

Abattoir-specific ways of implementing risk-based meat inspection methods in Germany

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Abstract

In the European Union serological and/or bacteriological monitoring results on zoonoses are to be taken into account for the risk assessment of slaughter pig herds in the framework of the risk-based meat inspection. Furthermore, the European food safety strategy pursues the additional goal to increase herd health. The new understanding of “One Health” (healthy animals and healthy people) and the new paradigm of assuring safe food (responsibility of food producers, prevention, risk-orientation, process-optimization, and continuous improvement) require new concepts for replacing the traditional meat inspection at the slaughter line with a risk-based meat inspection focusing at the whole food chain, and for modern and proactive veterinary diagnostics. The focus of such new concepts supporting continuous improvement systems is proactively acquiring knowledge on the herd health status, early warning and surveillance systems, instead of diagnosing diseases and causes of death in single animals. This paper describes how the basics of the risk-based meat inspection and especially the permit for the so-called “visual” meat inspection were implemented in three slaughterhouse companies taking into consideration the differing agricultural structures and differing qualities of the information exchange between the slaughterhouses and “their” farmers, but also differing points of view of the regional veterinary authorities on the preconditions for the permission of the visual meat inspection, i.e. inspection without palpations and incisions

Introduction

The need for restructuring the meat inspection procedures and the veterinary diagnostic system for food animals was identified by the “White Paper of the EU on Food Safety” in 2000. The resulting new European food safety concept with its basic Regulations (EC) No. 178/2002 (Anonym, 2002), and the so called “Hygiene Package” Regulations (EC) No. 852/2004, 853/2004, 854/2004 and 882/2004 (Anonym, 2004a, 2004b, 2004c), reflects the new paradigm targeted at improving not only food safety but also the health and welfare of all food animals (Hathaway and Richards, 1993). In contrast to the traditional sole responsibility of the state for providing safe food by final end product inspections at the slaughter line, the core elements of these new European regulations are:

a) Strengthened responsibility of the food producer: All persons that are involved in the production of food of animal origin share the food producers’ responsibility for food safety, animal health (notifiable and production diseases), and animal welfare, which is supervised by the official veterinary surveillance (i.e. public-private partnership). The food producers along the meat production chain are feed producers (farmers and feed mill operators), food animal producers (farmers supported by their consulting veterinarians), and slaughterhouse operators (supported by their quality management staff). The state still has the final responsibility, but not by inspecting the end products alone, but by enforcing the principle of the “control of the control”. This principle has greatly contributed to the establishment of industry-driven self-monitoring systems with independent auditing and certification procedures.

b) Prevention and process-optimization: In contrast to the past paradigm of protecting the consumer by just condemning carcasses and organs during the official meat inspection at the slaughter line for preventing products “not fit for consumption” from entering the food chain, the new goal is to assure production processes at farm level that result in healthy animals for slaughter, which in turn result in carcasses that are “fit for consumption”. The major tool for this is to implement systems for a continuous process optimization from feed to meat.

c) Risk-orientation and continuous improvement: Traditionally, official inspections of food production operations have been equally distributed at random with the same quantity and quality of the inspections, since no information on any differences in the compliance of the operations with current laws had been taken into account. The new approach recognizes that it is possible to gain information from existing data (feed mill and farm records, veterinary documentations on drug use, and slaughter check results) so that risk-oriented selections for inspecting operations are feasible: low-compliance (i.e.

“high-risk”) operations are inspected more frequently than full-compliance (i.e. “low-risk”) operations. This principle leads “automatically” into incentive systems, which encourages continuous improvements.

Consequently, the future food production system demands for a new proactive diagnostic strategy for food animals. The overall task is to build up new concepts that serve the holistic requirements of the new European food safety philosophy. Such new diagnostic strategy should enable both the responsible food producers (from feed to food) and the official control system to make cost-effective and risk-oriented decisions that results in targeted, information-based actions for the continuous improvement of food safety, animal health and animal welfare on the basis of the growing role of public-private partnerships.

After the so-called “Hygiene Package” of the new EU food safety concept was issued in 2004 and put in force in 2006, the German federal risk assessment authorities predominantly thought of ONE national “prescription” of how to implement the risk-based meat inspection in all slaughterhouses in the country. Furthermore, according to the traditional understanding of the food safety responsibility, the general expectation was that the new approach has to be implemented predominantly by the official veterinary food safety services. This was mainly due to the difficulty of switching from the traditional prescription of “what to do” to “reaching food safety goals”. Another difficulty was the intended shift of the food safety responsibility from the veterinary authority to the food business operator, with the veterinary authority mainly controlling the self-control mechanisms of the food operators including the farming community as part of the food chain.

In short: the task was and still is to make the responsible people (farmers, slaughterhouse operators and official veterinarians) understand that nowadays the food safety risks stem mainly from the production phases prior to slaughter (zoonotic microbes and residues), which cannot be dealt with by the traditional meat inspection, but by improving the herd health of all pig supplying herds including the latent infections especially with the relevant zoonotic pathogens as listed in the Scientific Opinion of the EFSA “On the public health hazards to be covered by inspection of meat (swine)” (EFSA, 2011): *Salmonella* spp. *Yersinia enterocolitica*, *Toxoplasma gondii* and *Trichinella* spp. (Meemken and Blaha, 2011).

Having these basic principles of the new food safety paradigm were better understood, it became obvious that there is not ONE way to implement the risk-based meat inspection in all slaughter facilities, but several ways to achieve the same goal. The reason for this flexibility is that slaughterhouses with their specific sets of pig supplying farmers have very different supply chain conditions (number and size of herds, quality of cooperation between suppliers and slaughterhouse, quality of information exchange, etc.). Even the risk patterns vary between regions and slaughterhouses (outdoor holdings vs. confinement; small vs. large pig units, straw or wood chips litter vs. slatted floor, etc.).

