



CA18105



RIBMINS

Risk-based meat inspection and
integrated meat safety assurance

A European survey on PMI of finishing pigs

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Madalena Vieira-Pinto , Riikka Laukkanen-Ninios, Nina Langkabel, Susana Santos, Lis Alban, Jaime Gómez Laguna, Bojan Blagojevic, Diana Meemken, Silvia Bonardi, Boris Antunović, Patric Maurer, Ole Alvseike, Sergio Ghidini

- Meat inspection (MI) is essential to verify compliance with legal requirements related to human and animal health and animal welfare protection
- During post mortem inspection, for each finding (lesion), OV needs to
 - Evaluate the necessity to apply MI additional procedures beyond visual inspection
 - Apply a condemnation criteria in order to remove meat unfit for human consumption
 - Record data (TC and PC) with codes
- PMI data: Major importance for animal health and welfare surveillance and benchmarking purpose
- Differences in MI procedures: Avoid comparative analysis; Unequal treatment of FBO and farmers; Different economic losses....





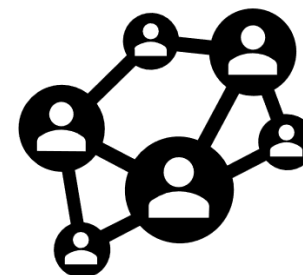
WG4

OBJECTIVES

- The specific objectives included the European **mapping** of:
 - Post-mortem **condemnation criteria** to decide if meat is fit for human consumption
 - **Additional procedures** in place on top of visual inspection for assessing whether meat is fit for human consumption;
 - Detection **ability of visual** MI (**VMI**) for different gross pathological findings (PC)
 - **Databases** in place to record total and partial condemnations and **terminology** used (codes).



- An online survey was prepared by WG4 (RIBMINS) using SurveyHero®, aiming to collect information on **how PMI of finishing pigs is currently performed in Europe.**
- After **validation** (10 OV's with relevant experience in pig meat inspection, from five countries (Portugal, Italy, Finland, Germany and Denmark)
 - Official veterinarians via the RIBMINS national contact points (September to November 2020)
- Divided in 4 parts to cover the study objectives
 - **A** – Condemnation criteria
 - **B** – PMI Additional procedures
 - **C** – Detection ability of VMI
 - **D** – Database and codes used to record PM findings



- The questions were targeted **at 10 important gross pathological findings** selected by RIBMINS members, (Representing Denmark, Finland, Germany, Italy, Norway, Portugal and Spain, who each provided information about the condemnation causes reported in 2019 in their country)



- **10 TC (Part A and B)**

- Abscesses, arthritis, cachexia, erysipelas, icterus, *Mycobacterium*-like lesions, osteomyelitis, peritonitis, pleuritis and pneumonia

