European approach to food safety
The role of EFSA

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Outline

• Short introduction to EFSA’s scientific panels incl. the Panel on Biological hazards
• Foodborne zoonotic infections in EU
  Highlights from EUSR
• Scientific opinions/risk assessment
• The future
EFSA’s 10 scientific panels and scientific units

- Risk assessment and scientific assistance
- Animal health and welfare (AHAW Panel)
- Biological hazards (BIOHAZ Panel)
- Contaminants (CONTAM Panel)
- Plant health (PLH Panel)
- Scientific support unit
- Dietary & chemical monitoring unit
- Biological monitoring unit
- Scientific evaluation of regulated products
- Feed (FEEDAP Panel)
- Nutrition (NDA Panel)
- Food additives and nutrient sources added to food (ANS Panel)
- Food contact materials, enzymes, flavourings and processing aids (CEF Panel)
- GMO (GMO Panel)
- Pesticides (PPR Panel)
EFSA’s Biohaz panel

The Panel on Biological Hazards (BIOHAZ) deals with biological hazards in relations to food safety and food-borne diseases.

EFSA’s Biohaz panel is composed of independent experts (trying to balance countries and gender).

The Biohaz panel provides scientific advice to the EC, Parliament, member state or produces opinions related to self-tasking issue.
FoodSafety cannot be achieved by senseless testing

Lot: 0.1% defectives

10 samples:
Probability of detection ~ 1%
30 years of development, Practices, hazard and risk

80'ies:
Good hygiene practices
  - general hygiene in production and preparation

90'ies
HACCP (Hazard Analysis Critical Control Point)
  - focus on hazard in the food and critical point for prevention

00'ies
Risk analysis and epidemiological links
  - focus on human outcome and the whole food chain
  - science-based interventions to lower risk (only very few until now)
  - foodborne disease burden estimations (future)
Risk Analysis

Risk Assessment

EFSA, FAO/WHO
Expert Bodies
(Independent science)

Risk Management

EC
FAO/WHO
Codex Alimentarius
Commission

Risk Communication
Interactive exchange
of information and opinions
concerning risks
Old school:
Looking where the data is in stead of
Looking for the right data
Examples of newly adopted opinions

- Public health risk of “Salmonella Typhimurium-like strains”
- Safety and Efficacy of hot water decontamination
- Analytical sensitivity of approved TSE rapid tests
- Risk assessment of parasites in fishery products
- Salmonella in slaughter and breeder pigs
- Campylobacter in broiler meat – source attribution
- Association between TSE in animals and humans
- Efficacy and microbiological safety of irradiated foods
- Campylobacter in broiler meat
- Review of the BSE-related risk in bovine intestines
European Union Summary Reports (EUSRs)

- Prepared in collaboration between EFSA and the European Centre for Disease Prevention and Control (ECDC)
- Two annual reports currently:
  - EUSR on zoonoses and food-borne outbreaks in EU
  - EUSR on antimicrobial resistance in EU
- The only reports on integrated analyses of data on food safety at a supra-national level in the world
- EUSR on zoon and FBOs published in March, EUSR on AMR in June 2011
Zoonoses in humans; notification rates in EU, 2009, EUSR

Campylobacteriosis and salmonellosis continued to be the most often reported zoonoses in humans in EU.
Estimated fatality rates in humans at EU level, 2009, EUSR

Based on the reported fatality rates and the total numbers of reported confirmed cases, it was estimated that in 2009 there were in EU approximately:

- 270 human deaths due to listeriosis;
- 90 deaths due to salmonellosis; and
- 40 deaths due to campylobacteriosis.

