



Trazodone as a Mediator of Transitional Stress in a Shelter:

Impact on Rates of Illness, Length of Stay, and Outcome



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ANIMAL SHELTER CHALLENGES

Stress

- Emotional: fear, aggression escalated; shut down
- Physical: suppressed immune system



Contagious illness

- Individual health
- Herd health



SHELTER SETTING



- **Strange noises and odors** (Hennessy, 2013; Shiverdecker et al., 2013)
- **Separated from attachment figures**
(Hennessy, Davis, Williams, Mellott, & Douglas, 1997; Hennessy, 2013; Protopopova, 2016; Shiverdecker et al., 2013)
- **Disrupted routines** (Hennessy, 2013)
- **Social isolation and spatial restriction**
(Beerda, et al., 1999; Coppola et al., 2016; Hennessy et al., 1997; Hennessy, 2013; Protopopova, 2016; Shiverdecker et al., 2013; Wells, 2004)
- **Undesirable behavior changes** (Beerda et al., 1999; Wells, 2004)
- **Increased cortisol levels** (Beerda et al., 1999; Wells, 2004)



CAN PHARMACOLOGY HELP?

How can we further reduce stress levels?

- Improve immunity → Decrease contagious illness
- Improve behavior → Reduce behavioral deterioration & improve accuracy of behavior assessments
- Do more than just diminish the physical signs of stress



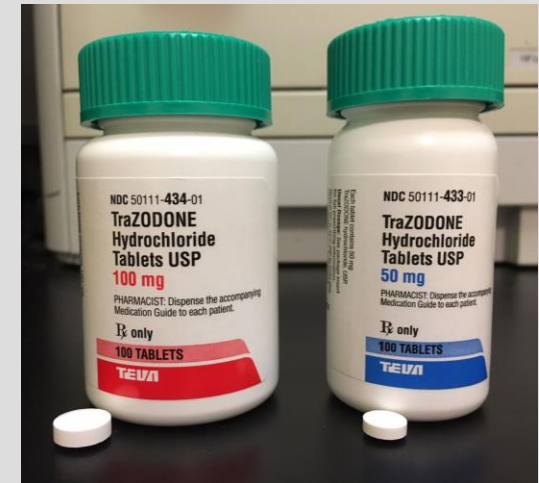
THE STUDY

Animal Care Centers of NYC (ACC)

- 7,000-9,000 dogs/year

Trazodone

- Atypical antidepressant (Gruen et al., 2017; Gruen & Sherman, 2008; Betti et al., 2018)
- Serotonin receptor antagonist and reuptake inhibitor (SARI)
(Ciribassi & Ballantyne, 2014; Gruen & Sherman, 2008)
- Indicated to treat anxiety & stress, induce calm behavior in dogs & cats
(Gruen et al., 2017)



