

CA18105



**RIBMINS**

Risk-based meat inspection and  
integrated meat safety assurance



# FCI and HEIs for bovines

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# Introduction

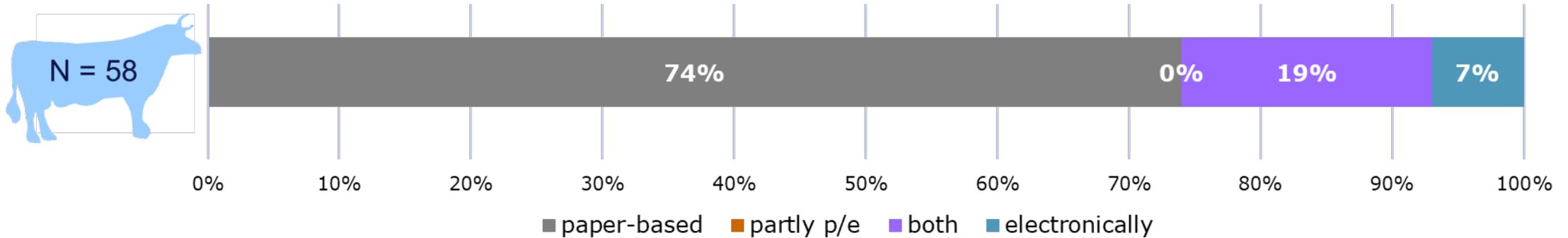
- low level of integration compared to pigs and broilers
- different production systems with different risk potentials
- different food production intention
  - fattening bulls and calves: meat
  - dairy cows: 1<sup>st</sup> milk; 2<sup>nd</sup> meat
- reasons for slaughtering dairy cows mainly unclear and very diverse
- background of animals → transparency of all lifespan stages more complicated

# Food chain information (FCI)



- mandatory (→ Reg. (EC) No 853/2004)
- farmer transfers FCI to abattoir → processed FCI to OV
- FCI important connective link between farm and abattoir
- standard forms exist → But are they helpful?
- additional information if knowledge about suspected risks (infection, zoonoses, treatment)
- the more information is transferred the better it is
  
- What is the status quo of FCI for bovines in Europe, what can be improved?  
→ RIBMINS online survey

# Results: transmission procedure of FIC



## ■ OV (n=36):

- 3% only paper-based
- 75% electronically and paper-based
- 22 % only electronically

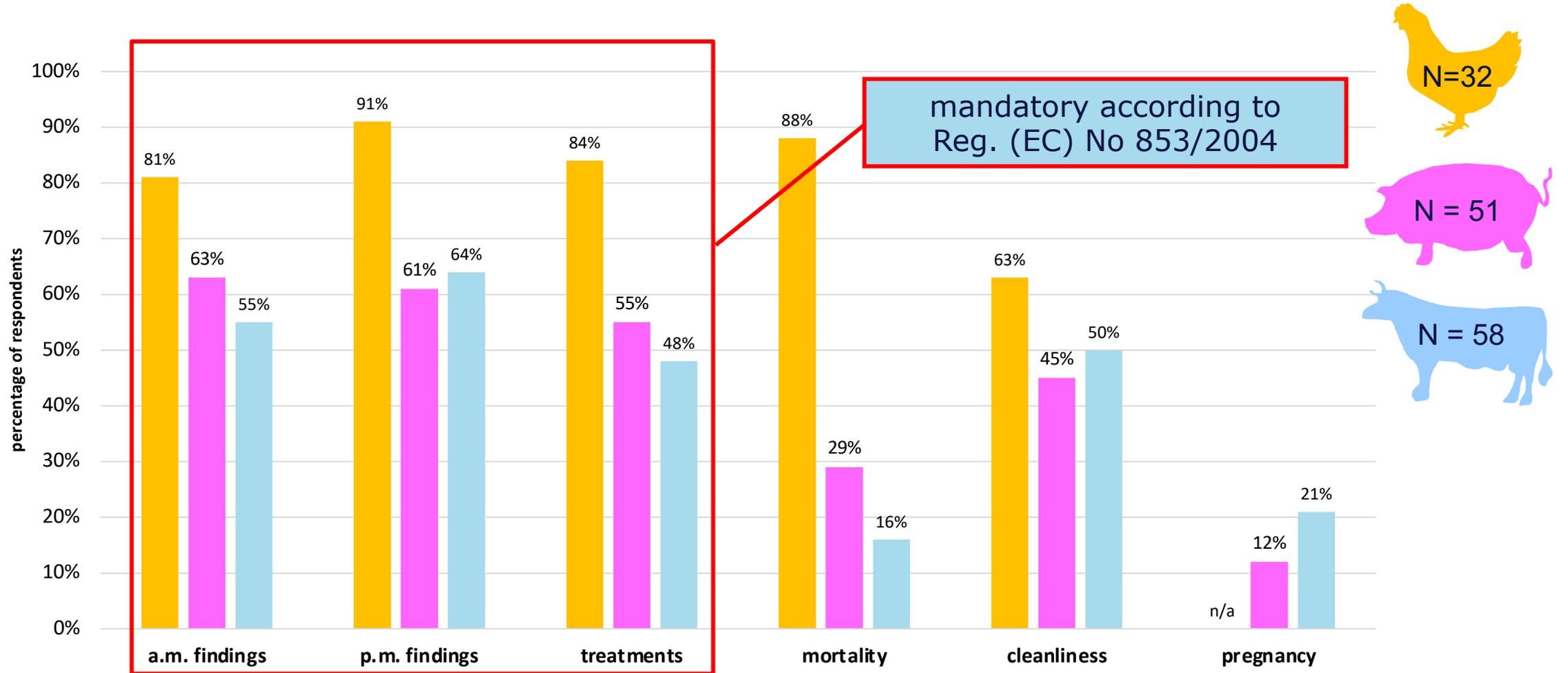
## ■ FBO (n=16):

