



Module 29

Veterinary Disaster Management

Lecture Notes

Slide 1:

The material in this module was created by the World Society for the Protection of Animals (World Animal Protection) in 2012 with updates from Dr Caroline Hewson.

Slide 2:

Before we talk about veterinary disaster management, it is useful to clarify why vets need to know about this topic – there are several reasons.

The first reason is that vets have a professional duty of care to animals because they are sentient. Disastrous events like earthquakes and floods can cause animals to suffer from injuries, disease, hunger and dehydration. These are things that we can help to alleviate, whether by treating animals if that is appropriate under the circumstances, or by euthanising them.

The second reason why vets need to know about disaster management is because our clients and communities value their animals and look to us for help with them in a disaster. In many countries, animals are a very important part of people's lives, as companions and as livestock and working animals. In order for people to retain their livelihoods after a disaster and have peace of mind, they need their animals to survive and recover too. Consequently, they need their vets to know what to do.

Slide 3:

Given our duty of care to animals, and people's need for their animals, vets are necessary personnel in a disaster.

In particular, as a vet, you may be one of the key personnel, helping to organise and coordinate the relief effort for animals.

Alternatively, you may find yourself acting as an ad hoc expert until larger veterinary relief services arrive. In that capacity, you may be doing rapid clinical assessments on large numbers of animals, performing euthanasia, or working with rescue services to evacuate some animals.

Another essential role of vets in a disaster is in public health. For example, a disaster may mean that large numbers of stray animals come into contact with homeless human populations, who are themselves under stress and may be more susceptible to disease and injury from the animals. This situation increases the risk of people being bitten and possibly contracting rabies, or other zoonotic diseases, from the animals. The picture shows very close contact between stray dogs and human beings in Haiti, following the 2010 earthquake there.

Vets have an important role to play in advising the authorities about this public health aspect, in disaster preparedness, and in implementing appropriate animal control measures in response to a disaster.

Slide 4:

Veterinary disaster management is a large topic, and you need formal training to become a qualified disaster responder. Today's lecture cannot give you that. However, it will give you an overview, and tell you how you can get further training.

The lecture presents information and experience from vets within World Animal Protection and others from around the world. It uses information from international bodies involved in veterinary disaster management, like World Animal Protection, and it includes some reports written by practicing veterinarians who have encountered disasters themselves. Many of those reports have come from vets in the USA, because there is a lot of data recorded and written up from disasters in this part of the world. The important thing is not where the experience and information comes from, but what we learn from it.

There are many different ways in which disasters can affect you and your community, and today you are going to learn guiding principles that you can follow and adapt according to the needs at hand.

- We will start by defining what a disaster is.
- Then we will look at the reasons why it is important to save animals in a disaster, and at reasons why animals sometimes are not saved.
- Then we will look briefly at how disasters should be managed, in terms of the logistics and order of command.
- Next we will talk about your role in a disaster, as a vet.
- We will finish by looking at two examples of veterinary disaster management.

Slide 5:

A disaster is an event that involves the serious disruption of a society and exceeds the ability of the affected communities to cope using their own resources. That is the definition used by the United Nations (UN). This slide shows the destruction that might accompany a true disaster.

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Note that some serious events might not exceed the national community's ability to cope, but may still involve the evacuation of large numbers of people and animals, or the need for emergency management of large numbers of animals for days or weeks.

So, a true disaster consists of:

- a hazard, i.e. any danger whether natural (e.g. earthquakes) or technological (e.g. chemical spill, nuclear radiation)
- a vulnerable community, e.g. a remote, low-income, rural village without local medical facilities
- local incapacity to cope: in the example of the village, there would not be local medical personnel, stores of food or buildings that are resistant to hazards such as earthquakes.

We will now look at three examples of disasters, in light of this three-point framework.

