

Prevalence and impact of sound sensitivity in dogs

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In a 2005 survey for the RSPCA, 49 per cent of UK dogs were found to exhibit some degree of fear of firework, thunder or gunshot noises¹. However, the study did not look at the severity of the fear problems reported, so it isn't known what proportion of dogs were so badly affected that the problem had an impact on their health or quality of life.

As part of a series of studies to develop an online sound sensitivity questionnaire, the author and others characterised a number of aspects of noise fear in dogs^{2,3}. They found the same overall proportion of dogs as the RSPCA study was afraid of loud noises, but about a third of those fearful dogs could be classified as severely affected.

These were dogs that reacted to fireworks, thunder or gunshot noises that were distant and almost inaudible to owners. They also showed high levels of distress during noise events.

After an incident, these dogs would take a long time to recover and often be nervous even the day after a noise incident.

This level of sound sensitivity makes it hard for dogs to enjoy a normal quality of life and they really need behavioural therapy and, in many cases, medication.

Evidence also suggests problems of fear and anxiety may impact on the health of animals. In one study, dogs with non-social fear and separation anxiety experienced significantly increased severity and frequency of skin disorders, and dogs with a fear of strangers had a significantly shorter lifespan⁴.

The worst affected noise-sensitive dogs will eliminate or vomit during noise events, so it is probable these animals are at a high risk of stress-related health problems.

Detection and triage

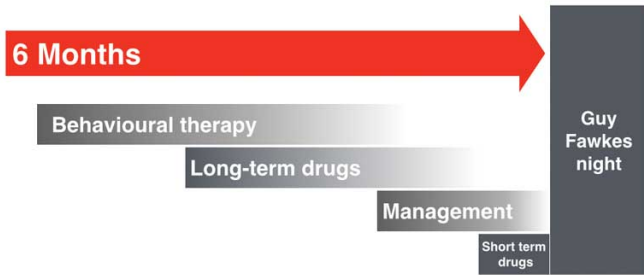


Figure 1. Timeline showing intervention constraints leading up to a noise-related event.

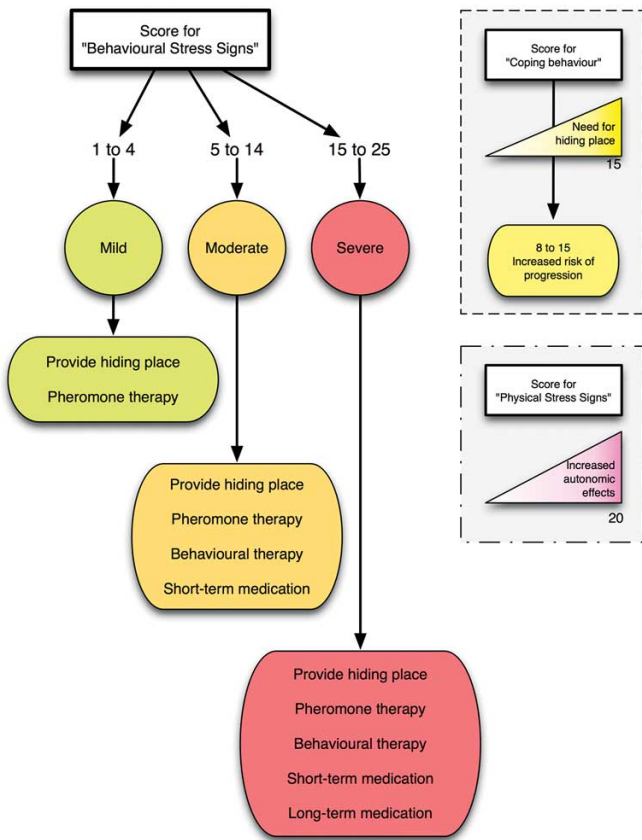


Figure 2. Sound sensitivity questionnaire.

Typically, clinics experience a surge in demand for help with noise fears in the fortnight before a public event, such as Guy Fawkes Night.

Unfortunately, the range of interventions we can offer becomes more constrained as an event approaches (**Figure 1**).

In many cases, behavioural therapy such as desensitisation can produce an improvement within eight weeks, but often takes much longer in severely affected dogs. Long-term medication will usually take four to eight weeks to produce an effect. Even short-term anxiolytic drugs, such as diazepam and alprazolam, should only be used after the effects have been tested in an individual dog. It is also clear noise fears tend to get worse over time, with only four per cent of the dogs in the RSPCA study spontaneously improving. So, early detection is important not only for treatment, but also to prevent the development of more serious problems.