- 81% only paper-based
- 13% electronically and paper-based
- 6% only electronically

- digitalisation step necessary at abattoir
- FCI often included in internal IT system
- OV need access

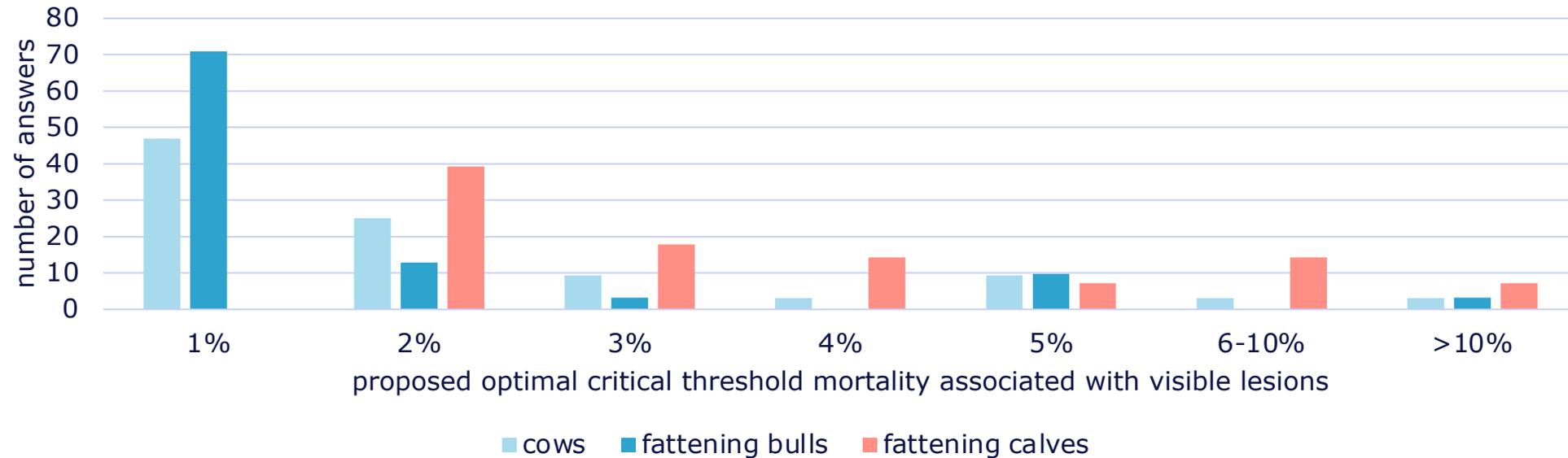
- transmission procedure feasible for > 50% of participants
  - most OVs assess current transmission (mainly electronically transmission) procedure feasible
  - → Why is it not feasible?
    - missing access
    - too complicated because OV stands in lairage and FCI in the office
- technical devices, i.e. iPad, Smartphone
- investigation needed which transmission procedure is proposed

# Results: status quo of transferred FCI



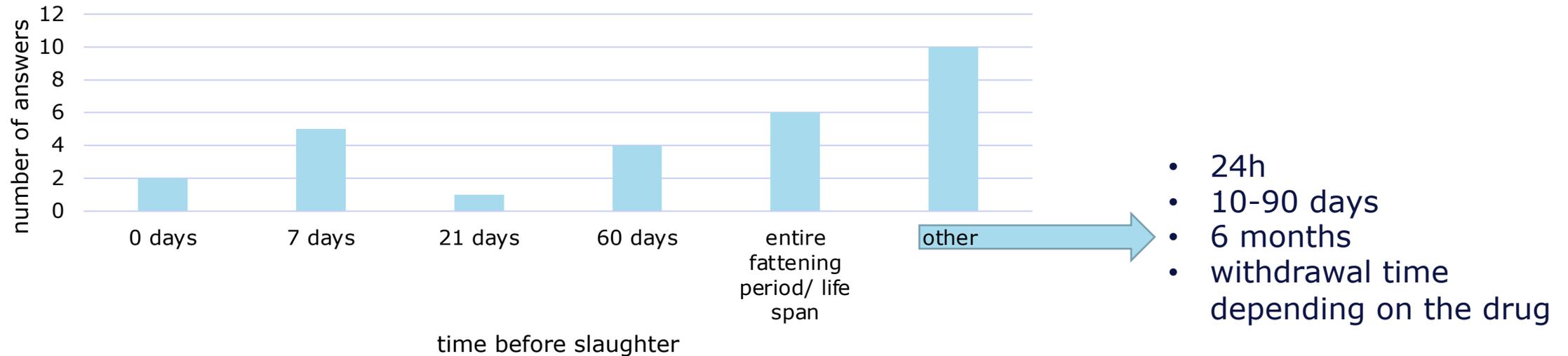
- a.m. findings = 55%: OV = 58%, FBO = 50%
  - p.m. findings = 64%: OV = 69%, FBO = 56%
  - Why do so few have access to the same manufacturer's data?
    - low level of integration
    - fattening calves and bulls are collected before sending to slaughter  
→ not the same farm of origin
  - How can it be improved?
    - feedback to the farmer, but is done in
      - 69% for a.m. findings
      - 81% for p.m. findings
- farmers must be aware that transmission is important, to sent it to other abattoirs