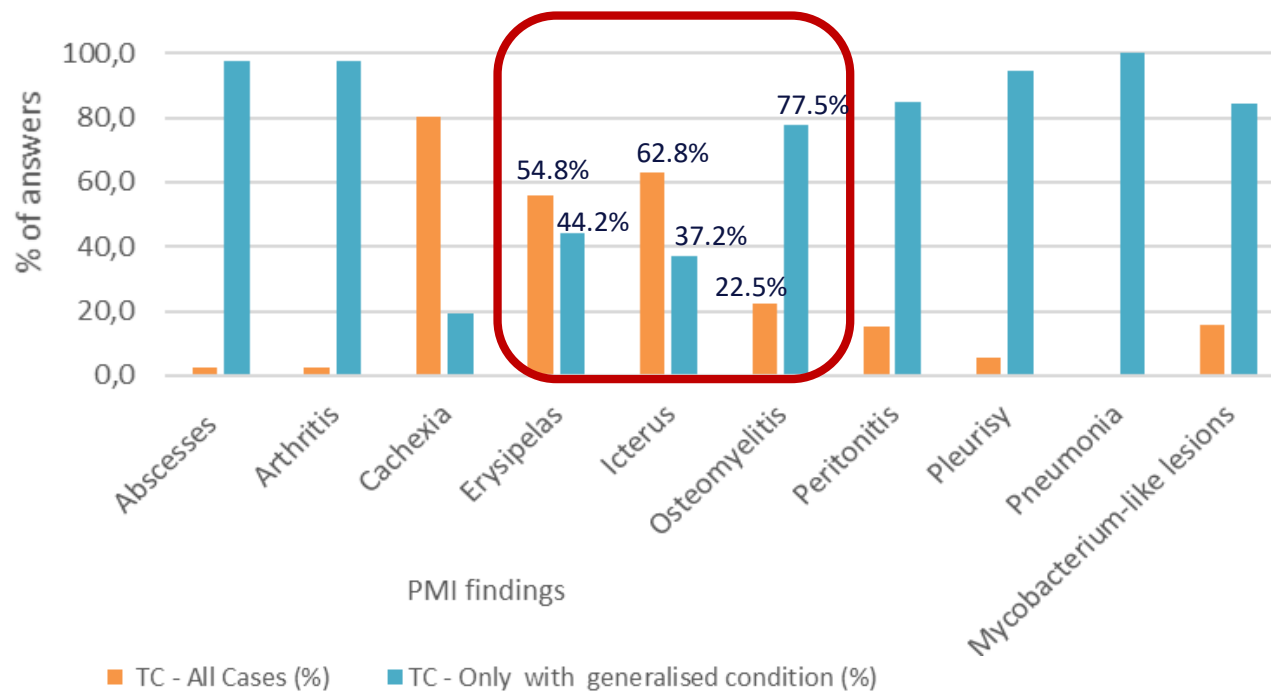


- **10 PC (Part C)**

- Abscesses, arthritis, kidney lesions, liver parasitism, pericarditis, pleuritis, pneumonia, skin lesions, tail lesions, umbilical hernia, faecal contamination



- Responses from 44 OVIs – From 26 out of 44 European countries
- TC criterion: **In all cases / Only in cases of generalised disease**



- TC criterion “**only in cases of generalised disease**” was used more often by the respondents than the criterion “**in all cases**” (AC) (72.7% versus 27.3%)
- Variation regarding the TC criteria used by OVIs was revealed
 - Erysipelas, icterus, osteomyelitis



Spain, Italy
(Alban et al., 2022)



Portugal
(Vieira-Pinto et al., 2020)

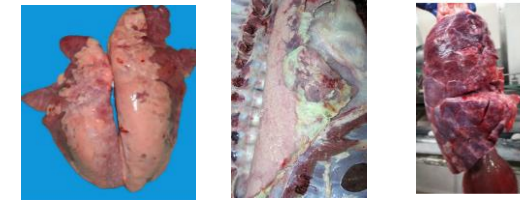
WG4 RESULTS PART A – Indicators GD

■ Respondents provided PMI findings indicators of GD – Example of **PNEUMONIA**

Table 8. Other PMI findings indicating a generalised disease related to pneumonia provided by 15 respondents.¶

PMI findings indicating generalised disease related to pneumonia	Number of answers
Type of pneumonia lesion	8
▫ Abscesses	2
▫ Purulent exudate	3
▫ Necrotic	3
Associated to other lesions or conditions	7
▫ Febrile carcass	2
▫ Abscesses, endocarditis, reactive lymph nodes	1
▫ Arthritis	1
▫ Lymphadenitis, abscesses and arthritis	1
▫ Generalised abscessation, tail lesions	1
▫ Abscesses in other locations	1
Acute	4
▫ Acute state with more than 25% affected	1
▫ Acute state	2
▫ Acute with reactive lymph nodes and/or spleen	1
Extension of lesion	3
▫ More than 25% affected and have complications	1
▫ Extensive and severe bronchopneumonia	2

- **Variability** of indicators shown in the respondents' answers reflects the presence of **different lesions in combination** that makes harmonisation **challenging**.



- **Basis of a reflexion on the elementary principles for correct judgement** of important PMI findings in swine
 - **Scientific-based recommendations**, that could be used at **European level**.