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- In March 2009, there was a tornado in the Kendrapara district of Orissa State, India. This destroyed 11 villages and affected approximately 3,000 cows, goats and buffalo that the people had relied on for food, fertiliser and agricultural work. The animals quickly suffered secondary problems such as enteric and skin diseases, which made them less able to work in the aftermath. This put their owners more at risk. The event met all three disaster criteria, and an intensive relief effort enabled the animals to get well and contribute in turn to human recovery.
- The second example is from Bolivia. In 2011, very cold weather caused floods and landslides. Over 24,000 people and more than 295,000 livestock were affected. Because the events destroyed food stores and pasture, the animals were malnourished which reduced their capacity to cope with parasitism. This event again met all three disaster criteria. The relief effort involved feeding and treating the animals, which made a crucial difference to the people because it enabled them to retain or rebuild their means of earning a living.
- The third example is from the USA. In America in 2007, summer fires in California created one million human evacuees, and at least 5,000 horses were evacuated (Pennell & Paik, 2009). The local community was vulnerable because of its proximity to the wooded areas; it could not cope and had to call on the support of the wider national community for housing and help in extinguishing the fires. Again, the event met the criteria of the three-point disaster framework.

Slide 8:

Another way of looking at a disaster is based on the outcome of the event that has occurred. That is, we can say that a disaster has occurred if one of the following criteria applies:

- 10 or more people reported killed
- 100 or more people reported affected
- the declaration of a state of emergency
- a call for international assistance

In each of the three examples on the previous slide, at least one of those criteria applies. In all the examples, more than 100 people were affected and a state of emergency was declared. In addition, international assistance was sought in two of them.

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The most common disasters are naturally occurring, but any disaster may either be rapid-onset or slow-onset.

Rapid-onset disasters include: floods, earthquakes, tornadoes, hurricanes, cyclones, severe storms, wildfires, landslides and tsunamis. They could also include technological events such as a gas explosion.

Slow-onset disasters include: drought, unusually harsh winters, freezing weather, insect infestations, disease epidemics and flooding. They could also include events such as oil spills or nuclear leaks.

Note that in the above cases, if the community is not vulnerable (e.g. has good infrastructure, earthquake-resistant buildings, flood defences, food supplies, etc.), then the examples above are, largely, hazards. They become disasters when a community is vulnerable and cannot cope with the events.

Another form of slow-onset disaster is known as a 'complex emergency'. This involves human conflict which may escalate quickly. (We consider the welfare of animals during conflicts and war in Module 28.)

While most of this lecture will give you an overview of the management of large-scale disasters that may arise gradually or suddenly, the same principles apply to the management of smaller incidents.

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Over the next few slides we will look at why it is important to save animals in disasters. There are several reasons.

The first, as we noted earlier, is because animals can suffer. Animals are often displaced or abandoned in disaster zones, and suffer from injuries, disease, hunger and dehydration. As vets, we can help to ensure that animals do not suffer because of this, e.g. by arranging for animals to be evacuated, if appropriate, or by ensuring that they are euthanised and are not killed randomly or cruelly by the human victims of the disaster.

Note that there are several categories of animal that it is important to save. Livestock, working animals and companion animals are the commonest ones.

However, there are also:

- 'Small' farm animals, such as backyard poultry, rabbits, etc.
- Animals in shelters
- Animals in zoos and laboratories
- Animals that are in-patients in our veterinary clinics – later on in this lecture, we will look at the importance of having a disaster preparedness plan for your clinic.

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The other equally important reason why it is important to save animals in disaster is that animals can be central to their owners' livelihoods.

This is especially common in many low-income countries, where livestock are far more crucial to rural households than they are in rural households of high-income countries.

Many of those who rely heavily on their animals to cultivate land and provide food and transport are also among the poorest in the world. It is not easy to obtain exact current statistics. However, in 2003 the Food and Agriculture Organization (FAO) estimated that, among the global poor, 2.8 billion people were living on less than \$2 a day and one quarter of these people kept livestock. That's 0.7 billion impoverished people who keep livestock.

Working animals are equally important.

