



Module 14

Companion Animal Management

Lecture Notes

Slide 1:

This lecture was first developed for World Animal Protection by Dr Siobhan Mullan (University of Bristol) in 2003. It was revised by World Animal Protection scientific advisors in 2012 using updates provided by Dr Caroline Hewson.

This module and Module 26 should be considered together. Some of the important issues introduced here are expanded on in Module 26.

Slide 2:

In this module we will look at an overview of common welfare problems in companion animals, why these problems occur, and how vets can help improve the welfare of companion animals. In this last part we will emphasise your role within a wider, coordinated approach to controlling overpopulation of dogs and cats, which is a worldwide problem.

Slide 3:

Around the world, humans have developed a special relationship with certain animals. The relationship can take many forms, but it fulfils a psychological need and provides us with companionship. So, we can define companion animals as species that humans keep primarily for social contact and for pleasure, rather than for performing a task or producing food, fibre, etc. Another word for companion animals is 'pets'.

Companion animals include birds, reptiles and fish, and small mammals such as rabbits. We can see from this list that companion animals are usually domesticated species. However, birds and reptiles may be wild-caught.

The most common companion animals are dogs and cats. If these animals run away or if the owners relinquish them, they create populations of strays. Strays live freely without homes or owners. With uncontrolled reproduction, stray populations can become very large and they are a major problem around the world.

Slide 4:

As a vet in practice, you will encounter many welfare problems in owned companion animals. There are many problems in strays too, and as a vet you may be involved in helping to treat and manage populations of stray dogs, e.g. on the street, or in shelters. Before we look at the problem of strays more closely, we will briefly list the main welfare problems that you will encounter in companion animal species, starting with owned dogs and cats.

In some parts of the world, depending on the income level and the culture, the main problems you will see will be associated with lack of basic husbandry, e.g. emaciation through lack of regular balanced meals; infectious diseases due to a lack of vaccination and of anti-parasitic treatment; injuries from fighting and accidents; litters of young that do not thrive.

In areas where owners have an adequate income, you are more likely to see:

1. Health problems arising from the animal's genetics, especially in dogs. This is because breeders have selected animals for their appearance instead of their function or health. Consequently, many breeds are made up of individuals that are predisposed to health problems (McGreevy & Nicholas, 1999). Recent studies in the UK indicate that the 50 most popular breeds registered with the UK Kennel Club all had hereditary disorders (Asher et al., 2009; Summers et al., 2010).

Examples are hip dysplasia that accompanies the low sloping hindquarters in German Shepherd dogs and mitral valve disease in Cavalier King Charles spaniels. The organisation UFAW (Universities Federation for Animal Welfare) has a website that lists genetic diseases in pets (UFAW, 2012), and there are others. As a vet, you can explain to your clients that if they know about the genetic disorders suffered by a breed, they can ask the breeder to provide them with an animal that does not have the disorder. In that way, breeders are encouraged to breed healthy animals.

2. Undesirable behaviours. Undesirable behaviours in dogs and cats are very common. For example, in a survey of dog owners in Iran, 85.6 per cent of dogs had exhibited specific behavioural problems such as inappropriate elimination, fearfulness and destructive behaviour (Khoshnegah et al., 2011). Undesirable behaviours are the main reason why animals are relinquished to shelters in Western countries (e.g. Salman et al., 2000). As a vet, you can help to prevent this from happening by studying clinical ethology, and offering behavioural counselling.

3. Obesity is a growing problem in human beings in developed and developing nations, and it is also becoming a widespread problem in pets. Obesity in dogs and cats can have many adverse effects on health (e.g. it predisposes them to diabetes mellitus and osteoarthritis) and comfort (in hot weather, it is difficult for obese dogs and cats to cool down).

Slide 5:

Moving on to pet birds, fish and reptiles, there are many different species and a detailed discussion of their welfare problems is beyond the scope of this lecture. However, in clinical practice, the commonest cause of illness in most of these species is lack of proper husbandry, i.e. inadequate diet, such as feeding parrots mainly on seeds, and inadequate housing, e.g. not enough space, incorrect humidity, etc.

There are so many different species involved that often there is little veterinary knowledge of their physical and behavioural needs; many of these animals are not suitable pets. For example, a review of the suitability of parrots and related birds (psitticaformes) concluded that they are not suitable as companion animals for many reasons including owners' widespread ignorance, the longevity of the birds (e.g. African grey parrots live for 30–70 years), and the difficulty in meeting their species-typical needs, e.g. to fly (Engebretson, 2006). Schuppli and Fraser (2000) provide a framework for assessing whether a species is suitable to keep as pets, and use the Five Freedoms as a guide.

In some countries, small mammals such as rabbits and rats are popular pets, especially for children. In these species, there is adequate veterinary knowledge, but owners are often ignorant of husbandry.