Data provided by ECDC
Significantly decreasing trend in human cases since 2005; decrease of 17.4% compared to 2008
Decrease supposed to be mainly due to successful controls of *Salmonella* in laying hens, breeding flocks and eggs
*S. Enteritidis* in humans, laying hens and eggs in EU, 2007–2009, EUSR

*S. Enteritidis* declined in human cases, eggs and laying hen flocks and number of *Salmonella* FBOs caused by eggs
Campylobacteriosis in humans in EU, 2005-2009; EUSR

- The most often reported zoonosis in humans
- The incidence seems to be fluctuating over the years - no major changes
Trichinella in humans and pigs in EU, 2007-2009; EUSR

Humans

Pigs
(very seldom found)
Scientific Opinion on *Campylobacter* in broiler meat production: control options and performance objectives and/or targets at different stages of the food chain - Conclusions

It is estimated that there are approximately nine million cases of human campylobacteriosis per year in the EU27. The disease burden of campylobacteriosis and its sequelae is 0.35 million disability-adjusted life years (DALYs) per year and total annual costs are 2.4 billion €.

Broiler meat may account for 20% to 30% of these, while 50% to 80% may be attributed to the chicken reservoir as a whole (broilers as well as laying hens).
Scientific Opinion on *Campylobacter* in broiler meat production: control options and performance objectives and/or targets at different stages of the food chain - Conclusions

The public health benefits of controlling *Campylobacter* in primary broiler production are expected to be greater than control later in the chain as the bacteria may also spread from farms to humans by other pathways than broiler meat. Strict implementation of biosecurity in primary production and GMP/HACCP during slaughter may reduce colonization of broilers with *Campylobacter*, and contamination of carcasses.
Scientific Opinion on *Campylobacter* in broiler meat production: control options and performance objectives and/or targets at different stages of the food chain - **Conclusions**

After slaughter, a 100% risk reduction can be reached by irradiation or cooking of broiler meat on an industrial scale. More than 90% risk reduction can be obtained by freezing carcasses for 2-3 weeks. A 50-90% risk reduction can be achieved by freezing for 2-3 days, hot water or chemical carcass decontamination.
Scientific Opinion on *Campylobacter* in broiler meat production: control options and performance objectives and/or targets at different stages of the food chain - Conclusions

Achieving a target of 25% or 5% BFP in all MS is estimated to result in 50% and 90% reduction of public health risk, respectively.

A public health risk reduction > 50% or > 90% could be achieved if all batches would comply with microbiological criteria with a critical limit of 1000 or 500 CFU/gram of neck and breast skin, respectively while 15% and 45% of all tested batches would not comply with these criteria.
Scientific Opinion on the public health hazards to be covered by inspection of meat from swine

- Identify and rank the main risks for public health that should be addressed by meat inspection at EU level.
- current meat inspection methodology and recommend possible alternative methods fit for the purpose of meeting the overall objectives of meat inspection.
General public health performance of the current meat inspection

Useful:
• **Ante-mortem**
  - Animal health, welfare, identification, some Food chain information (FCI) underdeveloped
• **Post-mortem**
  - Animal health hazards
  - Animal welfare
  - Meat quality
  - Classical zoonotic hazards; but those are nowadays absent or less important

Shortcomings:
• **Ante-mortem**
  - No animal risk categorisation
  - Non-uniform analysis of FCI
  - Difficult examination of individual
• **Post-mortem**
  - Not detecting hazards not causing visible signs/lesions
  - Those include presently the most relevant hazards
  - Most hazards present in lesions are not transmitted via pork eating
  - Palpation/incision mediates cross-contamination with top-ranked bacterial hazards
Main risks in swine in EU

High risk
• Salmonella

Medium risk
• Yersinia
• Toxoplasma
• Trichinella

• Because current meat inspection of pigs does not target, and is not able to protect the consumer against the most important “new hazards” (Salmonella, Y. enterocolitica, Toxoplasma), appropriate procedures for these hazards have to be developed anew. Whilst the current meat inspection targets “old hazard” Trichinella, the approach used can be further developed so to be more dynamic and flexible.
Meat safety assurance

• Effective control of the main hazards (*Salmonella* spp., *Yersinia enterocolitica*, *Toxoplasma gondii* and *Trichinella* spp.) in the context of meat inspection is possible only through a comprehensive pork carcass safety assurance combining a range of preventative measures and controls applied both on-farm and at-abattoir in a longitudinally integrated way.