In these countries, livestock and working animals have both direct and indirect values relating to food, agriculture, savings and cultural values. For example, when the animals die in a disaster or are not rescued, the people have less to eat in terms of meat, milk and eggs. This can:

- cause malnutrition in children, affecting their mental and physical development, and also
- cause malnutrition in adults, affecting their capacity to earn a living.

Other problems for poor rural communities that lose their animals in a disaster include:

- fewer working animals, and less manure, so an increased need to spend money on fuel and fertilisers
- lost savings and income, so increased vulnerability to future disasters, as well as the inability to pay for treatment for their injuries and burials of loved ones, or repairs to their properties following a disaster
- the inability to meet their cultural obligations such as providing animals or material goods as a dowry. This cultural impact may ultimately result in the loss of the pastoral way of life
- getting into a spiral of debt, if people borrow money to buy replacement animals, fertiliser, dowry goods, etc.

You can see from this list that losing animals in disasters can create immense longer-term problems, which is why it is so important to people that their animals are saved.

Therefore there is a fundamental difference in the impact of livestock loss in low-income countries and in other countries.

In high-income countries, livestock represent a source of food that can be replaced. For the farmers concerned, the animals also represent their livelihood, but governments or insurers might compensate them for the loss of their livestock.

In contrast, in low-income countries, we have seen that livestock and working animals have several roles. Also, government compensation or insurance is often not available. The loss of livestock in disasters can devastate communities in low-income countries.

Slide 12:

Cyclone Nargis hit Myanmar in 2008. The picture shows a World Animal Protection vet examining a cow, and you can see destroyed buildings in the background.

The successful relief effort (a collaboration between World Animal Protection and humanitarian organisations) convinced the country's government of the need to coordinate animal and human disaster management, so as to safeguard Myanmar's animal welfare, food security and rural livelihoods from disasters.

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That example illustrates how much can be lost if countries do not have a systematic plan for rescuing livestock and working animals following disasters. A plan is not simply about rescuing the animals at the time of disaster. It must include longer-term provisions.

In the previous example, 50 per cent of livestock did survive. However, without rescue intervention, they might have died from lack of food in the aftermath.

Without a plan for feeding animals in the aftermath of the disaster, they may die even if they are allowed in camps and temporary shelters where their owners may now have to live. The consequences of this lack of a feeding plan are far-reaching. Here are some examples:

- If donkeys die, their owners cannot easily collect firewood and water. Often that is the job of women and children and, if they now have to make more trips to the well themselves, they may be at risk of rape and attack.
- If owners cannot take their animals with them to the shelters or camps, many may return to the disaster area to try and feed them. This may be hazardous.
- In all these situations, the resulting loss of animals often means that people lose their foundation for returning to normal life and income. This can make them likely to remain in camps for longer following a disaster.

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We shall now move on to why it is important to save companion animals in a disaster.

Companion animals provide support and comfort to their owners, especially in difficult times. The human–animal bond is strong in many cases, and many owners may refuse to evacuate a disaster area without their pets. This can impede rescue efforts: it puts rescuers and the public at risk, especially if owners attempt to return to the danger zone to find their pets.

People also seem more able to recover psychologically from a disaster if their animals have been saved. Conversely, the loss of domestic pets can add to people's psychological distress: in a study of 65 Americans who lost their pets following Hurricane Katrina in 2005, many showed signs of depression, not only because they had lost their homes, but because of the acute loss of their pet and their continued absence (Hunt et al., 2008).

Such attachment to pets seems largely unrelated to culture. For example:

- In a survey of urban pet owners in Mexico, Colombia and Costa Rica (countries that have high risk of disasters), ~75 per cent said they would take their animals if they were evacuated; only 16 per cent said they would not, and that was generally related to lack of transport. Within that study, those owners who had experienced disasters had all taken their pets, except in the case of earthquakes, when there is little time to respond.

In a survey of pet owners in one region of the USA, up to 25 per cent of pet owners said they would refuse to evacuate because of their animals. This represented 5–10 per cent of the total population that would be directed to evacuate. Furthermore, 50–70 per cent of people leaving animals behind would attempt to re-enter a secure site to rescue their animals, representing 5–15 per cent of the evacuated population.

