

Animal handling, restraint and transport

Clare Wilson with exotic pets by Simon Girling

Learning objectives

After studying this chapter, readers will have the knowledge to:

- Describe how to handle and restrain dogs, cats and exotic pets correctly for examination, transportation and treatment
- Adopt canine and feline communication strategies and behaviour as a foundation for an approach to animal capture, handling and restraint that is both ethologically appropriate and causes minimal stress
- Identify why animals might show anxiety or fear behaviour at the veterinary practice and use methods of approach, catching, handling and restraint that recognize and minimize anxiety and fear
- Discuss basic learning theory in animals and how this applies to the veterinary context
- Describe approaches used to interact with, handle and restrain dogs, cats and exotic pets to ensure human safety whilst providing excellent patient welfare
- Adopt techniques to manage the handling of aggressive or potentially aggressive patients, including the use of relevant equipment
- Apply the principles of handling and restraint to use in everyday veterinary practice

Introduction

Veterinary nurses are commonly required to handle and restrain animals for various reasons and must learn how to do so for the safety of the animals, staff and clients. Appropriate handling of animals allows tasks to be completed efficiently and with minimal distress to the patient. Stress has detrimental consequences such as triggering defensive aggressive behaviour or escape attempts, as well as adverse effects on healing, immunity and health. Client perceptions must also be considered; if respect and care is shown towards their animal, the client-practice relationship will improve, providing long-term benefits.

Aims of handling and restraint:

- To ensure high standards of patient welfare and minimize distress
- To allow efficient examination, treatment or procedures
- To ensure safety of all involved (patients, staff and clients), particularly in relation to using sharps or instruments, as well as in relation to the responses of the animal, both of which risk causing injury
- To ensure that existing injuries, pain or distress are not exacerbated.

This chapter discusses not only handling techniques but also how to identify emotional states of patients through observation of behaviour and ways in which animals learn. This information is crucial for ensuring appropriate handling, in addition to creating long-term successful relationships between patients and the veterinary staff. When handling non-tame animals of any species, alternative techniques may be required due to the necessity to medically treat these patients. However, it must be noted in all cases that learning will affect future behavioural responses and, in cases where animals are excessively fearful, the use of chemical restraint (sedation or general anaesthesia) is preferable. It is also the case that all species, domesticated and non-domesticated, can be trained to allow minimally invasive handling techniques.

Canine and feline communication

Ethology is the study of animals' behaviour, in particular in their normal environment. Interacting with patients in an ethologically appropriate manner aims to ensure their

wellbeing, whilst keeping the veterinary surgeon and veterinary nurse safe. Understanding normal behaviour and the strategies that animals use for communication is a crucial foundation for appropriate interaction. This enables staff to adapt techniques depending on the response of the patient and thus minimize fear and distress. Fear and pain are the most common underlying causes of aggressive behaviour in the veterinary context. Therefore, minimizing fear and being aware of potential pain reduces the risk of animals exhibiting aggressive behaviour.

Avoidance of conflict

Physical conflict is potentially dangerous in dogs and cats due to the risk of serious injury, so strategies for both species aim to minimize this risk. The strategies used in each species are different due to significant differences in their evolutionary and domestication history and are addressed separately (see below). In both species, one of the primary aims of communication is to avoid confrontation and physical conflict, so a thorough understanding of this is crucial for effective handling.

Canine communication

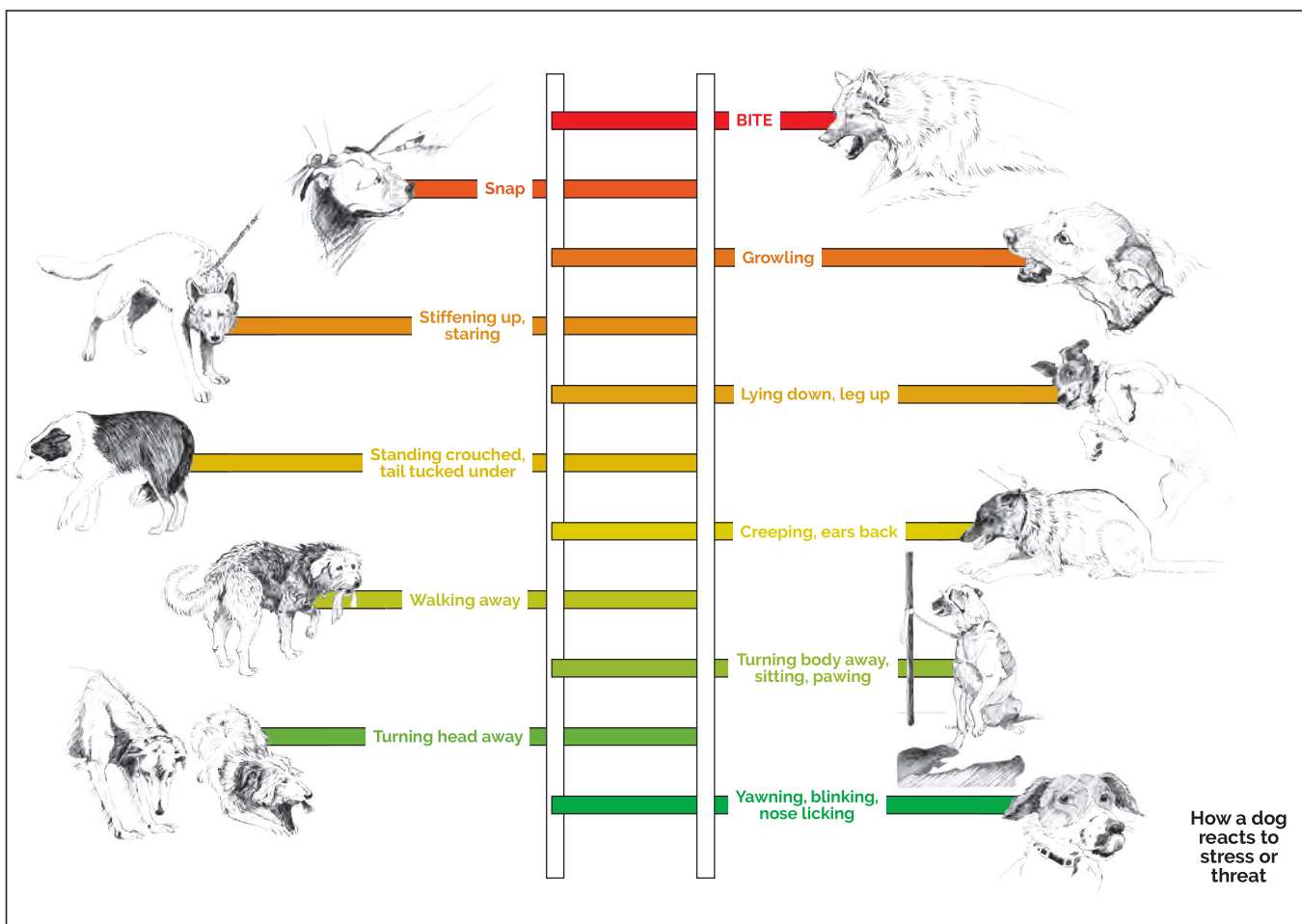
Dogs are highly adapted to social living and have well developed, complex means of communicating to ensure avoidance of conflict. They use visual, vocal, olfactory and tactile strategies, but those of primary relevance in a handling

context are the visual signals of body language, including posture and facial expressions. It is essential to recognize subtle signs of anxiety and fear, and to identify the triggers for those responses in order to avoid the expression of aggressive behaviour.

Figure 11.1 illustrates the escalating responses of dogs that are seen when they feel under threat. Lower level signals (e.g. turning the head away, licking the nose and lifting a paw) are seen in response to low intensity threat. If the threat intensity increases, dogs will escalate their signalling in an effort to avoid physical confrontation. Only when dogs are feeling very threatened will they resort to biting. Each individual will show unique responses as their perception of what is deemed a threat depends on several factors, such as genetics, early experience and physical illness/pain. Responses also vary depending on prior experience. If dogs have experience that lower level signalling is ignored, they may escalate more rapidly to growling, snapping and biting. It is therefore crucial that these communication signals are recognized and respected when interacting with patients.

Feline communication

The ancestor of the domestic cat was a highly territorial and solitary wild cat. Although the domestic cat has adapted to social living and is capable of making strong social bonds,



11.1 The Ladder of Aggression. (© Maggy Howard and Kendal Shepherd)

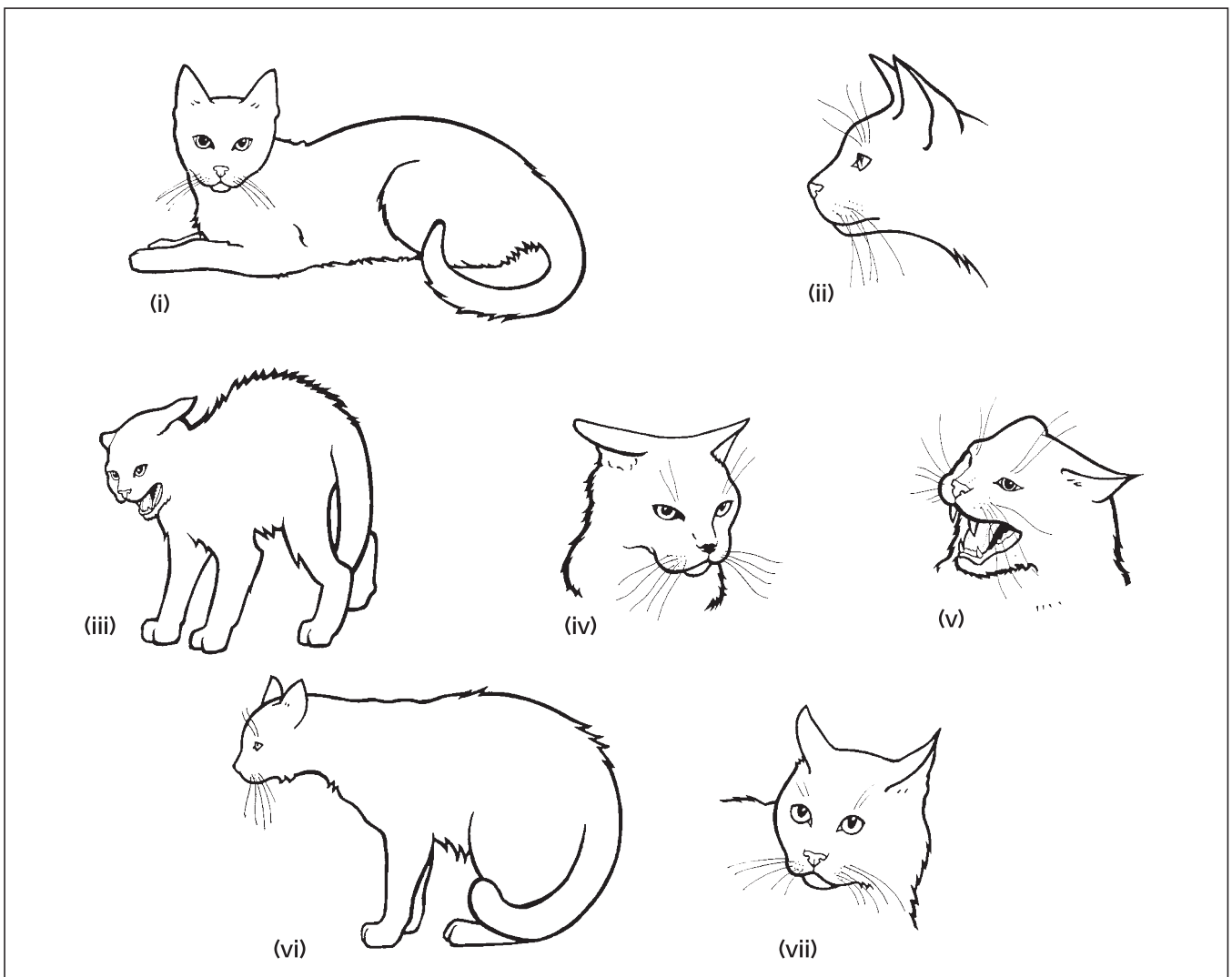
much of their communication is still based on their evolutionary history of solitary living and territorial behaviour. Cats have not developed an intricate system of escalating signals to appease threatening behaviour like dogs. Their system of communication is primarily based on using distance-maintaining strategies to avoid coming into close proximity with unfamiliar cats, in combination with using affiliative behaviours towards those within their social group. If these distance-maintaining strategies fail, cats have very limited communication skills for resolving conflict and, in this context, fights and injuries are common. Therefore, the veterinary professional needs to ensure that cats feel safe when handled in order to avoid defensive aggression and the risk of serious injury. Observing facial expressions and body posture provides a great deal of information about how a cat is feeling. Figure 11.2 illustrates changes in body posture and facial expressions that occur during different emotional states in cats.