For example, in a study assessing the welfare of pet rabbits in the Netherlands, the average lifespan was ~4 years whereas the maximum potential lifespan is 13 years (Schepers et al., 2009). Most health problems seen in pet rabbits are due to a poor or incorrect diet, with consequent problems for dentistry and digestion (Sayers, 2010).

We have now looked very briefly at the common welfare problems in dogs and cats, and other companion animals. Next we will look at how these problems arise and how to address them, and we will focus mainly on the problem of stray dogs and cats and how to control their populations.

Slide 6:

There are many reasons why companion animals may have poor welfare. In many countries the pet industry is responsible: pet owners are a big market and a lot of advertising presents pets as a desirable commodity, because owners will then buy pet food, toys and accessories for them. As people become more affluent, they may acquire pets without knowing much about them or their care. In some countries, sale of pets on the internet can contribute to this problem because suppliers will sell to anyone who will buy, without providing any advice or screening of owners.

Therefore most of the welfare problems that you will see in clinical practice are related to owners' ignorance of the needs of the animal in their care. However, as people find themselves with less disposable income, human poverty may also create welfare problems in companion animals, because basic health care is not affordable.

Uncontrolled reproduction is an issue affecting all owners and is often related to owners' attitudes as well as to access to appropriate clinical procedures.

The solution to welfare problems in companion animals is responsible pet ownership. In clinical practice, you cannot address all the wider problems that prevent owners from taking full responsibility (e.g. human poverty, marketing). However, you can help by making sure that you consider welfare as well as clinical health during your consultations with clients. The next slide shows a simple framework to remind you.

Slide 7:

This slide shows the main areas that you should discuss with your client during any clinical consultation about their pet. The goal is to help them be responsible owners who have happy, healthy pets.

There are five areas that you would cover. These mirror the Five Freedoms and are interrelated. However, health is at the top of the list because this will probably be why the owner has brought the animal to you. During your clinical examination, you can also enquire about the other four aspects listed on the slide so that you can ensure that you give the owner the right advice. We will discuss neutering and permanent identification in the next few slides but the framework includes discussing some of the owner's wider responsibilities.

The last point listed on the slide is 'Behaviour' and this is important, especially in the case of dogs. Understanding the behaviour of dogs and cats takes knowledge of applied ethology, and it is a clinical discipline in itself. One aspect of it is encouraging owners to use humane training methods (based on rewards, not on punishments like electric-shock collars). This is important so that the dog can understand the owner's communication and benefit from being in a predictable environment. Training is also essential so that the owner has humane control of the dog and it does not bite or injure other people or animals.

Slide 8:

The main reason for neutering is because, in most countries, un-neutered pets reproduce and create overpopulation which in turn results in stray animals and overcrowded shelters. However, a few countries are an exception to this rule: the neutering of pet dogs and cats is rare in Scandinavian countries, and yet in those countries there is not a massive problem with pet overpopulation and stray animals. This is probably due to a cultural antipathy to uncontrolled breeding.

However, in the majority of countries around the world, there is not such a strong ethic of responsible dog ownership. Moreover, un-neutered animals can be more prone to some health problems such as pyometra (womb infections) and prostate infection or enlargements in dogs and uterine cancers in rabbits.

Consequently, for clinical reasons, and for the wider issues around overpopulation, vets in practice should recommend routine neutering of dogs, cats and rabbits.

Slide 9:

At the time of neutering, or before, you can also provide permanent identification for the animal.

There are many reasons why it may be useful to identify companion animals and, in clinical practice, it is valuable to explain these to your clients and to encourage them to use some form of identification. This slide lists the reasons for permanent identification.

Generally, registration, proof of ownership or veterinary certification (for export or hereditary disease schemes) require the permanent identification of the animal with a unique code or number, linked with a coordinated database to keep the rest of the appropriate data. Identification is also important if a pet runs away, so that a shelter or other authority can return him or her to the owner.

Generally, the best forms of permanent identification are either a tattoo or a microchip. The photo shows a pre-sterilised microchip, with the unique identification number.

In some countries, stray dogs and, to some extent, cats are not allowed to live freely but are taken in by animal control or shelters. While research is very limited, it seems possible that many pet owners in such countries do not appreciate the value of identification, whereas people in countries where stray dogs that are not owned may be killed might be more likely to use permanent identification.

For example, research in America, where rabies is endemic, indicated that only 30 per cent of owned dogs and 4 per cent of owned cats in the city studied had any form of identification. This was usually a tag rather than a microchip. Moreover, only 36 per cent of dogs and 4 per cent of cats wore a rabies tag. It is not clear why so few owners used permanent identification, and most owners reported positive attitudes towards identification of any kind and said they would normally arrange this with their veterinarian (Slater et al., 2012).

