CHRONIC STRESS IN KENNELLING: SOME PRACTICAL CONSIDERATIONS

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Kathryn Chappell suggests methods to decrease animal stress by improving accomodations in practice kennels

STUDIES on a variety of species have repeatedly associated poor welfare with spatial restriction and barren environments. In light of all this research, are veterinary practices, kennels and rescue centres really doing enough to improve their animal accommodation?

Part one of this two-part article (Real cost of kennelling; *VT* 39.22) explored the effects of acute and chronic stress on canine physiology. Cortisol levels, appetite, weight, body condition score, respiratory rate and faecal quality were studied in 58 clinically “healthy” new arrivals at the RSPCA’s Bristol Dogs and Cats Home.

During their first two weeks of kennelling in the isolation unit, the dogs were monitored for a wide range of behavioural and physiological effects associated with poor welfare. Summarised results from the experimental paper showed dramatically elevated urinary cortisol levels, significant periods of inappetence, idiopathic diarrhoea, decrease in body condition score, high incidence of tachypnoea and widespread weight loss in association with kennel stress. The implications of chronic stress on patient health and welfare were also discussed.

Part two studies behavioural changes associated with chronic stress in kennelled dogs, and provides suggestions for consideration and practical changes to help minimise inpatient stress.

Behavioural responses to stress

Reactions to stressful situations are obviously affected by an animal's experiences during its socialisation period, plus individual "personalities" and breed traits. However, the following behaviours are all associated with poor welfare and stress: the development of repetitive and stereotypical activities (obsessive oral or movement); increased panting and paw lifting (Beerda et al, 1997; Hiby et al, 2006); and oral displacement activities, such as lip-licking and snoutlicking. Additionally, there was an increase in the occurrence of "normal" behaviours including contact-seeking vocalising (barking, whining and howling) and psychogenic polydipsia.

Some of these displacement activities and stereotypical behaviours can be physically damaging and even painful to the animal, but, despite this, it will often continue to perform them.

Sometimes the behaviours are so extreme that even when the cause is removed, they are still exhibited by the animal, which may even show signs of distress when prevented from doing so, such as horses that box-weave, crib-bite and windsuck. Excessive chewing of bars and cage fittings is damaging to teeth, causing pain from exposed pulp, yet sows confined in stalls continue to obsessively chew bars, as do kennelled dogs.

Stress and fear can diminish normal "maintenance" behaviours such as eating, drinking, urinating and grooming. Lamouroux (1968) implies a link between stress and reduced appetite in a study on mental anorexia in dogs, and Hiby et al (2006) showed a decrease in normal drinking, urinating and grooming behaviours in kennelled dogs in a rescue centre.

Therefore, it is important to monitor not only what a veterinary patient is doing, but also what it is not doing.

Behaviour recording

Filming allowed analysis of the dogs'behaviour with humans (myself) present, and also captured their behaviour when they were left alone.

Each dog was filmed individually while in its run during the staff lunch hour. A pair of four-minute films (called film one and film two) were made on day one and day eight for each dog. Kennels were out of bounds to staff during filming and all hi-fis and intercoms were turned off. A camcorder was mounted on a tripod opposite the runs.

For film one to record "alone" behaviours, the camcorder was activated remotely from a separate building one minute after I left the isolation block.

For film two (human-interaction footage) the dogs were filmed while I was doing a set series of normal husbandry tasks, such as sweeping outside the run, standing in front of the run filling out

forms and making eye contact with the dog.

The types of behaviours seen in each film were divided into categories to make trends more noticeable: repetitive and stereotypical behaviours (for example, spinning, pacing and jumping – Figures 1, 2 and 3); escape behaviours (for example, bar chewing or scratching at the floor or sides of the run – Figure 4); oral displacement activities (lip-licking and yawn ing often indicate stress); fear or frustration behaviours (shaking or trembling); hallucinatory behaviours (staring at the wall and what is termed “fly chasing”); contact-seeking vocalisation (intermittent periods of barking, whining or howling) and repetitive barking (long periods of continuous barking as a stereotype).

Summary of results

A dramatic increase in the occurrence of stereotypical/repetitive behaviours was seen over time, with 23.3 per cent of the dogs stereotyping on day one and 44.1 per cent stereotyping by day eight. There was also a noticeable increase in the occurrence of stereotypes when I was present (film two), and periods of repetitive barking (film two) doubled to 44.1 per cent of dogs over a week of kennelling.