Slide 15:

Other reasons for having a formal plan to save companion animals during disasters are more pragmatic, but also important. In particular, if there is no plan, owners may abandon their animals, resulting in an increase in the stray population.

Stray populations may carry diseases such as rabies and can therefore be a source of understandable fear in the human population. People may therefore try to kill them or to cull the population as a whole, often using inhumane methods.

Including animals in the disaster plan helps to reduce the risks to people and animals, to the benefit of both.

Slide 16:

Despite the many humanitarian and practical reasons for saving domestic animals in disasters, many countries do not do so. This is a problem in developed and developing countries alike. For example, New Orleans did not have a plan for animals in place when Hurricane Katrina struck in August 2005.

There are several reasons why countries may not save animals in a disaster:

- one of the commonest reasons is that the countries do not have the human and financial resources needed to plan and respond to animals' needs in a disaster; for example, local and national advisors may lack knowledge of animal needs in an emergency. In turn, the emergency personnel may lack animal management skills and are not given responsibilities for animals
- similarly, when developing disaster preparedness plans, the authorities may not have the appropriate expertise and material resources to implement risk reduction strategies.

The consequences of this are illustrated by the tornado in Orissa State, India that we mentioned earlier. The picture shows cattle in one affected village. You can see the destruction around them. The tornado left animals without shelter, food or water, posing serious animal welfare problems. Animals had not been part of the emergency planning (World Animal Protection, 2009).

Slide 17:

Other reasons why the authorities may not include animals in disaster planning include:

- the authorities may not understand the full importance of different domestic animals to their owners
- they may be overwhelmed with humanitarian problems
- there may be different attitudes to animal sentience and their capacity to suffer
- there may be cultural differences towards the value of some animals.

Similarly, many of the non-governmental organisations (NGOs) that often become involved in disaster management in developing countries do not have the expertise or resources to assist animals. In the rescue effort, therefore, owners are not allowed to take their animals with them.

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Another reason why animals are not saved in disasters is because the owners themselves are not prepared.

- In many cases, subsistence farmers and those who rely on working animals do not have the financial and material resources to be prepared. Larger farmers may also be unprepared. In all cases, large animals are difficult to manage quickly in an emergency when it is important to keep them under control so that they do not get alarmed and scatter or stampede. Also, when you have large numbers of animals confined in housing units, such as hens in cages, or sows tethered in stalls, it may be impossible to remove them all quickly.
- All these aspects of farming in different systems makes the emergency management of livestock difficult.
- Moreover, farmers may mistrust the authorities and any recommendations that they might hear regarding disaster planning.
- There may also be cultural reasons whereby farmers (and pet owners) believe the disaster is an 'act of God' or fate that must simply be accepted, not managed.
- A further problem may be the frequency of disasters, such that there is relatively little opportunity to recover and make a longer-term plan, before the next disaster occurs.

Despite these challenges, vets can help here. They know their communities, and the particular contexts. They can therefore talk appropriately to their clients and help them to prepare for disasters, e.g. advise livestock owners to get together and have a disaster preparedness plan, and help them to create one.

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- Many pet owners are also unprepared for disasters. For example, an epidemiological study of pet owners in America who had been suddenly evacuated following concerns about a chemical disaster, found that people who had several cats were less likely to evacuate their cats than their dogs. This was because the cat owners did not have enough cat carriers.
- Even when pets are evacuated, it may be impossible to keep them for a long time in a shelter if they do not have identification. For example, following Hurricane Katrina in the USA in 2005, approximately 15,000 pets were rescued, but only 20 per cent were reunited with their owners (Destreza, 2007). This was probably because few animals had identification – in the main holding facility in New Orleans, fewer than 1 per cent of dogs and cats had identification (Breton, 2010a). In that case, unclaimed animals could be accommodated elsewhere in the country. However, in many countries this is not possible and animals that have survived a disaster have to be euthanised because their owner is unknown.
- As with livestock owners, factors such as culture, mistrust of authorities, and the frequency of disaster occurrence may all contribute to owners not saving their pets.