- only 16% have access to mortality rate
- proposed critical threshold associated with lesions varies between categories



→ representing the diversity of bovine production groups

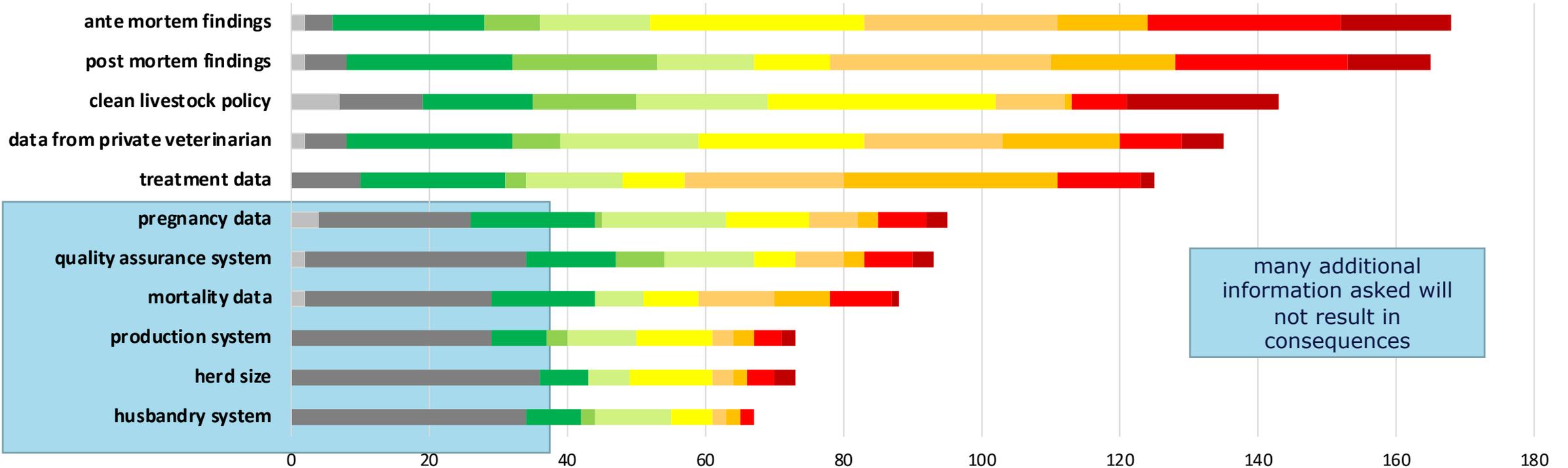
- 48% have access to treatment data
- documentation obligation period before slaughter



- depending on the animal category differences should be investigated and different relevant periods have to be set

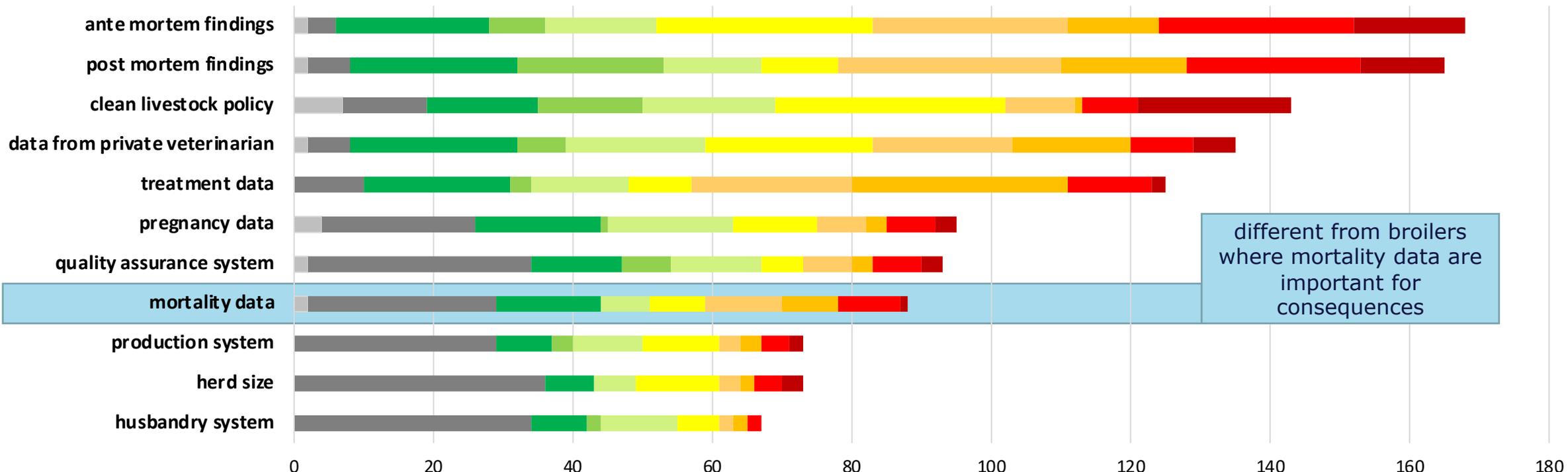
- FCI are the main connection link between the holding and the abattoir to ensure food safety
- additional information is very important and is always asked by half of the respondents:
  - farm related issues: farm number, farm location
  - production system related issues: indoor vs. organic, husbandry system
- Why is this information often asked?
  - low level of integration
  - different suppliers per abattoir (data are not available)

