

KENNEL STRESS IN DOGS- WHAT IS IT AND WHAT CAN WE DO ABOUT IT?

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Outline

- Definition of Kennel Stress
- Epidemiology and Risk Factors
 - Who is affected
- Diagnosis
 - How to recognize it
- Etiology/Pathophysiology
 - Development
- Treatment
- Prevention

Definition

- Behavioral deterioration while in a kennel setting
- Behavioral manifestations consistent with:
 - Fear or anxiety
 - Abnormal repetitive behaviors
 - Increased arousal and frustration
- Hallmark:
 - Pet did not display these behaviors prior to kennel housing
 - Behaviors worsened since being housed in shelter/ kennel setting

Motivation

- Goal of displayed behaviors:
 - Reduce Stress
- But what is stress?

What is Stress?

- Definitions:
- Physiologic and behavioral responses to re-establish homeostasis when interrupted
- Sum of all nonspecific effects or factors acting on body to increase energy consumption significantly above resting levels

What is Stress?

- Response via hypothalamic-pituitary-adrenal (HPA) axis
- Immediate release of sympathetic nervous system hormones
 - Epinephrine and norepinephrine
- Glucocorticoid release moments later



Nelson, Intro Behav Endocrin

What is Stress?

- Adaptive vs. Maladaptive
 - Adaptive
 - Stress response helps to adjust to situation
 - Usually short term presence
 - Improve survival
 - Maladaptive
 - Animal unable to return to homeostasis
 - Chronic or repeated presence of stressor
 - System remains activated trying to reach it

What is Stress?

- Three Phases:
 - Alarm Reaction
 - Recognition of stressor
 - Resistance Phase
 - Respond to stressor
 - Exhaustion Phase
 - Stressor reaches chronic/ maladaptive point
 - Body shows effects from sustained high levels of stress hormones
 - Significant physical changes can occur

Nelson, Intro Behav Endocrin

Back to Stress in the Shelter



Stress in the Shelter

- Signs of "stress"
 - Fear and anxiety
 - Response to perceived or actual threatening stimulus
 - Hiding, trembling, cowering, or excessively drooling
 - Learned helplessness/ depression
 - Withdrawn, curled up in back of kennel
 - Lack of interest in social interaction
 - Frustration
 - Motivated to perform a behavior without an appropriate outlet
- Goal of these behaviors motivated by stress:
 - Reduce anxiety, fear and frustration created by the inadequate environment or housing system

Why Not Stress?

- Stress used incorrectly
 - Over-simplified catch-all term
 - Any aversive physical or psychological condition
- "Stress" = "Unpleasant Emotion"
- Not interchangeable!

Frustration

- Results in
 - High arousal, lack of impulse control
 - Jumping, mouthing
 - Acute conflict behaviors
 - Stereotypic or abnormal repetitive behaviors
 - Cage biting
 - Aggression
 - Fence running, charging the kennel door
 - Very difficult to ignore some of these unwanted behaviors

Dr. Frank McMillan 2018

Epidemiology/ Risk

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- Pre-existing environmental/ situational fears
- Highly social dogs
 - To people or dogs
- High energy levels
- Highly trainable breeds
 - Working breeds
 - Rottweilers, Dobermans, German Shepherds
 - Other herding breeds- Aussie, Border collie
 - Hounds
 - Terriers
 - Including Pit bull terriers



Diagnosis

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- Kennel stress considered when:
 - Hiding, trembling, cowering, or excessively drooling
 - Abnormal repetitive behaviors
 - Patterned pacing, circling, tail chasing, shadow chasing, stereotyped pouncing, other repeated behaviors
 - Increased barking, jumping and lunging at passersby; difficulty focusing during play & training
- In current housing system

Social Frustration

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Dr. Brian DiGangi, University of Florida

Social Frustration

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Frustration

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Repetitive Jumping

Frustration

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Repetitive Spinning

Frustration

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Shadow Chasing

Frustration

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Weaving

High Arousal, Anxiety

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Excessive Drooling

Fear/ Anxiety

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Differential Diagnoses

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- Pre-existing behavior disorders
 - ▣ Generalized anxiety
 - ▣ Compulsive disorder
 - ▣ Other Fears/ Phobias
 - ▣ Fear aggression
 - ▣ Territorial aggression (?)
 - ▣ Separation anxiety (?)
 - ▣ Medical causes for abnormal repetitive behaviors

Diagnosis

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- Physical examination:
 - ▣ Traditional exam
 - ▣ Body language
 - ▣ Behavior observation
 - Negative emotional state inferred
 - ▣ Only after observing all signals and interpreted together within context of situation and environment
- Hallmark:
 - ▣ Behaviors not displayed prior to being housed in shelter, or have worsened since being housed in shelter/ kennel setting

Physical Exam Findings

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- Increased TPR*
 - Due to high arousal
- Weight loss
 - Despite appropriate nutrition and good appetite
- Diarrhea
 - No other physical cause
- Physical injury secondary to repetitive behaviors
 - Lameness, paw pad excoriations, broken teeth or nails