Slide 10:

Tattooing and microchipping have been used successfully as methods of permanent identification, and each has advantages and disadvantages.

Tattoos

Tattoos can be applied by using crush forceps on the pinna or by a 'handwritten' technique to the skin of the ventral abdomen. The forceps method is more painful, and in both cases the number may fade or be changed. There is scope for human error in transposing the number, or using the same number in more than one animal. The 'written' method has the great disadvantage that people from different countries form letters and numbers in different ways.

If one considers an international system which requires a large number of digits to signify country, region, etc, a tattoo generally cannot carry enough digits – they would not all fit on the ear of a cat or small dog.

The advantage of tattoos is that the numbers do not require specialist equipment to visualise them.

Microchips

Microchips are small (grain-of-rice sized) coils encased in a non-bio reactive casing. They are pre-coded with a unique number at the time of manufacture, and implanted under the skin in a sterile manner (usually in the midline between the shoulder blades, or the left side of the neck). The animal and the owner's details are then registered with the microchip number, in a central database.

To read microchips, you use a specialised scanner that automatically shows the number on a screen (see photograph on the right). If carried out correctly and rapidly, the implantation technique inflicts limited pain and is easy. Migration of chips following implantation has been described but is rare.

The major disadvantage of microchips is the cost of scanners used to read the chip (pictured on the right). While you may be able to afford a scanner in your practice, the shelters and local authorities in your area may not. In that case, tattooing is probably a better option.

A disadvantage of both approaches is that the owners must keep the central database informed of their contact details, e.g. if they move house. This is especially important during a disaster, when pets may be separated from their owners, and also if a pet runs away. Vets can help by reminding owners of this during a consultation.

Photos:

1. Ear tattoo
2. Scanning for a microchip implanted between the shoulder blades

Slide 11:

We have seen that permanent identification is helpful, but that there is no perfect system for implementing this.

In addition to permanent identification, a collar tag has its uses (see photo). Tags are criticised because they can come off, especially in the case of cats. However, a tag is an easy way to identify a pet who may have lost his or her owner, especially during a disaster when there may not be access to a central database because phone lines are down, or electricity has been cut off. Also, tags are often easier to read than a tattoo in a frightened animal. Following Hurricane Katrina in the USA in 2005, it is estimated that fewer than 1 per cent of rescued dogs had identification tags or microchips, and even fewer cats did (Breton, 2010).

To summarise, we have looked at how vets can help promote the welfare of companion animals and reduce the number of strays by advising owners about neutering and responsible pet ownership. However, in some cultures, dogs (and perhaps cats) are not owned by an individual client but by the community as a whole. To encourage the responsible care of those animals, you will have to be sensitive to the structure of the community. The next slide illustrates this.

Slide 12

In regions where there are 'community dogs', you need to promote a degree of 'community responsibility', otherwise the animals can suffer from a lack of food, shelter and veterinary treatment. To achieve this, you have to understand the culture of the community.

For example, in Kathmandu, Nepal, the arrangement of the housing into discrete squares (chowks) means that dogs tend to be restricted to specific groups associated with each square. There is also a strong community structure, such that annual mass canine vaccination and worming programmes have been carried out.

In contrast, in a remote indigenous community in northern Australia, the culture did not include an attitude of personal or collective responsibility for the condition of the numerous dogs. Also, the dogs had strong spiritual significance. There, a programme to improve the dogs' welfare had to take a very individual approach, house by house, and included close communication with spiritual leaders and others (Donelan, 2005).

Slide 13:

To summarise so far: we have seen that companion animals are not only dogs and cats, but can include birds, rabbits, etc. We have also seen that a wide range of health and behaviour problems can arise in them, and that often these occur because of owners' actions.

Then we looked at how you can help to promote responsible pet ownership as a vet in practice, especially by recommending neutering and permanent identification, and by advising owners about their pets' behaviour.

We will now focus on how vets can help in programmes to control the overpopulation of stray dogs and cats. Stray dogs and cats are a massive problem in many countries, both for the welfare of the animals and for the health and safety of the humans too. For example, in a survey of animal welfare standards carried out in 2008 in 172 member countries of the World Organisation for Animal Health (OIE), where ~75 countries completed the survey, "the problem of stray dog management was ranked as 'major' or 'severe' more often than any of the other issues" (Stafford & Mellor, 2009).

Slide 14:

Stray cats and dogs are a problem for two main reasons: the animals suffer reduced welfare in many ways, and they create considerable risks to other species around them, particularly humans.

However, the lives of stray animals are not all bad. Stray dogs and cats have much more freedom of movement and control over their lives than many pet dogs and cats. This picture shows stray cats in Banjul, Gambia, and they seem very healthy and well fed and content. Schemes to stabilise cat populations by trapping them, neutering them, and releasing them can be very successful. We will return to those schemes later in this lecture.

