaxT30
View Settings
Videos
10MaxT30.MPG
Relative Time (mm:ss.ff)
00:00.00
01:00.00
02:00.00
03:00.00
04:00.00
05:00.00
10MaxT30 - Results - Event log0001 - <Missing Subject>
Sitting
Standing
Recumbent
Ambulating
Event
Paw lifting
Direction of head
Looking at petter
Looking at handler
Looking elsewhere
Oral behavior
Lip licking
Panting
Alertness
Alert
Ready

Results

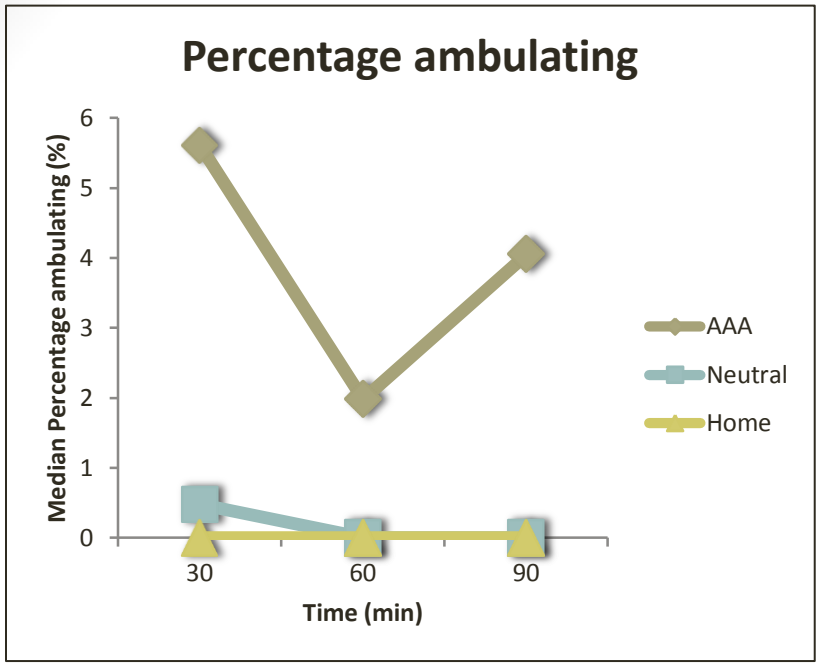
- 15 dogs
- 8 male neutered; 7 female spayed
- Median weight: 17.3 kg (Range 6.8-44.5 kg)
- Mean age: 4.6 years (Range 2-10 yrs)
- Mean therapy certification: 2.6 years (Range 1-8 yrs)
- No adverse events