Learning theory and its practical application to the veterinary context

Understanding how animals learn is crucial for working effectively with them in both short-term situations, such as in a 10-minute consultation, and for the long-term consideration of future surgery visits. The general processes discussed below occur not only during active training but also in everyday life in relation to all the environmental and social stimuli experienced.

Habituation

This is the process whereby the animal 'gets used to' a stimulus such that it no longer shows an active response to it. The purpose of such learning is to avoid overwhelming the sensory systems with information that is not useful. This is the process we should use when socializing young animals to stimuli we wish them to ignore in the future (e.g. traffic, fire-works, people and other dogs walking by).



11.2

Feline visual communication signals help to differentiate between (i–ii) an alert non-threatened cat, (iii–v) a fearful and defensive cat and (vi–vii) a confident aggressive cat. (Reproduced from *An Ethogram for Behavioural Studies of the Domestic Cat (Felis silvestris catus L.)* by the UK Cat Behaviour Working Group (1995); plates 3, 4, 5, 6, 7, 16 and 17, by permission of Universities Federation for Animal Welfare (UFAW), Wheathampstead)

Sensitization

Sensitization is the opposite of habituation and results in the animal becoming more responsive to a stimulus over time. This is the basis of the development of sound phobias but is equally relevant to aversive experiences at the veterinary surgery, which can lead to increasingly fearful and anxious behaviour over time. This process needs to be avoided.

Associative learning

When two previously unrelated stimuli become relevant to each other, associative learning has occurred.

Classical conditioning

In this type of conditioning, an association is formed between two stimuli that were previously unrelated, based on instinctive responses. No 'thinking' is involved in this process. The purpose is to create predictive cues to make the world easier to understand and live in. It is happening all the time; for example, dogs make an association between their lead being picked up and going for a walk. This learning makes the world more predictable and therefore less stressful. This process must be used to prevent fear responses from developing by ensuring that handling, examination and treatment are paired with good consequences. For example, clipping nails or applying eardrops can be associated with food treats by doing the procedure then giving a treat. The timing of this is crucial, as the action must predict the food.

Operant conditioning

Operant conditioning is related to consequences of behaviour rather than just a simple association. There is an increase in the behaviour if it has positive (good) consequences and a decrease in the behaviour if the consequences are negative (bad) or neutral. As veterinary professionals, if we are aware of this learning process, situations can be created whereby the dog is set up to behave appropriately and is rewarded for that behaviour. For example, rewarding a dog for sitting as we pass a kennel door in the hospital will increase the frequency of sitting occurring in the future, as the dog learns that sitting predicts a beneficial outcome. If this form of learning is ignored in the clinic, dogs may inadvertently learn inappropriate responses, such as kennel guarding, as the frightened dog learns that aggressive responses keep people away from the kennel.

Desensitization

During this process, the animal's perception of a stimulus that results in sensitization is altered such that it shows a neutral response to it. This process can be used to reverse sensitization by very carefully exposing the animal to a stimulus they are sensitized to at a low intensity and allowing them to habituate to it. Over time, the intensity is increased at a rate the animal can cope with, so that when this process is complete the animal will ignore the stimulus when it is presented at a normal intensity.

Counter-conditioning

This process can be used to create a positive (good) association with a stimulus that previously caused a negative (bad) association. This is a crucial process to understand when working with animals who have developed fear responses to handling, restraint, examination and treatment. As with desensitization, the aim must be to present the stimulus (e.g. otoscope, syringe, nail clippers) at a low intensity so that the animal is relaxed in its presence and then to associate that experience with something positive (e.g. food, play, verbal praise, physical interaction).

Context specificity of learning – importance of generalization

Many dog owners will have done at least some basic training with their pets, either in the context of classes, at home or when out walking. However, their pets are unlikely to have practised responding to cues in the context of the veterinary surgery, or learned cues associated with a clinical examination or treatment. Learning occurs in a context-specific manner and, therefore, owners should be encouraged to practice responses to various cues in various different situations. The use of learned cues during veterinary examination and treatment can vastly aid handling (Figure 11.3).

Effects of stress on learning and response to learned cues

There are many emotional states that can lead to a stress response, including frustration, fear, anxiety and pain. Mild stress benefits the learning process but higher levels of



11.3 (a) Food lures, (b) rewards and (c) cued behaviours can aid examination of veterinary patients. (© C. Wilson)

stress, such as stress that may occur in some patients at the surgery, may adversely affect learning. Stress can reduce an animal's ability to learn new responses or respond to previously well-trained cue words such as 'sit'. However, stress also heightens the animal's ability to learn about negative (bad) experiences and, therefore, stressed animals are even more at risk of learning to show avoidance or defensive aggression if they are not interacted with appropriately. Just one aversive experience can have a powerful effect, particularly in young animals in their early visits to the surgery. Thus, it is always better to err on the side of caution and consider whether an individual patient is resilient enough to cope with the planned procedure or whether an alternative strategy might be more appropriate.

Initial approach and handling of dogs and cats

The manner in which animals are approached and handled will have a long-term effect on the client–practice relationship, affect the behaviour and welfare of the animal, and influence risks of aggressive and/or escape responses. Animals must therefore be treated with respect and handled gently and calmly. When the owner is present, not only is their opinion of how you treat their animal to be considered, but also their safety. Owners can be involved in assisting with handling, but the risks must always be assessed and other practice staff utilized if an owner is at risk of being injured. Owner behaviour should also be considered, as an overly anxious owner or an owner using forceful techniques on their animal may adversely influence the animal's behaviour. For some animals, particularly puppies, it is best to ensure that the owner is present as they provide important emotional security.

Fear and anxiety

Fear is the most common underlying reason for pets showing aggressive behaviour in the veterinary context (as discussed above). Animals become anxious or fearful for many reasons, for example ill health, pain, an unfamiliar environment, pre-existing fear of unfamiliar people, previous experience, owner anxiety about their pet's health or behaviour, aversive scents and stress during transport to the surgery. The concept of 'trigger stacking' must be considered (see Figure 11.4); this is where several small stressors have a cumulative effect and result in an animal going over their threshold for coping. Educating owners in how to reduce potential stressors (e.g. cat box training) can help pets to arrive at the surgery in a more relaxed state. Management of the waiting room, for example separate rooms for cats and dogs, partitions between dogs and avoiding long waiting times, can all reduce the build-up of stress.

Trigger stacking

There are many potential triggers that can cause stress at the surgery, one or two of which in isolation may not adversely affect the patient. However, if several triggers co-exist in a relatively short space of time, their



Trigger stacking *continued*

cumulative effects can have severe consequences on the patient's ability to cope (Figure 11.4). The entire process of a surgery visit must be considered: the client getting the animal ready for transport, the journey itself, entry to and time spent in the waiting room, and every other aspect of the surgery visit. Addressing as many of these triggers as possible that affect an individual patient will be of significant benefit to subsequent handling and restraint

History-taking


Taking the history before examining the animal allows time for them to adjust to the situation in which they find themselves. It also provides for distant observation of the animal, for both behavioural and clinical purposes. Dogs and cats without a history of aggression can be allowed to explore the consulting room, dogs with their lead trailing and cat carriers opened to allow them the opportunity to exit should they choose to. Allowing cats to explore their three-dimensional (3D) environment is very beneficial and owners should be encouraged to allow them to do this rather than trying to contain them on the consulting table. During this time, some patients may choose to approach and initiate interaction, which can be welcomed with calm and gentle responses. In addition to asking the general clinical and pre-anaesthetic questions, owners should also be asked for behavioural information about their pet. This is of primary importance for patients that are to be hospitalized but is also relevant for consultation appointments (see also Chapters 10 and 14).

Distant observation

In addition to noticing specific communication signals in cats and dogs, observing general muscle tension and posture are also relevant to identifying emotional state. These can be observed from a distance when an animal first enters the surgery or consulting room, or is resting in a hospital cage, to provide an initial assessment. Identifying signs of anxiety or fear allows the type of approach to be tailored to the individual animal. Observing the distribution of bodyweight in the animal reveals whether they want to move away or towards us. Activation of the sympathetic nervous system in anxious or fearful animals results in various physical changes that can be observed at a distance. The respiratory rate may be elevated in anxious animals, resulting in panting in dogs, although dogs may pant for a variety of other reasons including increased environmental temperature and respiratory compromise. Cats only pant if severely stressed or if they have a compromised respiratory system. Widely dilated pupils, which are often non-responsive to pupillary light reflex testing, in combination with either staring or hyper-vigilance may indicate fear.

Environment observation

Animals have four basic responses when they are feeling frightened: freezing, flight (running away), fight (defensive aggression) or 'faffing about' (showing displacement behaviours such as sniffing, scratching, grooming). As discussed above, animals generally prefer to avoid conflict but, if




Preventing aggression in the veterinary practice by recognising 'trigger stacking'

The dog may show defensive aggression if his level of fear crosses this line


Fear trigger

Being leaned over or stared at




Fear trigger

Other dogs




Fear trigger

Noise



Fear trigger

Noise



The more fear triggers a patient is exposed to, the more likely they are to use defensive aggression. This can be reduced by managing as many triggers as possible.

Promoting the best in pet behaviour: www.apbc.org.uk

Images by Lili Chin
Design by Stephanie Hedges RVN CCAB and Clare Wilson CCAB MRCVS

11.4 Trigger stacking. (© APBC, images by Lili Chin)

options are restricted, they are more likely to show aggressive behaviour. The environment must be taken into account when initially approaching animals in the veterinary surgery as confinement, whether in the consulting room, a hospital cage, being physically restrained or on a lead, can cause animals to show defensive aggression when, if given the choice, they would have used avoidance.

In addition to the physical environment, the social environment should also be considered. The owner–pet relationship should be considered; for example, observing whether the owner is providing important support for their pet or whether they are inadvertently exacerbating anxious responses. The presence of other animals in the consulting room may affect the behaviour of the patient; for example, some anxious dogs may benefit from having their canine housemate with them if the other dog is relaxed at the surgery. However, if both dogs are anxious this might aggravate the situation and they may be better seen separately. Dogs and cats who have a good relationship at home may not provide the same support to each other in an unfamiliar environment; this is particularly true for cats who, having been brought out of their familiar home territory, may find the presence of the dog an additional stressor.

Interacting with the dog

When approaching dogs, the veterinary professional must bear in mind what a dog may perceive as confrontation. Dogs do not approach each other head-on during friendly

greetings, but from the side and circle around each other. A head-on approach is seen as confrontational and may inadvertently cause even a friendly dog to feel under threat, so a side-on approach is preferred (Figure 11.5a). Direct eye contact can also be misinterpreted as a threat, so avoiding eye contact will help put an anxious dog at ease. Where the dog is touched during an examination should also be considered; starting with the front of the chest is a non-threatening approach. Reaching over the head or leaning over the dog should be avoided (Figure 11.5b). If possible, allowing the dog to approach voluntarily is preferable to the staff approaching the dog. The use of previously learned cued behaviours should be used to the veterinary professional's advantage (see Figure 11.3). Nervous dogs often relax if they are given cue words or hand signals that they recognize and expect rewards for. Appetite is often inhibited by stress, so the willingness of a dog to eat treats in the consulting room can be a good measure of anxiety levels, which provides important information for deciding how best to interact with that patient.

Interacting with the cat

The use of a towel pre-sprayed with feline facial pheromones on the consulting table may help some cats feel more relaxed. Cats may willingly exit their carrier when the door is opened, but others may prefer to remain inside, as hiding is one of the cat's main coping strategies when worried. The information below explains how best to approach cats that are unwilling to exit their carriers. Forceful



- 11.5** (a) Animal should be approached from the side.
 (b) Leaning over or reaching over the head of an animal should be avoided.

extraction must be avoided at all costs, as this is likely to frighten the cat and make handling difficult. Allowing cats to choose where they feel safe reduces the chances of them attempting to escape or showing defensive aggression during examination. Therefore, owners should be discouraged from attempting to control their cat's movement if the animal prefers to move around the consulting room. Cats use elevation and hiding for safety and may, for example, feel more secure being examined on a window sill or hiding in the lower half of their cat box. Nervous cats should be approached slowly and quietly. As with dogs, direct eye contact should be avoided. Cats, generally, are more likely to accept touch around their cheeks and under their chin, and are less likely to tolerate touch along their lower back and around their tail. Therefore, the clinical examination and handling should reflect this. Fussing a cat around the cheeks and under the chin helps to release facial pheromones, which can help the cat to relax, and this can be used effectively during examination and restraint.