## Results: no consequences



many additional information asked will not result in consequences

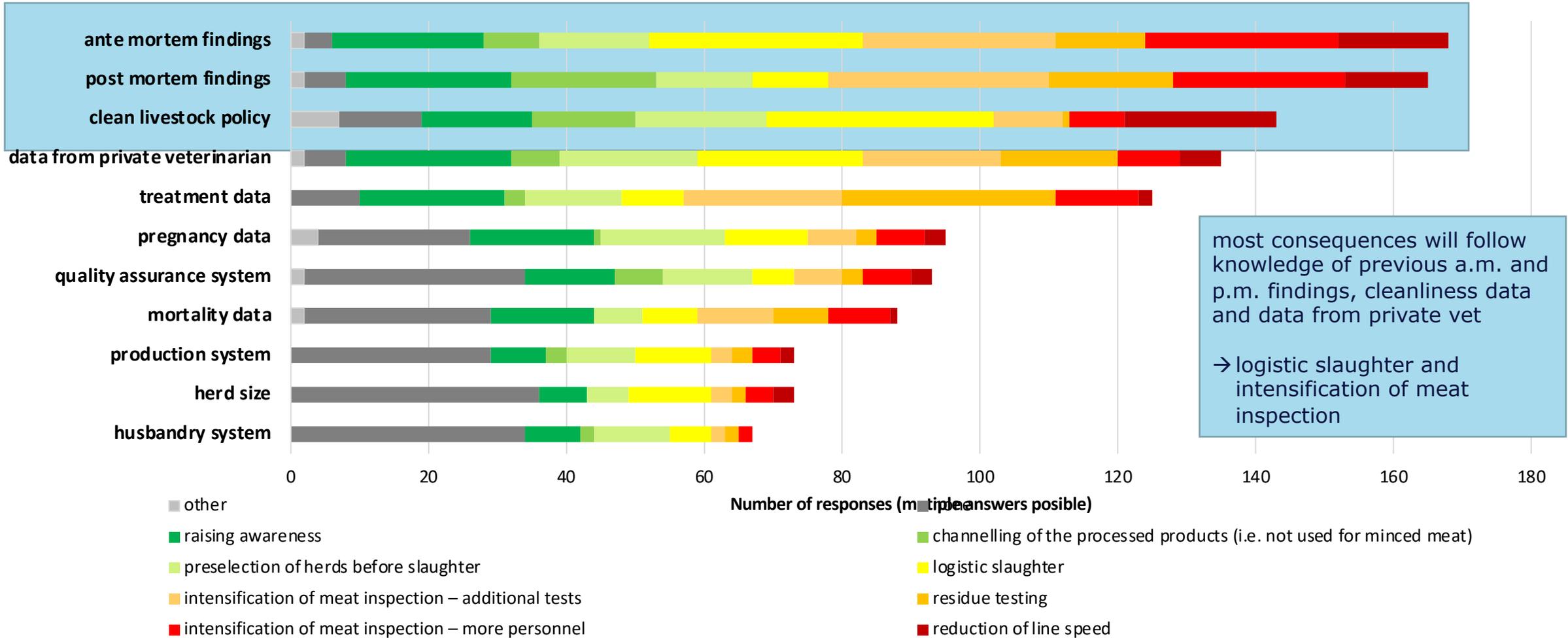
- other
- raising awareness
- preselection of herds before slaughter
- intensification of meat inspection – additional tests
- intensification of meat inspection – more personnel
- none
- channelling of the processed products (i.e. not used for minced meat)
- logistic slaughter
- residue testing
- reduction of line speed



different from broilers where mortality data are important for consequences

- other
- raising awareness
- preselection of herds before slaughter
- intensification of meat inspection – additional tests
- intensification of meat inspection – more personnel
- none
- channelling of the processed products (i.e. not used for minced meat)
- logistic slaughter
- residue testing
- reduction of line speed