Material and Methods

In the framework of the recent research of the Field Station for Epidemiology of the University of Veterinary Medicine Hannover on improving the so-called “food chain information” (Reg. [EC] 853 and 854/2004) the authors combined data from the farm such as the mortality rate, the drug use measured by the “animal treatment index” (Blaha et al., 2006), and the slaughter check results to provide the official meat inspection service with meaningful information for the risk-based meat inspection procedure, the so-called “Herd Health Score” (Dickhaus et al., 2009). During these efforts it became obvious that there are general gaps in the knowledge about the health status and the zoonoses load of pig herds supplying pigs to the slaughterhouse. This led to considerations how to collect data on the occurrence of especially the subclinical infections in pig herds with relevance for the safety of meat, but also for the health and well-being of the food animals in question.

The resulting concept was developed into a general guideline for the implementation of the risk-based meat inspection. These guidelines cover the following steps:

- 1) A kick-off meeting with the management of the slaughter facility, the regional veterinary authority responsible for the meat inspection at the chosen slaughterhouse, and representatives of the pig supplying farmers for explaining the plan and getting the full commitment of these three “players”, with T. Blaha and D. Meemken acting as both moderators of the meeting and facilitators of the following implementation process.
- 2) Adaptation of the software packages of both the official veterinarians responsible for the meat inspection at the slaughter line and of the slaughterhouse to make the herd-wise recording of organ lesions possible so that at any time a “6-month rolling average” of the percentage of lesions per herd can be established. This rolling average is to define herds that can be “visually” inspected (low frequency of lesions) and herds that need additional inspection activities at a slower line speed or at the trimming line (very high frequency of lesions).

- 3) Developing forms for the so-called “food chain information” for informing the meat inspectors and the slaughterhouse about food-safety-relevant herd health status issues such as a controlled and integrated husbandry system, no out-door keeping of the animals, food-safety relevant diseases and/or laboratory results such as Salmonella serology, as well as the drug use prior to slaughter.
- 4) Preliminary permission of the visual meat inspection and carrying out a parallel inspection to compare the accuracy of the decision “fit for consumption” in both methods.
- 5) After making sure that the new meat inspection method achieves the same or even better level of food safety transferring the entire meat inspection procedure to the new risk-based approach: inspecting carcasses from herds with a high herd health status and a low frequency of lesions “visually”, and inspecting carcasses from herds with a poor herd health status and a high frequency of lesions “specifically more intensively” addressing the specific risks per herd.
- 6) Validating the functionality of the new system by double-checking carcasses from randomly chosen slaughter batches in the cooling facilities to make sure the “visually inspected” and the “specifically more intensively inspected” carcasses are likewise fit for consumption.

These general guidelines were used as basis for the implementation of the risk-based meat inspection in three different types of slaughter enterprises:

- a) A slaughterhouse in the North of Germany belonging to a multi-national big meat company with its headquarters in The Netherlands and, consequently, acting under the quality policy of the Dutch company.
- b) A Meat Cooperative in the West of Germany with 4 slaughterhouses acting under the cooperative’s quality policy, and
- c) A family-owned mid-sized slaughterhouse in the Northwest of Germany near the Dutch border, slaughtering also pigs raised and finished in The Netherlands.

Results

Although the same guidelines were used as basis for the implementation processes, due to the very different organisational structures, information systems, bondage between the slaughterhouses with the farmers and the differing points of views of the respective official veterinarians in these slaughterhouses, varying implementation steps had to be taken, and, accordingly, the finally routinely used ways of achieving the intended objectives of the risk-based meat inspection method are distinctly abattoir-specific:

- a) The multinational company focussed on: improving the QM-system in the slaughterhouse, adding information about the feed sources for the animals (taking into account that several food scandals took their start at the feed production level), implementing additionally to the serological Salmonella monitoring serological surveillance on *M. avium* and *Toxoplasma gondii*, and implementing additional testing for drug residues, and decision on “visual” or “specifically intensified” inspection at the following threshold: only the pigs of herds with a lesion frequency above the double value of the slaughterhouse average are “specifically intensified” inspected.
- b) The Meat Cooperative focussed on: improving the veterinary care and consultancy of their supplying herds by employing two cooperative-own veterinarians exclusively consulting any farmer with deficiencies of the health and welfare status of his or her herd, logistic slaughter by day-wise slaughtering the pigs for the “visual” inspection and those for the “specifically intensified” inspection, additionally logistic slaughter of pigs according to the Salmonella status of the herd in question, and selecting herds with an unusually high frequency of lesions for residue testing.
- c) The family-owned mid-sized slaughterhouse uses a “slaughterhouse index” (i.e. the average of the frequencies of lesions of all carcasses slaughtered in a certain period of time and compares this to every herd-specific (the “farmer’s index”) frequency of lesions in the same period of time, adding mortality rates to the “food chain information”, using the slaughter check results and the mortality rates as trigger of risk-oriented controls of pig herds with health deficiencies.

Although in each of the three pork-producing entities (the slaughterhouses with their set of pig supplying farmers) has finally implemented its own abattoir-specific way of using the risk-based meat inspection, they all achieved the same objective:

- 1) replacing the traditional hands-on meat inspection by inspecting the majority “visually”, i.e. in a hands-off manner for reducing the potential cross contamination of zoonotic pathogens,

- 2) improving the information flow between the farmers and the slaughterhouse (the “food chain information”) and between the slaughterhouse and the farmers (feed-back information of the herd specific slaughter check results), and
- 3) reducing the veterinary man power at the slaughter line and shifting the veterinary awareness more and more to the supplying farms focussing on the improvement of the health and the animal welfare of the animals produced for slaughter.

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