Module 9
Assessing Welfare in Practice
Lecture Notes

Slide 1:

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

Slide 2:

This module will teach you:

- why you carry out welfare assessments

- how you carry out welfare assessments in the different contexts listed on the slide.

Slide 3:

We saw in Module 2 that we carry out welfare assessments to ensure that standards of care are being met.

- The reason this is important is that animals are sentient and we do not want them to suffer.

- Instead, and in accordance with the three-part concept of welfare, we want animals to function well, to feel well and to be able to perform the species-typical behaviours that are important to them.

- Standards of care in any of these areas can slip, such that a particular area of care is bad. Welfare assessment prevents 'bad becoming normal'.

The impetus for welfare assessment has largely arisen out of public concern for farm animals, and assessing their welfare will the main focus of this lecture, although we will also consider laboratory animals. Those approaches can be adapted to animals under other conditions, such as zoo animals and shelter animals.

Moving on to the different types of standards that may apply to farm animals, there are three main types:

- The World Organisation for Animal Health (OIE)'s minimum standards of care for terrestrial and aquatic animals – these are not legally binding, but have been agreed upon by the ~174 member countries of the OIE. The standards are available online[1].

- The second type of standard is the legally binding standards that countries may have written into their legislation. Some countries may not have much legislation, but they may have recommended guidelines for treatment and welfare of farm animals.

- Most common of all are private standards of care, designed to satisfy the concerns of those consumers interested in certain aspects of that care, in this case animal welfare. Because private standards are the most common, we will now look at these in detail

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- The first type of private standards are voluntary schemes that provide standards in animal welfare and, often, other characteristics that are also deemed to be important by consumers (e.g. food safety, environmental protection).

- Farms that participate in these schemes undergo regular, independent checks to ensure that they follow the rules.

- As vets in practice, you are unlikely to perform such checks because you will not be independent. However, if your clients are members of such schemes, you can help them to ensure that their standards of care meet or exceed the standard required by the scheme.

Slide 5:

There are many different types of quality assurance (QA) schemes in countries around the world. This slide gives some examples.

Some schemes operate for the internal market.

The very first animal welfare assurance scheme was developed by the Royal Society for the Protection of Cruelty to Animals (RSPCA) in the UK and is known as the Freedom Foods scheme.

It covers meat, eggs and dairy products (see www.rspca.org.uk/freedomfood).

- Chile operates a quality assurance scheme for beef

- McDonald's and some other American chain restaurants operate welfare assurance schemes for some of their animal products both in America and in some of the other countries where they operate, e.g. for egg production, and at the slaughterhouses that supply their meat.

1.   Terrestrial code: http://www.oie.int/index.php?id=169&L=0&htmfile=chapitre_1.7.1.htm
      Aquatic code: http://www.oie.int/index.php?id=171&L=0&htmfile=chapitre_1.7.1.htm

Other assurance schemes may be in place to satisfy consumers in external markets, enabling producers to benefit from a particular consumer demand. For example:

- Brazil operates such a scheme for beef exported to the French supermarket chain, Carrefour

- Namibia operates a Farm Assured Namibian scheme to enable the export of beef to the European Union.

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The second private scheme that may involve welfare assessment is a benchmarking scheme.

A benchmark is defined as: 'a standard or point of reference'. Here, farmers may participate in regular assessment and anonymous comparison with their peers, as a way to voluntarily uphold and improve their standards of welfare and production.

Benchmarking enables the farmer and the farmer's veterinarian to identify both areas of concern and positive areas where welfare is already very good. This helps to produce farm-specific priorities for action.

Benchmarking schemes require administration and detailed assessment and they have not typically been organised by veterinarians in practice.

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This slide gives an example of the sort of feedback that a benchmarking scheme can generate.

The graph compares the mean number of calluses on the legs of pregnant sows on an individual farm (grey bar) with that on 42 other farms. On all farms, the sows are housed individually, in gestation stalls.

The *y*-axis shows the mean number of calluses per farm and the *x*-axis represents the 43 individual farms, ranked from best to worst. The darker bar highlights one farm, which had an average of 6 calluses per pig. You can see that all the farms had at least two calluses per sow, and many had four to five per sow. However, the farm in question is doing slightly worse than that, with six per sow, and ranks 38th out of 43 in this area of welfare.