First, however, we will look more closely at the welfare problems often experienced by stray dogs and cats. The specialisation within veterinary medicine that deals with stray animals and their management and care is called *shelter medicine*. Be aware that managing the problems of strays is not your responsibility as an individual vet.

However, as a vet you can be very much part of the solution, and some of you may work with local authorities and animal shelters to design and implement control programmes. The rest of this lecture gives you an overview of that.

Slide 15:

Stray populations tend to grow in number. This is because (a) they have their numbers replenished because of their own uncontrolled breeding, and (b) because pet owners abandon their animals, which then become strays. As a result of the large populations, there will be a relative lack of food and water, and the presence of large numbers of animals will favour the spread of parasitic and infectious disease. Competition for mates and food may encourage fighting and so cause wounds and stress. Stray animals in towns and cities are also exposed to a high risk of injuries from road traffic accidents.

All these factors can be a source of fear and distress. However, because the animals live freely, they have a better opportunity to adapt to their circumstances than many pets, who have little or no control over their environment and cannot escape from chronically stressful situations.

Overall, however, the many welfare challenges that strays face limits growth of the population, because so many animals will die from disease or injury. This means that if the population is allowed to reproduce in an uncontrolled manner, and no additional food provided, it will reach a sustainable level. However, the associated welfare problems for those animals and the risks that these animals pose to humans all make the control of stray dogs and cats an urgent public issue.

The dog in the photo has hair loss on her limbs and body. She has erythema of the skin, although the cause is difficult to determine. She has a poor body condition score, likely as a result of poor nutrition.

Slide 16:

We have looked at the welfare problems for strays. This slide shows some of the wider problems that stray populations cause for people.

The first point is direct injury to other animals and to people, from bites. For example, in 2008, a survey of 472 households in Todos Santos, Guatemala, where there are many free-living dogs, indicated that 78 of respondents (17 per cent) had experienced at least one dog bite incident during the past two years (Lunney et al., 2011).

Next, in towns and cities, car drivers may swerve to avoid dogs and cats which stray into the road. This can cause accidents, with injury and even loss of life to the animals and people concerned. As cities become more congested, these risks increase. (This may call into

question the logic of introducing 'neuter and release' programmes in large modern cities, and this will be discussed later.)

Stray dogs and cats can be a reservoir of disease organisms that can affect humans or their pets. Diseases that are transmitted from animals to humans are called zoonoses. There are many, but one of the most important is rabies. Another, in tropical areas, is leishmaniasis: dogs are a reservoir for the leishmania parasite and infected dogs are a real risk to humans who are immunocompromised because of HIV (AIDS) infection.

Stray animals can also cause pollution (from their faeces and urine), and may also cause a nuisance in the form of noise and aggression.

Slide 17:

This slide shows the scale of the stray population. This is a major problem, and it will become worse as the human population also expands. There are simply too many dogs and cats. Managing the problem involves:

- humane methods to control further breeding and so reduce the future expansion of the population; and
- humane methods to decrease the existing population (Module 26).

This lecture will focus largely on controlling further breeding.

Slide 18:

Humans are very afraid of rabies because it has the highest case-fatality ratio of all infectious diseases (Rupprecht et al., 2002). Once the symptoms appear, death is inevitable. In areas where rabies is endemic, most human rabies cases are due to the bite of a rabid dog (Knobel et al., 2007). This understandably influences public attitudes towards stray dogs and cats.

It is clearly important that any control programme for rabies includes mass dog vaccination and identification (including non-owned dogs). However, the additional costs of vaccination and post-exposure therapy may be prohibitive, and may not be readily available everywhere. This may cause the authorities to favour mass killing of the animals instead. We will see later in this lecture why mass killing is ineffective in the long run.

Slide 19:

You can see that animals and humans all have an interest in resolving the problem of stray dogs and cats. The slide shows the specific groups who have an interest; the general term for a group or individual who has an interest is a *stakeholder*.

The column on the left side lists all the stakeholders who have a direct interest in resolving the problem of stray dogs and cats.

The right-hand column lists all those who have an indirect interest – that is, they act on behalf of the direct stakeholders, in some way. This does not mean that they are always acting in the stakeholders' best interests. For example, animal protection societies may decide to take in all stray animals. This helps to reduce the problem of injury to the animals on the roads, barking in the streets, etc. However, the animals may then have to live in overcrowded shelters where they have no freedom of movement and fight a lot. We will look at the role of shelters in Module 26. You can see that veterinarians also have an indirect interest in resolving the problem of strays, because of the welfare issues involved, and you may find that you are asked to advise a local authority about humane ways of managing the problem.

