

# Food chain information: let's make it work

The veterinary profession has a major role to play in the enhancement of food safety and animal health through utilisation of food chain information, herd health planning and modernisation of meat inspection. Frank O'Sullivan, Veterinary Ireland, and Chair of the Food Safety and Quality Working Group at the Federation of Veterinarians of Europe, previews a forthcoming paper by the group

## INTRODUCTION

The food chain is elongated and complex. It is best practice to 'measure' the parameters that you wish to improve. Whether on farm, in the slaughterhouse or further down the food chain, there are many opportunities to extract data and to create a 'bell curve' that can be very useful to prompt positive change in animal health, welfare, food safety and the environment.

Food chain information (FCI) gives significant expression to this concept. A forthcoming paper by the FVE Food Safety and Quality Working Group, *FVE guidance document on food chain information*,<sup>1</sup> is expected to be formally adopted by the FVE General Assembly in June 2015. The paper aims to make all key players, including veterinary surgeons, aware of the legislative origin, scientific background, purpose and implementation of the modernisation of meat inspection with meaningful FCI linked to herd health planning. It is anticipated that the paper will also acknowledge the possible use of harmonised epidemiological indicators (HEI) relevant to livestock intended for slaughter.

## SUMMARY

The purpose of the Working Group's paper is to promote the meaningful use of FCI as part of modernisation. It will explore the historical, scientific and legislative drivers prompting change and modernisation in meat inspection and, in particular, the opinions of the European Food Safety Authority (EFSA) risk assessments. The paper will consider the positive role of the veterinary profession in utilising modernisation and FCI for the enhancement of food safety as well as animal health, public health and the environment. It will explore how modernisation with effective FCI can set benchmarks and targets that assist in key decision making throughout the food chain (Figure 1). In particular, it is envisaged that modernisation will confer a number of advantages: firstly by promoting a longitudinally integrated approach to food safety; and, secondly, by demonstrating how FCI can act as a key constructive link to herd health on farm. The paper will also explore how HEI from the farm can inform the food business operator (FBO) and the official veterinarian (OV) about key parameters that may influence decisions around methods of slaughter. In addition, the paper will consider the inherent flexibility and adaptability in modernisation in consideration of the varying socioeconomic and cultural factors that exist in the member states in the EU.

## OVERVIEW

The Federation of Veterinarians of Europe (FVE) is an umbrella organisation of veterinary organisations from 38

European countries. FVE comprises four sections, each of which represents key groups within our profession: practitioners (UEVP), hygienists (UEVH), veterinary state officers (EASVO) and veterinarians in education, research and industry (EVERI).

Internationally, the issue of how meat inspection should be carried out in the future is the subject of intense discussion. The EU risk assessor, the European Food Safety Agency (EFSA), has published a number of opinions (June 2013) with a scientific opinion that provides "the scientific basis for the modernisation of meat inspection across the EU". These opinions cover cattle, sheep, goats, game and horses and follow previously published opinions on pigs and poultry published in 2011 and 2012. The approach taken by EFSA was to identify food-borne biological and chemical hazards and rank them according to their risk for public health. For biological hazards, the priority ranking was based on assessment of impact on incidence of disease, the severity of the disease in humans and evidence that consumption of meat from the various species is an important risk factor for the disease. For pigs, EFSA concluded that the main hazards with public health significance to be considered are *Salmonella*, *Yersinia enterocolitica*, *Toxoplasma gondii* and *Trichinella* spp. Chloramphenicol has been identified as of high potential concern, and dioxins and DL-PCBs as of medium concern. For poultry, the main biological hazards are *Salmonella* and *Campylobacter* spp, while chemical hazards are represented by DL-PCBs, chloramphenicol (prohibited), nitrofurans and nitroimidazole. For cattle, EFSA concluded that the main biological hazards are *E coli* (VTEC) and *Salmonella* spp, while dioxins and PCBs are the chemical hazards of greatest concern. Findings for sheep were similar, with the addition of *Toxoplasma* spp while, in horses, *Trichinella* spp and phenylbutazone were the main concerns. The reports have found that traditional meat inspection techniques are not always the most effective or efficient methods to deal with the hazards identified and have recommended changes and improvements. In the EU context, DG Health and Food Safety of the European Commission functions as the risk manager and is now examining the EFSA reports with a view to tabling legislative proposals. It has already begun actions on foot of the 2011 scientific opinion on pig meat inspection and, in 2014, adopted a regulation (Regulation EU 219/2014) aimed at making meat inspection for pigs (ante-mortem and post-mortem) more effective and risk-based. The regulation provides the option to remove the requirement for obligatory palpation and incision of lymph nodes and organs, moving instead to visual inspection, because of the risk of microbial cross-contamination.