Escape behaviours increased by day eight, with almost twice as many dogs displaying escape behaviours with staff present compared to when alone.

Oral displacement activities were recorded in 37.9 per cent of dogs when alone and 75.9 per cent with staff present. Lip-licking and yawning had decreased slightly by day eight.

Half the dogs were captured on film either shivering or trembling on day one (48.3 per cent during film one and 50 per cent during film two) – subjects showed fear behaviours, both in the presence of staff and while alone.

What is termed “hallucinatory behaviour” was observed in only one dog, which was staring at the wall in both films one and two of day one. This dog was elderly and had previously been kennelled at a dogs’home. A week later this type of behaviour was exhibited by four dogs.

Regarding vocalisation, more than half (58.6 per cent) the dogs were whining, howling or barking (non-repetitive) during film one footage when they were alone, both on day one and day eight. In general, dogs were more vocal during film two footage, but some of the dogs were barking directly at my presence. However, many dogs were continuously whining while alone throughout film one.

Sadly, no direct relationship was found between types of behaviour and cortisol levels – similar to Beerda et al (1999b) – or between different behaviour types and periods of diarrhoea and inappetence.

The methods used to record behaviour were, effectively, only a snapshot of a daily behavioural repertoire, but it was possible to capture surprisingly revealing dog behaviour when alone. The fact that many dogs failed to settle when left alone was unexpected, and this must have a knock-on effect on the amount of rest the dogs actually received, causing them to be deprived of sleep.

Conclusion

More consideration of the psychological well-being of patients is needed in any type of animal accommodation, especially in veterinary practices.

A patient's physical health is the reason for its hospitalisation, yet its emotional state is repeatedly overlooked. After all, these are simply animals trapped in a confined space, frequently faced with stressful situations they cannot escape from.

Whether domesticated or not, if an animal cannot confront or flee from unpleasant environmental challenges or predict when the next emotional or physical challenge will occur, it will move from a state of acute stress (normally acting to assist the animal in overcoming the situation) to a state of chronic stress. We are aware of the detrimental results. It is hardly surprising that kennelled animals react in such extreme ways in moments of fear and stress, and that aggression towards veterinary staff is commonplace.

The study dogs were all "clinically healthy" and housed in rescue centre kennels a good deal larger than veterinary cages.

Hospitalised veterinary patients may also already be trying to cope with pain, compromised immunity, or drug or disease-related disorientation. If they also have reduced mobility, they will be even more anxious when approached because their ability to escape is affected.

Unfortunately, the current attitude of the general public towards the kennelling of domesticated animals does not yet mirror the pattern of increasing sympathy that is now being felt towards the confinement of wild animals in zoos. It is simply deemed acceptable to kennel a dog or to place a cat in a cattery while away on holiday, with little or no thought given to the effect this is having on that animal's welfare and health. Sadly, it is also considered relatively acceptable in most veterinary practices to hospitalise animals in whatever accommodation is available, no matter how small or unsuitable.

The majority of domestic dogs accept short periods of confinement (such as travelling in the back of a car), so it is somehow thought to be fine for these animals to be placed in cramped, barren conditions in veterinary practices. Animals that fail to cope with this are often seen by staff to merely be "misbehaving".

Unfortunately, I can recall countless situations when dogs have been accommodated in veterinary

practice spaces that they can barely turn around in, or in a totally unsuitable location in relation to other animals. It is commonplace for a 35kg Labrador to be placed in a “normal” sized kennel of less than $2m^2$ because that is the largest cage the practice has to offer, or it is the only vacant kennel.

Housing prey species such as rabbits opposite a predator such as a dog, cat or ferret is also, sadly, a regular occurrence in many practices, and animals that show aggression towards each other are often put in neighbouring or opposite cages.

It is the responsibility of all veterinary staff to combat these issues. The financial outlay on patient accommodation is pitiful in comparison to the amount a practice would be willing to pay for the latest diagnostic or surgical gadget, yet poor housing massively affects patient welfare and recovery time, and can trigger behavioural problems such as stereotyping, self-mutilation and dog-to-dog aggression.

The recommended management and care of dogs in research institutions is stipulated in legislation documents from the Home Office and by bodies such as the Universities Federation for Animal Welfare (UFAW). The UFAW minimum space recommendations for laboratory dogs (Table 1) include how much space these animals are allocated. Note that there are no minimum space guidelines for veterinary patients.