Slide 20:

Because strays do not have identifiable owners and pose significant risks to human welfare, and to their own welfare, local authorities have to take responsibility for managing the risks. One approach is mass killing of all the stray dogs and cats that can be found.

However, often methods of mass killing of stray dogs and cats are not humane, e.g. electrocution, poisoning, mass drowning or bludgeoning the animals to death.

Slaughter is defined as killing with any procedure that causes death by bleeding (OIE, 2011). It should be humane (e.g. with the animals being stunned first). As veterinary professionals, it is important that you use terms accurately, and we will refer to the practice overall as mass killing, not mass slaughter. However, if a municipality's practice is to beat animals to death, that is correctly termed mass slaughter.

Slide 21:

Apart from the difficulty of killing masses of stray dogs and cats humanely, the approach is not effective for many reasons and the veterinary profession has a role collectively in showing strong leadership to the authorities on better ways to manage the stray population.

The reason that mass killing is not effective is that the population density of dogs and cats is related to the availability of food. Once the population rises above this critical level the relative starvation will cause reduced fertility and survival, hence stabilising the population size.

If a programme of mass killing effectively kills (let us say) 75 per cent of the stray dogs or cats, the increased food availability for the survivors will improve fertility and the survival of puppies or kittens to adulthood. In addition, there may be a migration of animals into the area from outside, perhaps increasing the level of aggression as they try to establish new territories. Within a few years numbers could return to the original level.

The greatest argument against mass killing is that the method is ineffective in the long term, for the reasons above. It is therefore not a good use of public money.

Slide 22:

Even though mass killing is not effective in the long term, the problems associated with stray dogs and cats put pressure on the municipalities to come up with an instant solution. This sometimes involves inhumane methods such as poisoning, drowning, electrocution, gassing and starvation.

Using inhumane approaches to control stray dogs and cats creates other problems, such as alienating the public and disregarding their concerns. Other issues are important to consider too, for example: poisoning may cause a prolonged painful death and is very indiscriminate. Poisoned baits may be accidentally picked up by pets and children.

Promoting an inhumane approach to unwanted life is important because it may predispose people towards inhumane treatment of humans too. The next slide looks at this.

Slide 23:

As discussed in the modules on humane education, and human–animal interactions (modules 34 and 30 respectively), there is evidence that children who abuse animals (and who witness animal abuse) are more at risk of becoming violent towards humans later in life (see Benetato et al., 2011 for a brief review).

If a municipality sanctions methods of stray control that are inhumane or violent, they are inadvertently encouraging a violent society. If the public authorities expose children to violence to animals, this could make children feel that violence to stray animals and to humans is acceptable.

Slide 24:

If vets are to advise public authorities against mass killing, it is important to propose something more effective.

The points on this slide outline the broad principles of a practical plan to control stray dogs and cats. The plan is more time-consuming than simply finding animals and killing them, but does offer a more effective and sustainable means of population control. As a veterinary scientist, you can make a particular contribution in the first area (assessing the nature of the problem) and also in the fourth (advising about humane methods).

We will now look more at the first step in these programmes, which is about making an accurate assessment of the population of dogs and/or cats before you design the protocol to control strays. This is very important because quoted estimates of the population are often inaccurate and, as a veterinarian, you are in a position to advise about the need for a scientific approach.

Slide 25:

When assessing the population, you must use standardised, consistent methods in order to obtain reliable data so that when you repeat the survey to see how your strategy is working, you can be sure that any reduction in numbers that you find is real. Also, if you use a standardised method across a city, you can make comparisons within the same city, and it might also then be possible to compare the outcomes of your programme with similar programmes used in different locations.

Discussion of the different ways of accurately estimating the population of strays is outside the scope of this lecture. However, the most important distinction to make is between those dogs and cats that are *owned* and those that are not (you need to remain considerate of the difference in how we may value the status of animals within the same species that vary in their status as pets or pests).

You need to continue to survey the population of strays once you have started your chosen programme, to monitor the success of the programme.

Slide 26:

The slide indicates more about the different groups of animals that you will want to estimate in your population surveys. Not all groups will be present in every situation.

In addition to individually owned dogs, you may find community dogs and feral dogs. Community dogs are those which usually wander freely within a populated area, in close proximity to humans, and are usually cared for by the neighbourhood or community in that area. Feral dogs are ownerless and untamed, but while some may be of truly 'wild' origins (e.g. *Canis lupus dingo*), others are simply domestic dogs that have gone back to a wild lifestyle, but nevertheless remain a domesticated species (*Canis lupus familiaris*).

Cats can also be classified under the same categories, except that they do not tend to become 'community' animals – free-living cats in a populated area tend to live in colonies and do not usually seek human contact.

Again, as we noted earlier, the most important distinction to make is between those dogs and cats that are *owned* and those that are not.