WG4 RESULTS PART B – Variation in APMI procedures

- Palpations and incisions specific for a gross pathological finding
- Most variation in abscesses and mycobacterium-like lesions

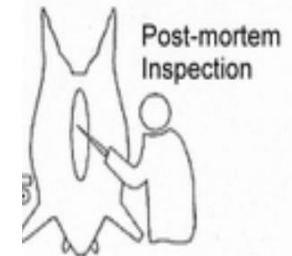


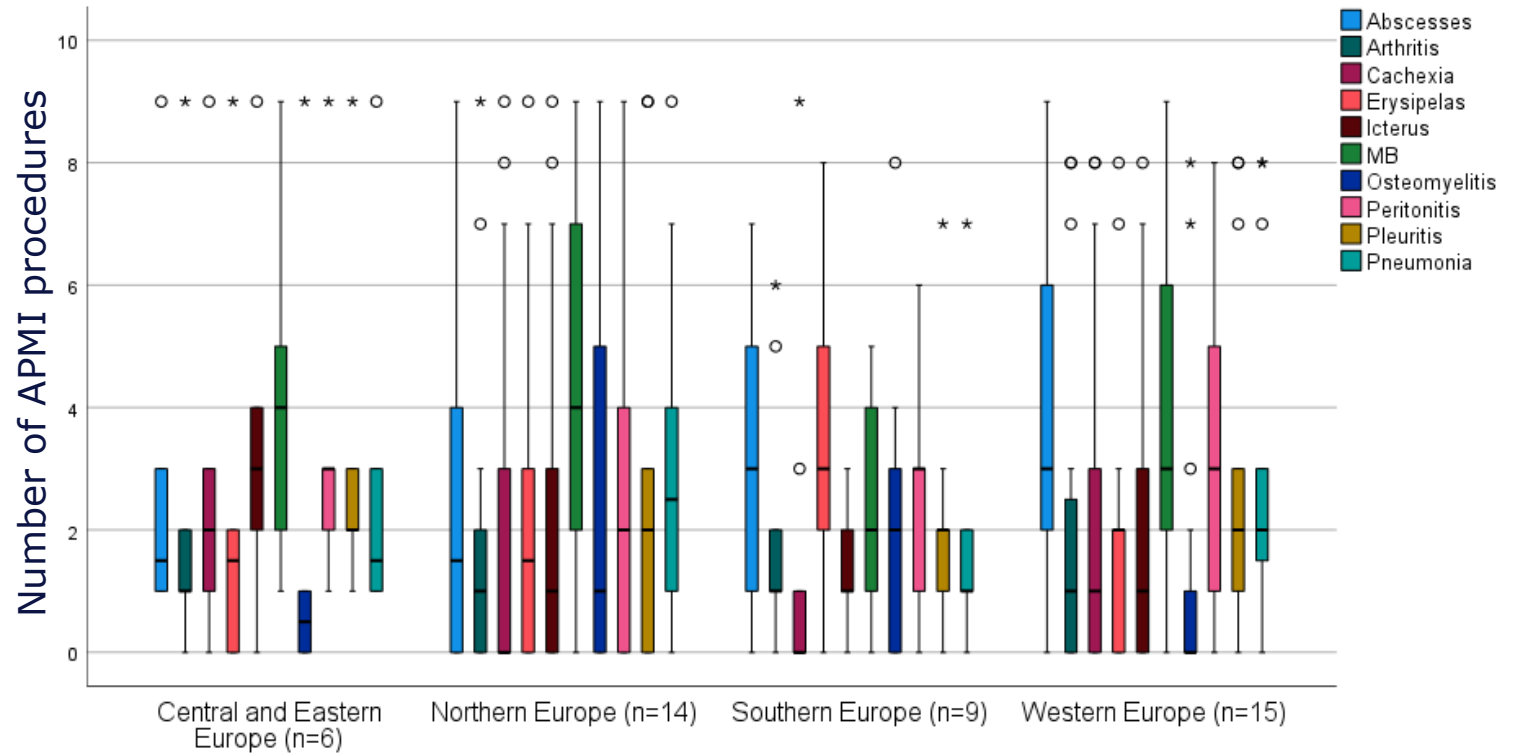
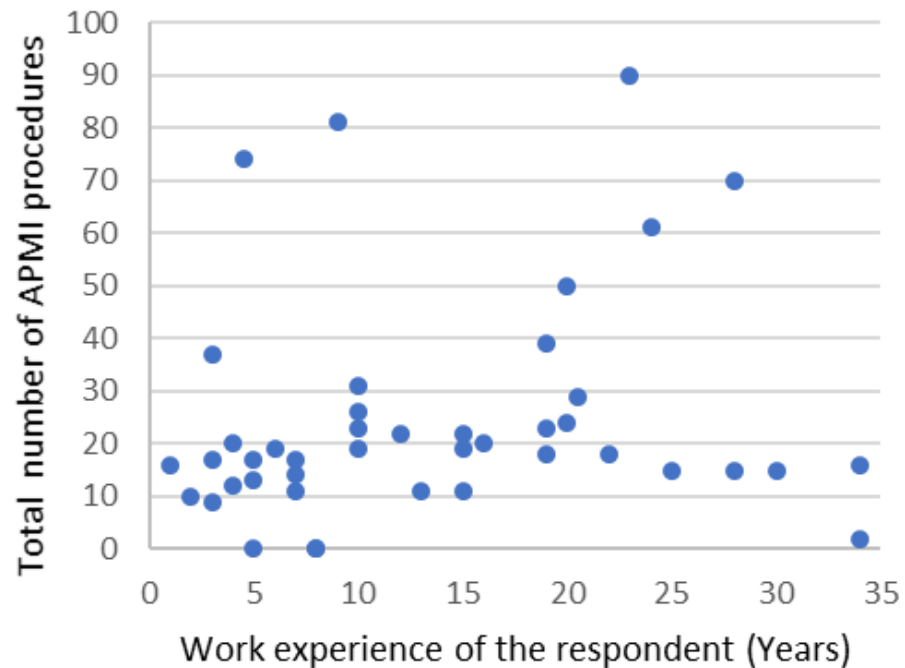
Table. The proportion (%) of respondents (N=44) that consider additional post-mortem inspection (APMI) procedures (Article 23(2) (a)–(i) of Commission Implementing Regulation (EU) 2019/627) required to determine the fitness for consumption of pork