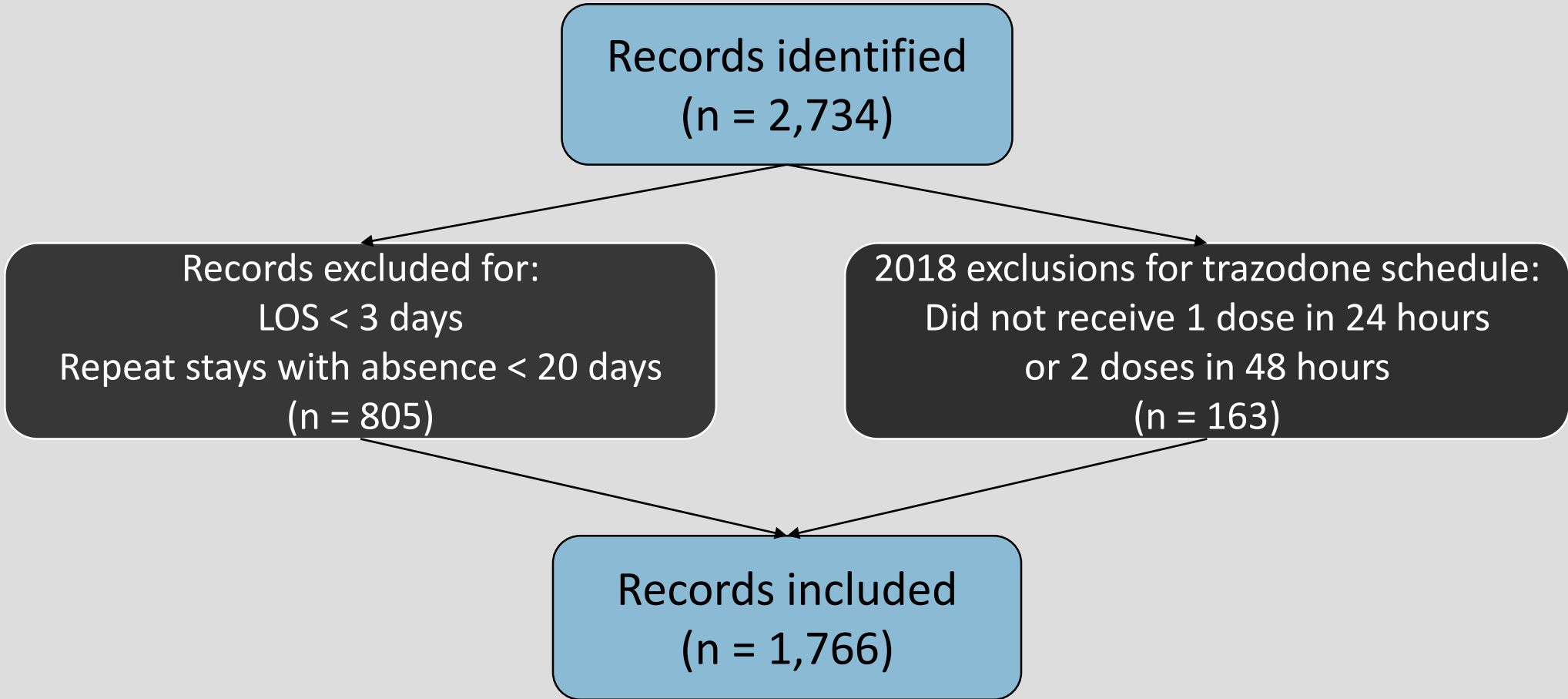
THE STUDY

- Pharmacological intervention pilot
 - Two doses (5 mg/kg) PO given during “transition period” (first 48 hours in the shelter)
- Is there an effect?
- Compare pilot year to previous years
 - Trazodone: November/December 2018
 - No Trazodone: Nov/Dec 2016 & Nov/Dec 2017
 - Brooklyn (BACC) & Manhattan (MACC) Animal Care Centers





RECORD REVIEW





DEMOGRAPHICS

Demographic data

<u>Condition</u>	<u>Sex</u>		<u>Lifestage</u> ¹			<u>Size</u> ²		
	Male	Female	Junior	Adult	Senior	Small	Medium	Large
No Trazodone	769	588	193	1027	137	419	478	460
Trazodone	242	167	38	304	67	132	126	151
Total number	1011	755	231	1331	204	551	604	611

¹- Per ACC guidelines, dogs are categorized into lifestages at intake based on a combination of age and size

²- Size small = 0-20 lbs, medium = 21-50 lbs, large = 51+ lbs



TRAZODONE DOSING (2018)

- Pearson chi-square test comparing the three schedules found no significant difference, $\chi^2 (2, N = 409) = .43, p = .81$

2018	Sick	Not sick	Total	Percent sick
Ideal, 2 doses in 24 hrs	69	158	227	30.4%
Delayed, 2 doses in 48 hrs	16	41	57	28.1%
Single, 1 dose on day 1	34	91	125	27.0%
TOTALS	119	290	409	28.6%

- Therefore, all three of these schedules were included in the trazodone pilot data set



ILLNESS RATE

No differences found between locations or between baseline years:

- Locations: Brooklyn vs Manhattan, no significant difference

$$\chi^2 (1, N = 1357) = .002, p = .968$$

- Years: 2016 vs 2017, no significant difference

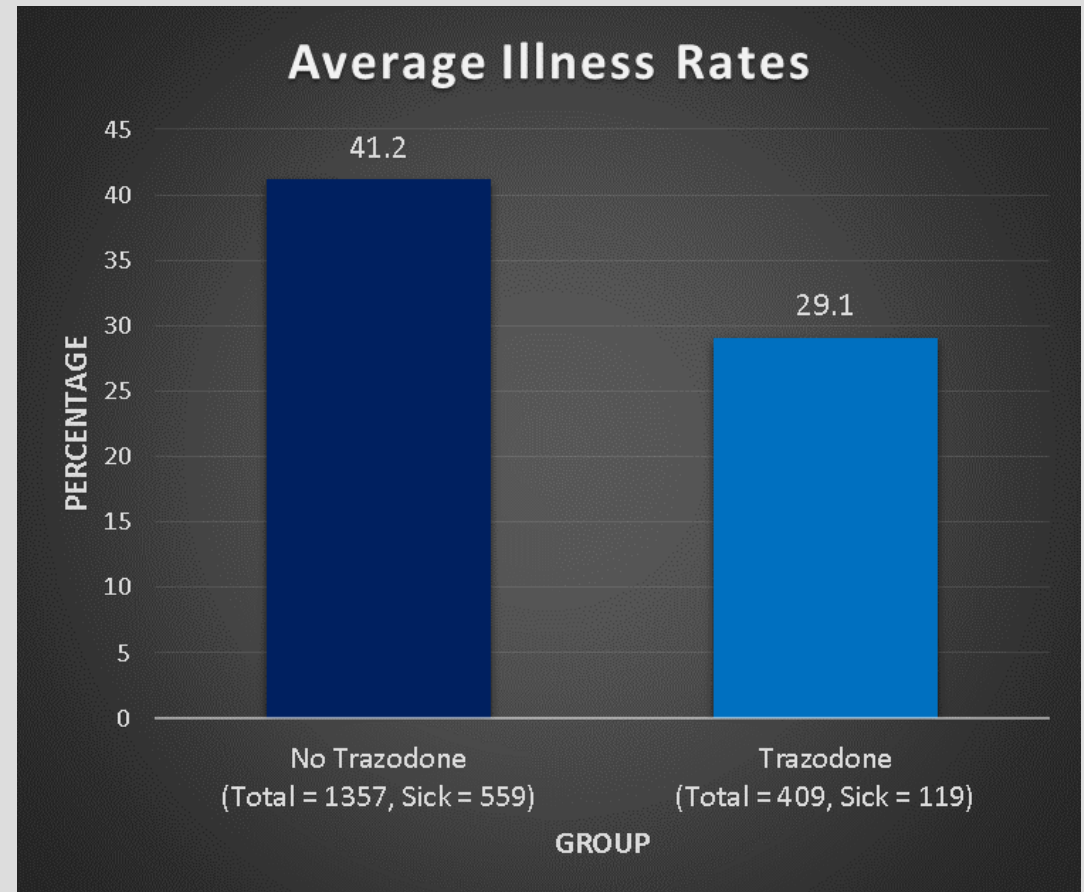
$$\chi^2 (1, N = 1357) = 2.9, p = .09$$

- Therefore, data from BACC & MACC 2016 & 2017 were combined (No Trazodone group)

ILLNESS RATE

Pearson chi-square test comparing
No Trazodone and Trazodone groups →
**significant drop in illness rates in
the Trazodone group,**
 $\chi^2 (1, N = 1766) = 19.4 p < .001$

