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Causes of poor welfare in large animals during transport

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Introduction

The handling, loading, transporting and unloading of animals can have very substantial effects on their welfare. The welfare of an individual is its state as regards its attempts to cope with its environment (Broom 1986) and includes both the extent of failure to cope and the ease or difficulty in coping. Health is an important part of welfare whilst feelings, such as pain, fear and various forms of pleasure, are components of the mechanisms for attempting to cope so should be evaluated where possible in welfare assessment (Broom 1998, 2001b). Where an individual is failing to cope with a problem, it is said to be stressed. Stress is an environmental effect on an individual which overtaxes its control systems and reduces its fitness or appears likely to do so (Broom and Johnson 1993). If the effect of the environment is just stimulation, or useful experience, or an adrenal cortex response which has no adverse consequences, the individual is not stressed.

Assessing stress and welfare

A variety of welfare indicators can be used to assess the welfare of animals which are being handled or transported (see Broom and Johnson 1993, Broom 2000).

Changes in behaviour are obvious indicators that an animal is having difficulty coping with handling or transport. Some of these help to show which aspect of the situation is aversive. The animal may stop moving forward, freeze, back off, run away or vocalise.

Social species which can collaborate in defence against predators, such as pigs or man, vocalize a lot when caught or hurt. Species which are unlikely to be able to defend themselves, such as sheep, vocalize far less when caught by a predator, probably because such an extreme response merely gives information to the predator that the animal attacked is severely injured and hence unlikely to be able to escape.

When male adult cattle are mixed during transport or in lairage, they may fight and this behaviour can be recorded directly (Kenny and Tarrant 1987). Calves of 6 months of age may also fight (Trunkfield and Broom 1991).

The physiological responses of animals to adverse conditions, such as those which they may encounter during handling and transport, will be affected by the anatomical and physiological constitution of the animal.

Table 1 Commonly used physiological indicators of stress during transport

Stressor	Physiological variable
Measured in blood or other body fluids	
Food deprivation	↑ FFA, ↑ β -OHB, ↓ glucose, ↑ urea
Dehydration	↑ Osmolality, ↑ total protein, ↑ albumin, ↑ PCV
Physical exertion, bruising	↑ CK, ↑ LDH5, ↑ lactate
Fear/arousal	↑ Cortisol, ↑ PCV, ↑ LDH5 ↑ Heart rate, heart rate variability ↑, ↑ breathing rate
Motion sickness	↑ Vasopressin
Hypothermia/hyperthermia	Body temperature, skin temperature

FFA, free fatty acids; β -OHB, β -hydroxybutyrate; PCV, packed-cell volume; CK, creatine kinase LDH5 lactate dehydrogenase isoenzyme 5. (modified after Knowles and Warriss 2000).

Factors affecting welfare during animal handling and transport

There is a wide range of attitudes to animals and these have major consequences for animal welfare. During handling and transport, these attitudes may result in one person causing high levels of stress in the animals whilst another person doing the same job may cause little or no stress. People may hit animals and cause substantial pain and injury because of selfish financial considerations, or because they do not consider that the animals are subject to pain and stress, or because of lack of knowledge about animals and their welfare. Training of staff can substantially alter attitudes to, and treatment of, animals.

Laws can have a significant effect on animal welfare. Within the European Union, the major Directive “Concerning the protection of animals during transport” is 91/628 while others concerning veterinary checks and other transport related topics are 89/662, 90/425, 90/675, 91/495, 91/496, 91/628 and 95/29. In addition there are Regulations 1255/97 “Concerning staging points and amending the route plan” and 411/98 “On additional animal protection standards applicable to road vehicles used for the carriage of livestock on journeys exceeding eight hours.” Following the E.U. Scientific Committee on Animal Health and Animal Welfare Report “The welfare of animals during transport (details for horses, pigs, sheep and cattle)” (March 2002), a new Directive on transport is likely. These laws have effects on animal welfare only if they are enforced and the mechanisms for enforcement within E.U. Member States are the subject of current discussion. Codes of practice can also have significant effects on animal welfare during transport. The most effective of these, sometimes just as effective as laws, are retailer codes of practice since retail companies need to protect their reputation by enforcing adherence to their codes (Broom 2002).

Some animals are much better able to deal with adversity associated with handling and transport than are other animals. This can be because of genetic differences, associated with the breed of the animal or with selection for production characteristics. Differences amongst individuals in coping ability also depend on housing conditions and with extent and nature of contact with humans and conspecifics during rearing.

Physical conditions within vehicles during transport can affect the extent of stress in animals so the selection of an appropriate vehicle for transport is important in relation to animal welfare. Similarly, the design of loading and unloading facilities are of great importance. The person who designs the vehicle and facilities has a substantial influence, as does the person who decides which vehicle or equipment to use.

When planning a journey, there must be decisions about the stocking density of animals on the vehicle and the grouping and distribution of animals on the vehicle. For all species, tying of animals on a moving vehicle can lead to major problems and for cattle and pigs any mixing of animals can cause very poor welfare.

The method of payment often affects transport staff's treatment of animals whilst loading and unloading, and the way in which they drive vehicles. People who are paid more if they load or drive fast, cause poorer welfare so such methods of payment should not be permitted. Payment of handling and transport staff at a higher rate if the incidences of injury and poor meat quality are low improves welfare. Insurance against bad practice resulting in injury or poor meat quality should not be permitted.

Planning for transport should also take account of temperature, humidity and the risks of disease transmission. Disease is a major cause of poor welfare in transported animals. Planning of routes should take account of the needs of the animals for rest, food and water. Drivers or other persons responsible should have plans for emergencies including a series of emergency numbers to telephone to receive veterinary assistance in the event of injury, disease or other welfare problems during a journey.

The methods used during handling, loading and unloading can have a great effect on animal welfare. A good quality of driving can result in very few problems for the animals but poor quality driving leads to poor welfare because of difficulty in maintaining balance, motion sickness, injury etc. Animals should be driven much more carefully than humans who are seated or able to hold on to part of the vehicle. The actual physical conditions, such as temperature and humidity may change during a journey and require action on the part of the person responsible for the animals. A journey of long duration will have a much greater risk of poor welfare and some durations inevitably lead to problems. Hence good monitoring of the animals with inspections of adequate frequency, and in conditions which allow thorough inspection, are important.

Summary

The welfare of animals during transport should be assessed using a range of behavioural, physiological and carcass quality measures. In addition, health is an important part of welfare so the extent of any disease, injury or mortality resulting from, or exacerbated by, transport should be measured. Many of the indicators are measures of stress in that they involve long-term adverse effects on the individual. Key factors affecting the welfare of animals during handling and transport which are discussed are: attitudes to animals and the need for training of staff; methods of payment of staff; laws and retailers' codes; genetics especially selection for high productivity; rearing conditions and experience; the mixing of animals from different social groups; handling procedures; driving methods; stocking density; increased susceptibility to disease and increased spread of disease.

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