Extracting a cat from a carrier

- After ascertaining from the clinical notes and owner reports that the cat is usually tolerant of being handled at the surgery, the cat box door can be opened
- The cat should be given the opportunity to exit the carrier in their own time whilst a history is taken →

Extracting a cat from a carrier continued

- If the design of the carrier does not allow examination without removing the cat and the cat does not exit of their own accord:
 - If the carrier can be dismantled, quietly remove the top half and allow the cat to remain in the bottom half for examination
 - If the carrier cannot be dismantled and has a top opening, the cat can be gently lifted out ensuring they are well supported and any potentially painful areas are avoided
 - If the carrier cannot be dismantled and has a front opening, gently tilting the carrier can encourage the cat to exit
- Once the cat is out of the carrier, put the carrier out of the way to avoid repeated attempts by the cat to return to the safety of the carrier in order to prevent the risk of frustration or increased fear

Moving, transporting and lifting dogs and cats

Escape either within the surgery or into the external environment must be prevented through careful management of patients. Dogs must always be on secure leads attached to fixed size, sturdy, well-fitted collars or harnesses. For patients who are remaining at the surgery, it may be beneficial to use collars and leads owned by the practice to ensure they are in good condition and to prevent accidents such as snapped clips. Although slip leads can be useful as a back-up, used in addition to a normal collar and lead, these are best avoided due to the risk of overtightening, which not only compromises the respiratory and circulatory systems but also aggravates fear and anxiety. If slip leads are used, the tab should be moved to the inner side of the metal ring to prevent overtightening (Figure 11.6). Cats and other small animals should be contained in carriers when being moved and this may also be appropriate for small dogs.



11.6

Avoiding over tightening of slip leads by moving the tab to the inner side of the metal ring.
 (© C. Wilson)

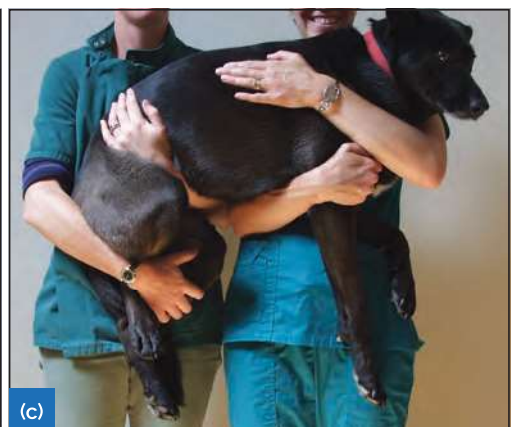
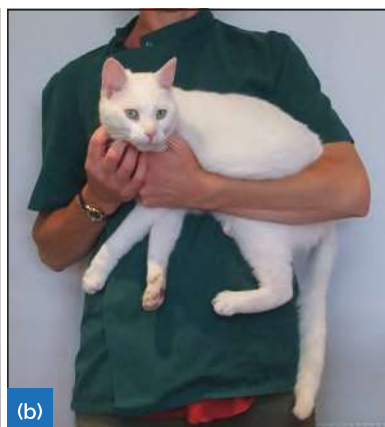
Moving dogs

Dogs should never be forced to move if they are unwilling, as this will aggravate fear responses, risking defensive aggressive behaviour. Dogs attending for a consultation who are unwilling to enter the surgery or consulting room can be examined in the car park or the waiting room. Such patients would most likely benefit from a behavioural referral to assist with future visits. For inpatients, if dogs are reluctant to leave their owners, asking the owner to accompany their pet to the hospital area can be considered. This approach, allowing the owner to see where their pet will be housed, will also help owners to feel more comfortable about leaving their pet at the surgery. Alternatively, if the owner leaves first whilst the dog remains in the consulting room with the member of staff, the dog will then often keenly exit the consulting room, hoping to follow the owner.

Lifting and carrying

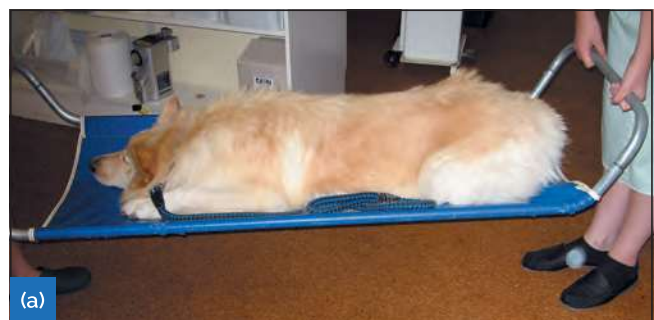
The aim of lifting and carrying an animal must be to ensure that it feels safe and secure so that it does not make attempts to struggle free or show defensive aggression. Excessive restraint should be avoided as this may trigger defensive behaviour if the animal feels under threat. It is important before lifting an animal to assess for areas of discomfort or injury, which may be aggravated during handling. Painful areas are best held on the side away from the handler's body to avoid accidental pressure. The animal should be made aware of the presence of the handler before any attempt to lift it is made, so that it is not taken by surprise. Health and safety guidelines must also be adhered to (see Chapter 2).

- Small to medium-sized dogs may be lifted by one person, although assistance may be required if intravenous fluids are being administered or cage doors need to be opened. The hind legs can be supported and held against the handler's body using their elbow and upper arm, whilst their hand and forearm support under the animal's chest. Their second arm can support the front of the chest and, potentially, hold the head gently against their body should the dog struggle (Figure 11.7a).
- Cats may be lifted and carried in a similar way, but with the handler's hand also used to hold the front legs against their body. Cats often respond well to the second hand rubbing the cheeks or under the chin to help them relax (Figure 11.7b).



11.7 Techniques for carrying (a) a small dog, (b) a cat and (c) a large dog. (© C. Wilson)

- Larger dogs (>20 kg) should be lifted by two people, preferably of a similar height to ensure the dog is kept level and feels secure. Safe lifting techniques (see Chapter 2) must be observed at all times. One person should support the front of the dog with one hand around the chest, holding below the neck area to ensure that the airways and circulation are not obstructed, and the other arm below the chest. The second person should have one arm under the abdomen and the other supporting the hind legs (Figure 11.7c). Some dogs may feel sufficiently relaxed to allow the hind legs to hang loosely, but other animals will feel safer having them supported.
- Some animals may be best transported on stretchers (Figure 11.8a) or blankets (Figure 11.8b); for example, if they have serious injuries or surgical wounds.
- Trolleys should be used to transport sedated or anaesthetized animals and their position should be checked and monitored to ensure maintenance of the airways.



11.8 (a) Carrying a dog on a stretcher. (b) Lifting a dog with a duvet. There should be enough staff available to ensure that the dog is safely restrained as it is lifted. Relevant health and safety protocols regarding manual handling (i.e. lifting with bent arms and legs) should be observed at all times. (a. Courtesy of E. Mullineaux; b. © Kate Chitty)

Restraint of dogs and cats for examination or treatment

Dogs and cats tend to respond best to low intensity handling techniques, where they experience minimal restraint and feel safe to use avoidance strategies if they become frightened. Excessive restraint risks the development of aggressive behaviour due to the animal's avoidance responses being constrained. This gentle restraint should be carried out in a manner that is flexible, i.e. allows increased restraint if safety requires it (e.g. during venepuncture), or quick, considered, reduction of restraint if an animal is becoming distressed (e.g. panicking to escape). The type of restraint that is appropriate will vary and each individual situation must be considered in isolation.

Factors to consider include:

- The emotional state of the animal (recognized via body language and behaviour)
- The procedure to be carried out (e.g. are sharps involved?)
- The duration of the procedure (e.g. does it all need to be done in one go?)
- The environment (social and physical)
- The previous experience of the animal
- The health status of the animal
- The experience and the emotional state of the staff (and client if they are present).

Animals in respiratory distress should be provided with first aid treatment with minimal examination and restraint until they are in a more stable condition (see Chapter 19). This is particularly important in cats, as they are usually seriously compromised by the time they reach a state of respiratory distress. Animals that are in pain may require analgesia and/or sedation or anaesthesia prior to full examination, and restraint must take into account the areas of the body that may be painful. The use of appropriate doses of premedication drugs and analgesia (see Chapter 21) can significantly benefit the subsequent need for restraint during venepuncture for general anaesthesia. The appropriate use of benzodiazepines at home prior to practice visits is beneficial for patients that are generally anxious about attending the surgery.

Minimal handling involves not only using minimal physical contact and pressure but also the minimum number of staff. Crowding an animal with several members of staff (Figure 11.9) can significantly add to the stress of that individual, and animals that require significant levels of restraint should be sedated or anaesthetized rather than subjected to such inappropriate handling.

Restraint of dogs

Wherever possible, dogs should be given cues and/or hand signals to request pre-trained behaviours to aid a cooperative, low stress approach. When holding dogs for restraint, if they usually enjoy physical interaction then gentle stroking or ruffling of the fur can help keep them calm. Talking in a calm manner may also be of benefit; in particular using the dog's name and any relevant cue words the dog has been previously taught, such as 'wait' or 'stay'. Figure 11.10 illustrates restraint of a dog for presenting the forelimb to clip the fur



11.9

Overcrowding animals during restraint for examination should be avoided.

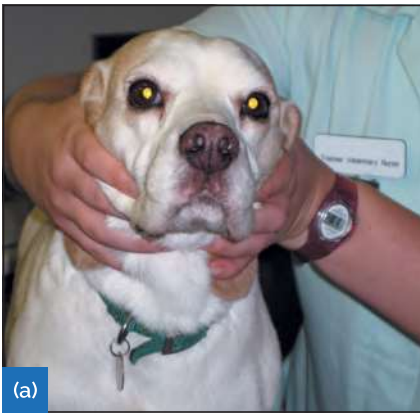


11.10

Restraint of a dog to obtain a blood sample from the cephalic vein. Note that the wall is being used to help prevent the dog from moving backwards and this is preferable to using additional staff, which may inadvertently overwhelm a nervous dog. (© C. Wilson)

and obtain a blood sample via the cephalic vein, or for other purposes such as bandaging of the forelimb. In Figure 11.10, the wall is used to help prevent the dog from moving backwards and this is preferable to using extra staff which may inadvertently overwhelm a nervous dog. Figure 11.11 shows two methods of steadying a dog's head. The rolled-up towel method is particularly useful with small brachycephalic breeds and can be used to prevent a dog from turning round to bite, in some instances avoiding the need for a muzzle.

If a dog needs to be examined or treated lying down, then providing a comfortable surface to encourage the dog to lie down on cue is beneficial for any patient, particularly elderly dogs suffering from joint pain (Figure 11.12). The dog may then be willing to roll over or be gently manoeuvred on to its side. Once lying on its side, the limbs closest to the floor or table can be gently held to keep the dog in place (Figure 11.13) and, again, giving verbal cues to 'wait' or 'stay', along with the dog's name, can be of great benefit. This is a good position for obtaining a blood sample from the saphenous vein. Dogs may also be gently restrained for sampling from the jugular vein by asking the dog to sit, the nurse standing to the side of the dog and then gently elevating the chin (Figure 11.14).



11.11 Restraining a dog's head. **(a)** The hands are placed either side of the neck and the head is gently pushed forwards with the fingers. **(b)** A rolled-up towel is held firmly but gently around the dog's neck. (Courtesy of E. Mullineaux)



11.12 Provision of comfort to aid examination. (© C. Wilson)



11.13 Restraining a dog on its side. (Courtesy of J. Niehoegen)



11.14 Restraint of a dog for jugular blood sampling. (Courtesy of E. Mullineaux)

Restraint of cats

Cats respond best to minimal restraint. When obtaining a blood sample from the cephalic vein, a similar method to that for restraining dogs (see Figure 11.10) can be used but with the cat on a table and the body of the handler being used to prevent the cat from moving backwards. Fussing the cat around the cheeks and under the chin can aid relaxation and reduce the risk of struggling (Figure 11.15). Jugular vein venepuncture is often best tolerated in cats. Having the cat in a sitting position with one hand gently resting in front of the forelegs, as a barrier to them being lifted up, whilst the other is used to raise the chin is the best method. Similar restraint can be used for examination or treatment of the head area (Figure 11.16). It is often recommended to hold both forelegs in one hand (Figure 11.17), but this extra restraint often causes cats to struggle so is better used as a last resort.