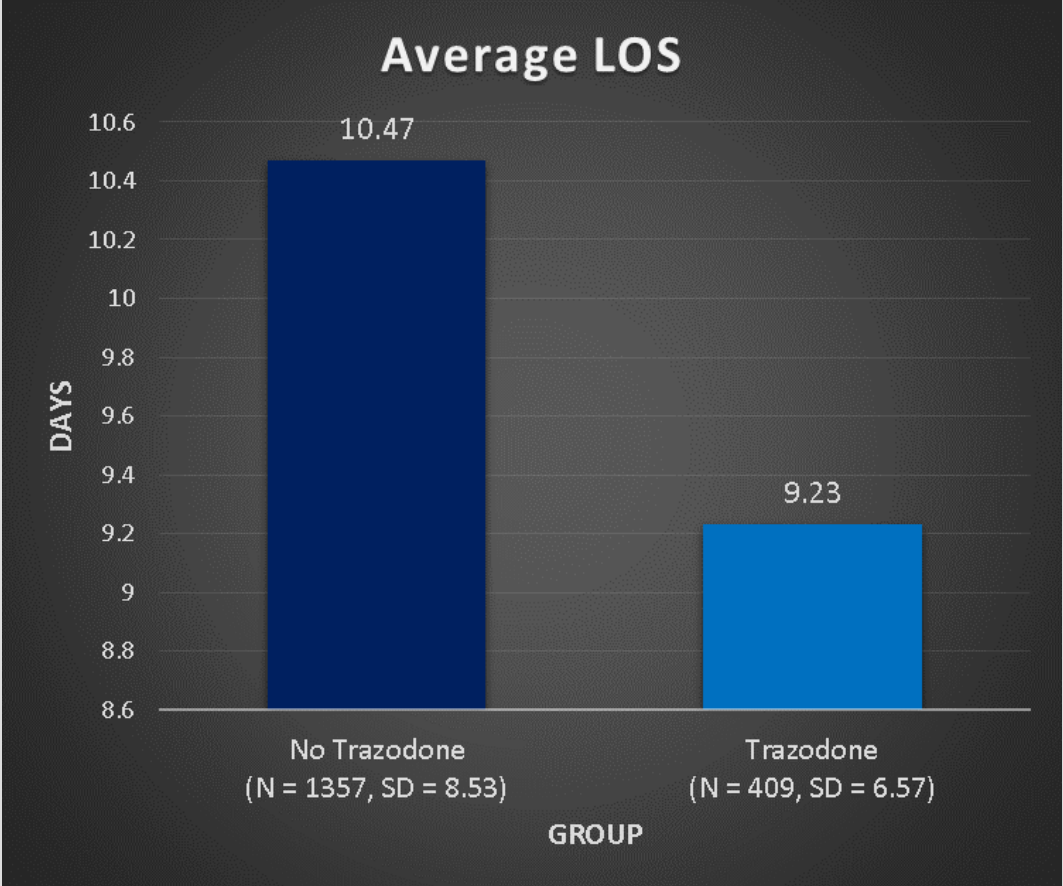
- Average illness rate: 41.2% → 29.1%



LENGTH OF STAY (LOS)

Independent samples t-test (two-tailed) comparing No Trazodone ($M = 10.47, SD = 8.53$) and Trazodone ($M = 9.23, SD = 6.57$) groups → **significantly shorter average LOS for the Trazodone group, $t(1764) = 2.71, p = .007$**

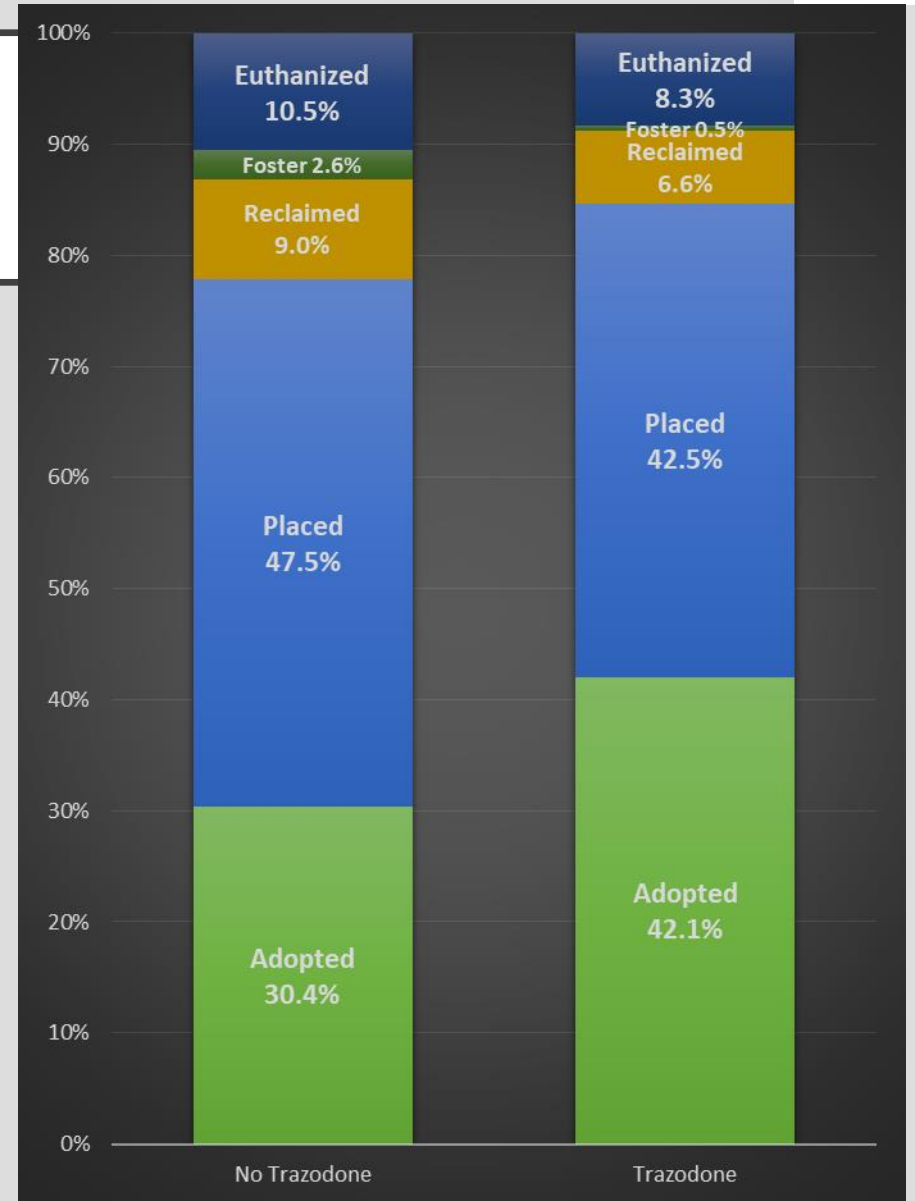
- Average LOS 10.47 days → 9.23 days
- No differences seen *within* the 'sick' and 'not sick' conditions