## Results: most consequences (with high impact on the process)



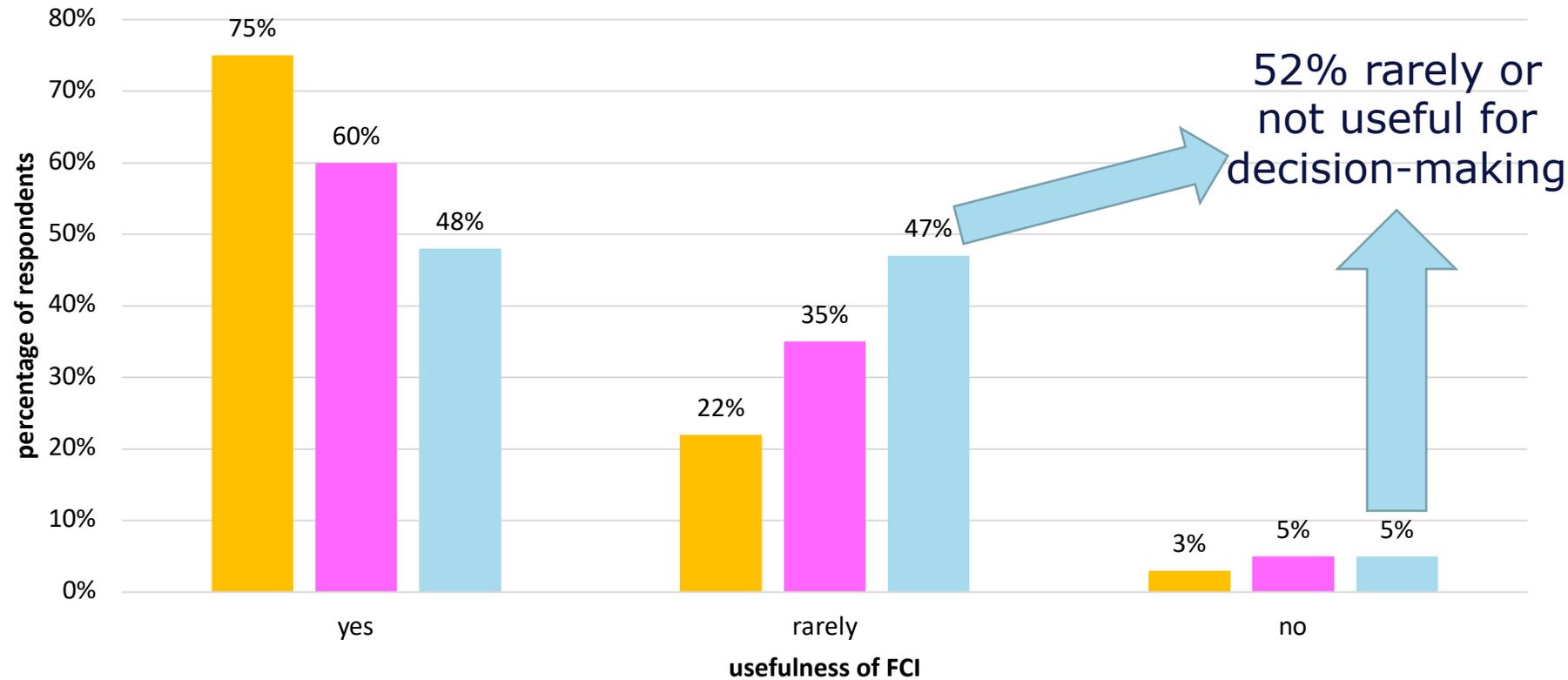
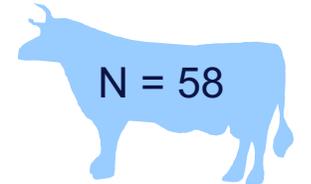
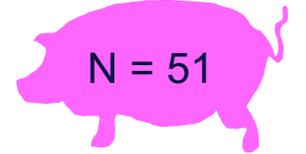
most consequences will follow knowledge of previous a.m. and p.m. findings, cleanliness data and data from private vet

→ logistic slaughter and intensification of meat inspection

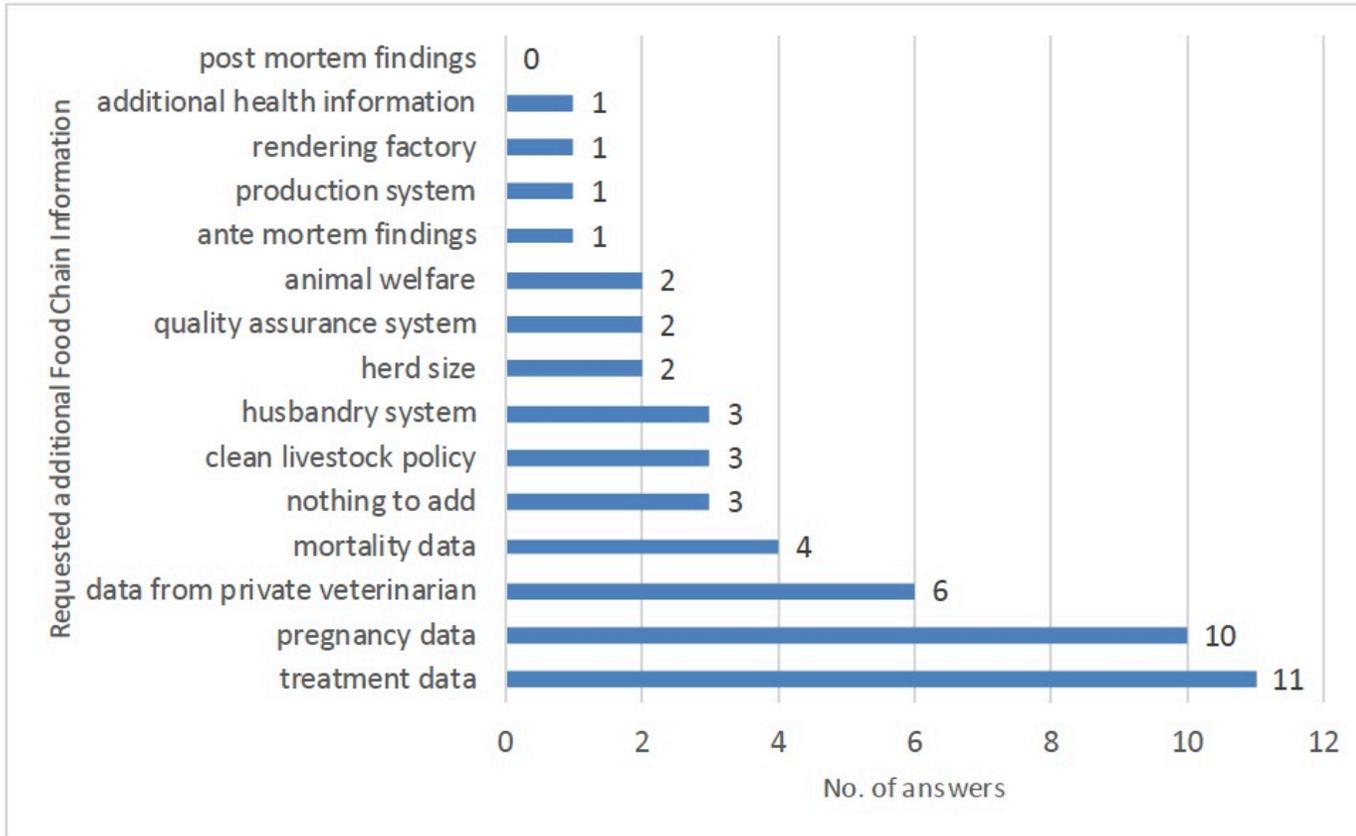
respondents reported consequences regarding