• A prerequisite for effective pork carcass safety assurance system is setting **measurable targets** in respect to the main hazards to be achieved on final, chilled carcasses. These would also inform what has to be achieved at earlier steps in the food chain and focus related control measures.
Meat safety assurance

- At abattoir level, the primary goal is the risk reduction for the main hazards that can be achieved through integrated programs based on GMP/GHP and HACCP, including:
  - hygienic practice- and technology-based measures aimed at avoiding direct and indirect cross-contamination with *Salmonella* spp. and *Yersinia enterocolitica*;
  - additional interventions such as antimicrobial (decontamination) surface carcass treatments where considered necessary;
  - heat- or freezing-based treatments of carcass meat to inactivate intramuscular parasites *Toxoplasma gondii* and *Trichinella* spp. where considered necessary and as alternative to related laboratory testing of carcasses;
  - FCI should be used to differentiate incoming pig batches in respect to the *Salmonella* spp., *Yersinia enterocolitica*, *Toxoplasma gondii* and *Trichinella* spp. risks (based on herd status via sampling at farms or abattoirs), differentiate risk-reduction capacity of abattoirs (based on process hygiene performance), and balance the two.
**Meat safety assurance**

- At farm level, the primary goal is the risk reduction for the main hazards, which can be achieved through preventive measures such as closed health and breeding pyramids, GHP and GMP.

- Categorisation of animals based on the carrier state of the these agents is recommended.
Meat safety assurance

• The FCI and the ante-mortem inspection findings are the basis for decision whether the incoming pigs will be subjected to normal slaughter.

• Palpation/incisions used in current post-mortem inspection should be omitted in pigs subjected to normal slaughter, because the risk of microbial cross-contamination is higher than the risk associated with potentially reduced detection of conditions targeted by these techniques.

• The use of these manual techniques during post-mortem examination should be limited to suspect pigs identified through FCI/ante-mortem inspection or post-mortem visual detection of abnormalities.

• Manual post-mortem examination, where necessary, should be performed separately from the slaughterline operation and accompanied with laboratory testing as required.

• Elimination of abnormalities on aesthetic/meat quality grounds can be ensured through meat quality assurance system; it is not necessary through official meat inspection.
Data and research needs

• Ranking relates to the EU as a whole and refinements reflecting differences between regions or production systems may be necessary if/where hazard monitoring data indicate.

• Furthermore, as new hazard(s) might emerge and/or hazards that presently are not a priority might become more relevant over time or in some regions, the risk ranking is to be revisited regularly.

• To provide a better evidence base for future rankings, studies should be carried out to:
  • systematically collect data for source attribution;
  • identify emerging pork-borne hazards, including the collection of data for ranking.
Data and research needs

• Systematic data collection and analysis for the main hazards at herd and abattoir levels, as well as other (re-)emerging agents at EU or regional levels is a prerequisite for the new food safety assurance system

• Further research on development of the hazard testing that could be used within the new safety assurance system.

• The development of systematic methodologies for assessing abattoir process hygiene performance

• The principles of validation of the efficacy of various carcass treatments to be used for elimination/inactivation of the main hazards need to be developed
Recommendations

• The overall public health impact of the modified pig meat inspection system, as compared to the current status, should be evaluated regularly after its implementation in practice.

• It is recommended that all parties involved in the new food safety assurance system, including official veterinarians, official auxiliaries and abattoir staff, be trained in the skills required for this system.
Meat inspection mandates—other species

Poultry, bovine animals over six weeks old, bovine animals under six weeks old, domestic sheep and goats, farmed game and domestic solipeds.
Future known Biohaz activities

Continuing with meat-based meat inspection

Targets for *Salmonella* in turkeys

Risks represented by certain composite products

Review of EUSR

Control of sporadic Listeriosis

Animal by-products

And more
Future challenges in Food Safety

• Increase in food and energy prices
• Climate change
• Scarcity of clean water (irrigation etc)
• Changing consumption patterns
• Risk-based meat inspection - in practice
• Improved diagnostic tools
• Availability of data
Thank you for your attention!