OUTCOME

Series of Pearson chi-square tests (with Bonferroni correction) → **significant increase in adoption rates in the Trazodone group, $\chi^2 (1, N = 1766) = 19.4, p < .001$**

- Average adoption rate: 30.4% → 42.1%



DISCUSSION

- Decreased stress levels → improved resistance to CIRDC?
- Decreased stress levels → improved behavior, kennel presence, engagement?
 - More frequent & faster adoptions, shorter LOS
- Possible new practical use for trazodone



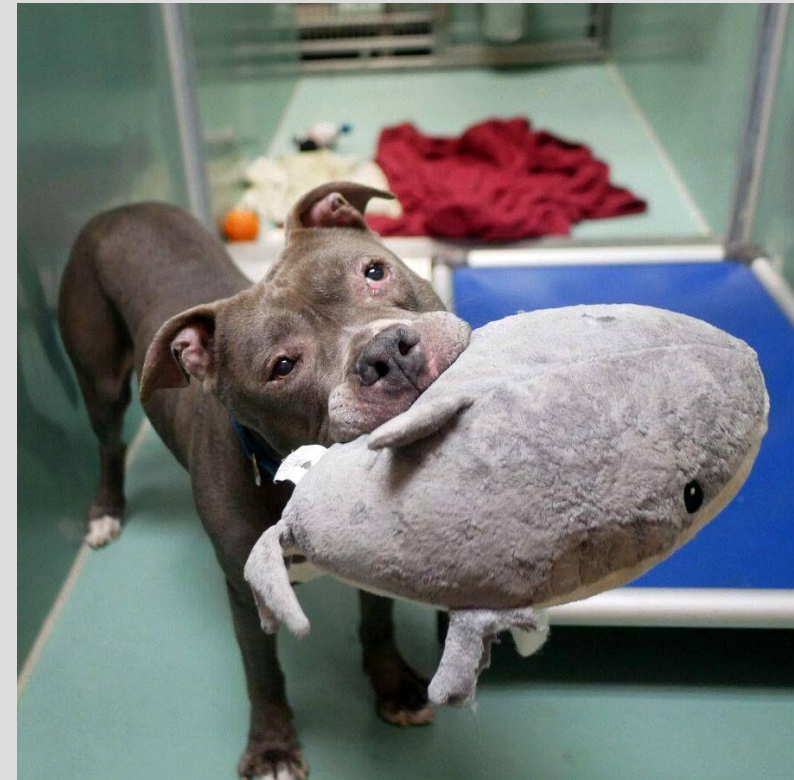
LIMITATIONS

- Correlational not causal
- Changes at ACC: adoption policy, kennels, feeding times, lights out, removal of breed labels, staffing changes, enrichment program expansion



FUTURE DIRECTIONS

- Alternative pharmacological options
- Experimental paradigm with control group
- Behavioral study: masking vs decreasing anxiety



THANK YOU TO

Animal Care Centers of NYC (ACC)

<https://www.nycacc.org/>



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<https://www.facebook.com/HunterTDC/>

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LET'S CHAT!

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