**Figure 1: Modernisation of meat controls promotes three advantages to the food chain.**

To prevent cross-contamination, those palpations and incisions are not required anymore for normal animals, but only when abnormalities are identified. Palpation and incision techniques are to be limited to cases where the epidemiological or other data from the holding of provenance of the animals, the FCI or the findings of ante-mortem inspection and/or post-mortem visual detection of relevant abnormalities indicate possible risks to public health,<sup>2</sup> animal health or animal welfare. In such situations, it is the responsibility of the OV to decide which palpations and incisions must be carried out during post-mortem inspection, separately from the slaughter line, in order to decide if the meat is fit for human consumption. Palpation/incision can be accompanied by laboratory testing as required.

The Commission has also recently circulated a draft of Implementing Regulation amending Regulation (EC) No 2074/2005<sup>3</sup> as regards model documents for FCI. The main objective is to develop a harmonised and easy-to-interpret FCI in order to support the slaughterhouse operator to organise slaughter operations and to assist the OV to determine the required inspection procedures.

### TECHNICAL BACKGROUND

Organoleptically detecting zoonotic disease in animals that are slaughtered and eliminating them from our food supply has been the classical method for meat inspection. However, the food chain has become elongated and, unfortunately, microbial pathogens now causing the majority of food borne diseases (eg. *Campylobacter*, *Salmonella* and *E coli* 0157) can be shed by animals showing no clinical signs. These pathogens are undetectable by conventional meat inspection. Traditionally, inspection techniques (visual, palpatory and by incision) for the presence of gross lesions or flaws have satisfied public health objectives. However, these techniques are not always suitable for detecting food-borne diseases such as campylobacteriosis, salmonellosis and virulent strains of *E coli* or contamination by chemical substances such as steroids or veterinary medicine residues. Nor can we rely on end product testing of our meat products to guarantee safety,

as tests are somewhat insensitive and it is not possible to sample every meat product.

### THE ROLE OF THE VET IN MAINTAINING THE INTEGRITY OF THE FOOD CHAIN

The veterinary role, either in public or private sectors, has four pillars: animal health, animal welfare, public health and the environment. The veterinarian plays a key role in ensuring the safety of foods of animal origin from farm through to the consumer by providing professional integrity, competent advice and knowledge transfer of key information through the food chain.

The veterinary practitioner's role on farm includes advice on animal husbandry, animal health and animal welfare, surveillance, diagnosis and control of disease. This must be informed by timely receipt of information from the slaughterhouse as it relates to food safety, and animal health and welfare and to a productive interplay with the official veterinarian.

### LONGITUDINAL APPROACH TO FOOD SAFETY

Modernisation of meat inspection and its components provides an opportunity for development of longitudinally integrated food safety systems for meat in the EU. The most effective approach to control the main hazards in the context of meat inspection is a comprehensive meat safety assurance system for all animals, combining a range of preventive measures and controls applied both on the farm and at the slaughterhouse in a longitudinally integrated way. FCI, as defined in the legislation, is a two-way process linking the veterinary practitioner with the OV at the slaughterhouse. There are many examples of excellent format of inspection results providing information from the slaughterhouse back up the chain to the farm. FCI should include information on animal welfare in order to complement the slaughterhouse surveillance systems (ante-mortem and post-mortem inspection), and the latter could be used to identify and highlight the on-farm welfare status. Collection and communication of inspection results (CCIRs) from the slaughterhouse to the farm can assist the farmer and his/her advisors, including the private veterinary practitioner (PVP), to make informed decisions to improve animal and herd health, welfare and public health and efficiency with respect to carbon emissions. FCI, of course, must be linked back to herd health planning and confirmed by veterinary checks on farm. This involvement of the veterinary practitioner from 'farm to fork', especially at pre-harvest level, is central to an integrated process control. FCI/CCIRs, together with the HEI, can facilitate disease prevention on farm.