11.15 Raising a cat's cephalic vein or restraint for examination of foreleg.



11.16 Restraint of a cat to allow treatment or examination of the head, including the ear.



11.17 Restraint of a cat for jugular blood sampling. (Courtesy of E. Mullineaux)

Handling difficult or aggressive dogs and cats

The overall aim when interacting with patients should be to ensure that they do not feel the need to show aggressive or avoidance behaviour. In reality, however careful we are, some animals will react adversely to veterinary interventions whether due to anxiety, fear, pain or frustration. In the first instance, taking a good history, observing the animal and checking the clinical notes will give forewarning of expected problems. Whilst taking the history, the animal should be allowed some time to settle in the room but potentially aggressive dogs should not be permitted to wander without lead restraint and cats should be contained in their boxes until the time of examination. In cases where examination or treatment is non-urgent, the opportunity for behavioural referral must be considered. Some dogs and cats may have learned that aggressive behaviour is effective at keeping people away and may appear very confident. However, it is important to realize their original motivation for showing this behaviour was most likely fear and they just have confidence in aggression keeping them safe. Dogs who have learned contextual cues which exacerbate their anxiety may be better examined in the car park or another environment where they feel safer. At all times the safety of staff, clients and the animals must be paramount (see Chapter 2).

Options for aggressive animals

It is important to consider why an animal has felt the need to show an aggressive response so that the approach can be altered.

- Is the animal in pain?
 - Use of opiates may aid examination if needed immediately.
 - Use of non-steroidal anti-inflammatory drugs for a few days may aid future examination.
- Is the procedure essential?
 - If yes, then sedation or general anaesthesia should be considered.
- Does the procedure need to be carried out now or can it be postponed to a later date?
 - If it needs to be carried out now, then sedation or general anaesthesia should be considered. →

Options for aggressive animals continued

- If the procedure can be postponed for a day or more, the use of anxiolytic benzodiazepines 30–60 minutes before the next appointment should be considered.
- If the procedure can be postponed for longer, referral to a clinical animal behaviourist is advisable.
- Can the approach be altered to help the animal feel safer?
 - The methods of restraint, the type of approach, the manner of interaction, the presence or absence of the owner, and the environment should be considered.
 - Frightened animals respond much better to a minimal restraint approach as they feel able to use avoidance rather than aggression.

Difficult cats

Removing difficult cats from a carrier

Cats that either have a history of problematic handling or are already aroused must be treated with caution. Inappropriate reactions from staff or the owner may exacerbate the cat's arousal state and render handling impossible. Figure 11.18 shows a technique for safely removing a fractious cat from a carrier by placing a towel between the top and bottom halves, covering the cat and wrapping it as a means of safe restraint.



(a)



(b)

11.18 Technique for removing a fractious cat from a carrier. (a) Place a towel between the two halves of the carrier and (b) position over and around the cat before removing the animal from the box. (© C. Wilson)

Restraining cats in large towels or blankets

Cats generally respond far better to minimal restraint as they feel safer and therefore less in need of showing defensive aggression or escape responses. Forceful restraint is highly likely to further aggravate an aroused cat and should be avoided at all costs. Scruffing cats is rarely warranted as a restraint method due to the physical restrictions on the airway and blood supply, which is clinically inappropriate but also serves to increase fear and arousal. Figure 11.19 demonstrates the appropriate use of towels as restraint for accessing different body areas of cats that are difficult to handle. Cats in which it would be unsafe to access the jugular vein (Figure 11.19a) for blood sampling can be fully enclosed in a towel and a rear leg exposed for sampling from the saphenous vein (Figure 11.19b). Cat bags may be used, but a towel is preferable as this allows the cat to hide and feel safer.



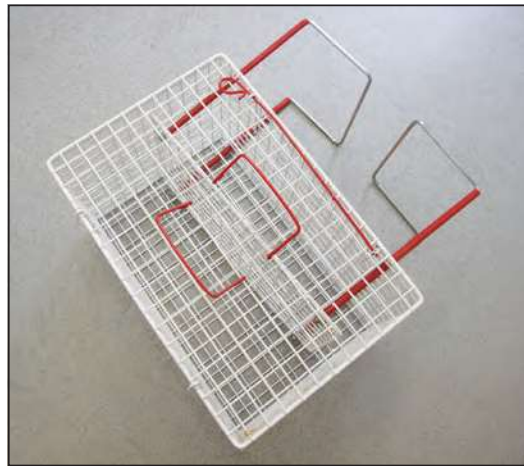
11.19 Restraining a cat in a towel for (a) jugular vein and (b) saphenous vein access. (© C. Wilson)

Crush cages for cats

A crush cage has a sliding partition that allows the cat to be physically restrained for injection of sedatives or anaesthetic drugs (Figure 11.20). These are very useful for cats that are dangerous to handle but are generally only used for feral cats as most pet cats respond well to the other methods described.

Cat muzzles

Cat muzzles are not widely used in the UK and, although they are available, it is more appropriate to use blankets and sedation/anaesthesia. Cat muzzles usually cover the eyes and mouth (Figure 11.21), which may be useful for brief procedures such as jugular blood sampling. Cats that require regular muzzling (e.g. frequent blood tests) should be trained to accept the muzzle in much the same way as dogs (below).



11.20 A crush cage used for cats. (© C. Wilson)



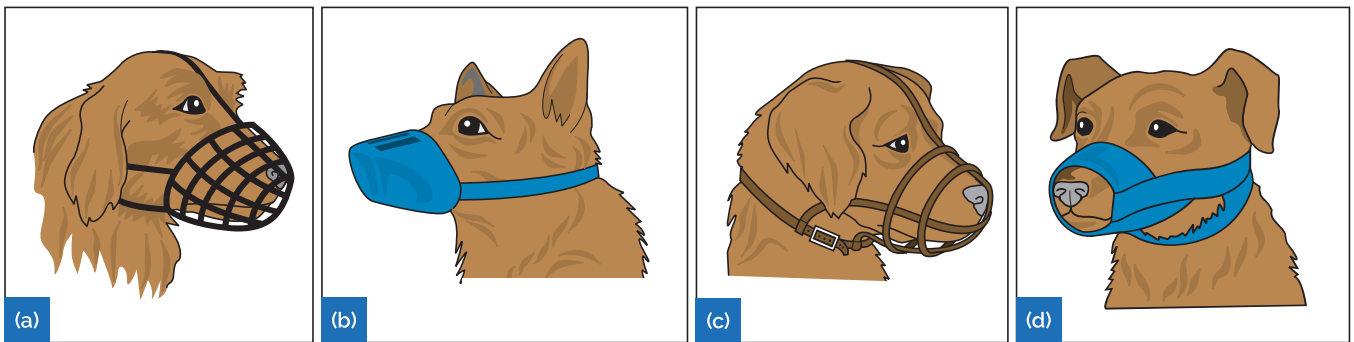
11.21 Cat muzzle.

Muzzling dogs

Muzzling of dogs must be used appropriately and be proportionate to the risks involved. It is vital when dogs are muzzled that the emotional state of the animal is still observed and considered. Fearful dogs often respond better to muzzling than to being excessively restrained and, therefore, for an urgent procedure, muzzling is preferable to heavy-handed restraint. Dogs that require muzzling for regular surgery visits should be trained at home (see 'Useful websites') by the owners in order to feel relaxed wearing a muzzle. Veterinary staff should avoid inadvertently making aversive associations with muzzles, as this can be counterproductive for future muzzle training.

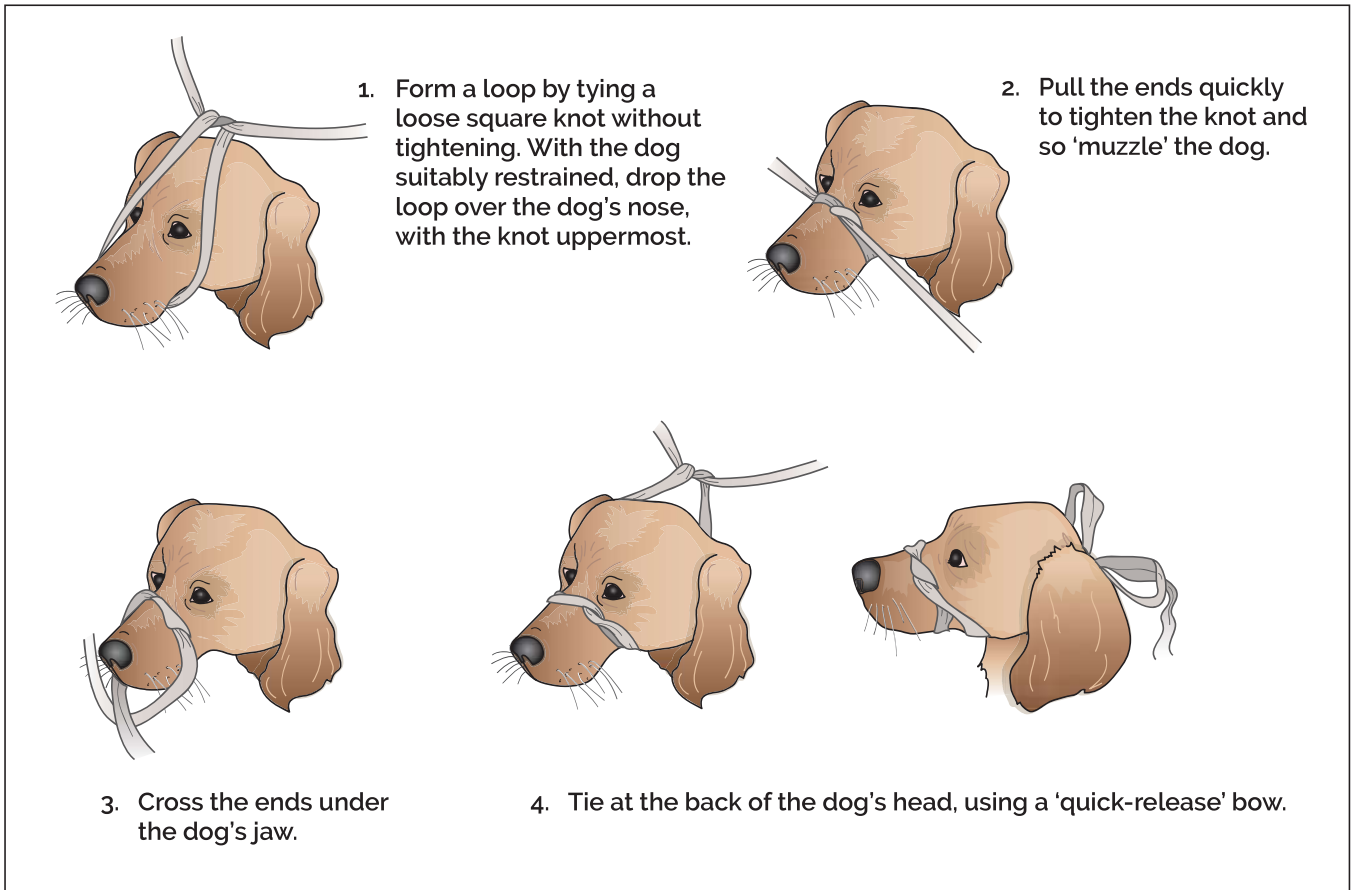
A variety of fabric, plastic and leather muzzles are available (Figure 11.22). Basket style muzzles (Figure 11.22a) are the best as they allow the dog to pant, crucial for thermoregulation, to show warning signs such as a curled lip or bared teeth, and to be fed food treats. Once the dog is trained, basket muzzles can be placed on the dog before entering the surgery.

Although an open-ended fabric muzzle (Figure 11.22d) may be useful, dogs may still nip with their incisors and this design restricts the dog's ability to show important communication signals and compromises panting. Panting is a common sign of stress and, therefore, fabric muzzles that do not allow panting are not appropriate for anything other than a very brief procedure. Using a tape muzzle (Figure 11.23) can be useful in an emergency but must only be used for very brief procedures due to compromised respiration and signalling. An inability to pant is likely to increase the stress response and consequentially increase the difficulty of handling.



11.22

Examples of muzzles. (a) Closed basket type, (b) Closed plastic type, (c) Semi-closed leather type, (d) Open-ended fabric type.



11.23

Applying a tape muzzle. Use a length of tape or non-stretch bandage at least 100 cm long for a medium-sized dog.

Feeding treats from a muzzle builds a good association (Figure 11.24) and encourages the dog to choose to place their nose into it. Often dogs better tolerate their owner placing a muzzle on them, but the safety of the owner must be considered; if there is a risk of injury, muzzling should be carried out by the staff. When approaching a dog to place a muzzle, it is best to approach from the side or from behind (Figure 11.25) as a head-on approach is confrontational and will increase the fear response. Occasionally, a dog may be too scared of a muzzle to allow it to be safely placed, in which case a loop of bandage can be used (Figure 11.23). However, this should only be used as a last resort as it is not comfortable for the dog and does not allow panting. It can be helpful to allow time to inject a dog with an intramuscular sedative; the tape can then be immediately released.