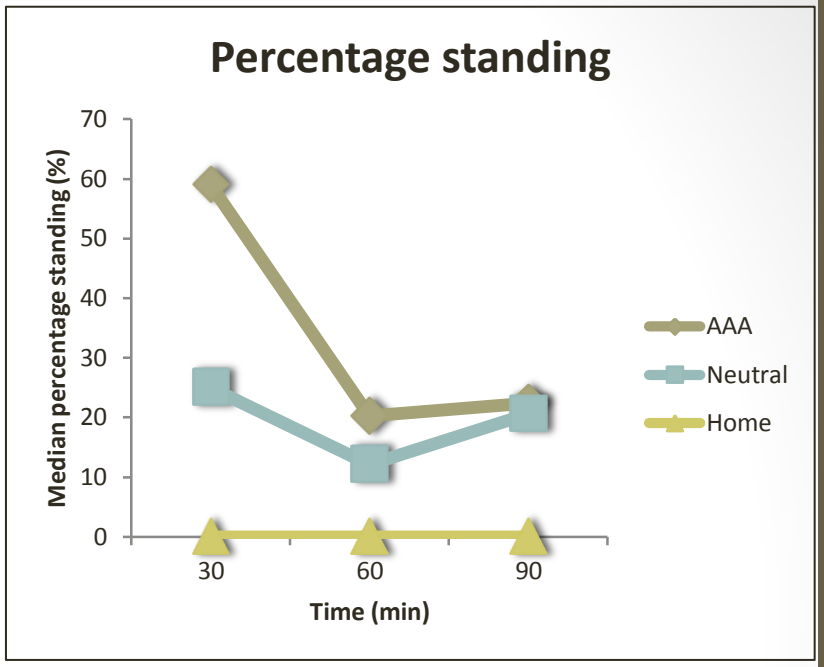
Salivary cortisol

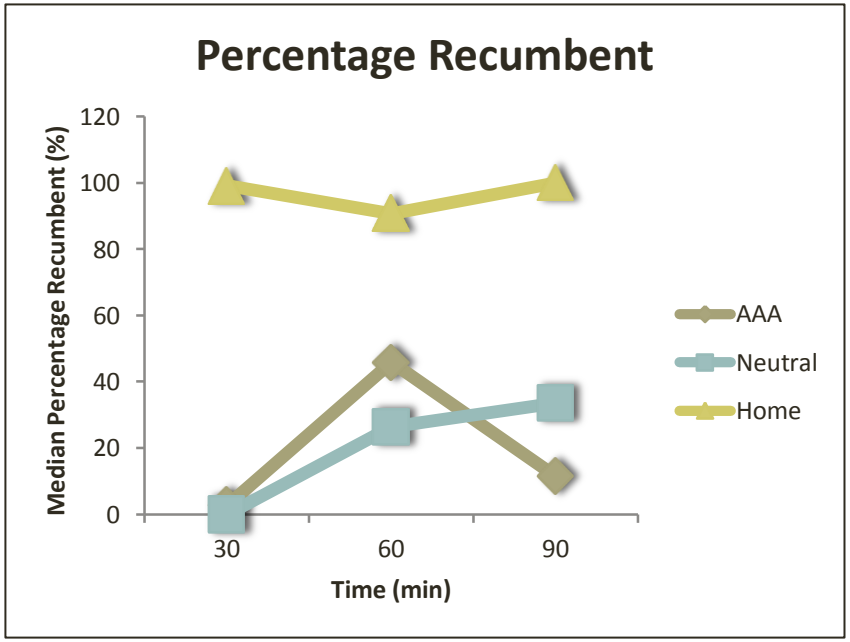

Salivary cortisol mean
0.74
0.64
0.54
0.44
0.34
0.24
0.14
Salivary Cortisol (ug/dL)
a
a
b
b
b
a
a
b
b
b
0
30
60
90
120
Time (min)
Home
Neutral
AAA

Salivary cortisol

- No difference in cortisol in AAA compared to home setting
- Cortisol levels were higher in neutral setting
  - Unpredictable environment
  - Located in the veterinary school
- No effect of time on change in salivary cortisol
- Cortisol levels were higher (0.28 ug/dL) than what has been previously reported in other studies (0.15 to 0.2 ug/dL)
  - Laboratory/assay variation
  - Cortisol levels may be higher in AAA dogs


Percentage ambulating
Median Percentage ambulating (%)
0
1
2
3
4
5
6
30
60
90
Time (min)
AAA
Neutral
Home

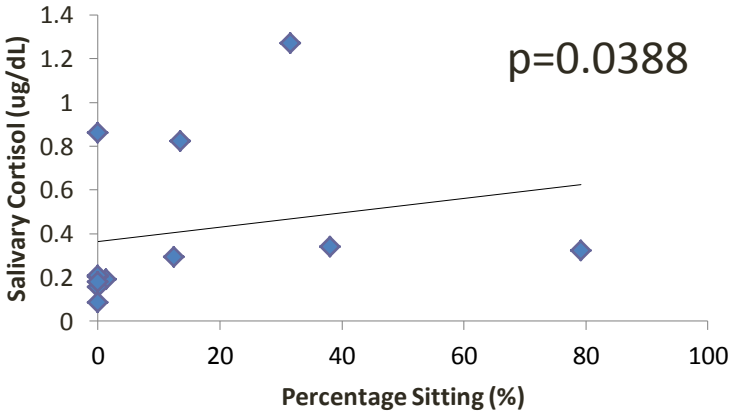

Percentage standing
Median percentage standing (%)
0
10
20
30
40
50
60
70
30
60
90
Time (min)
AAA
Neutral
Home


