

## Lecture 6

### Animal Welfare during Transport: Risks and Control Points

#### Plan

1. Main risks during transport
2. Loading stage: a critical control point
3. Conditions of transport: space, ventilation, and microclimate
4. Journey duration and the need for stops
5. Unloading and adaptation after transport
6. Regulatory requirements and international standards

#### Introduction

Animal transport is an integral part of modern livestock production and the food industry. It is carried out to move animals between farms, deliver them to markets, processing plants, or veterinary clinics. However, this process is one of the riskiest periods in the life of animals, as it is accompanied by numerous stress factors. Transport itself often determines the level of animal welfare during the final stages of life, and its quality directly affects productivity, food safety, and the economic outcomes of farms. Therefore, it is crucial to understand the risks animals face during transport and identify control points that help minimize suffering and ensure the humaneness of the process. It should also be emphasized that animal transport has not only ethical but also political and economic dimensions. Non-compliance with modern standards of transport may result in sanctions, loss of markets, or decreased competitiveness of products. Conversely, compliance with welfare standards increases consumer trust and enhances the country's reputation as a supplier of humanely produced goods. In many states, animal transport has become the subject of heated public debate and campaigns, which have tightened requirements for transport operators. This demonstrates that animal welfare is not only a matter of internal farm management but also an element of international agricultural policy.

#### 1. Main risks during transport

The first and most obvious risk is stress caused by the very fact of relocation. Animals, accustomed to familiar environments, face noise, vibrations, movement restrictions, and unfamiliar surroundings. This triggers activation of the sympathetic nervous system, increased cortisol levels, tachycardia, and other signs of physiological stress. A second significant hazard is injury, often occurring during loading and unloading, especially if animals are inexperienced in human contact or handled improperly. Falls, collisions with surfaces, and crushing in tight spaces frequently result in fractures or internal injuries. A third risk is heat stress or hypothermia: temperatures inside vehicles may change rapidly depending on the season, which can be fatal for pigs and poultry. A fourth factor is dehydration and starvation during long journeys. The loss of even 5–10% of body fluids significantly reduces animal viability. Finally, morbidity and mortality are major risks, as stress weakens immunity and creates favorable conditions for the spread of infections. Equally dangerous is the mixing of groups of unfamiliar animals, which often leads to

aggressive fights, causing serious injuries from horns, hooves, or pecking in poultry. Noise stress from loud engines or sudden sounds adds to the risks. Young animals are particularly vulnerable, as they lack previous transport experience. Poor hygiene in vehicles may spread intestinal and respiratory diseases. Even short trips can have severe consequences if animals already suffer from underlying health conditions. Thus, transport risks are multifactorial and require comprehensive control.

## **2. Loading stage: a critical control point**

The highest levels of stress and injury occur during loading. Animals are forced into unfamiliar spaces, moving in directions they perceive as threatening. Improper ramps, steep inclines, or slippery surfaces greatly increase the risk of falls and injuries. Additional stress comes from electric prods or rough handling by staff. Lighting conditions also affect behavior: animals resist entering dark areas, so proper illumination is key to safe loading. Studies show that using trained dogs or rubber boards instead of electric devices reduces stress. Loading should be calm, applying “low-stress handling” principles that account for natural animal behavior. This first stage is critical, setting the welfare standard for the entire journey. Furthermore, loading must be supervised by trained specialists familiar with species-specific behavior. For ruminants, sudden movements should be avoided, as they panic easily. Pigs respond better to group movement, while horses require individualized handling. Timing matters too: loading in hot weather accelerates heat stress. Prolonged loading increases stress levels. Anti-slip flooring is essential to prevent injuries. Animals should be moved gradually, avoiding crowding. Poor organization of this stage may cause economic losses due to injuries or mortality even before the journey begins.