11.24

Feeding from a muzzle. (© C. Wilson)



11.25 Dogs should be approached from behind when placing a muzzle. (© C. Wilson)

Appropriate responses to aggressive behaviour

If an animal starts to show signs of aggression or trying to escape, the style of interaction and handling must be adapted to ease its distress and reduce its need to show such responses. Confrontation or an increase in restraint is very likely to escalate the animal's behaviour. The Ladder of Aggression (see Figure 11.1) shows the risk of escalation of aggressive responses if lower level stress signals are ignored. However, in conjunction with reducing distress, the handler must also consider the safety of the animal and the safety of the people in the vicinity. For example, if a restrained dog is becoming highly aroused, the restraint must be reduced to allow the dog to relax, but consideration as to how that dog may behave once the restraint is reduced is also critical, both in terms of exacerbating the patient's existing injuries and risk of injury to people. Each situation is unique, so a risk assessment must be made based on the individual circumstances; options for diffusing a situation include calmly returning a dog to his kennel to allow him to settle, asking the owners to take the dog out of the surgery via a back door to avoid distressing waiting patients, reducing the number of people in the room, removing a muzzle if muzzling has caused the distress or placing a muzzle if required to allow loosening of other restraint. A highly aroused cat may have to be returned to a carrier or kennel before reducing restraint to ensure it does not become loose in the room.

Postponing a procedure

In some cases, the most appropriate decision is to postpone a procedure if the animal is struggling to cope with handling. The veterinary surgeon will need to make a clinical judgement as to whether this is appropriate and must inform and explain to the owner the basis of this judgement to ensure the animal receives the necessary care. Depending on the reason for handling, the animal may have time for referral to a clinical animal behaviourist prior to the next appointment, or other shorter-term strategies may be required in the interim, such as the use of anxiolytic medication at home prior to the visit and changes in the interaction style of the staff to ensure the animal does not feel so threatened.

Removing a reactive dog from a hospital cage

Kennel guarding may occur even in previously friendly dogs and the underlying fear associated with this behaviour must be respected. Dogs are unable to use avoidance strategies in this context and, if fearful, are more likely to show aggressive responses. Enquiring about previous crate training or kennelling and about responses to unfamiliar people during the history-taking can provide important information (see Chapter 14).

If a dog is at risk of kennel guarding, a longline lead should be attached and trailed out of the kennel door (Figure 11.26). If dogs show aggressive or avoidance behaviour from within a kennel, a direct approach must be avoided, as must eye contact. Instead, the longline should be approached and held, the kennel door opened, and the handler should then turn to the side and allow the dog space to come out of its own accord. In most cases, once the dog is out of the confined area and able to use avoidance strategies, the need to show defensive aggression subsides. If a dog unexpectedly kennel guards and, therefore, does not have a lead attached, a slip lead may be used to noose the dog as it comes out through a small gap as the door of the cage is opened. If a dog is kennel guarding when being discharged from the hospital, it may be prudent to involve the owner, as the dog may feel much safer and not demonstrate the same behaviour towards them.



11.26

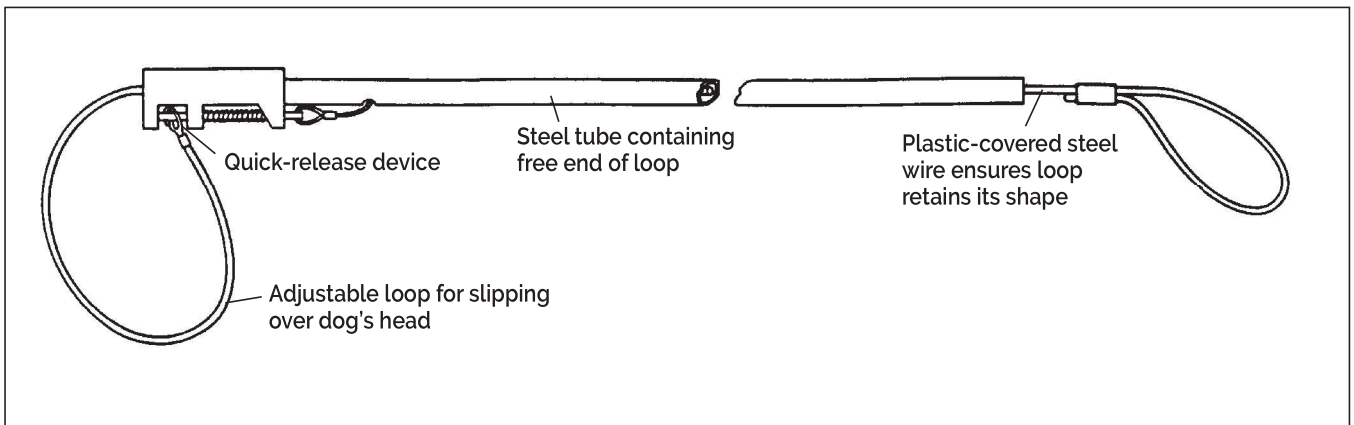
A longline attached to a collar should be used for dogs at risk of kennel guarding. (© C. Wilson)

Removing a reactive cat from a hospital cage

All cats should be given hiding and perching opportunities in their hospital cages to ensure they feel safe. If space allows, and the design of the carrier is appropriate, then placing the cat's own carrier inside the cage, with familiar bedding and scents, is ideal. Frightened cats will invariably choose to hide when given the opportunity and, therefore, offering them their carrier to voluntarily enter removes the need for handling. If the cage is too small to allow this, or the cat is unwilling to enter the carrier, a towel or blanket can be placed over the animal and wrapped underneath, and the cat picked up inside the towel/blanket as shown in Figure 11.18b.

Dog catchers and cat grabbers

These tools (Figure 11.27) should only be used in an emergency as a last resort as they are highly traumatic for the animal.



11.27 A dog-catcher.

Referral to a clinical animal behaviourist

Animals that show excessive fear responses at the surgery, or that are difficult to handle, should be referred to an appropriately qualified behaviourist, an RCVS Specialist in Behavioural Medicine, a Diplomate of the European College of Behavioural Medicine, an Association for the Study of Animal Behaviour (ASAB) Certificated Clinical Animal Behaviourist or an Animal Behaviour Training Council (ABTC) registered Clinical Animal Behaviourist.

Handling and restraint of exotic pets

Travelling boxes

Exotic pets should be fully assessed before any attempt is made to remove them from their cages or boxes. Often significant clinical information can be obtained through 'hands off' observation of both the patient and its cage.

Removing exotic pets from their travelling boxes for examination can be a challenge in itself and depends to a certain extent on the type of carrying box the animal has arrived in and the species. Examples of dealing with different types of pets in differing boxes are given below; however, these should be considered in conjunction with the species-specific advice that follows. In all cases, it is easier to remove the patient when the handler is at roughly the same level; therefore, picking the box up and placing it on to a table with a non-slip mat is preferred. In some cases with larger rabbits, it may be preferable to kneel down and remove the patient from its box on the floor, particularly where nervous or aggressive individuals are concerned.

Top-loading boxes

In most cases, it is best to consider sliding a towel in underneath the lid before the lid is fully opened to ensure that the patient does not suddenly leap out, in the case of a rabbit or ferret, or fly out, in the case of a parrot. The towel may then be allowed to cover the animal whilst the lid is carefully opened and the animal scooped out of the carrying box. In the case of ferrets and rabbits that are fractious or nervous, it may be advisable to grasp the scruff of the neck with one

hand through the towel, whilst reaching underneath and restraining the hindlegs around the hocks. The rabbit or ferret may then be carefully lifted out and placed on to a non-slip surface.

Side-front-loading boxes

For rabbits and other small mammals in this type of box it is preferable to remove the door where possible, as this increases the opening available for removal of the patient. A towel may then be introduced and the scruff of the neck grasped, to enable the patient to be moved forward enough to allow the hindlegs to be grasped and the animal removed as described above.

In the case of a parrot or other larger cagebird, a towel should be carefully introduced to prevent escape of the bird past the towel. This should then be draped over the head and body, and the head grasped from behind, transferring the thumb and fingers underneath the lower mandible to control the beak. The rest of the towel is then used to drape over the wings and body, and the other hand is used to wrap the bird in the towel to prevent it flapping and hurting itself. The bird may then be removed from the box.

Bird cages

Many smaller cage birds are transported to the practice in their everyday cage. This can be useful to assess the local environment and the type of droppings the bird has been passing recently, assuming it has not been cleaned out prior to the visit. However, such cages may present a problem in removing the bird safely from the cage as many small cagebirds have plentiful perches, toys (e.g. mirrors, bells) and food items that provide cover to hide behind and that could potentially cause damage. The first aim is therefore to remove the majority of these obstructions carefully from the cage.

In the case of highly nervous and flighty individuals, it may be sensible to transfer the cage into a darkened room, preferably with a red light as diurnal (day-active) birds do not see well in red light; this makes catching the patient easier. Once the cage has been depopulated of toys etc., a small hand towel or paper towel may be introduced through the largest opening to aid the catching of the bird. This presents a larger surface area than the hand alone, and so tends to make the bird less likely to dodge around the towel and escape. It also provides something for the patient to bite on whilst trying to control the head and beak, and allows some passive restraint of the wings as well (Figure 11.28).



11.28 Removing a parrot from its cage. **(a)** The towel and hand are introduced into the cage. **(b)** The bird is firmly but gently grasped from the back. The head must be located first, to allow the thumb and forefingers to be positioned underneath the lower beak, in order that it can be pushed upwards, thus preventing the bird from biting. The rest of the towel is then used to wrap around the bird to gently restrain its wing movement. This will avoid excessive struggling and wing trauma. **(c)** The patient may then be cocooned in the towel, with the head still held extended from behind through the towel, and the rest wrapped loosely around the bird's body.

Rodent cages

As with bird cages, there may be a lot of cage furniture inside these enclosures and the majority should be removed to allow free access. Hamsters in modular housing should be encouraged to move into their sleeping quarters, which may then be detached from the maze of tunnels.

Once the cage is cleared of excess furniture, a light hand towel or paper towel may be introduced and draped over the rodent to initially restrain it. The scruff of the neck may then be firmly grasped, as described below for more active and aggressive animals such as hamsters. Alternatively, the thumb and forefingers may be slid under the forelimbs and the other hand introduced to support the rear end of more docile rodents such as chinchillas and rats.

Handling and restraint of small mammals

Pet mammals come in many different shapes and sizes, and from many different backgrounds – from those more adapted to human co-habitation, such as mice and rats, through to the animals more recently adopted as pets, such as chipmunks, which are still semi-wild in nature.

The behavioural characteristics of each animal should be considered before handling. Most of these species are 'prey' animals and will be stressed if not familiar with human handling. In order to avoid making the animal's clinical condition worse, and to avoid human injury, careful assessment is required (see 'Assessment before handling'). Further information on behavioural traits in exotic pets is given in the relevant BSAVA manuals (see 'References and further reading').

Rabbits

Understanding rabbit behaviour is key to their handling (Figure 11.29); further information is given in the BSAVA rabbit manuals (see 'References and further reading').

Assessment before handling

1. Is the patient severely debilitated and/or in respiratory distress?
Examples include the pneumonic rabbit, with obvious oculonasal discharge and dyspnoea, or older rats with chronic lung disease. Excessive or rough handling of these patients is contraindicated and the journey into the veterinary practice may already have caused stress.
2. Is the species tame?
Examples of the more unusual small mammals that may be kept include chipmunks, marmosets and other small primates, opossums and raccoons. All of these are potentially hazardous to handlers and themselves, as they will often bolt for freedom when frightened, or turn and fight. Even the more routinely kept small mammals (such as hamsters) may be aggressive.
3. Is the small mammal suffering from a metabolic bone disease?
This is often seen in small primates, young rabbits and guinea pigs. The diet may have been inadequate with regard to calcium and vitamin D3, and exposure to natural sunlight may be absent. Hence, long-bone mineralization during growth will be poor, leading to spontaneous or easily fractured bones.
4. Does the small mammal patient require medication/physical examination?
If so, handling is often essential.

The majority of domestic rabbits are docile, but the odd aggressive doe or buck, usually those not used to being handled, does exist. The potential dangers to the veterinary nurse arise from the claws, which can inflict deep scratches rivaling those inflicted by cats, and the incisors, which can produce deep bites. Aggression is frequently worse at the



Understanding rabbit behaviour

YOUR RABBIT'S BODY LANGUAGE CAN HELP YOU TO UNDERSTAND HOW THEY ARE FEELING

A happy rabbit

These rabbits are relaxed and happy.

Rabbits 1-3 show ears close together, facing slightly backwards and pointing outwards. Eyes may be partially closed.

1



Rabbit is lying down, with a relaxed body posture and legs tucked under the body.

2



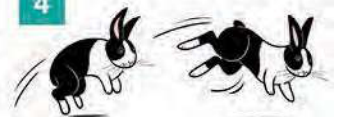
Rabbit is lying down, with front paws pointing forward and rear legs stuck out sideways. Body is relaxed and extended.

