

ANIMAL HYGIENE THE BASIS OF PRE-HARVEST FOOD SAFETY FOR WHOLESOME FOOD OF ANIMAL ORIGIN

Thomas Blaha

*DVM, Ph.D., Diplomat ECVPH,
School of Veterinary Medicine Hanover, Germany*

THE CURRENT FOOD SAFETY REALITY AND PERCEPTION

In general, our food supply is not yet completely safe, but it has never been safer than today. However, its safety has never been questioned more than today. The reasons for this obvious contradiction are twofold:

1. **Consumers and the society have changed:** The consumers' and the society's trust in food safety is decreasing due to:
 - the never ending chain of food safety "accidents"
 - supply chains are less transparent than in the "old days"
 - single mistakes have bigger consequences
 - diagnostics are getting better and better (i.e. more sensitive)
 - the media like "bad news" better than "good news"
2. **Food Supplies and markets have changed:** The GATT Marrakesh Agreement of 1994 decided that food should be subject of free trade in the same way as any other goods under the rules of WTO. This means that food safety risks can easily "travel" throughout the world, but it also means that food safety "anxieties" and promises become market tools. This, in turn, will increase the importance of the Codex Alimentarius and the SPS (Agreement on Sanitary and Phytosanitary Measures), which emphasizes the roles of WHO, FAO and the O.I.E.

Consequently, we need to ask whether our traditional approach to food safety can "handle" the changing world of food production, distribution and consumption, and the changing attitude of the consumer and the society towards food.

THE TRADITIONAL APPROACH TO FOOD SAFETY

Until recently, food safety was "guaranteed" by asking the government: "...make sure that the food we eat is safe..." This approach has a long history:

- In the ancient Rome empire, there were already "market inspectors" that took "rotten" meat from the market.
- In the middle ages, there was already a distrust in the free market in respect to food, thus, food inspection enforced by ruling aristocracy was under way.
- In the modern world, the meat inspection, following the proposals of Dr. Robert von Ostertag (Germany), was a "success story", which, however, could not prevent the recent food safety "accidents" such as: the emergence of Salmonella Enteritidis in the mid 1980s, the occurrence of BSE with its long-lasting aftermath, the emergence of E. coli O157:H7, the ongoing latent infections of livestock with zoonotic Salmonella spp.

and the increase of pentaresistant *S. Typhimurium* DT 104, dioxin, nitrofen, MPA etc., etc.

The reason for that is that governmental food inspection as single point inspection of products after their production process can fail and it is no prevention of any deficiency during the production procedures. Governmental inspection is also kind of an “exoneration” of those that produce the food from their liability, since the producer can rely on the expectation that the governmental inspection is to take out any food product that is not fit for consumption.

Governments and food safety agencies have reacted in the early 1990s with developing the HACCP and demanding their implementation in slaughter plants and food production facilities, which has led to an improvement of the food safety standard. However, still there are again and again food safety glitches that “circumvent” meat inspection and even the most diligently implemented HACCP concept.

The reason for that is that most of the food safety glitches of today have one common feature: they have their origin in the primary production, i.e. in the pre-harvest area, which comprises all production stages prior to meat inspection and HACCP (feed production, animal husbandry and the transport to the slaughterhouse).

To guarantee the necessary food safety continuum (from “stable to table”), the full responsibility for the safety of our food must be taken by **all** of those that produce and handle the food. Thus, the primary production (the pre-harvest area) needs to be fully integrated into the entire package of food safety measures throughout the food chain, which leads to pre-harvest food safety. The definition is:

Pre-harvest food safety is the complex of continuous measures at farm level (including feed production, storage and transport) that prevent or permanently minimize the amount of food-borne (chemical, microbiological and physical) risks to human health that can be carried into the food chain via animals or animal products.

WHAT ALL THIS HAS TO DO WITH ANIMAL HYGIENE

The basic premise for the connection between pre-harvest food safety and animal hygiene is: ***Wholesome (“healthful”) food of animal origin can only be produced from healthy animals.***

The latest “Webster’s New Encyclopedic Dictionary” explains HYGIENE as follows:

- a) hygiene is: “a science dealing with the establishment and maintenance of health”
- b) hygiene is: “conditions or practices (as of cleanliness) tending to promote health”.

The word is derived from the Greek term “.....hygienos”, which means “healthful”; this meaning goes beyond cleaning and disinfection, that are mostly meant by using the term hygiene.

The premise that only healthy animals produce wholesome food and the definition of hygiene lead to the understanding that, for the veterinarian, animal hygiene means the following activities beyond treating disease:

- Establishment and maintenance of husbandry systems that provide the animals the conditions for high health and a high level of animal welfare (which is a component of health);
- Monitoring and control of latent food-borne pathogens such as *Salmonella* spp., pathogenic *E. coli*, *Campylobacter* spp., *Listeria* spp. and *Yersinia enterocolitica*.
- Good veterinary Practice (GVP):
 - a) prevention of residues (carry over effect)
 - b) prudent use of antibiotics (bacterial resistance)

The sets of traditional veterinary knowledge (apart from therapy) that is needed for pre-harvest food safety and applied animal hygiene are:

- external and internal biosecurity (high health replacement animals, fences, showers, change of clothes and boots, bird-proof barn openings, etc.),
- all-in/all-out practices, cleaning and disinfection,
- applying hygienic working procedures (change off needles, tool cleanliness for clipping teeth and tails, clean surroundings for newborn animals, "sow showers", etc),
- optimization of feed and feeding hygiene,
- continuous rodent and pest control,
- microbiological monitoring for controlling bacterial resistance, and
- serological monitoring as early warning system.

The sets of additional veterinary knowledge for the application of the principles of quality management and HACCP-like pre-harvest food safety are:

- defining and implementing the targeted standards (quality and safety criteria, critical points),
- establishing the documentation for the self-control system and the internal audits
- organizing the external audits for neutral certification procedures.

Combining these two sets of veterinary and quality management knowledge will enable veterinarians to be active and generate revenue by both

- consulting the implementation of pre-harvest food safety and quality management systems in food animal husbandry, and
- conducting internal and external audits.

In a world, in which preventing disease (animal hygiene) instead of treating disease, and in which the quality and safety of food gains more and more importance, the veterinary profession has a unique opportunity to "occupy" a new field of activities that will further develop the prosperity and social acceptance of the veterinary profession.