## **3. Conditions of transport: space, ventilation, and microclimate**

Once loaded, animals face the challenge of limited space. Too little room leads to aggression, suffocation, and injury, while too much space causes instability and falls during movement. Strict regulations define the minimum area per animal for different species. Ventilation is another crucial factor. Accumulation of carbon dioxide, ammonia, and humidity in confined spaces causes hypoxia and heat stress. Pigs are particularly vulnerable due to poor thermoregulation. Summer temperatures inside vehicles can exceed 40°C, quickly leading to heatstroke. In winter, drafts and cold are threats. Vehicle design must include climate-adapted ventilation and insulation. Road quality and driving style also matter: sudden braking or sharp turns cause falls and injuries. Thus, the microclimate in vehicles is a key control point for animal welfare. Drivers and attendants should constantly monitor temperature and humidity using sensors. Modern vehicles are equipped with automatic ventilation and climate systems. Stocking density must be carefully balanced: overcrowding reduces ventilation, while excess space risks instability. Young animals are especially sensitive to heat stress. Poultry requires specialized crates to ensure airflow. Drivers should avoid abrupt maneuvers, as they trigger panic. Emergency plans, including unscheduled stops, are necessary for extreme weather. These conditions highlight that transport environments directly determine welfare outcomes.

## **4. Journey duration and the need for stops**

Journey length is another critical factor. Short trips typically pose fewer problems, but long transports exceeding 8–10 hours significantly increase risks. Regular stops are needed for rest, feeding, and watering. EU law requires mandatory breaks after a set number of hours. Young animals such as calves and piglets are especially vulnerable, as they lack stress resistance and often die during transport. Pregnant females are also at high risk, with travel causing miscarriages or complications. Long journeys increase dehydration, weight loss, and weakened immunity. The longer the trip, the higher the risk of mortality. Therefore, monitoring journey time and organizing quality rest stops is essential.

Additionally, hot weather makes even short trips dangerous due to heat stress. Poultry can endure much shorter water deprivation periods than cattle. Many countries prohibit transporting calves under 14 days over long distances. Rest stations providing water, feed, and veterinary checks are recommended for long trips. Regular breaks reduce mortality and injuries. Route planning is also vital: drivers must avoid traffic jams and construction delays. In some countries, electronic tracking systems monitor journey times in real-time to prevent manipulation and ensure transparency.

### **5. Unloading and adaptation after transport**

Unloading is as critical as loading. After long journeys, animals are exhausted, and poor unloading conditions dramatically increase injury and mortality. Slippery floors, steep ramps, and rough handling are the main risks. Proper organization can quickly reduce stress. Rest areas after unloading, where animals can rehydrate and feed, are crucial. Early hours post-transport shape the perception of welfare. Calm unloading lowers mortality and improves meat quality in slaughter cases. Thus, unloading and adaptation are the final control points defining overall welfare outcomes. Veterinary checks should be performed immediately to detect injuries or illness. Access to fresh water is vital, but sudden overdrinking can cause digestive disorders. Young animals and poultry need warm, calm environments. Lighting should be moderate to avoid stress. Horses and pigs require individualized care due to sensitivity to new settings. At slaughterhouses, rest before killing reduces stress and improves meat quality. Poor unloading can undo all welfare efforts made during transport.

### **6. Regulatory requirements and international standards**

Animal transport is governed by numerous international regulations. In the EU, Council Regulation (EC) No 1/2005 sets rules on journey duration, space allowances, vehicle design, and staff qualifications. Similar guidelines are issued by the World Organisation for Animal Health (WOAH, formerly OIE). These stress minimizing suffering, enforcing control systems, and holding transporters accountable. Welfare certification systems increasingly evaluate transport as a key criterion. In advanced livestock countries, businesses adopt internal standards that exceed legal minimums. For Ukraine, EU integration requires harmonizing transport laws, creating both challenges and opportunities to raise welfare and competitiveness. Additionally, electronic monitoring of transport is expanding in the EU, with GPS tracking and climate sensors ensuring real-time welfare control. The US has its own guidelines, such as AVMA recommendations. In Asia, standards vary: some countries align with EU norms, while others have minimal regulation. Hence, international bodies advocate harmonization. For Ukraine, building independent auditing systems

and training staff are priorities. EU alignment also opens new export markets. Legal requirements thus become not just formalities but guarantees of humane treatment.

### **Control Questions**

1. What are the main stress factors affecting animals during transport?
2. Why is loading considered one of the most critical control points?
3. What risks arise from insufficient or excessive space in vehicles?
4. How do microclimate and ventilation affect animals' physiology during journeys?
5. What differences exist in transporting young, adult, and pregnant animals?
6. What measures are needed during long trips to ensure welfare?
7. Why can unloading negate earlier welfare efforts?
8. What are the consequences of poor transport for productivity and meat quality?
9. What key provisions are contained in EU Regulation 1/2005?
10. Why is harmonization of Ukrainian transport law with EU standards important?

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