If the stray population is principally 'owned', civic approaches like legislation, and the registration and identification of all owned animals, will help to reduce the population of strays. The owners will also be a specific target audience for education on responsible pet ownership.

If the population is largely 'unowned' (non-owned), other strategies become more important. However, you would still need to take account of the minority of 'owned' animals.

Photo: Dog with a collar allowed to scavenge for food. The collar indicates that this is probably a pet dog that has been allowed to roam freely for part of the day or even forage for food at night.

Slide 27:

Photos (from left to right):

- Stray dogs in Guatemala. These dogs live in close proximity to humans and may be termed 'community dogs'. However, the local human population, though tolerating them, has no real responsibility for them.
- Semi-feral dogs on Chennai beach, India; they have less close contact with humans than in the two other cases.
- A dog guarding the entrance to a 'chowk', Kathmandu, Nepal. The group of dogs has a distinct territory, and the human families within the 'chowk' seem to take on a greater degree of 'community responsibility' for the dogs than in Indian cities.

Slide 28:

In 2009, the World Small Animal Veterinary Association, World Animal Protection and others jointly produced updated recommendations on humane management of dog populations (ICAM Coalition 2009).

Each item is important and must be included. However, the details of each will depend on the particular place being discussed.

Responsibilities for each item will fall to different agencies, e.g. legal department, animal control, public cleaning etc. It is essential that all these groups agree to coordinate their activities from the start.

As a veterinarian, you may be involved in parts of the plan because you are working for the local authority or for an animal shelter. It is therefore important that you have an overview of what is involved; and the next slides provide that.

Slide 29:

Legislation is the basis of any stray control programme. It may include codes relating to responsible pet ownership. It is important that it is realistic, practical and clear. If it is not, people will ignore it because they have no hope of meeting the requirements or because it is difficult to interpret.

The law does not have to be entirely punitive. Much of the inhumane treatment of animals during population control is probably the result of lack of awareness rather than a specific intention to treat animals inhumanely. However, this is not always the case, and appropriate penalties must be in place. However, instead of punishing perpetrators, providing education that enables someone to act appropriately and humanely in the future might be preferable in some cases.

A further essential element is that there must be adequate provision for enforcement. Who is responsible? Is it the police or another agency? If it is the police, do they understand the provisions of the law? Enforcement is only possible if you can prove that an animal belongs to a particular person, so identification of the animal is important.

Slide 30:

We looked at tattooing and microchipping earlier in this lecture.

However, many owned animals do not have identification. In many countries, dogs that are wandering in the streets without their owner are taken to some form of municipal 'dog pound'. Generally the dog is kept for a period of time (usually from three to ten days) in case an owner comes forward to claim him or her. After that time, the dog may be destroyed or offered for re-homing.

If identification and registration are compulsory, the owner can be found quickly and the dog reunited with them (for a fee), avoiding unnecessary time in the shelter.

If the dog has been abandoned, the owner could be traced and dealt with appropriately. Repeated offences can be recognised and dealt with more harshly. If there is no owner, the dog can enter the re-homing programme from day one, which saves a number of days of kennelling costs.

Stray cats are not usually treated in the same way, and in many places animal protection societies deal with stray cats by catching, neutering and releasing them, sheltering, re-homing or euthanising them according to their policies.

In countries where rabies is endemic, annual vaccinations may be compulsory. Without adequate identification, such a requirement is difficult to enforce.

Photo: Cat with a collar and name tag, indicating the owner's name and address. It is cheap, readily visible and does not require special equipment to see the number. However, it can be lost or removed and is not permanent.

Slide 31:

Because identification is such an important element in the control of stray populations, we will look at why only tattooing or microchipping are recommended.

Ear-tagging is not suitable. The tag can get lost, and the ear may become infected. Also, if dogs fight, it can be the cause of more severe injuries.

Ear-notching or ear-tipping is not a suitable method for identification of dogs. The distribution of blood vessels in the ear means that there is a danger of excessive bleeding. The notch cannot be seen in long-haired breeds, and it may resemble a bite wound – which would make it useless as a method of identification.

In cats, however, removing the left ear tip does not create these problems. It is used in trap–neuter–release programmes to identify animals that are neutered, before releasing them again. Bite wounds to the ear can mimic the removal of the ear tip, but the system has proved to be useful in practice.

Slide 32:

We have already mentioned that the size of a stray population is dependent on the availability of food. Garbage will also attract other potential disease-spreading agents (e.g. rats) so it is important for general human public health that it is dealt with appropriately. Poor hygiene around slaughterhouses or markets selling food for human consumption is especially hazardous.

If more efficient garbage collection is achieved in an area that operates a neuter and release programme, not all the stray population will have enough to eat. In such circumstances, a degree of selective humane culling may be necessary to avoid starvation and disease in the future. An alternative is to provide the population with feeding stations.