This is why the author and Jaume Fatjó developed a short online sound sensitivity questionnaire^{2,3}, which has been translated into several languages, including French, German and Spanish. The questionnaire can be completed online in the clinic or clients can be sent a link so they can fill in the questionnaire at home. This has the advantage of it being easy to contact a large number of clients. The questionnaire has been made publicly available through sponsorship from Ceva Animal Health and is available from its website.

The questionnaire generates scores for several aspects of the dog's reaction to noise events and indicates how severely the dog is affected. It also provides some basic advice on how to help the dog. A simple algorithm enables clinicians to determine the best level of treatment to offer (**Figure 2**). Since the questionnaire has high retest reliability, it can also be used to determine whether the owner has made the correct changes necessary to enable the dog to cope better with noise events, and to track the improvement or deterioration of a case over time. This enables us to identify whether therapy has been effective.

Prevention

The incidence of firework fears has been found to be lower in UK dogs that were born in autumn¹. This is close to the start of the firework season, so puppies born at this time would be exposed to firework noises during their sensitive period.

This is confirmed by the finding puppies that had experienced thunder during the first four months of life were 2.26 times less likely to develop a fear of thunder, compared with those that had not experienced it⁵.

This effect is not confined to exposure to real events; exposure to sound recordings of thunder and fireworks during the sensitive period (for example, at a puppy socialisation class) has been shown to reduce problem risk by five to seven times⁶.

Some practical challenges can occur when playing sounds to puppies to habituate them, not least of which is finding recordings of suitable quality.

Several years ago, the author and Sarah Heath made a product for habituating puppies to a wide range of sounds including fireworks, thunder and gunshots, which is available as a free download from the Dogs Trust website.

An instruction manual is included, which also contains information about socialisation and how to deal with a range of minor behavioural problems commonly seen in puppies. The author recommends clinics publicise the availability of this resource to all clients who breed dogs.

Treatment overview

Main methods for dealing with dogs with noise fears include:

- Management: providing a suitable hiding place and minimising noise event exposure.
- Behavioural therapy: desensitisation and counterconditioning.
- Medication:
 - Long-term to control the dog's emotional response to fearful sounds and situations.
 - Short-term to diminish acute responses to fearful events, or to induce amnesia.

Choice of specific treatment depends on the severity of the dog's reaction, as well as the frequency and intensity of sound exposure it experiences. Severely affected dogs will probably need the full spectrum of treatments, from short-term medication to long-term medication and therapy. Mildly or moderately affected dogs respond very well to desensitisation and counterconditioning alone.

Management

Panel 1. Creating a suitable hiding place

Typically, dogs prefer to hide in dark, quiet places away from household activity, but they may also want to be close to a person for added security. Making the following additions can help improve a hiding place:

- Windows and curtains closed and lighting dimmed.
- A comfortable, familiar bed with extra blankets and items of recently worn clothing carrying the scent of the owner.

- A water bowl, chews and toys nearby in the room.
- A dog appeasing pheromone diffuser in the room where the hiding place is, close to where the dog's bed is located.

A dog is more likely to use a hiding place if it likes to go there at other times. If possible, the hiding place should be set up a week ahead of any expected loud noise event.

Owners should give the dog treats and chews when it is in the hiding place, and show attention and approval when they find the dog there. This allows time for the dog to get used to the hiding place and associate it with pleasant experiences. This hiding place must be available to the dog at all times, regardless of whether the owner is at home.

Owners must not force animals to confront their fears by, for example, cutting off opportunities to hide. This can make dogs worse and, in some cases, leads to aggression. Comforting a fearful or phobic dog excessively should also be avoided because it is possible to foster excessive dependence.

The best advice is to provide the dog with a secure hiding place it can go to at any time – this has been found to reduce stress and fear. Often, dogs already go to a specific place to hide, such as a bathroom or behind a sofa, and the best option is to make this existing hiding place even better.

Dogs that show a lot of freezing, low body posture and repeated unsuccessful attempts to hide (for example, going from one hiding place to another, never fully settling) have not found a suitable hiding place.

Owners of these dogs should be encouraged to provide a hiding place in accordance with the instructions in **Panel 1**.

Behavioural therapy

Several studies have shown the benefit of desensitisation and counterconditioning using recorded firework sounds. After an eight-week plan of behavioural therapy using recorded sounds, dogs were tested with a different sound recording and the clients were asked to evaluate their dog's response to real firework events⁷.

Substantial and significant improvements were found after this brief intervention, and these benefits were found to persist, with severity scores remaining lower than at baseline after a year without further treatment⁸. Clients rated the procedure to be easy and worthwhile.