- pregnancy data
  - animal welfare and transportability
  - information of OV
  - official tracking and photos
- clean livestock policy
  - individual risk groups
  - sanctioning of the farmer
  - no slaughtering of dirty animals because no cleaning possibility

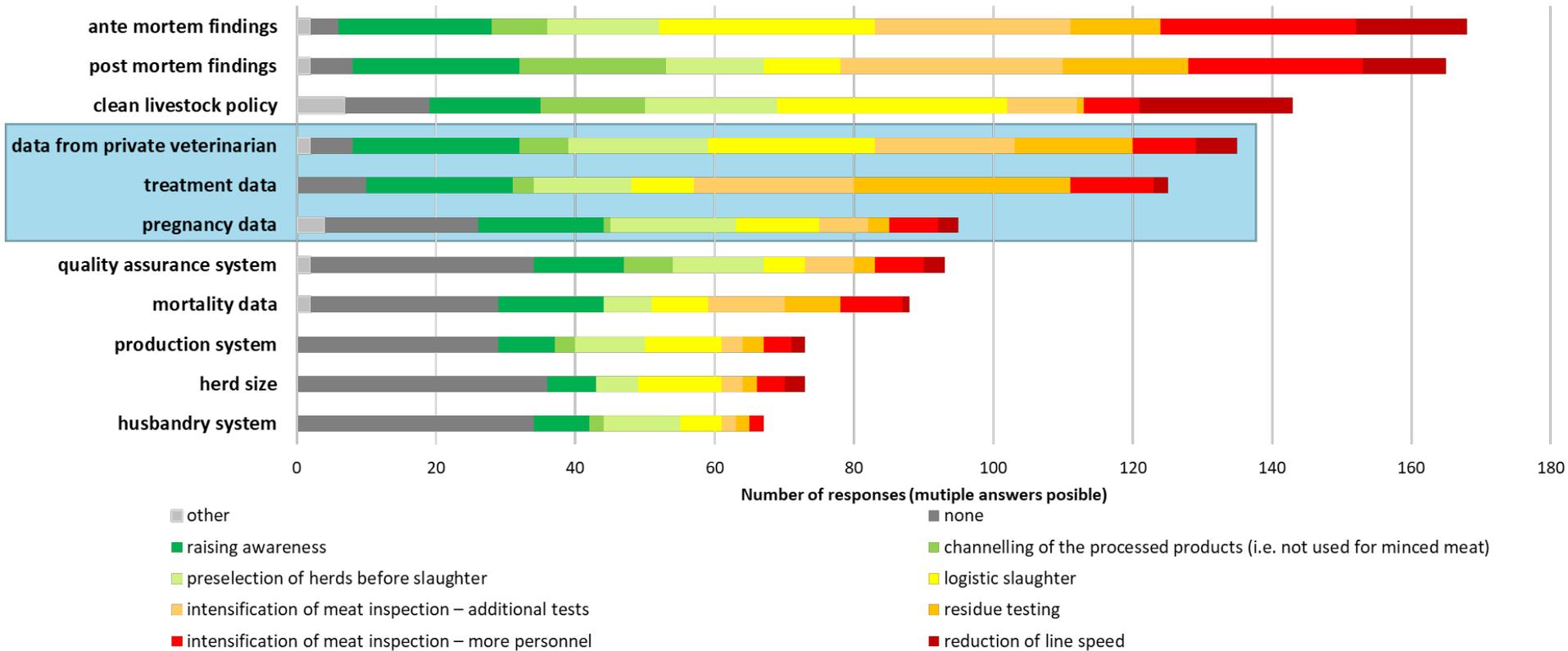
Does the FCI help you in decision-making regarding food safety?



- because
    - „it doesn't contain any valuable information“
    - „you can't be sure about the accuracy of the information“
    - „only information about administered treatments“
- ➔ What is needed?