Section nine of the Animal Welfare Act 2006 states that “a person commits an offence if he does not take such steps as are reasonable… to ensure the needs of an animal are met… to include… its need for a suitable environment… diet… to be able to exhibit normal behaviour patterns… any need it has to be housed with, or apart from, other animals and… its need to be protected from pain, suffering, injury and disease”.

I am frustrated to see that – considering their “duty of care” – many veterinary practices and kennelling establishments are not sufficiently implementing this new legislation. In my experience, mixedspecies housing in itself causes “unnecessary suffering”.

When designing kennel areas and training staff in handling and husbandry techniques, veterinary practices should act on the valuable information gained from studies. Kennel noise is damaging to the hearing of staff and animals as well as being stressful. It can be reduced by eliminating straight corridors and by using sound-proofing materials or adding acoustic doors and cavity walls (Hubrecht, 1992).

The suitability of certain kennel “furnishings” will obviously vary according to individual cases. For example, after orthopaedic surgery, a dog needs spatial restriction and a flat nonslip surface without steps for safe recovery. Additionally, animals on IV fluids are in danger of getting tangled up in toys, while patients with normal mobility or that are not on medications that reduce sensory perception can benefit from small considerations.

Environmental enrichment techniques need not compromise ease of husbandry or infection control, and can still be practical. A simple platform will increase an animal's visibility of its surroundings and provide additional kennel floor area (Hubrecht, 1993). A three-sided barrier will provide the animal with a place to retreat while still being visible enough to monitor it without disturbance. Easily cleaned toys suspended just off the ground on ceiling chains will not be soiled, and toys (particularly those with a desirable taste or smell) act to decrease destructive behaviour of cage fixtures (Hubrecht, 1993). Raised bed areas add another dimension to the space. Bedding should be kept clean, dry and away from draughty, damp and soiled areas. This is of great benefit to patients where coat contamination may cause infection and complicate wound healing. Whenever possible, animals should be housed with their companion if the space is adequate.

The larger the kennel, the more able the dog is to separate its sleeping and toilet areas – a natural choice for most animals. This also reduces staff workload by making cleaning easier. Kennel "through traffic" should be kept to an absolute minimum, and noise made by staff, machinery and husbandry procedures must be reduced as far as practical.

Professional statutory regulation of veterinary nurses will most likely lead to more widespread introduction of nursing care plans. Hopefully, this will result in a dramatic improvement in the quality and continuity of patient care, with veterinary nurses playing a key role.

Nursing care plans are useful tools to ascertain what is "normal" for each individual, so changes in behaviour and demeanour can be quickly noticed and acted on. Sticking to a patient's home routine regarding exercise, diet, toilet habits, familiar bedding and toys, as well as familiar use of language and handling, will all help improve its sense of normality and security and so reduce stress.

Nurses should also take the allocation of kennels very seriously, and select a suitable housing and handling protocol to suit each patient's needs according to its illness or injury. Whenever possible, patients should be handled by the same member of staff. This would build a bond of trust, allowing the animal to feel safer and, therefore, be easier to handle. If this is not practical, Hubrecht (2005) suggests patient-handling procedures should be standardised among all staff. Social contact with staff and owners, and the opportunity to exercise and play, should be scheduled in the same way as any other procedure, because it carries a similar importance and is crucial to the animal's demeanour.

Despite its limitations, this study has successfully illustrated the significance of stress in kennelled dogs and the important relationship between emotional challenge and physical and mental health. Veterinary staff members are on the front line for improving the welfare of caged animals and should be leading by example. It is essential that we make changes to refine housing, husbandry and handling to reduce the stress of all animals in our care.

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Figure 1 and 2 (insets). The observed behaviour includes repetitive jumping, pacing and stereotypical spinning.

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Figure 3. Is the kennel design encouraging dogs to jump?

Figure 4. Dogs continue to frantically scratch fencing and concrete floors.

Body weight of dog kg (lb)	Minimum floor area per dog m^2 (ft^2)		Minimum height cm (in)
	Housed singly	Housed in groups*	
less than five (11)	4.5 (48.4)	1.0 (10.8)	150 (59.1)
5-10 (11-22)	4.5 (48.4)	1.9 (20.5)	150 (59.1)
10-25 (22-45)	4.5 (48.4)	2.25 (24.2)	200 (78.7)
25-35 (45-77)	6.5 (70.0)	3.25 (35.0)	200 (78.7)
more than 35 (77)	8.0 (86.1)	4.0 (43.1)	200 (78.7)
* Floor area must not be less than specified for a singly housed dog.			

Table 1. UFAW recommended kennel sizes for laboratory canines