Percentage Recumbent
Median Percentage Recumbent (%)
0
20
40
60
80
100
120
30
60
90
Time (min)
AAA
Neutral
Home

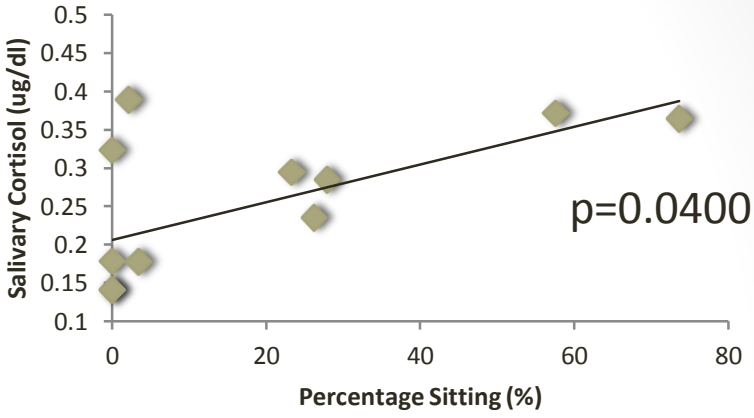
Behavior

- More standing/ambulating in AAA setting than home
  - Likely due to stimulation
- No effect of location on traditional stress-associated behaviors (lip licking, yawning, paw lifting, body shaking) because it is not stress inducing
- No effect of time on change in behavior
- High variability in the way individual dogs exhibit stress behavior

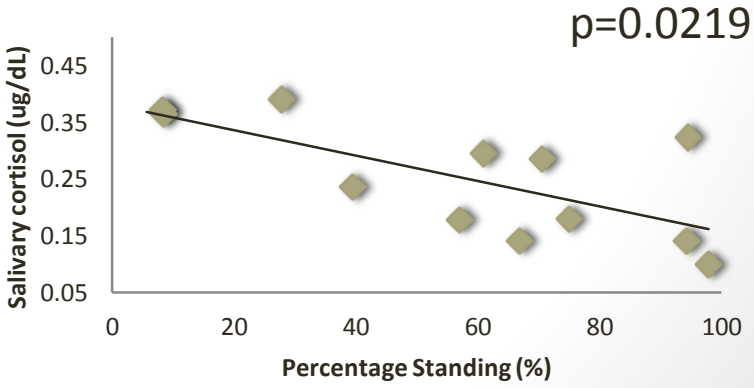
Neutral Time 90
Percentage Sitting vs Salivary Cortisol



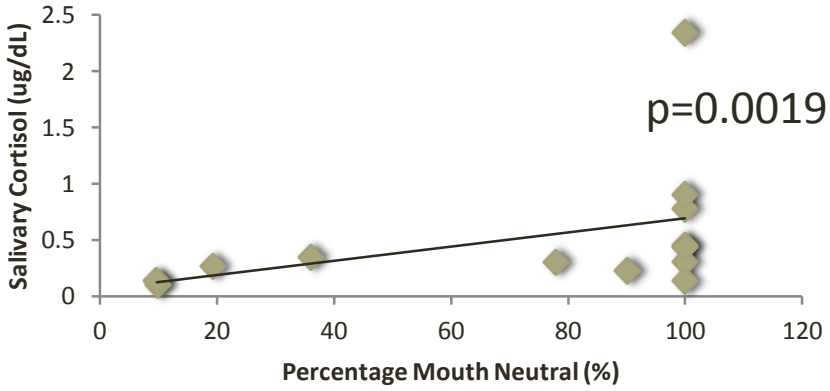
AAA Time 30
Percentage Sitting vs Salivary Cortisol