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Other reasons why companion animals are not saved in a disaster are listed here.

- Often, there is nowhere with food and shelter where the owners can take their animals, whether livestock or pets.
- The owner may not be able to take the animals because they are physically too much for the owner to manage.
- In the case of dogs, owners may leave them behind to guard their property from looters.
- Pet owners may also think that they will be able to return later to collect their animals.
- In some communities, dogs and cats live freely and tend to roam, so there is no single owner and no one feels a direct responsibility for them in a disaster.

Again, despite all these challenges, vets can help pet owners to prepare for disasters. They know the local context and can advise owners accordingly, e.g. advise them to have a plan, including up-to-date identification of their pets, appropriate carriers, etc. Tags on animals' collars have value here: even though they are not a permanent form of identification, they are easy to read in disaster conditions. Microchips are permanent; however, they may be impossible to read if the shelter facility does not have a scanner, or if it is impossible to access the central database.

Slide 21:

You now know why it is important to save animals in a disaster, and why animals often are not saved. We will now move on to look at how to manage disasters.

Slide 22:

Whether a disastrous event is large-scale or small-scale, it is important to have a protocol to follow when it occurs.

Disaster management is the term used for this protocol. It covers what you should do to **prepare** for different disasters, and what you should do **in response** to them, so that you can cope better with it as a community.

Within this two-point framework, disaster management has four main components:

- prevention and mitigation, i.e. making the effect of the disaster less severe and reducing the risk of it happening at all
- preparedness
- response
- recovery.

These elements are interrelated in a cycle, rather than a linear order, as we see on the next slide.

Slide 23:

Starting at the bottom left of the diagram, we see Prevention. This comprises Mitigation (minimising the effects of a disaster – at the bottom of the graphic) and Risk reduction, as well as Preparedness, which involves making adaptations to prepare for a disaster if you cannot completely remove the risk of it occurring.

At the top of the diagram, we see the Disaster. When this happens, the earlier Prevention work enables a rapid Response, which you see on the right. The Response involves Relief, with emergency veterinary care, food and water, etc, and then Recovery (e.g. restoring veterinary care and providing aid), which in turn enable you to make plans for potential future disasters.

We shall now look more closely at each of those elements.

Slide 24:

Mitigation

This covers the regulatory and physical measures to ensure that emergencies are prevented, or their effects mitigated.

Examples:

- Decreasing the likelihood of disasters (e.g. efficient land management to prevent soil erosion, rotating animal pastures, avoiding over-grazing, etc.)
- Strengthening veterinary services (e.g. epidemiology, herd health management, nutrition, public health)
- Education (e.g. advising your clients about the risks of disasters and how to avoid them or minimise them).

Slide 25:

Preparedness

This means the arrangements to ensure that, should a disaster occur, all the resources and services which may be needed to cope with the effects of a disaster can be rapidly mobilised and deployed.

Examples:

- national warning systems
- vaccination programs
- strengthening and securing animal shelters
- developing safe evacuation methods
- ensuring sufficient storage of food and water
- identification of animals.

Very importantly, vets should have their own preparedness plans for their clinics or the animal facility where they work, e.g. laboratory, zoo, and abattoir.

Note that you need specialist skills in dealing with zoo and laboratory animals, due to the risk of escape, attack and disease. However, if you are the vet for that facility, you will have those skills and it will be important to create an appropriate preparedness plan for those animals.

Slide 26:

Response

This is the term for the actions taken in anticipation of, during and immediately after impact to ensure that the effects are minimised and that people are given immediate relief and support. Note that most damage and mortalities of rapid-onset disasters like earthquakes occur within the first 72 hours. If the damage is severe, it may take days before sufficient support has gained access to the area. Therefore during most disasters the biggest difference is made by local people, and an effective local response plan is essential.

It includes an initial needs assessment, and the appropriate actions including, for example:

- static and mobile emergency veterinary clinics
- search and rescue operations
- provision of emergency food,
- temporary shelters
- reuniting animals with their owners.