Slide 8:

These feedback reports serve several goals at the same time:

First, they can encourage farmers. Some competition between farmers is stimulated (especially with performance data) or an incentive system can be built up. Also, many welfare criteria affect the quality of the produce so farmers may see fellow members of the scheme getting a better return as a result of having high welfare standards.

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Benchmarking also educates farmers:

- Awareness of the farmer's own performance is raised and comparison to other farms enabled. This can be very important because farmers rarely get the opportunity to see other farms and may assume that their level of lame animals, for example, is normal. By seeing that other farms have much lower levels of lameness, the farmer can see that something more is possible.

- Also, benchmarking helps to demonstrate that certain husbandry solutions will result in lower prevalence of signs of low animal welfare (such as disease), which can result in increased production.

Enforcement:

Definitions of minimum requirements can be set up (e.g. no more than an average of four calluses per sow, or fewer than 20 per cent lame animals). This can be used to pass or fail a farm that belongs to the scheme, or to set up an action plan for a failing farm and then monitor its success.

Slide 10:

Another type of voluntary welfare standard may be unique to the individual farmer, and can be part of a general herd health plan that you, as the vet, create as part of your service to the farmer. By suggesting minimum welfare standards for the farm, you can help the farmer to plan for times when his animals may be at high risk of suffering and to specify when to intervene so as to prevent suffering.For example:

- In an extensive sheep farm, can the sheep cope with very cold or very dry weather – do they have enough shelter, water sources, etc.?

- If not, at what point during bad weather should the farmer intervene to prevent the sheep from suffering due to extreme cold, thirst, etc.?

This kind of planning benefits the animals and gives animal owners peace of mind that they are minimisingany risk to their livestock.

As vets, we can also carry out welfare assessments on animals that we see individually, as part of good clinical practice.

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Veterinary practices can also have private standards of animal welfare for their own work. Some veterinary associations operate voluntary Practice Standards Schemes in which participating practices are inspected every one to two years, and must meet many standards of hygiene, equipment, etc. However, these schemes do not typically focus much on welfare, such as animal handling or animals' stress while at the clinic.

Consequently, practices may decide to create standards of care in these areas. These standards might include:

- humane handling of animals, e.g. no member of a practice ever hits an animal

- hospitalisation standards whereby in-patients have a place to hide (e.g. by covering part of the cage door with a towel)

- surgical and anaesthetic standards (e.g. the use of lubricant on endotracheal tubes; no more than 10 anaesthetic incidents per 10,000 anaesthetised patients).

Slide 12:

Now that we have seen the different types of standards that farmers and veterinarians themselves might choose to adhere to, we need to look at how you would assess animal welfare to see if those standards are being met.

1. We will start by looking at how you might incorporate welfare assessment into your advice to farmers in farm planning at the group level.

2. Then we shall look at how welfare assessments are used on-farm as part of quality assurance schemes.

3. Then we shall look at the assessment of welfare at the slaughterhouse.

4. Then we shall look at how you might assess the likely impact of research procedures on laboratory animals.

5. We will also look briefly at how, when we examine an individual animal in practice, we should include the 'feelings/mental state' and 'important behaviours' aspects of welfare, and not only the 'physical functioning' aspect.

Slide 13:

Before we look at the assessment of welfare in animals, we will review what we learned in Module 2. There we saw that the two measures of animal welfare that we can assess are:

1. The events and resources which give rise to animals' sensory input. These are known as 'welfare inputs' or 'resource-based measures'.

2. Animals' responses to this input. These animal-based measures are 'welfare outputs' or 'outcome-based measures'.

This slide illustrates welfare inputs and welfare outputs. You will recall that welfare inputs concern three things:

- management factors including the stockperson's training and how they handle the animals

- environmental factors such as the housing, nutrition and other areas of husbandry

- animal factors such as genetics and early experience.

Below that, you see that welfare outputs also come under three main areas:

1. Clinical health and production.

2. Behavioural measures.

3. Physiological measures.

While welfare inputs are relatively easy to measure, on their own they cannot tell us enough about whether a given farm is meeting the standards concerned. You need the welfare outputs as well.

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The process for carrying out a welfare assessment has four stages:

1. You gather information about the animals themselves (welfare outputs).

2. Then you gather information about the management of the animals (welfare inputs).

3. You inform the farmer or owner of any welfare problems, what the risk factors are and how they can overcome them.

4. Finally, you encourage and support the farmer or owner in making your recommended changes, e.g. by explaining the financial and non-financial benefits of making the changes.