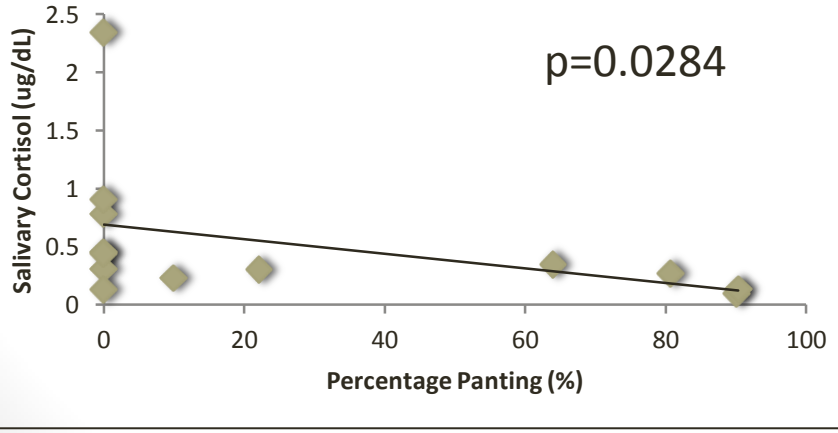
AAA Time 30
Percentage Standing vs Salivary Cortisol



Neutral Time 60
Percentage Mouth neutral vs Salivary Cortisol



Neutral Time 60
Percentage panting vs Salivary cortisol



Cortisol and Behavior

- Only at these time points in different settings:
  - Positive correlation between sitting and salivary cortisol; negative correlation between standing and salivary cortisol
    - Dogs commanded to sit during sessions
  - Negative correlation between panting and salivary cortisol
    - Tensing and “freezing”
- No other correlations between cortisol and behavior
  - These settings were not stress-inducing

Conclusions

- AAA dogs can work in this setting for up to 1 hour without significant physiologic or behavioral stress
- Cortisol level highest in neutral setting
  - Novel environments may be physiologically stress-inducing
- Cortisol levels were higher than previously published results
  - These levels were not detrimental to health and well-being

Future research

- Utilize the AAA room as the neutral setting
- Compare with non-trained, inexperienced dogs
- Utilize other physiologic parameters influenced by stress (heart rate variability, blood pressure, salivary IgA, neutrophil:lymphocyte ratios)
- Test effects of
  - Type of AAA
  - Frequency/duration
  - Intervals of rest
  - Handler

Current Recommendations

- Education
  (handler is key)
- IACUC (Palley 2010)

Lefebvre SL, Golab GC, Christensen EL, et al. Guidelines for animal-assisted interventions in health care facilities. *American Journal of Infection Control* 2008;36:78-85.

Current animal health recommendations

- Health evaluation by vet once per year
- Rabies vaccination
- Preventive medicine based on veterinarian's recommendation/geographic area
- No raw food diets
- Routine screening for zoonoses not recommended

Current handler recommendations

Animal Health

- Common zoonoses
- Infection control practices
- Inspection for ectoparasites

Behavior

- Reading body language to identify signs of
  - Physical discomfort
  - Stress
  - Fear
  - Aggression
- How to manage changes in behavior

AAI recommendations

Health

- Prevent animal from engaging in activity from onset to 1 week beyond resolution of ailments
- Avoid animal contact with human face, saliva, feces, urine, vomit, blood, wounds, etc.
- Rigorous hand-washing for all patients, visitors and health care workers before and after each animal contact
- Discourage paw shaking, licking, taking treats, getting on beds

Behavior

- Restrict sessions to maximum of 1 hour to reduce risk of adverse events associated with animal fatigue
- Provide a safe place to rest in working environment

Acknowledgements

Thank you

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- Student volunteers

Questions?