Physical Exam Findings

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- Body language
 - Fear and anxiety
 - Ears back, eyes wide open, furrowed brow, trembling, cowering, excessive drooling, barking, or howling
 - High arousal
 - Pupil dilation, tense hackles up, penile panting, barking



Physical Exam Findings

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- Behavior Observations
 - Fear and anxiety
 - Escape, hiding
 - Abnormal repetitive behaviors
 - Circling, tail chasing, shadow/ reflection chasing, weaving, or other patterned movements (pacing)
 - Frustrated and aroused dogs
 - Jump and mouth frequently, difficulty focusing during play and training

Etiology/ Pathophysiology

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- **How does it develop?**
- Some degree of fear or frustration inevitable upon experiencing shelter/ kennel setting
 - Novel unfamiliar environment
 - Loud sounds
 - Intense smells
 - Exposure to unfamiliar people and animals
 - Lack of control of schedule and interactions

Etiology/ Pathophysiology

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- Upon entering shelter
 - Catecholamines increase immediately
 - Cortisol within minutes
- Pet attempts to return to normal set point
 - Homeostasis
- Fear
 - Escape or hide from trigger
- Social frustration
 - Attain interaction with another person/ dog
- Physical frustration
 - Perform normal active behaviors

Etiology/ Pathophysiology

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- Acclimation
 - Some within a few days
 - Others take longer (2 weeks)
 - Another subset continually deteriorate
 - Body continues to release neurotransmitters, expend energy
 - Unable to return to normal
 - Leads to exhaustion of body's normal coping strategies
 - Remain in chronically negative emotional state
 - Leads to reduced quality of life and poor welfare

Etiology/ Pathophysiology

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- Frustration
 - Active, intelligent dogs
 - Learning by operant conditioning
 - Trial and error
 - Occurring all of the time, whether we want it to or not
 - Law of Effect



Law of Effect

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- **Behavior** resulting in pleasant consequence **strengthened**/ increases in frequency
- **Behavior** resulting in **no consequence** is weakened
- **Behavior** resulting in **unpleasant consequence** **Weakened**/ decreases in frequency
- *Interpretation of consequence based on **dog's** perception, not ours!*

Treatment

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- Address motivation for the behaviors displayed
 - Environmental management
 - Behavior modification
 - Behavior medication
- Must also appropriately address underlying negative emotional state
 - Inappropriate to use aversive tools or methods to address unwanted behavior in sheltered pets

Treatment

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- Immediate
 - Strategic housing
 - Increased time outside of kennel
 - Consistent daily routine
 - Increased enrichment
 - Cage side behavior modification



Treatment

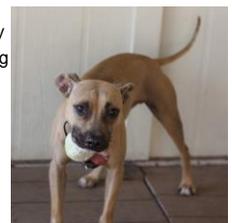
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- Immediate-acting anxiety reducing medication
 - Address immediate welfare emergency
 - Prevent continued deterioration
- Trazodone 2-5 mg/kg PO q 12 hrs
- Gabapentin 10-30 mg/kg PO q 12 hrs
- Clonidine 0.01-0.05 mg/kg PO q 6-8 hrs PRN

Treatment

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- Chronic
 - Fast track to adoption or transfer if appropriate/ available
 - Put on a schedule
 - Increased enrichment/ activity
 - Positive reinforcement training
 - Group housing or foster if appropriate



Treatment

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- Longer-term anxiety reducing medication
 - Anticipated long length of stay
 - Suspect pre-existing behavior disorder
 - Manage welfare
- Fluoxetine 1-2 mg/kg PO q 24 hrs

Monitoring and Follow Up

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- Record behavior observations
 - Daily caregivers
 - Daily population rounds
- Review for response to treatment and adjust plan weekly/ bi-weekly



Prognosis and Outcome

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- One of only behavior problems that can be completely reversible
 - How to do this?
 - Change environment!
- Fair to Guarded
 - Depends on duration and severity before treatment implemented
 - Treat earlier when less severe
 - Prevent continued deterioration and poor welfare
 - Does organization have resources available to implement behavior treatment plan?
 - Other options

Recognition and Prevention

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- Screen every pet frequently for signs of kennel stress
 - Treatment implemented as soon as identified
 - Delayed recognition and treatment results in rapidly worsening condition
- Leads to:
 - Welfare emergency
 - Poor physical and emotional health
 - Less appealing to adopters
 - Longer length of stay
 - Can result in pet no longer being suitable for live positive outcome in community

Prevention

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- Prevention
 - Housing
 - Enrichment
 - Social interaction
 - Exercise
 - Manage length of stay