Slide 33:

Some people will feed stray cats and dogs, and this must be accepted in the overall plan. One requirement of neuter and release programmes is that there must be some guaranteed source of food. Often local animal protection groups or individuals will attempt to take on this role.

Given that encouraging strays to some areas may be associated with special human health risks (slaughterhouses, butchers' shops, hotels, restaurants, etc.), it may be advantageous to set up specific feeding stations some distance away. 'Cat cafés' have been successfully introduced by some hotels in holiday resorts in southern Europe. The cats have generally been regarded favourably by the hotel guests, who are usually quite sensitive to poor treatment of animals in these regions. The cats are fed at specific stations away from the hotel kitchens. They may also be taken away for neutering and veterinary check-ups. The hotel gets the added 'bonus' of appearing to care about the cats, which is important to many tourists and conveys to children a humane message of having reverence for other living beings.

Slide 34:

As a veterinarian, it is important that you encourage all your clients to have their animals neutered. We looked at this in an earlier slide in this lecture. Some authorities and humane organisations may offer a financial incentive to pet owners to have the surgery.

Looking next at non-owned animals, all dogs and cats should be neutered before they are re-homed from shelters. If the onus is on the new owner to have the animal neutered, many owners will not do this; for example, when kittens and puppies were re-homed from charity shelters in USA, with a voucher offering neutering free of charge at a later date, only 50 per cent of the new owners complied. Early-age neutering is therefore important (i.e. neutering puppies and kittens at ~6 weeks old).

Slide 35:

One way to stabilise populations of strays is by neuter–release schemes. Such programmes are popular in certain situations where there is a relatively high stray companion-animal population, and where the availability of food will favour the survival and reproduction of a population of strays. The capture, neutering, rabies vaccination, identification and release of animals to the same area ensures that a large, uncontrolled population is replaced by a smaller, vaccinated and non-breeding group. This fills the niche and prevents inward migration.

A guaranteed source of food is an essential requirement of these schemes, or the animals will starve. Municipalities can ensure a supply of food, but in many cases this is undertaken by animal welfare organisations or the community. If effective rubbish control is also implemented, the size of the population that can be maintained will be reduced.

Neuter and release programmes raise a number of concerns, both about their success in terms of public health as well as in terms of animal welfare. In densely populated areas such as large cities and towns, where these programmes are popular, the municipalities or animal welfare organisations conducting the activities do not usually catch a sufficient number of animals to make a difference to the population. Resources for these programmes are also usually insufficient. Although the animals are vaccinated before release, there is usually no re-vaccination programme. The animals can still constitute a danger in terms of aggression, and can continue to pollute the environment and cause road accidents.

The situation is also not suitable for the welfare of the animals. They have no guaranteed source of food, shelter or veterinary care, even when they are ‘community’ animals. They can be injured in road accidents (especially in densely populated areas), and can suffer from fight injuries, starvation and abuse by humans.

Neuter and release programmes do not, in general, tackle one of the main causes of continued overpopulation – irresponsible pet ownership and the abandoning of animals. Education and properly enforced legislation are required to tackle this complex problem at its roots.

Slide 36:

If you are involved in a neuter–release scheme, it is important that the programme is part of an agreed coordinated strategy. There is no value in an animal protection society funding such a programme in a city in which the municipality still catches and kills strays – the easiest animals to catch are the ones that have been neutered, and so no benefit is gained by expending considerable cost and effort. It is also essential that the local community is in agreement with the programme since, without their support, it will fail. In fact, a very high degree of community responsibility is required, both to ensure that most animals in the locality are caught and neutered, and also to care for the animals following release.

Also, neuter–release schemes only work if a large number of dogs or cats in a specific area are neutered. Failure to do this (due to lack of resources, or attempting to deal with too large an area) will jeopardise the success of the programme. A further point is that the schemes are not feasible in cities with a lot of traffic where many of the animals may die in traffic accidents; e.g., in the UK, it is illegal to return a stray dog to the streets.

If you are involved in a neuter–release programme, animal welfare is an important consideration at all stages. The next slide illustrates this.

Slide 37:

The different stages of welfare concern are:

- the initial catching from the street
- transport to the kennelling area
- pre-operative kennelling and treatment
- the surgical procedure: you must use proper asepsis and analgesia and you need to have a good surgical technique, as it will not be easy to treat complications once the animals are released
- post-operative care and kennelling
- transport and release
- monitoring after release.

Catching is often performed by poorly paid and untrained municipal workers. They are often scared of the dogs or cats, and even in areas where rabies is endemic are rarely vaccinated. Catching is much more humane and efficient where the catchers are given basic instructions and are using improved equipment. The design of the vehicles often also results in increased stress for the animals and handlers. The result is that the animals often arrive at the kennels in a highly stressed state, which in turn makes them more difficult to handle during the rest of the programme.