Slide 27:

Recovery

Recovery is the coordinated process of supporting disaster-affected communities in reconstructing their physical infrastructure and restoring their emotional, social, economic and physical wellbeing.

Examples:

- restoring veterinary care
- the development of risk reduction and contingency plans. In countries where entire industries depend on animals (e.g. food companies, supermarkets), risk reduction is very important tool to protect trade and food security. Vets have an important role here too.

Slide 28:

You have now seen, in outline, how disasters should be managed.

Next, we shall look more closely at your role in disaster management, as a veterinarian.

First we shall look at your role **in response** to a disaster. Then we will look at your role in **reducing the risk** from disasters, and **preparing** for them.

Slide 29:

Your locale or country may or may not have a complete disaster plan. Even if it does, it may still take days or weeks to implement fully. Therefore during the first hours and days, you and your community will be reliant on local infrastructure and Good will, and trained volunteers (Crowe, 2010).

- This slide suggests your order of priority in response to a disaster. Clearly, you need to attend to the people around you first; training in basic life support will help you enormously in this.
- Then you need to implement the disaster plan at the facility where you work, e.g. your clinic.
- Once that is done, you will want to assist in the wider community. Ideally, this will be done within the Incident Command System.

We will now look at the second and third points: the disaster preparedness plan that you need to have at your clinic or facility, and what the Incident Command System involves.

Slide 30:

In most countries, human hospitals have a disaster preparedness plan, as part of their duty of care to their patients. Veterinary hospitals and other animal facilities should do so as well.

If you do not have a plan, you put the animals and your livelihood at risk. For example: when Hurricane Katrina hit the southern USA in 2005, approximately 120 veterinary clinics had to close due to damage. Many of these did not have a disaster plan and did not receive enough compensation to reopen. Moreover, some had offered to board their clients' animals until the storms had subsided, and some of those animals died by drowning in their hospital cages. It seems possible that those deaths could have been minimised if more of the clinics had been adequately prepared (Breton, 2010a).

Even if your country is not prone to major disasters, you still need a preparedness plan in case of some unforeseen event such as chemical leakage from a nearby factory, a wildfire, etc.

In the face of a disaster, your plan would include:

- An Incident Command System whereby every member of your staff knows what their duties are within the plan, and has a checklist of tasks to complete in order of priority if they are the first to reach the facility. We will talk more about the Incident Command System in the next section, but it applies within a facility as well as to the entire disaster response.
- Details of where you could board or relocate any in-patients: who would transport them? What about those that are under anaesthesia? Immobile? On a drip?
- The back-up for your medical records: if your records are electronic and there is no electrical power or internet connection, how can you access the records? If your records are paper-based and destroyed by fire, do you have a back-up?

- Providing continuity of your veterinary service: animals may be injured in a disaster and need surgery or treatment; your existing patients may need blood tests, therapy or vaccinations to ensure their immunity to diseases like leptospirosis, which is water-borne and transmitted by rats, and which may increase for epidemiological reasons following a disaster. What if an animal needs a Caesarean section? How will you anaesthetise and monitor your surgical patients if you cannot do pre-operative blood work, and if you cannot get access to gaseous anaesthetics? Disaster preparedness planning enables you to research and write up anaesthetic protocols for different categories of patient risk, so that it will be much easier to make good clinical decisions for such animals under disaster conditions. You should also know alternative methods of euthanasia for different species, if you do not have the usual methods available.
- Contact details of suppliers.
- Actions to secure your premises and the animals in them, so that looters do not steal equipment, money or the animals themselves.
- Insurance and legal aspects that you need to follow in the face of a disaster.
- You might also use social media to interact with other clinics and with the public, so as to maintain the care you can provide to animals and their owners, e.g. you might need extra bedding or bowls or food or tin openers – while these should be considered in your plan, it is impossible to anticipate the numbers exactly.

Slide 31:

This slide moves away from concerns at the animal facility where you work, and on to the wider community.