The therapy programme evaluated in these studies was Sounds Scary, which the author developed in conjunction with Miss Heath.

Having been commercially available for more than a decade and used to successfully treat thousands of dogs, this year the creators decided to make the whole product available as a free download from the Dogs Trust website. This includes an instruction manual and high-quality recordings of fireworks, thunder and gunshots, as well as related sounds they know some dogs also react to (such as rain and hail).

Evidence suggests the effects of behavioural therapy last for at least 12 months after treatment, but it is generally recommended dogs should undergo occasional “top-up” therapy sessions to maintain their resilience to loud noises.

Medication

Medication can be used as a short-term strategy to enable a dog to deal with an inevitable event or circumstance, or long-term to assist in the application of behavioural modification techniques over a period of weeks and months.

Short-term therapy

The favoured approach for short-term treatment is use of benzodiazepine and triazolobenzodiazepine drugs.

Until recently, the most frequently prescribed drug was diazepam, but in the UK this has largely been superseded by triazolobenzodiazepine drug alprazolam.

Alprazolam has been shown to be an effective short-term anxiolytic in noise fears and phobias⁹. Given at a dose rate of 0.02mg/kg to 0.1mg/kg, alprazolam has a short half-life of approximately four to six hours, and a wide therapeutic range.

Unlike diazepam, ataxia and hyperexcitability are uncommon, but a test dose should always be administered to check a patient’s response before using the drug for a real event. A test dose of 0.02mg/kg should be given on a quiet day, and the dog observed for any adverse effects.

In animal models, alprazolam has been shown to have both retrograde and anterograde amnesic effects. The same effects have been reported in dogs receiving alprazolam for noise fear.

To achieve an amnesic effect, alprazolam may be given at a low dose (0.02mg/kg) before, during or after a fearful event. However, some evidence and anecdotal experience suggests regular use of alprazolam alone during a season of noise exposure can reduce reaction to loud noises.

Due to its amnesic properties, alprazolam may also be used as a “safety net” after completion of a long-term drug and behavioural therapy programme to prevent a relapse. It can be given after an intense noise event to block memories that might undermine therapy.

There is the potential for these drugs to be abused by humans and prescribing patterns should therefore be monitored to ensure clients are not obtaining them for personal use.

Long-term therapy

Long-term drugs can improve response to behavioural therapy, alleviate debilitating effects of intense fear and improve welfare of the animal. They can also limit progression of the problem (for example, generalisation).

In general, they should be reserved for treatment of dogs classified as severe using tools such as the sound sensitivity questionnaire. However, long-term medication is also valuable for dogs that react less severely, but are exposed to loud noises very frequently.

Clomipramine

Clomipramine is a serotonin reuptake inhibitor (SRI) drug licensed in the UK for treatment of separation anxiety in dogs. SRI drugs reduce anxiety and panic, making them suitable for treating dogs with severe noise fear. The efficacy of clomipramine at its standard data sheet dose has been confirmed in an open label prospective study⁹.

The main serotonergic alternatives to clomipramine are fluoxetine and sertraline, but these drugs are not licensed for use in animals.

Typically, serotonergic drugs are prescribed for a period of six months, after which they are gradually withdrawn over a period of six or more weeks. Gradual withdrawal is generally recommended for SRI drugs to avoid relapse, rebound anxiety and discontinuation syndrome.

Selegiline

Selegiline is licensed in the UK for treatment of behavioural problems with an emotional origin, including fear. It is a selective irreversible inhibitor of monoamine oxidase B, the enzyme that metabolises dopamine and phenylethylamine. However, it also has some effects on serotonin metabolism, through its effects on monoamine oxidase A.

As a result, it must not be coadministered with tricyclic antidepressant, SRI or selective serotonin reuptake inhibitor drugs, and a washout period of 14 days must be allowed between selegiline and these drugs (and vice versa). Clinical experience suggests selegiline is effective in treatment of noise fears associated with behavioural inhibition and symptoms of social withdrawal – for

example, dogs that hide and refuse to leave the house. Effects are usually seen within eight weeks, sometimes in less than a month. Like serotonergic drugs, selegiline is typically prescribed for six months.

Summary

Fear of loud noises is the commonest and best understood behavioural problem affecting pet dogs in the UK. A range of effective treatments and tools that facilitate problem detection and assessment are available, some of which are now free.

By detecting cases early and offering the most appropriate treatments, we can improve quality of life for dogs and prevent them from developing serious problems that can affect the quality of life of owners.

- Some drugs in this article are used under the cascade.

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