3



Rabbit is lying down with a fully extended, relaxed body. Back legs are stretched out behind the body and the front paws are pointing forward.

4



Rabbit jumps into the air with all four paws off the ground and twists in mid-air before landing.

A worried rabbit

These rabbits are telling you that they are uncomfortable and don't want you near them.

1

Rabbit is in a crouched position, muscles are tense, head held flat to the ground, ears wide apart and flattened against the back, pupils dilated.



2

Rabbits who are worried or anxious may hide.



An angry or very unhappy rabbit

These rabbits are not happy and want you to stay away or go away.

1



Rabbit turns and moves away flicking the back feet. Ears may be held against the back.

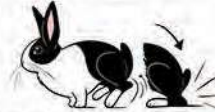
2

Rabbit is sitting up on back legs with front paws raised displaying boxing behaviour. Ears pointed upwards and facing outwards, rabbit may be growling.



3

Rabbit is standing tense, with back legs thumping on the ground. Tail raised, ears pointing upwards and slightly turned outwards, facial muscles are tense and pupils dilated.



4

Rabbit is standing tense with body down and weight towards the back, head tilted upwards, mouth open and teeth visible. Ears held back and lowered, tail raised, pupils dilated.



Royal Society for the Prevention of Cruelty to Animals

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start of the breeding season in March/April. In addition to the damage they may cause the handler, a struggling rabbit may lash out with its powerful hindlimbs and fracture or dislocate its spine. Severe stress can even induce cardiac arrest in some individuals. Rapid and safe restraint is therefore essential.

To this end, if aggressive, the rabbit may be grasped by the scruff with one hand whilst the other hand supports underneath the rear legs. If the rabbit is not aggressive, then one hand may be placed under the thorax, with the thumb and first two fingers encircling the front limbs, whilst the other is placed under the rear legs to support the back.

When transferring the rabbit from one room to another, it must be held close to the handler's chest. Non-fractious individuals may also be supported with their heads pushed into the crook of one arm, with that forearm supporting the length of the rabbit's body; the other hand is then used to place pressure/grasp the scruff region (Figure 11.30).



11.30 Carrying a docile rabbit, with its head in the crook of the elbow. Most rabbits find this method of restraint settling. (Reproduced from the *BSAVA Manual of Rabbit Medicine and Surgery, 2nd edn*)

Once caught, the rabbit may be calmed further by wrapping it in a towel, similar to the method used for cats, so that just the head protrudes in a 'bunny burrito' (Figure 11.31). There are also specific rabbit 'papooses' available that zip up along the rabbit's dorsum, leaving the head/ears free for blood sampling, but confining the limbs to prevent escape or self-harm. It is important not to allow rabbits to overheat in this position, as they, like a lot of small mammals, do not have significant sweat glands and do not actively pant. They can therefore quickly overheat if their environmental temperature exceeds 23–25°C, with fatal results.

Covering a rabbit's eyes will often help to calm it, but care should be taken not to damage the prominent ocular globes (Figure 11.32).

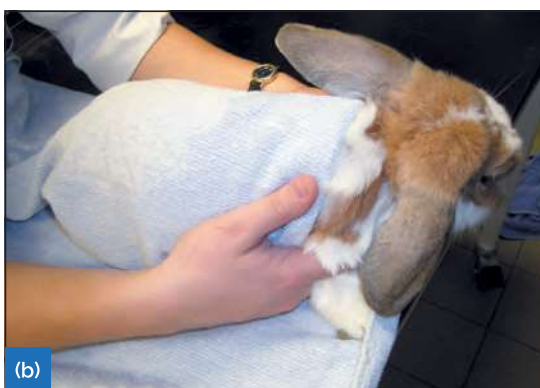
Trancing and turning

The method of restraint commonly known as 'trancing' (more accurately, creating a state of tonic immobility), whereby a rabbit is induced to become immobile after lowering it into a dorsal recumbency, should not be used. Contrary to popular belief, rabbits in a state of tonic immobility are not relaxed, hypnotized or insensitive to pain. Scientists believe that this is a defence mechanism employed once a rabbit has already been 'caught' by a potential predator. By remaining very still the rabbit may appear already dead, thereby causing the attacker to release its grip momentarily and allow the rabbit to escape. Research has shown that in this state rabbits show increased heart and respiratory rates plus elevated plasma corticosterone levels, indicative of fear-induced stress. The stress caused by this procedure may prove fatal, especially for rabbits suffering from respiratory or cardiovascular disease, and the sudden transition from the passive state to one of very active escape can be instantaneous and unpredictable and may result in significant injury to the patient.

Enlisting the help of an assistant to raise the rabbit's forelimbs off the ground, whilst keeping the rabbit's hindlimbs in contact with a solid surface, allows for ventral examination of rabbits.



(a)



(b)



(c)



(d)

11.31 The 'bunny burrito': restraining a rabbit by wrapping it in a towel. (a) The rabbit is placed on a towel, facing away from the handler. (b) One side of the towel is wrapped firmly across the dorsum, covering the forefeet but leaving the head exposed. (c) The back of the towel is folded up over the lumbar region. (d) The remaining side of the towel is wrapped across the dorsum and tucked in ventrally on the opposing side to complete the wrap.

(Reproduced from the *BSAVA Manual of Rabbit Medicine and Surgery, 2nd edn*)



11.32 A hand over the rabbit's eyes helps to keep the animal calm. (Courtesy of C. Clarke)



11.34 Holding a tame rat. (Courtesy of C. Clarke)



11.35 Restraining a rat. (Reproduced from the *BSAVA Manual of Exotic Pets, 4th edn*)

Rodents

Mice and rats

Mice will frequently bite an unfamiliar handler, especially in strange surroundings. It is first useful to grasp the tail near to the base and then place the mouse on a non-slip surface (Figure 11.33a). Whilst still holding the tail, the scruff may now be grasped firmly between the thumb and forefinger of the other hand (Figure 11.33b), allowing the mouse to be turned and examined as necessary (Figure 11.33c).

Rats will rarely bite unless roughly handled (Figure 11.34). They are best picked up by encircling the pectoral girdle, immediately behind the front limbs, with the thumb and fingers of one hand whilst bringing the other hand underneath the rear limbs to support the rat's weight (Figure 11.35). The more fractious rat may be temporarily restrained by grasping the base of the tail before scruffing it with thumb and forefinger.

WARNING

Under no circumstances should mice or rats be restrained by the tips of their tails, as de-gloving injuries to the skin in this area will easily occur

Hamsters and gerbils

Hamsters can be relatively difficult to handle as, being nocturnal, they are never pleased at being awoken and picked up during daylight hours. If the hamster is relatively tame and used to being handled, simply cupping the hands underneath the animal is sufficient to transfer it from one cage to another.

Some breeds of hamster are more aggressive than others, with Russian, Djungarian or hairy-footed hamsters being notorious for their short temper. In these cases, the hamster should be placed on to a firm, flat surface and gentle but firm pressure placed on to the scruff region with the finger and thumb of one hand. As much of the scruff as possible should then be grasped, with the direction of pull



(a)



(b)



(c)

11.33 (a–c) Handling techniques for mice. (Reproduced from the *BSAVA Manual of Exotic Pets, 4th edn*)

in a cranial manner to ensure that the skin is not drawn tight around the eyes (Figure 11.36); hamsters have a tendency for ocular proptosis if roughly scruffed. If a very aggressive animal is encountered, the use of a small glass/perspex container with a lid for examination and transport purposes is useful.

Gerbils are relatively docile but can jump extremely well when frightened and may bite if roughly handled. For simple transport, they may be moved from one place to another by cupping the hands underneath the gerbil. Small mammals should always be approached from the side and at low levels, as when they are descended upon from a great height, the handler's hands mimic the swooping action of a bird of prey, startling the rodent.

For more rigorous restraint, the gerbil may be grasped by the scruff between the thumb and forefinger of one hand after placing it on to a flat level surface. It is vitally important not to grasp a gerbil by the tail as this will lead to stripping of the tail's skin, leaving denuded coccygeal vertebrae. This will never regrow and the denuded vertebrae will themselves undergo avascular necrosis and drop off later. Jirds and jerboas are related species, and handling techniques are the same.



11.36 Handling a hamster. (Courtesy of A. Raftery)

Guinea pigs, chinchillas and degus

Guinea pigs are rarely aggressive, but they become highly stressed when separated from their companions and normal surroundings. This makes them difficult to catch, as they will move at high speed in their cage. To aid restraint, dimmed lighting can be used and environmental noise restricted to reduce stress levels. Restraint is also easier if the guinea pig is already in a small box or cage, as there is less room for it to escape. To restrain a guinea pig, it should be grasped behind the front limbs from the dorsal aspect with one hand, whilst the other is placed beneath the rear limbs to support the weight (Figure 11.37). This is particularly important as the guinea pig has a large abdomen, but slender bones and spine that may be easily damaged.

Chinchillas are equally timorous and rarely, if ever, bite. They too can be easily stressed; dimming room lighting and reducing noise can be useful during capture. Some chinchillas, when particularly stressed, will rear up on their hindlegs and urinate at the handler, with surprising accuracy.



11.37

Restraining a guinea pig. **(a)** The animal is first grasped around its shoulders. **(b)** It can then be lifted, with the hindquarters supported.

It is therefore essential to pick up the chinchilla calmly and quickly, with minimal restraint, placing one hand around the pectoral girdle from the dorsal aspect just behind the front legs, with the other hand cupping the hindlegs and supporting the chinchilla's weight.

Degus may be handled in a similar way to chinchillas.

WARNING

Chinchillas must not be scruffed under any circumstances, as this will result in the loss of fur at the site held. Chinchillas may actually lose some fur due to the stress of the restraint, even if no physical gripping of the skin occurs. This 'fur slip', as it is known, will leave a bare patch which will take many weeks to regrow

Chipmunks

There are more than 24 species of chipmunk, with the most common species seen in the UK currently being the Siberian, although smaller North American species are also kept. Chipmunks are extremely highly strung and the avoidance of stress is essential to avoid fatalities. Generally, they are very difficult to handle without being bitten, unless hand-reared when they may be scruffed quickly or cupped in both hands. The easiest method to catch them in their aviary-style enclosures is to use a fine-meshed aviary/butterfly net, preferably made of a dark material. The chipmunk may then be safely netted and quickly transferred to a towel for manual restraint, examination or injection/induction of chemical restraint.

Ferrets

Ferrets can make excellent house pets and many are friendly and hand-tame. Some ferrets kept as working animals, to hunt rabbits, may be less frequently handled and more aggressive.

For excitable or aggressive animals, a firm grasp of the scruff, high up at the back of the neck, should be made. The ferret may be suspended from this whilst stabilizing the lower body with the other hand around the pelvis (Figure 11.38). In the case of more hand-tame animals, they may be suspended with one hand behind the front legs, cupped between thumb and fingers from the dorsal aspect, with the other hand supporting the rear limbs (Figure 11.39a). This may be varied somewhat in the livelier individuals by placing the thumb of one hand underneath the chin, pushing the jaw upwards, and the rest of the fingers grasping the other side of the neck (Figure 11.39b). The other hand is then brought under the rear limbs as support.



11.38 Holding a potentially aggressive ferret, using the scruff. (Courtesy of S. Redrobe)



11.39 (a, b) Holding a less aggressive ferret. (Courtesy of S. Redrobe)

Handling and restraint of birds

As with small mammals, the veterinary nurse needs to make a decision on whether the bird in question is safe to restrain. This is not only because of the danger to the nurse's welfare (in the case of an aggressive or potentially dangerous bird of prey), but also because of the medical aspects of the patient's health.

Assessment before handling

1. Is the bird in respiratory distress, and is the stress of handling therefore going to exacerbate this?
2. Is the bird easily accessible, allowing quick stress-free and safe capture?
3. Does the bird require medication via the oral or injectable route, or can it be medicated via nebulization, food or drinking water?
4. Does the bird require an in-depth physical examination at close quarters, or is cage observation enough?

It is not always necessary to restrain the bird. It is important to remember that many avian patients are highly stressed individuals, so any restraint that is performed should involve minimal periods of handling and capture.

Initial approach

The majority of avian patients seen in practice (with the obvious exception of the owl family) are diurnal (active during the daylight hours), so reduced or dimmed lighting in general has an extremely calming effect. This can be used to the veterinary nurse's advantage when catching a flighty or stressed bird. In the case of Passeriformes (perching birds such as canaries and finches) and Psittaciformes (members of the parrot family, which includes budgerigars, cockatiels and the larger parrots), turning down the room lights or drawing the curtains or blinds is enough.