The standard international format for emergency response is called the Incident Command System (ICS). This system is a standard hierarchy of organisation, with an overall commander at the top, followed by public information and safety officers, and then by the four different sections that you see on the slide: Finances, Planning, Logistics and Operations.

You need formal training in order to understand how to work within an Incident Command System so that you are a help, not a hindrance. As a vet, you are most likely to work in the Operations section – assessing animals in the field and inspecting premises, or setting up animal shelters and caring for animals there.

As we have discussed earlier, many ICS operations may not include a plan for animals. So, you may find that they do not recognise the role that a trained vet can play here. However, international welfare organisations such as World Animal Protection are working to raise awareness of this in many countries – as we saw in the earlier examples from Myanmar, Bolivia and India. Therefore more and more ICS operations will involve trained, local Animal Response Teams (ART) as part of the larger disaster response.

Slide 32:

This slide lists the main areas of training that you would need. They are:

- the Incident Command System
- hazardous materials and decontamination: this is because earthquakes and other disasters can cause the release of toxic gases, oil, chemicals, etc. from factories, vehicles and so on, which may contaminate animals and humans. You will need to know how to proceed if such animals are brought to you. You also need to know how to purify water
- public health issues: disasters are a risk factor for increased incidence of various zoonotic diseases. We mentioned leptospirosis earlier; rabies is another risk, as are various parasites and other infections. You need to know how to minimise those risks, and about public education as part of community preparation
- mental health issues that disasters cause: as a member of the disaster response team, you will be working very hard for long hours, in a scene of damage and suffering. You may also be euthanising large numbers of animals, as well as witnessing great human and animal distress. All of this is extremely stressful, and it is important to be trained so that you have a full understanding of how this may affect you and those around you, so that you can manage the stress
- basic human first aid, life support and initial care: in the first hours after a disaster, you may be one of very few people with any clinical knowledge, and you will need to be able to help humans first until more skilled help arrives.

Equally, you need training in the management and care of animals following a disaster: there are many factors here which you will not necessarily encounter in your routine clinical work. Some examples are the use of ropes and slings to transport large animals; management of burns and infected wounds; triage and decision-making for large groups of animals; mass vaccination and how to maintain the cold chain so that vaccines are always kept at the correct temperature. We cannot cover all these things in one lecture, but we will look briefly at triage and euthanasia.

Slide 33:

During and immediately after a disaster, your goal is to do the greatest good for the largest number of animals. To achieve this, you have to assess many animals quickly, and sort them into groups based on their need for or likely benefit from immediate medical treatment. This process of sorting patients is called 'triage'.

In a disaster, you need vets doing triage in the field, to decide if animals should be rescued or euthanised. You also need vets doing triage at the hospital facility – which may be a very basic temporary shelter. In both situations, you need to have a lot of clinical experience to perform the triage well.

Briefly, with field triage, you are not usually examining each animal individually. Instead, you are observing the animals quickly so that you can put them in one of three categories:

1. Dead – or dying and requiring euthanasia
2. Badly injured but would benefit immediately from very basic interventions
3. Minor injuries and likely to survive without treatment.

With medical triage, you do examine animals individually, evaluating the major body systems – cardiac, respiratory, neurological, etc. Again, you are quick and you use your evaluation to categorise animals as:

1. Dead or dying and requiring euthanasia.
2. Grave prognosis, no matter what treatment you give, so requires euthanasia.
3. Guarded prognosis: requires treatment immediately or very soon. You monitor these animals closely because if treatment is delayed and their condition deteriorates, they may require euthanasia.
4. Prognosis fair to good: treatment is required but is not urgent.
5. Prognosis excellent because the animal is healthy and requires no treatment.
6. In all cases, it is important that your recommendations and actions are consistent with the standard of care that is normal for the standard of living and cultural expectations of that community. The same is true with disaster planning.

Note also that different species will have very different requirements.