### FCI AND MODERNISATION LINKS EU ANIMAL AND FOOD LEGISLATION

Key CCIRs from the slaughterhouse as required under the Hygiene Package are fundamental to the 'modernisation of meat inspection'. In addition to simplification and harmonisation, the EU Commission is keen to integrate existing and proposed new legislation affecting the food chain from farm to fork. Such key legislation includes modernisation of meat inspection, review of the medicines directive (while tackling antimicrobial resistance), the new animal health law<sup>4</sup> and, possibly, a new animal welfare law. While all the new proposals and past regulations have identified the key role of vets, there is responsibility

for the production of safe food, keeping of healthy animals and ensuring of good welfare standards laid down with the FBO and the farmer.

### RISK ANALYSIS TOOL LINKED TO HERD HEALTH PLANNING

Currently, from the experience of most MSs, CCIRs and HEI are often absent with poor meaningful linkage to and from the farm. Quality FCI and HEI will facilitate a multidisciplinary approach including veterinary-led risk assessment and risk management on farm to improve not only animal health and welfare but also food safety and production. Our vision is that various key parameters from all sections of the food chain could be gathered and measured, creating a typical bell-graph curve that quantitatively provides a benchmark facilitating improvement literally from farm to fork. You can only improve what you can measure.

FCI will provide assurance on herd health standards, welfare compliance and that withholding periods for medicines are observed. FCI should be robust, easy to collect and be useful to the farmer and FBO. Meaningful FCI will allow the FBO or the OV exercise target residue testing on animals from farms with poor animal health or where meaningful CCIRs is absent. This will mean that, in the future, those that are consistently delivering on their responsibilities will be rewarded by less inspection and reduced costs. In the new proposal on the official control, a new phrase – ‘bonus malus’ – has been introduced, which means that those with good performance are rewarded

and those with bad performance will have to pay with additional visits. Meat inspection is moving towards visual for low risk and acknowledgment of good FCI and CCIR.

### POTENTIAL OUTCOMES AND BENEFITS FROM QUALITY FCI AND CCIRS

1. The PVP can add integrity to the FCI

through advice to the farmer on good farming practice, biosecurity measures, quality assurance, HACCP plan, herd health planning and collection and interpretation of data. Epidemiology serves two major purposes in herd (health) management:

- Risk factor analysis (identify high-risk

animals); and

- Monitoring (use of key indicators/trends).

CCIRs provide the farmer and vet with up-to-date information on health parameters and allow comparison of previous FCI. This provides a mechanism for assessing previous herd health improvements on farm. Herd health planning is specific to individual farms

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where unique circumstances require individual farm targets to be set and improvement measured.

2. CCIRs from the slaughterhouse can integrate the information related to production, health and welfare status derived from many sources, such as production data from farm software, feed analysis, analysis from veterinary laboratory, clinical and health data, weight gain, mortality, morbidity, etc. This data could be stored in a central database and accessed by veterinary and other service providers. Harmonisation of the FCI and of the epidemiological indicators will facilitate benchmarking and epidemiological comparison for various farming sectors (eg. dairy, beef, sheep, etc.) and other demographical variation, not only at farm level but also at regional and country level.
3. At veterinary practice level, veterinary practitioners must communicate what the emerging needs of farmers are. This will inevitably lead to an expansion in the range of services provided. They must also promote the services available from the practice and cannot assume that farmers are aware of the range of services provided. At macro level, farm quality assurance is becoming the marketing standard used to signify levels of farm excellence in many aspects. Farm quality assurance needs to be based on objective measures that focus on outputs relevant to quality.