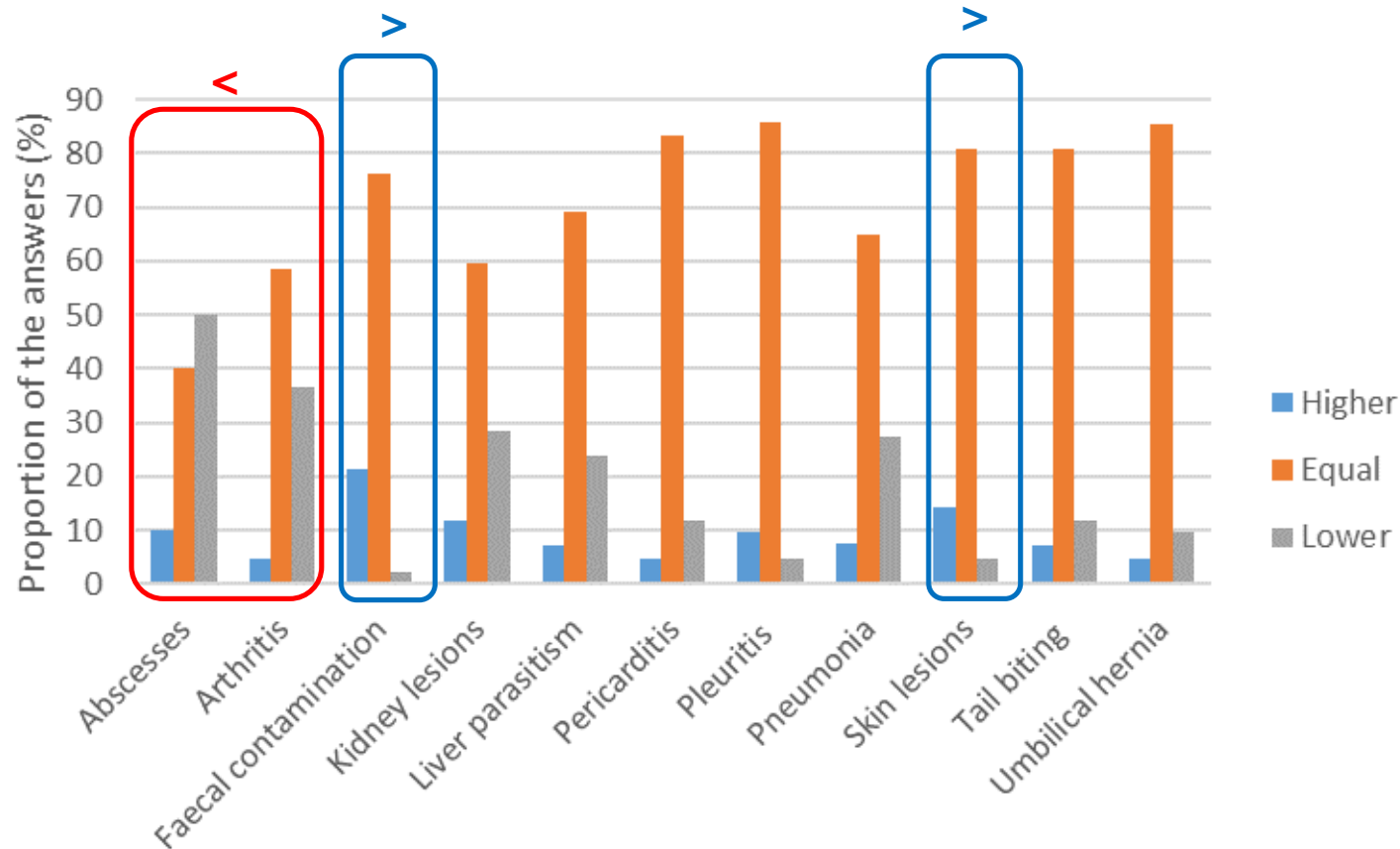
Additional post-mortem inspection procedure	Cachexia	Osteomyelitis	Icterus	Erysipelas	Arthritis	Abscesses	Peritonitis	Pleuritis	Pneumonia	MB-like lesions ^a
(h) Supramammary lymph nodes	11	9	9	14	14	20	11	9	7	18
(g) Kidney	34	27	27	32	20	32	32	23	23	25
(i) Umbilical region and joints of young animals	14	23	7	27	59	30	16	11	9	7
(f) Spleen	20	18	39	32	18	23	43	18	20	39
(c) Heart	34	34	25	59	39	41	25	61	50	23
(d) Liver	27	25	61	27	23	43	57	18	20	59
(a) Submaxillary lymph nodes	25	16	14	23	14	43	18	27	34	68
(e) Gastric and mesenteric lymph nodes	25	18	25	16	14	32	70	16	16	64
(b) Lungs	25	25	16	20	18	50	25	82	82	61