Slide 34:

We've seen that triage may lead you to conclude that animals need euthanasia. In addition, stray animals may have to be humanely killed. To recap: this is because disasters can lead to many stray or abandoned animals who can spread diseases – e.g. rabies, leptospirosis, *Toxocara*. Consequently, the public and the authorities alike may want to kill them and may do so using inhumane methods.

Zoo or laboratory animals, or other mass-housed animals, may also need to be humanely killed if they cannot be cared for or evacuated. Again, there is a risk that inhumane methods may be used. Note that, as a vet, you need specialist skills in handling and humanely killing these types of animals, due to the risk of escape/attack/disease. Discussion of that is beyond the scope of this lecture.

The main point is that, as a vet, you can help to ensure that animals are killed humanely, by advising the authorities during disaster preparation, and by knowing appropriate methods of euthanasia and training volunteers appropriately in this, as necessary.

Slide 35:

Now that you know the general areas where you would need training, this slide shows some sources of training.

- Some online training is available from the US Department of Agriculture, at <http://awic.nal.usda.gov/research-animals/disaster-planning>.
- A multinational group has created a course called LEGS (Livestock Emergencies Guidelines and Standards) which is particularly focused on pastoralists and other smallholders in Africa and South America. The website link is www.livestock-emergency.net/wp-content/uploads/2012/01/LEGS-Training-Coordinator-Job-Description-06-Feb-20122.pdf.
- Local veterinary associations may also run disaster training courses.

Slide 36:

In addition, World Animal Protection provides a specialised training course for veterinary students, to create Veterinary Emergency Response Units (VERU). The VERU are disaster response teams. As of 2012, these response units have been created in collaboration with veterinary schools in eight countries: Colombia, India, Myanmar, Kenya, Nicaragua, Mexico, Thailand and Costa Rica.

When disaster strikes, this highly trained group of veterinary students is deployed to provide critical veterinary care to injured or sick animals.

Slide 37:

The main roles of a VERU are:

- to assist with emergency response, working in coordination with civil defence, national ministries of agriculture and non-governmental organisations, and to be integrated into the emergency management system, both regionally and nationally
- to enforce effective stabilisation of animal populations in disasters, thereby increasing food security and decreasing the impact on livelihoods and disease spread
- to support veterinary response in disasters and to administer veterinary treatment under supervision according to local legislation
- to provide support to communities and individuals who are affected by disasters
- to assist in risk reduction programmes by educating owners with supplied materials, such as educational leaflets and instructional handouts
- to become trained veterinarians and leaders in development of preparedness strategies for animal populations at community level
- to promote awareness of animal welfare in communities.

Slide 38:

To review, we have been looking at your role as a vet in disaster management. We have seen, briefly, how you would proceed in response to a disaster, and where you might get specialised training.

We now need to look at your role in reducing the risk from disasters, and preparing for them.

Slide 39:

Every country has its own particular approach to risk reduction. At the national or community level, vets can be involved as planners and advisors about risk reduction. The slide gives some examples:

- VERU units/Animal Response Teams
- community-based projects
- national planning to include animals, e.g. law requiring local authorities to make provision for animals in their disaster planning
- collaboration of government with humanitarian organisations
- resources and training – such as the VERU course
- demonstrations and practice; for example, Japan has regular earthquake drills
- public service announcements.

Slide 40:

Vets also have a role to play in risk reduction in their own communities. We have covered a lot of these aspects already, and this slide summarises them.

- Vets can help owners of livestock and pets to prepare their own disaster plan.
- Vets can have a clinic preparedness plan: we outlined what that would consist of, earlier. However, note that the full plan would be very detailed, including checklists of supplies, etc.
- Vets might also lobby the local authority to include animals in their disaster preparedness.

Slide 41:

To conclude:

- It is essential to save animals in disasters, and vets have a very important and necessary role in planning and managing this.
- It is also essential to have a preparedness plan for your clinic, as well as for the local authorities to include animals in their plans.
- If you are involved in a disaster, remember that self-care is important because your work will be stressful, and puts you at risk of emotional breakdown.
- Finally, you can achieve all of this by having specialised training.