However, many neuter–release programmes are very well run, and do not have these problems. The next slide shows pictures from a programme in Jaipur, India.

Slide 38:

These pictures were all taken as part of the Help in Suffering neuter–release programme in Jaipur, India, which stressed the need for:

- a coordinated approach including the education of schoolchildren
- the involvement of the local community before catching can begin
- representatives of various government and municipal agencies and animal protection groups to work together.

Slide 39:

Before leaving the challenges of surgically neutering stray animals, we will look briefly at some newer approaches to the problem.

Traditionally, animals have not been neutered until they are at least five months old. However, it is becoming common in some clinics and, especially, some shelters to neuter dogs and cats at 6 to 14 weeks old. This is called paediatric neutering, or early-age neutering.

The surgery is easier to perform in very young animals, and is quick. However, the anaesthesia can be dangerous because of the animals' sensitivity to drugs generally, and their hearts' limited capacity to compensate for the effects of many anaesthetics. Also, not all NSAID analgesics are suitable for use in young animals.

However, some anaesthetic and analgesic protocols have a high safety margin. Therefore, in the appropriate shelter setting, with knowledgeable surgeons and technicians, paediatric neutering can make a big contribution to controlling pet overpopulation.

Slide 40:

It would be potentially cheaper and much quicker and easier not to have to neuter animals surgically. Research into this continues, and this slide shows two approaches. The first is a drug for permanent chemical castration of dogs and cats, by intra-testicular injection.

The second is contraceptive vaccines (Levy, 2011):

- The Gonadotrophin-releasing hormone is the pituitary hormone that supports the development and function of the gonads in males and females. This approach shows promise for the long-term control of reproduction, and would control sex-related nuisance behaviours that disturb people. The approach is still being researched.
- The zona pellucida is the layer of the wall of the ovum that regulates interaction with sperm during fertilisation. The zona pellucida vaccine has been successful in controlling some wildlife populations, but it has been difficult to produce one that is effective and successful in dogs and cats. Also, even if the vaccine were successful, it would not control sex-related nuisance behaviours.

The important issue with vaccination is that it should provide permanent contraception.

Slide 41:

We have now looked at most of the elements in the WHO/World Animal Protection framework for controlling stray populations of dogs and cats. To review, they are:

- legislation
- registration and identification of pets
- garbage control
- neutering – of both owned and non-owned animals. And we have seen here that neuter–release schemes have a place, but often they are not feasible, for the reasons discussed above.

To finish up, we will now look at the last two points. We said earlier that the best solution to the problem of stray animals is prevention. This includes controlling the sale of pets, and educating vendors and owners about responsible pet ownership.

Slide 42:

Traders share in the responsibility to educate potential pet owners. Selling puppies and kittens in street markets relies on the ‘emotional factor’ to encourage sales, and so favours impulse buys rather than considered actions that would be more likely to ensure long-term responsibility.

Only sales outlets that promote long-term responsible pet ownership should be allowed, and this may require appropriate licensing and legislation. Module 26 looks more closely at welfare problems in pet shops.

Slide 43:

This slide indicates some basic requirements for the pet trade, so that it plays its part in educating customers about responsible pet ownership. Licensing would help here, whereby pet shops would have to buy a licence to sell animals and could only get a licence if they met these basic requirements. However, licensing needs enforcement if it is to work.

Slide 44:

Education of existing and future pet owners, including children at school, remains the greatest challenge. All agencies have a role to play, including:

- municipalities
- community groups
- schools
- animal protection societies
- veterinarians in private practice
- animal legislation enforcement agencies.

It is also important that all these groups give the same message, and use resource material that is appropriate for the target audience.

Photo: Schoolchildren being educated in the responsibilities of owning a pet.

Slide 45:

Both these photos stress the message of the previous slide:

- a UK dog warden speaking to schoolchildren
- a 'puppy party' held at a UK private veterinary clinic.

Slide 46:

To sum up this lecture on companion animals: as vets, there are many ways that you can help to reduce welfare problems in companion animals, both in clinical practice and in the wider issue of pet overpopulation.

In practice, you can promote responsible ownership in all the ways listed on this slide. It is also important to understand clinical ethology so you can help owners whose dogs or cats may be showing undesirable behaviours. This not only helps the animals, but it prevents the owners from abandoning animals to shelters or on the street.

Regarding stray animals, as a vet you have an important role in working with all the agencies involved, including shelters and local authorities. In particular, you can advise about why mass killing does not sustainably control the problem of strays and why it is also inadvisable for other reasons. You can also help the agencies devise better programmes, which may include neuter-release schemes.