Prevention

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- | | |
|---|---|
| <ul style="list-style-type: none"> □ Housing □ Quieter kennel areas □ Smaller wards □ Runs not facing each other □ Larger runs □ Time outside of kennel every day □ Treat buckets/ Quiet Kennel Exercise □ Social Interactions □ Dog to dog interactions □ Play groups □ Group housing | <ul style="list-style-type: none"> □ Human Dog Interactions □ Positive reinforcement training □ Play □ Leash walks □ Quiet time/ Office Foster □ Other Enrichment □ Beds in kennels □ Hiding spots in kennels □ Toys □ Foraging toys □ Scent □ Music/ Quiet hours |
|---|---|

Conclusions

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- Kennel stress is an indicator of a negative emotional state and poor welfare
- All cases should be treated and early intervention can help reduce length of stay
- Prevention by creation of more behavior friendly housing and enrichment system can help prevent or reduce severity, progression of many cases

Conclusions

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- Documentation of behavior concerns using objective behavior descriptions important for comparing repeated evaluation pre- and post-intervention
- At minimum:
 - Provide daily walks and quiet time during entire shelter stay
 - Manage noise levels
 - Offer enrichment from time of intake to adoption

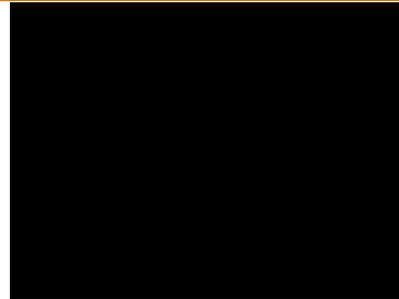
Thank You for Your Time!

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Gilbert

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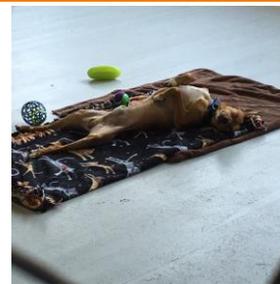
Gilbert

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Gilbert

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Gilbert

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Back to Stress in the Shelter

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Areas to Address

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- Environment
 - Housing
 - Size
 - Indoor/outdoor
 - Noise
 - Enrichment
 - Beds
 - Toys
- Social interaction
 - Conspecific interaction
 - Human interaction
- Exercise

Housing size, indoor/ outdoor

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- Dogs spent more time moving and less time in repetitive behaviors in larger pens
- Outdoor access
 - Associated with a decrease in stereotypy
 - Sometimes an increase in activity or pace
- By very nature, outdoor and/or group housing increases physical complexity of kennel environment

(Hughes & Campbell 1990; Hettis et al 1992; Hubrecht et al 1992; Beerda et al 1999)

Beds

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- Moving bed to front of cage made dog more likely to be at the front even though it's activity was not altered
 - May indirectly increase welfare by facilitating adoption
 - Visitors reported dogs at the front of cages to be more attractive than ones at the back
- Raised platforms were used by young dogs 55% of the time
 - After two months these dogs were rated as more confident, friendly and playful than previously

(Wells & Hepper 1992, 2000; Wells 1996; Hubrecht 1993)

Conspecific Social Interaction

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- Keeping dogs in groups
- Opportunity to satisfy biological need for physical exercise and social contact with conspecifics
 - Increased risk of behavioral abnormalities when housed singly
 - Particularly evident if isolated from a young age
 - More likely to circle repetitively, vocalize, and self groom
 - Almost complete absence of stereotypic behaviors reported in group-housed dogs

(Sonderegger & TuAn ;Thompson et al 1956; Fuller & Clark 1966; Scott 1980; Hubrecht et al 1992; Hubrecht 1993; Mertens & Unshelm 1996; Beerda et al 1999)

Conspecific Social Interaction

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- Group-housed shelter dogs were
 - ▣ More active, less aggressive, quicker to re-home
 - ▣ Showed fewer behavior problems in the new home
- Visual and auditory perception of conspecific without opportunity to physically interact can be very frustrating

(Mertens and Unshelm 1996 ; McAfee et al 2002; Mills & Davenport 2002)

Human Social Interaction

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- Presence of people can be both stimulating and calming
- Periods of human activity were correlated with increased dog activity and barking
 - ▣ Dogs more likely to stand near the front of the cage and bark during busy visiting periods

(Neamand et al 1975; Hughes et al 1989; Hetts et al 1992; Wells and Hepper 2000; Sales et al 1997; Ledger et al 1996)

Human Social Interaction

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- Human contact may decrease stress-related behavior and physiology
 - ▣ Mechanism for helping kennelled dogs cope with stress
 - ▣ Petting can reduce heart rate, after an initial rise upon greeting

(McMillan 1999; Hennessey et al 1998; Lynch & Gantt 1968; Kostarczyk 1992)

Human Social Interaction

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- Visual access to people without physical access
 - ▣ Can be over-stimulating, facilitate barking and be source of frustration
- Visual access to people may be detrimental to the welfare of the dogs
 - ▣ particularly for fearful dogs in shelters during maintenance or visiting times
 - ▣ Not been fully explored