- treatment data
- pregnancy data
- data from private vet
  - of main interest
  - not available for all participants



- treatment and data from private vet resulted in specific actions important for the slaughter process
- pregnancy data resulted in raising awareness and in small proportions in specific actions

- all categories:
  - include treatment and data from private vet
  - set a period for treatments before slaughter per animal category
- COWS
  - include pregnancy data
  - include cause of sending to slaughter
- bulls and calves:
  - feedback to the farmer
- find solutions for improving transmission procedure between OV and FBO

# Harmonised epidemiological indicators (HEIs)



- *Salmonella*
- VTEC
- *Cysticercus bovis*
- Mycobacteria



EFSA Journal 2013;11(6):3276

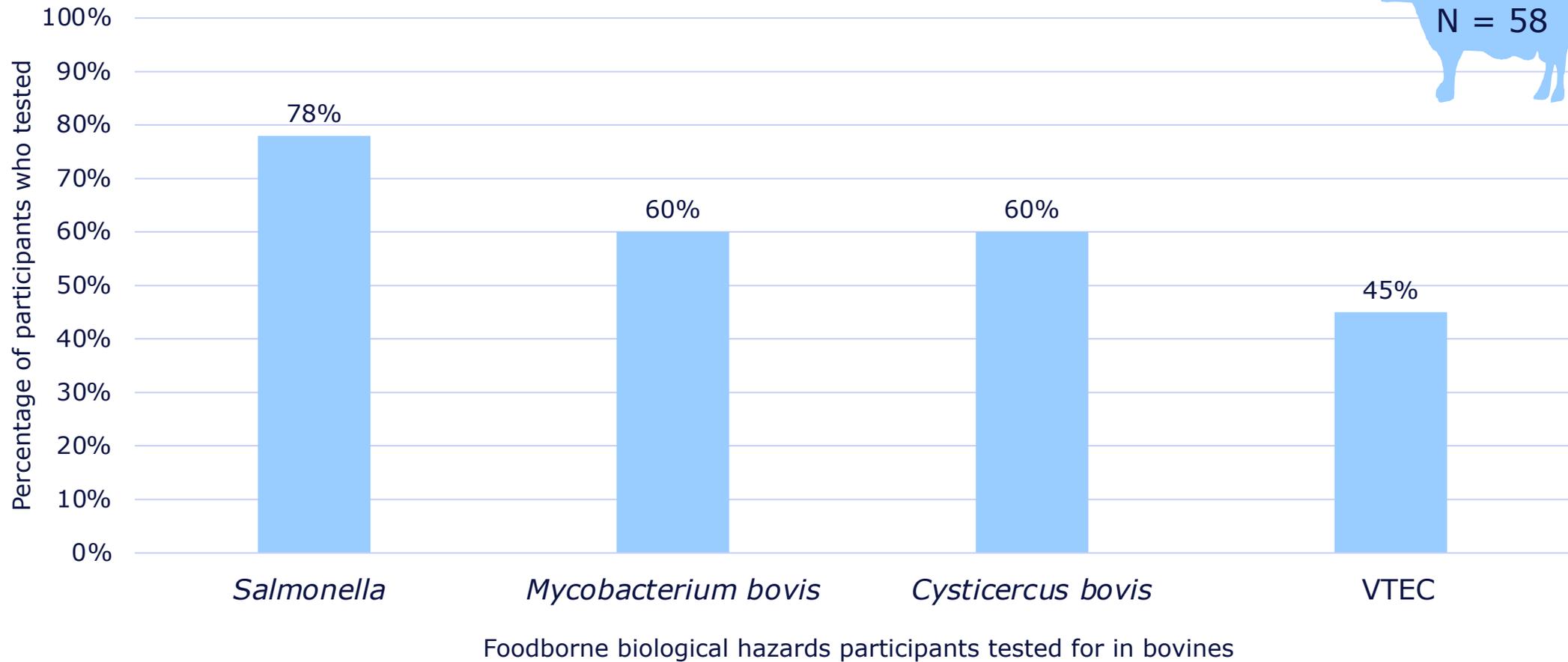
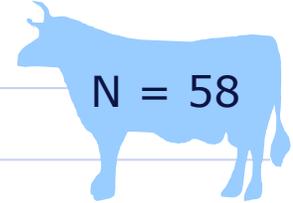
**SCIENTIFIC REPORT OF EFSA**

**Technical specifications on harmonised epidemiological indicators for biological hazards to be covered by meat inspection of bovine animals<sup>1</sup>**

**European Food Safety Authority<sup>2, 3</sup>**

European Food Safety Authority (EFSA), Parma, Italy

EFSA, 2013:  
<https://doi.org/10.2903/j.efsa.2013.3276>



\*MoSS = monitoring and surveillance systems

<i>Salmonella</i>			
HEI 1: Practices which increase the risk of introducing <i>Salmonella</i> into the farm (purchase policy, mixing with other herds, access to pasture, access to surface water)	Farm	Auditing	Not applicable
HEI 2: On-farm practices and conditions	Farm	Auditing	Not applicable
HEI 3: <i>Salmonella</i> status of the group(s) of bovine animals containing animals to be slaughtered within one month	Farm	Microbiology	Pooled faeces
HEI 4: Transport and lairage conditions	Transport and lairage	Auditing	Not applicable
HEI 5: Visual inspection of hide conditions of animals at lairage (clean animal scoring system)	Slaughterhouse	Visual inspection	Not applicable
HEI 6: <i>Salmonella</i> on incoming animals (after bleeding and before dehiding)	Slaughterhouse	Microbiology (detection and serotyping)	Hide swabs
HEI 7: <i>Salmonella</i> in incoming animals (evisceration stage)	Slaughterhouse	Microbiology (detection and serotyping)	Lymph nodes
HEI 8: <i>Salmonella</i> on carcasses pre-chilling	Slaughterhouse	Microbiology (detection and serotyping)	Carcase swabs
HEI 9: <i>Salmonella</i> on carcasses post-chilling	Slaughterhouse	Microbiology (detection and serotyping)	Carcase swabs