Slide 15:

You will see that welfare assessments currently tend to focus on preventing suffering more than on promoting positive emotional states such as happiness and pleasure.

This is because animal suffering is of such concern and there has been much more research on the factors associated with negative emotions and how to avoid them than there has been on positive emotions.

At present, all we can say is that some behaviours seem to indicate positive emotional states, and we need more research to know how husbandry can be adapted to maximise these states in different groups of animals. As clinicians, we need to be aware of the behaviours concerned which are:

- play behaviours

- positive behaviours between group members, such as grooming each other or resting together

- some vocalisations, e.g. purring in cats may be a sign that the cat is content or happy.

Slide 16:

Moving on to our first example of how to assess animal welfare.

This example concerns how you can assess welfare in practice as part of your service to your farm clients.

You would normally do that best within the context of farm health planning, which involves creating a practical and structured preventive health programme that includes welfare, and visiting the farm to monitor the success of the programme.

Visits might typically occur every three to six months, perhaps at times of year when welfare may be at greatest risk. For example, in the case of sheep this might be in the lambing season, during shearing, and during transport of lambs for slaughter.

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The next few slides will look at developing a farm health plan for a sheep farm. The pictures show sheep grazing in extensive systems in wet and arid conditions.

Slide 18:

This slide indicates some examples of key areas of your plan, with the welfare benefit stated.

In each area, you need to advise the farmer about the appropriate level of care required. For example, housing needs to provide enough space and protection.

The last example on the list considers when you might intervene to prevent a risk factor giving rise to a major welfare problem. An example of a risk factor is the weather: at what temperature or degree of drought would the farmer intervene to ensure his/her animals do not become dehydrated, too cold, etc.?

Slide 19:

Having devised a plan with your client to help him/her provide high levels of welfare to the animals, you will monitor the success of the plan during your periodic visits.

Monitoring involves reviewing relevant data that the farmer has collected. These data would include disease records, mortality rates, antibiotic expenditure, etc. and you might need to train the farmer to observe some of the relevant signs such as lameness. Other data the farmer may receive automatically, e.g. wool grading or carcass quality.

- The important thing is that you cannot help the farmer if he/she does not keep good records, and you may help him/her to collate the information by supplying easy-to-use record sheets.

Slide 20:

The next part of your routine visit would be to inspect the farm and the animals (welfare inputs and outputs). As the farm's regular vet, you may already know the farm quite well. However, it is still important to carry out a formal assessment so that you do not overlook welfare inputs that may have changed since you visited on a clinical call.

Your assessment can follow the areas of the Five Freedoms adapted for the Welfare Quality® project, which we mentioned in Module 2.

The method includes four main areas of welfare concern, as shown in this slide, and they have a total of 12 welfare criteria, details of which depend on the species and husbandry concerned.

The following three slides review these criteria in detail.

Slide 21:

The tables on these three slides show the 12 welfare criteria. The column on the right gives examples of what you need to observe about the resources (welfare inputs) and the sheep (welfare outputs), when you are on a routine visit at an extensive sheep farm.

Slide 22:

This third area of criteria concerns everything we do as vets: it is very clinical.

Slide 23:

This slide shows behavioural criteria. Note that sheep are social animals who are distressed by isolation, and who respond to sheepdogs as if they were predators. Therefore it is important how well sheepdogs are trained. It may be valuable to watch how a farmer's dogs behave with the sheep, and whether the sheep are able to retain some distance from the dogs, especially in corrals.

In regard to the animals' relationship with the farmer or other stockpeople, there are no quick, proven tests of this in sheep, but if your routine visit coincides with shearing, for example, you can observe how the animals are handled and how they behave.

Slide 24:

Your routine farm health visit has now included your review of the farmer's records, and your own assessment of welfare inputs and outputs during your visit.

- Your next step is to inform your client of your findings, and compare these with the plan you had laid out together at the beginning. You can see where things are going well in terms of welfare and the benefits of this to the farmer and his/her animals, and where things are not going so well and may be putting animals at risk of welfare problems now or in future.

- You can then explore the causes of successes and difficulties, adjust your original plan if appropriate, and set feasible and specific goals to be achieved by the next review, including the costs and benefits of reaching the goals.