For birds of prey, there may well be access to the practice's, or the bird's own, 'hoods'; these are leather caps that slot over the head, leaving the beak free but completely covering the eyes. These are mainly used for falcons and eagles, but the bird has to be trained to accept the hood in the first instance (Figure 11.40). They are used to calm the bird when on the hand or during handling or transporting.



11.40 A hood keeps a raptor calm. (© John Chitty)

It is also advisable to keep the noise levels to a minimum when handling avian patients, as the acuity of their hearing is second only to the acuity of their vision. With these two initial approaches, stress and time for capture can be greatly reduced.

Prior to capture, all obstructing items should be removed from the cage or box (e.g. toys, water bowls, food bowls). This helps to avoid self-induced trauma by the bird and reduces the time needed to capture the patient. Once these initial arrangements have been made, the avian patient can be approached.

Birds of prey

There are two main categories of birds of prey commonly seen in practice: Falconiformes (includes falcons, hawks and eagles) and Strigiformes (the owl family). Falconiformes are mainly diurnal (daylight active) and they make up the most commonly seen group of birds of prey in practice. Strigiformes are generally nocturnal (active during the hours of darkness) and so use of hoods and darkening the room will not quieten these birds. However, they generally tend to be relatively docile.

Several pieces of specific handling equipment are often used for birds of prey. Hoods (see Figure 11.40) are used to calm many falcons and hawks, and many of these birds will also have jesses on their legs. These are the leather straps attached to their 'ankles' (lower tarsometatarsal area) and they allow the falcon to be restrained whilst on the owner's fist. Jesses may also be connected to a leash (via a metal swivel), which can be used to tether the bird to a perch when it is not being handled.

Leather gauntlets (see Figure 11.40) should be worn by all handlers for all birds of prey, as their talons and the power of the grasp of each foot can be extremely strong. The feet of birds of prey represent the major danger to the handler and not the beak (with the exception of some of the larger species of eagle). It is important to note that when the bird of prey is positioned on the gauntleted hand, the wrist of this hand (traditionally the left hand in European falconers) is kept above the height of the elbow. If not, the bird has a tendency to walk up the arm of the handler, with serious and painful results. The type of gauntlet should be either a specific falconer's gauntlet or one of the heavier duty leather pruning gauntlets available from garden centres.

1. Place the gauntleted hand into the cage or box or beside the bird's perch.
2. Grasp the jesses with the thumb and forefinger of the gauntleted hand and encourage the bird to step up on to the glove.
3. Once on the hand, retain hold of the jesses and slip the hood over the bird's head (assuming that the bird has been trained to accept the hood).

The bird of prey may then be safely examined 'on the hand' and is frequently docile enough to allow manipulation of wings and beak and for small injections to be administered or for oral dosing to occur.

If the bird of prey does not have jesses on but is trained to perch on the hand it may well step up on to the gauntlet of its own accord, otherwise the room lighting needs to be reduced for Falconiformes. A blue or red light source could also be used, allowing the handler to see the bird but preventing the bird of prey from seeing normally. There are then two possible approaches:

- The bird may be grasped from behind in a thick towel; the handler should ensure that they are aware of where the bird's head is (this is known as casting the bird (Figure 11.41)). The bird is restrained across the shoulder area with the thumbs pushing forward underneath the beak to extend the head away from the hands. The hood can then be placed over the bird's head and the bird placed on to a gauntleted hand (if the bird is trained to accept the hood). The majority of birds are happier and struggle less when their feet are actually grasping something, rather than being held in a towel with their feet freely hanging
- Alternatively, the hooded bird may be held from behind with the middle and fourth finger of each hand grasping the leg on the same side and directing the feet away from the handler. This method of holding the legs prevents the raptor from grasping one foot with the other, which causes severe puncturing of the skin, leading to secondary infections known as 'bumblefoot'.



11.41

Casting a Harris' hawk. (© John Chitty and reproduced from the *BSAVA Manual of Exotic Pets, 5th edn*)

If the bird is not trained to accept the hood, then the procedure should be carried out as described above but minus the hood. In these cases, the examination/restraint should be kept as brief as possible to avoid distressing the bird.

For the majority of raptors, if they are loose in their aviary, it is best to catch them at dusk/night. Nocturnal species of owl should be caught during the day. The use of nets and towels is often required.

Finally, it is important to remember that the majority of birds of prey are regularly flown, so it is vital to preserve the integrity of their flight and tail feathers. Unfortunately, few falconers will thank you for saving their bird's life if they then cannot fly that bird until after the feathers have been replaced at the next moult; moulting usually occurs in the autumn. This means that during hospitalization, the tail feathers should be protected from fraying by taping pieces of lightweight card around their ends or using a commercial tail protector. Care should also be taken when handling birds to avoid damaging both the tail feathers and the primary and secondary wing flight feathers.

Parrots and other cagebirds

Parrots are often trained to step up on to the hand. If the owner does not have the bird already trained to do this, he/she should be encouraged to do so. A tasty treat can be held in front of the bird, with the other hand just in front and above the internal perch. The treat should be at such a

distance that the bird must step on to the hand to get the treat. It is important to be aware that nervous birds may reach down to the hand, as it is normal for many parrot species to use the beak as a third limb to help balance. The novice handler may mistake this for an attempt to bite and pull away, making matters worse as the bird is now even less sure about stepping on to the hand and may grab at the hand in a desperate attempt to pull itself on to the hand, biting in the process. All of these birds will also benefit from subdued, blue or red light to calm the bird and to allow restraint with minimal fuss.

- In psittacine birds (e.g. African grey parrots, macaws, Amazon parrots and cockatoos), the main weapon is the beak and a powerful bite is possible.
- In passerine birds (e.g. mynah birds, starlings and orioles), the main weapon may again be the beak. Although this is less damaging as a biting weapon, it may still be a sharp stabbing weapon.

Wearing heavy gauntlets is not recommended for restraint of either family group as it will not allow easy judgement of the strength of the handler's grip on the patient. Instead, it is better to use dish or bath towels for the larger species and paper towels for the smaller ones as these provide some protection from being bitten without masking the true strength of the grip. The towel technique is also more beneficial than gloves alone because it presents a larger surface area for the bird to try and evade. The bird is then less likely to try and bolt for freedom, whereas a single hand can be a much smaller target and encourages escape attempts. After removal of the bird from its cage (see Figure 11.28), the limbs may then be removed from the towelling one at a time for examination or medication.

WARNING

Birds do not have a diaphragm and so rely solely on the outward movement of their ribcage and keel bone for inspiration. Restriction of this movement with too tight a grip can be fatal

For smaller cagebirds:

1. A piece of paper towel may be used and then the bird transferred to the hand. Nitrile gloves may be worn.
2. The neck of the bird should be held between the index and middle fingers (Figure 11.42).
3. The thumb and forefinger can then be used to manipulate legs or wings.
4. The rest of the hand should gently cup the bird's body to resist struggling.
5. Care should be taken not to over-constrain as this could cause physical harm.

In the case of particularly aggressive parrots that are very difficult to handle, leather gauntlets may be employed. It should be noted that too strong a grasp around the bird's body can prove fatal.

Young and hand-tame parrots

In the case of hand-reared and very tame young parrots, these may be removed from their containers by scooping them up between the palms of both hands before being placed into a towel-lined cardboard box or shallow dish. They should never be left unattended as they could still



11.42

Holding a budgerigar for examination. (Reproduced from the *BSAVA Manual of Psittacine Birds, 2nd edn*)

jump out of the container and injure themselves; however, this technique may allow sufficient restraint to allow a clinical examination.

For fully feathered immature parrots it may still be necessary to towel restrain the bird to examine the vent, feet and other sensitive areas without the bird biting or flapping its wings and escaping.

Waterfowl

Ducks, geese and swans are often kept in farm situations, but are also kept by smallholders and so may well be brought in for treatment. Restraint of these species is relatively straightforward but may become hazardous with the larger species of swan and goose.

1. The first priority is to concentrate on capturing the head. This can be done manually, by grasping the waterfowl around the upper neck from behind.
2. Make sure that your fingers curl around the neck and under the bill whilst the thumb supports the back of the neck and the potentially weak area of the atlanto-occipital joint. Failing this, a swan or shepherd's crook or other such adapted smooth metal or wooden pole attached hook can be used to catch the neck – again high up under the bill.
3. Next, it is essential that the, often powerful, wings are controlled before the bird has a chance to damage itself or you. This can be most easily achieved by using a towel, thrown or draped over the avian patient's back and loosely wrapped under the sternum. Some practices may have access to more specialized goose or swan cradle bags, which wrap around the body, containing the wings but allowing the feet and head and neck to remain free.
4. The bird may now be safely carried or restrained by tucking its body (contained within the towel or restraint bag) under one arm and holding this close to the torso. With your other hand, the neck can be loosely held from behind just below the bill.

Toucans and hornbills

Another group of birds increasingly kept in private collections are the toucans and hornbills. These have an extremely impressive beak, with a serrated edge to the upper bill.

Provided the head is initially controlled using the towel technique described above for parrots, an elastic band or tape may be applied around the bill, preventing biting. The handler still needs to be careful of stabbing manoeuvres and it may be a good idea to work with a second handler. Otherwise, restraint is the same as for Passeriformes.

Escaped birds

Where a bird is loose in a room or in an aviary flight cage, a number of methods can be applied. Again, darkening the room for diurnal species and reducing its area, if possible, are both very helpful to calm and confine the bird.

- In the case of larger parrots, throwing a heavy bath towel over the bird can confine them for long enough to allow the handler to restrain the head from behind and then wrap the patient in the towel.
- For very small birds, the investment in a fine aviary or butterfly net (preferably made of dark, very fine mesh) is extremely useful to catch the bird safely, either in mid-flight or against the side of the cage or room. Larger nets are available from specialist retailers for catching the larger species of birds.

Handling and restraint of reptiles

Reptiles tend to be less easily stressed than birds and so restraint of the debilitated animal may be performed according to the degree of risk. It is still worthwhile considering one or two aspects that may make restraint dangerous to animal and veterinary nurse alike.

Assessment before handling

1. Is the patient in respiratory distress?
Examples include pneumonic cases, where mouth breathing and excessive oral mucus may be present, and where excessive manual manipulation can exacerbate the condition.
2. Is the species of reptile a fragile one?
The small day geckos (*Phelsuma* spp.), for example, are extremely delicate and very prone to shedding their tails when handled. Similarly, some species such as green iguanas (*Iguana iguana*) are prone to conditions, such as metabolic bone disease, whereby their skeleton becomes fragile and spontaneous fractures are common.
3. Is the species an aggressive one?
Some are naturally so, for example, alligator snapping turtles (*Macrochelys temminckii*), Tokay geckos (*Gekko gecko*), and rock pythons (*Python sebae*).
4. Does the reptile patient require medication/physical examination?
In these cases, restraint is essential.

Reptiles are ectothermic and so rely on their environmental temperature to maintain their body temperature. Handling periods should therefore be minimized as much as possible to prevent undue cooling of the reptile. Most reptiles commonly seen in veterinary practices require an optimum temperature range of 22–32°C.

WARNING

It should be borne in mind that many species of reptile have a bacterial flora in their digestive systems that frequently includes *Salmonella* spp. Personal hygiene is therefore very important when handling these patients, to prevent zoonotic disease transmission. Disposable gloves may be worn. Hands must always be washed thoroughly with hot water and liquid soap after handling

Chelonians

This group includes all land tortoises, terrapins and aquatic turtles. Size differences in this order are not as great as those for lizards and snakes, but it is still possible to see chelonians varying from the small Egyptian tortoises (*Testudo kleinmanni*), weighing a few hundred grams, all the way up to adult leopard tortoises (*Stigmochelys pardalis*), at 40 kg, and the Galapagos tortoises, which can weigh several hundred kilograms. The majority of chelonians are harmless, although surprisingly strong. The exceptions include the snapping turtle (*Chelydra serpentina*) and the alligator snapping turtle (*Macrochelys temminckii*), both of which can give a serious bite. Most of the soft-shelled terrapins have mobile necks and can also bite; even red-eared terrapins (*Trachemys scripta elegans*) may give a nasty nip.

For the mild-tempered chelonians, such as the Mediterranean *Testudo* species, the tortoise may be held with both hands, one on either side of the main part of the shell behind the front legs (Figure 11.43a). For examination, to keep the tortoise still, it may be placed on top of a cylinder or stack of tins. This ensures that the legs are raised clear of the table and the tortoise is balancing on the centre of the underside of the shell (plastron).

For aggressive species, it is essential that the shell is held on both sides behind and above the rear legs to avoid being bitten (Figure 11.43b). In order to examine the head region in these species, it is necessary to chemically restrain them.