EFSA, 2013:  
<https://doi.org/10.2903/j.efsa.2013.3276>

- 78% testing for *Salmonella*
- HEI 8 *Salmonella* on carcasses pre-chilling
  - **71%: microbiology + carcass swab**
- HEI 8 = PHC for *Salmonella* in cattle (Reg. (EC) No 2073/2005)
  - **26% (EU MSs + testing for *Salmonella*) ≠ PHC**
- HEI 9 *Salmonella* on carcasses post-chilling
  - **22%: microbiology + carcass swab**

- Most common consequent measures in case of *Salmonella*-positive results
  - 84%: surveillance of slaughter hygiene
  - 58%: raising awareness
  - 56%: feedback to the farmer

**Pathogenic VTEC**

HEI 1. Practices which increase the risk of introducing pathogenic VTEC into the farm (purchase policy, mixing with other herds, access to pasture, access to surface water)	Farm	Auditing	Not applicable
HEI 2. On-farm practices and conditions	Farm	Auditing	Not applicable
HEI 3. Pathogenic VTEC status of the group(s) of bovine animals containing animals to be slaughtered within one month	Farm	Microbiology	Pooled faeces or floor samples
HEI 4. Transport and lairage conditions	Transport and lairage	Auditing	Not applicable
HEI 5. Visual inspection of hide conditions of animals at lairage (clean animal scoring system)	Slaughterhouse	Visual inspection	Not applicable
HEI 6. Pathogenic VTEC on incoming animals (after bleeding and before dehiding)	Slaughterhouse	Microbiology	Hide swabs
HEI 7. Pathogenic VTEC on carcasses pre-chilling	Slaughterhouse	Microbiology	Carcase swabs
HEI 8. Pathogenic VTEC on carcasses post-chilling	Slaughterhouse	Microbiology	Carcase swabs

EFSA, 2013:

<https://doi.org/10.2903/j.efsa.2013.3276>

- 45% testing for VTEC
  - HEI 7 VTEC on carcasses pre-chilling
    - **46% microbiology + carcass swab**
  - HEI 8 VTEC on carcasses post-chilling
    - **31% microbiology + carcass swabs**
- ➔ no EU regulations addressing systematic monitoring or control of VTEC in EU

### Cysticercus

HEI 1. Audit of farming practices	Farm	Auditing	Not applicable
HEI 2. Prevalence of <i>T. saginata</i> cysticerci-positive slaughter animals (excluding white veal calves)	Slaughterhouse	Serology. At individual level. Direct method to detect circulating parasite antigens	Blood
HEI 3. <i>T. saginata</i> cysticerci in suspected lesions from all types of farms (excluding white veal calves)	Slaughterhouse	Visual meat inspection and PCR for confirmation of <i>Taenia</i> DNA in the lesion	Suspect lesion (meat)

EFSA, 2013:  
<https://doi.org/10.2903/j.efsa.2013.3276>

- 60% testing for *Cysticercus* (all official MOSS)
  - HEI 3 in suspected lesions from all types of farms
    - **6% visual meat inspection + PCR for confirmation**
    - 89% visual meat inspection
    - 74% incision in *M. masseter*
- part of PMI\* (Reg. (EU) 2019/627)

- visual meat inspection alone not sufficient to detect *Cysticercus*, other methods necessary
- prevalence varies in Europe
- ➔ conduct HEI application risk-based in countries with high prevalence

\*PMI = post mortem meat inspection

- Most common consequent measures in case of *C. bovis*-positive results
  - 69%: intensification of meat inspection
  - 63%: feedback to the farm
  - 54%: raising awareness
  - 54%: freezing the meat

***Mycobacteria***

HEI 1. Official status of bovine herd as regards bovine tuberculosis (OTF status)	Farm	Food chain information	Not applicable
HEI 2. Human pathogenic mycobacteria in bovines at slaughter (identification of tuberculosis-like lesions through visual <i>post mortem</i> inspection and microbiology of suspect lesions)	Slaughterhouse	Visual meat inspection and microbiology	Suspected lesions

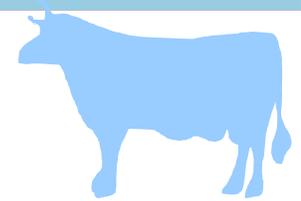
EFSA, 2013:  
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- HEI 2 represents legal requirement within PMI
- OTF\* status important for young cattle for PMI
- different actions regarding condemnation of carcasses if visible lesions following Reg. (EU) 2019/627 in Europe

- 60% testing for Mycobacteria (all official MOSS)
- HEI 2 Human pathogenic mycobacteria in bovines at slaughter
  - **20% visual meat inspection + microbiology of suspected lesions**
  - 46% visual meat inspection

\*OTF– officially tuberculosis free

- Most common consequent measures in case of *M. bovis*-positive results
  - 80%: categorisation of farms
  - 63%: intensification of meat inspection
  - 57%: raising awareness
  - 54%: feedback to the farm
- representing HEI 1 (OTF status)?
  - should be transferred with FCI because important for PMI



- HEIs for *Cysticercus* & Mycobacteria are well implemented
- main implemented consequences:
  - raising awareness
  - feedback to the farmer
- categorisation of farms only for Mycobacteria
- categorisation of abattoirs not mentioned at all
- combination of HEIs and FCI to improve consequent measures at the abattoir

Thank you for the attention.

And a special thanks to  
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