This is only a very brief outline of how you approach farm health planning with your clients, and how you can include all aspects of welfare in that, not just measures of disease.

However, note that some welfare problems are inherent to the farming system and cannot be altered without a big capital investment that the farmer might not be able to afford. In contrast, the premium that your sheep farmer may earn for producing meat, milk or possibly wool, under a quality assurance scheme, may enable him/her to make the investments needed to improve animal welfare.

Next, we shall look at quality assurance schemes.

Slide 25:

We saw earlier that there are many different quality assurance schemes for animal welfare. Valid, reliable assessment methods are essential if the standards of the scheme are to be met.

To this general end, the Welfare Quality® project was developed. The project involved research centres in 15 European and four Latin American countries, with the goal of developing standardised and valid welfare assessment protocols for common farmed species, at the different stages of their lives. The species are shown on the slide.

Another example is the AWIN Animal Welfare Indicators project which involves developing concepts further for these and other species and provides online information about animal welfare education.

Slide 26:

Here we see some results when this tool was used to assess growing pigs on 30 farms across Spain.

Performing all these assessments took approximately six hours per farm. The protocol was easy to use and could identify farms that posed a welfare risk to the animals in some areas.

However, the animal-based measures of behaviour were difficult to interpret. They showed a lot of variability, but it was not clear what was causing the variation from farm to farm. The authors concluded that more research is needed here if the assessment tool is to help animals in a quality assurance scheme. Otherwise it will only show that some farms are better than others, but it will not be clear what the farmer could do differently to benefit the pigs, in order to meet the standards of the scheme.

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We have now looked at how to assess welfare on-farm as a vet in practice and in the context of quality assurance schemes.

Another important aspect of quality assurance for everyone is that farm animals are slaughtered humanely. Therefore auditing welfare at the slaughterhouse is essential. As a vet in practice, you may work at an abattoir, either inspecting animals before slaughter, or inspecting their carcasses, or as an overall manager. In those capacities, you may be called upon to conduct internal audits of welfare.

The main purpose of the audit is to prevent 'bad' from becoming 'normal'. When there is a high throughput of animals, standards can easily slip. If you have clearly worded audits, it is relatively easy to measure the extent of problems at specific points in the process of handling and slaughter of the animals.

Professor Temple Grandin is the world's leading authority in the auditing of slaughterhouses for animal welfare. She stresses the importance of clearly worded audits, as shown in the example on the slide. You can see that the first wording, "most of the animals were handled roughly", is vague, and this makes any concern over rough handling difficult to correct. In contrast, the second wording is very specific and makes it easy to demonstrate whether or not the slaughterhouse is meeting standards.

Slide 28:

Based on the OIE standards of transport and slaughter, five variables should be measured when auditing animal welfare at slaughter.

1. The percentage of animals who are effectively stunned at the first attempt, e.g. at least 95 per cent of cattle must be stunned effectively on the first attempt.

2. The percentage of animals who show signs of regaining consciousness before slaughter. This should be zero: if any animals show signs of regaining consciousness before being hung on the rail, the slaughterhouse fails the audit.

3. The percentage of animals who vocalise during handling and stunning, e.g. fewer than 5 per cent of pigs should vocalise when in the restrainer box or stunning pen.

4. The percentage of animals who fall during handling, e.g. handling practices or flooring need to be improved if more than 1 per cent of the animals fall during handling.

5. The percentage of animals who are moved with an electric goad. e.g. this should be fewer than 25 per cent, and the goad should only be picked up when an animal refuses to move.

These standards are easy to assess: for each animal the criterion of care is either met or not met. Then you calculate the total number of animals where the criterion is not met, and estimate the overall percentage of animals affected. That percentage tells you if you have met the standard of care concerned or not.

Slide 29:

Following the OIE's animal welfare standards, the practices shown on the slide are absolutely prohibited.

Slide 30:

Note that this approach to welfare assessment does not mean that other aspects of animal handling during the slaughter process are not important. For example, welfare problems that occurred on the farm and during transport can also be assessed in a slaughterhouse welfare audit, as shown on the slide:

- Percentage of lame animals

- Percentage of thin animals

- Percentage of dirty animals

- Percentage of animals with sores, bruises or lesions

- Percentage of animals who are dead on arrival, or die before slaughter takes place

- Percentage of animals with disease or injuries

- Percentage of birds with broken wings and broken legs.