For the soft-shelled and aquatic species, soft cloths and nitrile gloves should be used in order not to mark the shell.

Lizards

Lizards come in many different shapes and sizes, from the 1.2 m long adult green iguana to the 10–12 cm long green anole (*Anolis carolinensis*). They all have roughly the same structural format, with four limbs (although these may become vestigial, for example in the case of the slowworm) and a tail. The potential danger to the veterinary nurse includes their claws and teeth, and in some species such as iguanas, their tails, which can lash out in a whip-like fashion.

Geckos, other than Tokay geckos, are generally docile, as are lizards such as bearded dragons (*Pogona* spp.). Iguanas may be extremely aggressive, particularly sexually mature males. They may also be more aggressive towards female owners and handlers as they are sensitive to human, as well as reptile, pheromones.

Restraint is best performed by grasping the pectoral girdle with one hand from the dorsal aspect, so controlling one forelimb with the forefinger and thumb, and controlling the other forelimb between the middle and fourth fingers. The other hand is used to grasp the pelvic girdle from the dorsal aspect (Figure 11.44), controlling one limb with the thumb and forefinger, and the other limb between the middle and fourth fingers. The lizard may then be held in a vertical manner with the head uppermost and the tail out of harm's way



(a)



(b)

11.43 Handling chelonians. (a) Lifting a docile species. (b) Handling an aggressive species by grasping the caudal part of the carapace. (Reproduced from the *BSAVA Manual of Reptiles, 3rd edn*)



11.44 Holding the forelimbs and hindlimbs against the thorax and tailbase, respectively, restrains medium to large lizards such as this iguana. (Courtesy of S. Redrobe)

underneath the handler's arm. When holding a lizard in this manner, the handler should allow some flexibility as the lizard may wriggle, and if the restraint is overly rigid the spine can be damaged. It is then possible to present the head and feet of the lizard away from the handler to avoid injury.

Some of the more aggressive iguanas may need to be pinned down prior to this method of handling. Here, as with avian patients, the use of a thick towel to control the tail and claws is often very useful. In some instances, gauntlets are necessary for particularly aggressive large lizards and for those which may have a venomous bite, such as the Gila monster (*Heloderma suspectum*) and the beaded lizard (*H. horribilis*). It is important not to use too much force when

restraining the lizard, as those with skeletal problems, such as metabolic bone disease, may be seriously injured. Lizards, like other reptiles, do not have a diaphragm, and so overzealous restraint will lead to the digestive system pushing on to the lungs and compromising respiration.

Geckos can be extremely fragile and the day geckos, for example, are best examined in a clear plastic container rather than physically restraining them. Other gecko species have skin that is easily damaged; nitrile gloves and soft cloths should be used and the gecko cupped in the hand rather than restraining it physically.

Small lizards may have their heads controlled between the index finger and thumb to prevent biting.

WARNING

It is important that lizards are never restrained by their tails. Many will shed their tails at this time, but not all of them will regrow (show autotomy). Green iguanas, for example, will only regrow their tails as juveniles (under 2.5–3 years of age); once they are older than this, they will be left tail-less

Vago-vagal reflex

There is a procedure that may be used to place members of the lizard family into a trance-like state. It involves closing the eyelids and placing firm but gentle digital pressure on both eyeballs. This stimulates the parasympathetic autonomic nervous system, which results in a reduction in heart rate, blood pressure and respiration rate (the vago-vagal reflex). To maintain pressure on the eyeballs, a cotton-wool ball may be placed over each closed eye and a bandage wrapped around the head, holding these in place. Provided there are no loud noises or environmental stimuli, after 1–2 minutes the lizard may be placed on its side, front, back, etc., allowing radiography to be performed without using physical or chemical restraint. Loud noises or physical stimulation, however, will immediately bring the lizard back to its normal wakeful state. A similar procedure may be performed with larger snakes by placing cotton wool balls over the eyes and lightly taping them in place.

The 'trancing' of rabbits (see above) has been reviewed on welfare grounds, based upon recent scientific research. Such scientific evidence is not currently available for lizards and snakes. It is not yet known whether the physiological response of the lizard or snake differs from that of a tranced rabbit or if the same welfare concerns arise. The procedure in lizards and snakes should therefore currently be viewed with an open mind.

Snakes

There is a wide range of sizes, from the enormous anacondas (*Eunectes murinus*) and Burmese pythons (*Python molurus bivittatus*) (Figure 11.45), which may achieve lengths of up to 10 m or more, down to the thread snake family (Leptotyphlopidae), which may be a few tens of centimetres long. They are all characterized by their elongated form with an absence of limbs. The potential danger to the veterinary nurse is from the teeth (and in the case of the more venomous species, such as the viper family, the fang teeth) or, in the case of the constrictor and python family, the ability to asphyxiate the prey by winding themselves around the victim's chest or neck. With this in mind, the following restraint techniques may be employed.



11.45 Carrying a large snake requires support from more than one handler. (Reproduced from the BSAVA *Manual of Reptiles, 3rd edn*)

Non-venomous snakes

Non-venomous snakes can be restrained initially by controlling the head. This is done by placing the thumb over the occiput and curling the fingers under the chin. Reptiles, like birds, have only one occipital condyle and so the importance of stabilizing the atlanto-occipital joint cannot be overstated. It is also important to support the rest of the snake's body, so that not all of the weight of the snake is suspended from the head. With smaller species, this is best achieved by allowing the snake to coil around the handler's arm, so that it is supporting itself.

In the larger species (those longer than 3 m), it is necessary to support the body length at regular intervals (see Figure 11.45). Indeed, it is vital to adopt a safe operating practice with the larger constricting species of snake. For this reason a 'buddy system' should be operated, whereby any snake longer than 2.5–3 m in length should only be handled by two or more people. This is to ensure that if the snake were to enwrap the handler, the 'buddy' could disentangle them by unwinding from the tail end first. Above all, it is important not to grip the snake too hard as this will cause bruising and the release of myoglobin from muscle cells that will lodge in the kidneys, causing damage to the filtration membranes.

Venomous and aggressive snakes

Venomous reptiles should only be handled by those who have the training and experience to do so safely. Venomous snakes (such as vipers and rattlesnakes) and very aggressive species (such as the green anaconda (*Eunectes murinus*), reticulated python (*Python reticulatus*) and rock python (*P. sebae*)) may be restrained initially using snake hooks. These are 0.5–0.75 m steel rods with a blunt shepherd's hook at one end. They are used to loop under the body of a snake, to move it at arm's length into a container. The hook may also be used to trap the head flat to the floor before grasping it with the hand. Once the head is controlled safely the snake is rendered harmless – unless it is a member of the spitting cobra family. Fortunately, it is rare to come across spitting cobras in general practice, but staff who do handle them must wear plastic goggles or a plastic face visor as they may spit venom into the handler's eyes and mucous membranes, causing blindness and paralysis. Using a specialist veterinary centre with both the experience and appropriate equipment is preferable to these species being seen in general practice.

Handling and restraint of amphibians

Examination of the amphibian patient should be performed at the species' optimum body temperature. A rough guide is between 21 and 24°C, which is lower than the more usual 22–32°C reptile housing conditions.

The examination table should be covered with paper towels (unbleached) soaked in dechlorinated, preferably purified, water. Additional purified water should be on standby to be applied to the amphibian patient to prevent dehydration during the examination.

It is useful not to restrain the patient until the extent of any problem is assessed, as many have severe skin lesions that are extremely fragile.

Once an initial assessment has been made, the patient may be restrained manually. It is advisable to use a pair of nitrile gloves. This minimizes irritation to the amphibian's skin caused by the normally acidic human skin. The wearing of gloves is also essential for handling members of the toad family or the arrow tree frogs, which can secrete irritant or even potentially deadly toxins from their skin. These toxins can be absorbed through unprotected human skin. It may be necessary to wear goggles when handling some species of toad. The giant toad (*Bufo marinus*) can squirt a toxin from its parotid glands over a distance of several feet.

When handling the amphibian patient, the method of restraint will obviously depend on the animal's body shape.

- The elongated form of salamanders and newts will require similar restraint to that of a lizard: one hand grasps the pectoral girdle from the dorsal aspect, with the index finger and thumb encircling one forelimb and the second and third fingers the other, while the opposite hand grasps the pelvic girdle, again from the dorsal aspect in a similar manner. Some salamanders will shed their tails if roughly handled and so care should be taken with these species.
- Large anurans (members of the frog and toad family) can be restrained by cupping one hand around the pectoral girdle immediately behind the front limbs, with the other hand positioned beneath the hindlimbs (Figure 11.46). Care should be taken with some species that have poison glands in their skin, as mentioned above. Care should also be taken with species such as the Argentinian horned frog (*Ceratophrys ornata*) as these can bite.
- Aquatic urodeles (newts and salamanders) should be examined only in water, as removal from the water results in skin damage. Some of the larger urodeles, such as the hellbender species (*Cryptobranchus* spp.), can also inflict unpleasant bite wounds on handlers.

Smaller species and aquatic species may be best examined in small plastic or glass jars.



11.46

Handling a frog. (Courtesy of G. Goodman)

Handling and restraint of invertebrates

The species involved will naturally determine the methods by which the patient can be safely, for handler and invertebrate alike, restrained.

Many invertebrates present no direct threat to the handler. Examples include giant land snails, stick insects and cockroaches. These may be gently picked up and cupped in the hand, or allowed to walk on to a towel or similar non-slip surface.

Other species, such as those in the mygalomorph spider family, may present multiple hazards. These may flick setae (the small hairs that cover their abdomens) at the handler if stressed or if they feel threatened. These setae are highly irritant on the skin and are particularly dangerous if they come into contact with the conjunctiva/cornea. In addition, many of these spiders have a nasty bite. The bites are rarely fatal but still cause pain and potential harm, similar to the pain associated with a bee or wasp sting. These species should be transferred into a Perspex, glass or plastic container (Figure 11.47), and only ever handled with nitrile gloves. If it is necessary to pick up such a spider, it may be either cupped in paired hands or grasped with atraumatic forceps or fingers, immediately behind the cephalothorax, around its 'waist'. Protective goggles should be worn if the spider is to be removed from its container.

Scorpions present a similar problem, with the tail sting being the most obvious danger. The majority of scorpions kept in captivity, such as the imperial scorpion, are not seriously dangerous, although the sting may be likened to a wasp or bee sting. To restrain these species safely, they may be transferred into a Perspex, plastic or glass container, or alternatively a sheet of clear plastic may be gently but firmly laid over the top of the scorpion to confine it for examination or to allow a better grasp. They may also be lifted gently by the tip of the tail using atraumatic forceps, with a sheet of card or plastic supporting the body from underneath.

Aquatic invertebrates should be examined and moved in water, using either their own tank or a clean plastic, Perspex or glass container.



11.47

Placing a spider in a transparent container allows it to be examined easily. (Courtesy of E. Morgan)

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Useful websites

Animal Behaviour and Training Council: www.abtcouncil.org.uk

Association for the Study of Animal Behaviour – Register of Certified Practitioners: www.asab.org/ccab-register

Association of Pet Behaviour Counsellors:

- Appropriate way to approach a dog
www.youtube.com/watch?v=lpecvb9Q7QY
- Cat carrier training
www.youtube.com/watch?v=tSp8nl9xK3g

Barbara's Force Free Animal Training – Force free training of all species for veterinary interventions:
<https://barbarasffat.com>

Blue Cross – Muzzle training:

www.bluecross.org.uk/pet-advice/dogs-and-muzzle-training

British Small Animal Veterinary Association (BSAVA) – Position Statement on Aversive Training Methods:
www.bsava.com/Resources/Veterinary-resources/Position-statements/Aversive-training-methods

RSPCA – Understanding rabbit behaviour:

www.rspca.org.uk/adviceandwelfare/pets/rabbits/behaviour/understanding

Self-assessment questions

1. What are the four main aims of the veterinary nurse when restraining an animal?
2. What are the signs that could indicate that a dog or cat may be fearful and/or potentially aggressive?
3. What actions should and should not be taken when initially approaching and handling a dog or cat?
4. What are the important behaviours to adopt when handling a dog that is demonstrating aggressive behaviour?
5. How is a tape muzzle applied and when should one be used?
6. How should an aggressive rabbit be restrained?
7. How should rodents be handled? Which species of rodent should not be routinely grasped by the scruff of the neck to restrain them?
8. What are the common methods of handling birds? What type of bird will not be quietened by moving it into a darkened room?
9. How should small cage birds be restrained? When restraining a bird, what should the handler be careful not to do too firmly?
10. How should reptiles be handled? What important zoonotic bacteria may be carried by reptiles?
11. What are the principles of handling invertebrates? What defence mechanism might mygalomorph spiders employ to avoid being handled?