### FLEXIBILITY AND ADAPTABILITY IN MODERNISATION

Modernisation with high-quality FCI recognises the different cultures and geographical and farming diversity that exists in the EU. For a number of reasons, including socioeconomic factors, there is no one global answer to modernisation. Each member state, compartment or region must be given time and flexibility to adapt an approach appropriate to local circumstances, while delivering the equivalent food safety objective. The speed of modernisation will, therefore, vary between member states with a long transition period for some. Member states have different farming demographics affected by diverse socioeconomic factors. For example, small farm size, farm structural development and expansion (with overcrowding at housing) and biosecurity challenges may affect the animal health, welfare and food safety status as they enter the slaughterhouse. In these situations, traditional meat inspection (including palpation and incision) may be deemed necessary by the official veterinarian.

However, FCI/CCIRs, when collated and analysed together with other HEI, may prompt the farmer, farmer groups or, indeed, competent authority to centrally support efforts to improve herd health back on the farm. The veterinary practitioner has a significant role to play here in providing professional input into herd health planning and farm quality assurance.

The PVP has to adapt to the new circumstances and recognise the new opportunities by promoting and marketing and winning business rather than, as in the past, waiting for government to act as 'sponsor' of various schemes. Firstly, the veterinary practitioner can provide clinical and herd health and welfare services for his farmer client, including advising and prescribing appropriate veterinary

medicines. Secondly, when on farm, the veterinary practitioner, who may be carrying out duties of public good for the regulator, such as providing surveillance, could forward accurate FCI for interpretation by the FBO and the official veterinarian at the slaughterhouse.

Any change introduced should be gradual. Many member states will lack the industry structures or capacity to fulfil the prerequisites for the changes described in the current proposals. It is significant that the flexibilities already within the regulations, which permit official auxiliaries or employees of the FBOs to carry out post mortem inspection tasks, have only been implemented in a minority of member states.

### RECOMMENDATIONS

1. Meaningful FCI/CCIRs, as part of modernisation, interpreted and advised by the veterinarians, can be the vehicle for positive change.
2. Animal health, welfare and food safety are inextricably linked and influence each other both positively and negatively.
3. FVE embraces the multidisciplinary approach to risk assessment, management and communication.
4. Within the EU, the government and regulatory authority role is changing from control via law enforcement to supporting the FBO (including the farmer) to take responsibility and ownership of standards through integrated animal health and welfare and food safety in their businesses.
5. The consumer and markets, at the end of the day, will dictate the values they require in the food chain including on farm. We must be mindful of this during the process of communicating risk and change during the modernisation process.
6. There is a need for a comprehensive food chain information (FCI) – CCIRs supplemented by HEI, which can be reported to a central (European) database for further interrogation.
7. Modernisation with good quality FCI/CCIRs linked to herd health planning support not only animal health and welfare and food safety but also environmental protection and sustainability; excellence in knowledge transfer is a prerequisite in the ability to share and use food chain information up and down the food chain for positive change.

### NOTES

1. The authors of the *FVE guidance document on food chain information* (© FVE) are: Frank O'Sullivan (Ireland); Alvaro Mateos (Spain); Maurizio Ferri (Italy); Henning Knudsen (Denmark); Thierry Chambon (France); Tudor Larentiu (Romania); Michel Laszlo (Switzerland); and Francesco Proscia (FVE Secretariat).
2. The risk-related abnormalities that require the traditional inspection procedure might include (but are not limited to) generalised conditions such as multiple abscesses; emaciation/generalised oedema; jaundice, poly-arthritis; suspect pyoemia; suspect pleurisy; mastitis (if associated with general signs); moribund/recumbent animals; orchitis (marked to consider Brucella); suspect emaciation; poor condition; suspect fever; and slaughter in lairage.
3. According to Commission Regulation (EC) No 2074/2005, FBOs raising animals dispatched for slaughter have to ensure that the food chain information referred to in Regulation (EC) No 853/2004 is included as appropriate in the documentation relating to the animals dispatched in such a way as to be accessible to the slaughterhouse operator concerned.
4. [http://www.fve.org/uploads/publications/docs/O34a\\_position\\_paper\\_\\_animalhealthlaw.pdf](http://www.fve.org/uploads/publications/docs/O34a_position_paper__animalhealthlaw.pdf)