^aMycobacterium-like lesions



- The variation in the number of palpations and incisions (APMI procedures) used is not explained by the origin or the experience of the respondents





- **In general:** Equal
- **Abscesses:** Small abscesses, deep in tissues, nature or the lesions
- **Arthritis:** Accessibility to joints and nature of arthritis
- **Skin lesions, faecal contamination:** More generalized view and more time

WG4 RESULTS PART D – Database and terminology

- Most of the official veterinarians have a database and published list of terminology on the post-mortem inspection findings.

Table. Percentage of respondents that have a database to record post-mortem inspection findings and a published list of post-mortem inspection findings terminology

	Database	Terminology
Total and partial condemnation	80%	68%
Total condemnation but not for partial condemnation	9%	0%
Partial condemnation but not for total condemnation	0%	2%
None	5%	18%
"I don't know"	7%	11%

n=44 respondents



- 23 respondents
- 1–10 causes per respondent
- Ca. 37 different causes mentioned
 - Combination codes
 - Multiple codes for e.g. different type of pneumonia

Table. 10 most often mentioned total condemnation causes

Total condemnation cause	Number of answers
Multiple abscesses / abscesses	19
Cachexia / ematiation / skinny animals	17
Polyarthritis / arthritis	15
Pneumonia (different forms)	14
Peritonitis (different forms)	13
Icterus / jaundice / yellow colour / abnormal colour	12
Septicaemia / generalized bacteremia/ pyemia / viremia	11
Erysipelas / erysipelothrrix rhusiopathiae	11
Osteitis / osteomyelitis	10
Contamination (fecal, bile)	7
Bad bleeding / insufficient bleeding / ill red	7

- The results showed **variations between respondents**: Different experiences and practices regarding
 - PMI judgement criteria
 - PMI procedures and
 - record/code systems
- The variation causes difficulties to use PMI data, e.g. in animal health and welfare monitoring programs, feedback to livestock producers and veterinarians.
- Better understanding on the practices regarding PMI of finishing pigs
 - Can be used to inspire possible harmonization, improve decision-making and, and make comparative analysis between different reports to allow trend analyses and benchmarking

Thank you!

■ Acknowledgements

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