Slide 31:

Moving away from farm animals, we shall now consider laboratory animals.

When researchers plan an experiment using animals many countries first require an animal care committee or individual to assess the expected impact of the study on the animal's welfare. If the welfare impact is too severe, and if the benefit of the research is not significant enough to merit the use of animals, the researchers may not be allowed to proceed, and may have to adjust their proposed methods and resubmit their application for review.

Assessing the likely impact of a research protocol is challenging because the study itself may be a new procedure or approach, and the assessment has to be made in advance.

Animal welfare grading was developed by researchers in New Zealand in the 1990s, as a way to assess the impact of research on animals' welfare.

The approach is based on the Five Freedoms, and estimates how long animals might experience any compromise in the Freedom concerned, and how severe that compromise would be. So, there are five domains and each domain is graded from A to E, where A represents no welfare compromise in that area, B represents mild compromise, etc., and E represents very severe suffering.

The next slide shows how this works.

Slide 32:

As in the Welfare Quality® project, within each domain, there are specific areas of assessment. For example, domain 2 – environment – includes the two areas of exposure to cold and exposure to heat.

The first four domains assess the likely impact of a research procedure on animals' functioning, as measured by its expected effects on behaviour and physiology.

The fifth domain, mental state, assesses the anticipated impact of the procedure on the animals' feelings.

Each domain is then graded from A to E for the impact of the procedure within that domain of welfare. The grades are mutually exclusive. The overall grade for the welfare impact of the procedure is normally based on the fifth domain, mental state.

Slide 33:

Mellor et al. (2009) use this grading system to assess the welfare impact of a hypothetical study on the effect on underfed animals of exposure to severe cold.

You can see from the slide that the first four domains of welfare, concerning the animals' physical functioning, were predicted to be mildly or moderately affected by this relatively short experiment. However, mental state gets a worse grade than all the others because marked suffering is anticipated based on the extreme cold and under-nutrition, and the length of exposure to this.

Consequently the overall grade for the anticipated welfare disruption caused by the study is D. It then becomes a matter of ethics and judgment whether the experiment would be allowed to go ahead.

Slide 34:

You can see from the previous examples that several different approaches have been developed to assess welfare in different groups of animals in various situations.

We shall now look at how you might assess welfare in an individual animal, as part of your clinical examination. Traditionally, you first take a clinical history – this is the same as enquiring about welfare inputs – which tells you about the animal's conditions of care, and any previous behaviours that may be cause for concern now. Then you examine the animal – this is the same as gathering data on welfare outputs.

So there is no new procedure to learn when you consider how you assess welfare in an individual patient. The only point in addition to the traditional veterinary clinical approach is that you also need to observe the animal for, and to ask owners about, those aspects of welfare that concern species-typical behaviours and the associated feelings. It is important to remember this, and not restrict yourself to observations and questions about physical functioning and the feelings associated with that alone.

The best time to do this full welfare assessment is during an annual health check, when the owner is expecting a full review. Just as it is not appropriate to carry out a full welfare assessment on a farm when the farmer has called you out for a particular clinical problem, neither is it good timing to quiz a pet owner about all aspects of his/her animals' care when the animal has a very specific illness about which the owner is seeking your advice.

Slide 35:

Whatever type of welfare assessment you are involved in, once you have made your recommendations you need to be clear about who is responsible for the success of your plan, so you can be sure the animals benefit from it.

The owner has overall responsibility to ensure the welfare of his/her animals. He or she must keep the appropriate records so you can review the results of his/her efforts.

You have a responsibility to advise the farmer on the plans he/she needs to meet the standards concerned, and to help him/her review their performance and correct areas where standards are slipping.

Then, when a future assessment is carried out, the farmer can use that information to see how he/she is improving.

However, note that when the assessment is carried out as part of an assurance scheme, the assessor provides valuable feedback but does not normally advise on corrective action at the same time. You, as the vet, may be asked to help the farmer there.

Slide 36:

- To sum up: we have seen *why* we carry out welfare assessments, and looked at *how* to assess welfare in some different contexts.

- The most important points to remember are that, as vets, you need to be aware of welfare inputs and outputs that reflect all aspects of welfare, not just the physical functioning aspect. You need to be ready to discuss this with owners and make feasible recommendations about how to improve all three aspects of welfare, as necessary