

CA18105



RIBMINS

Risk-based meat inspection and
integrated meat safety assurance

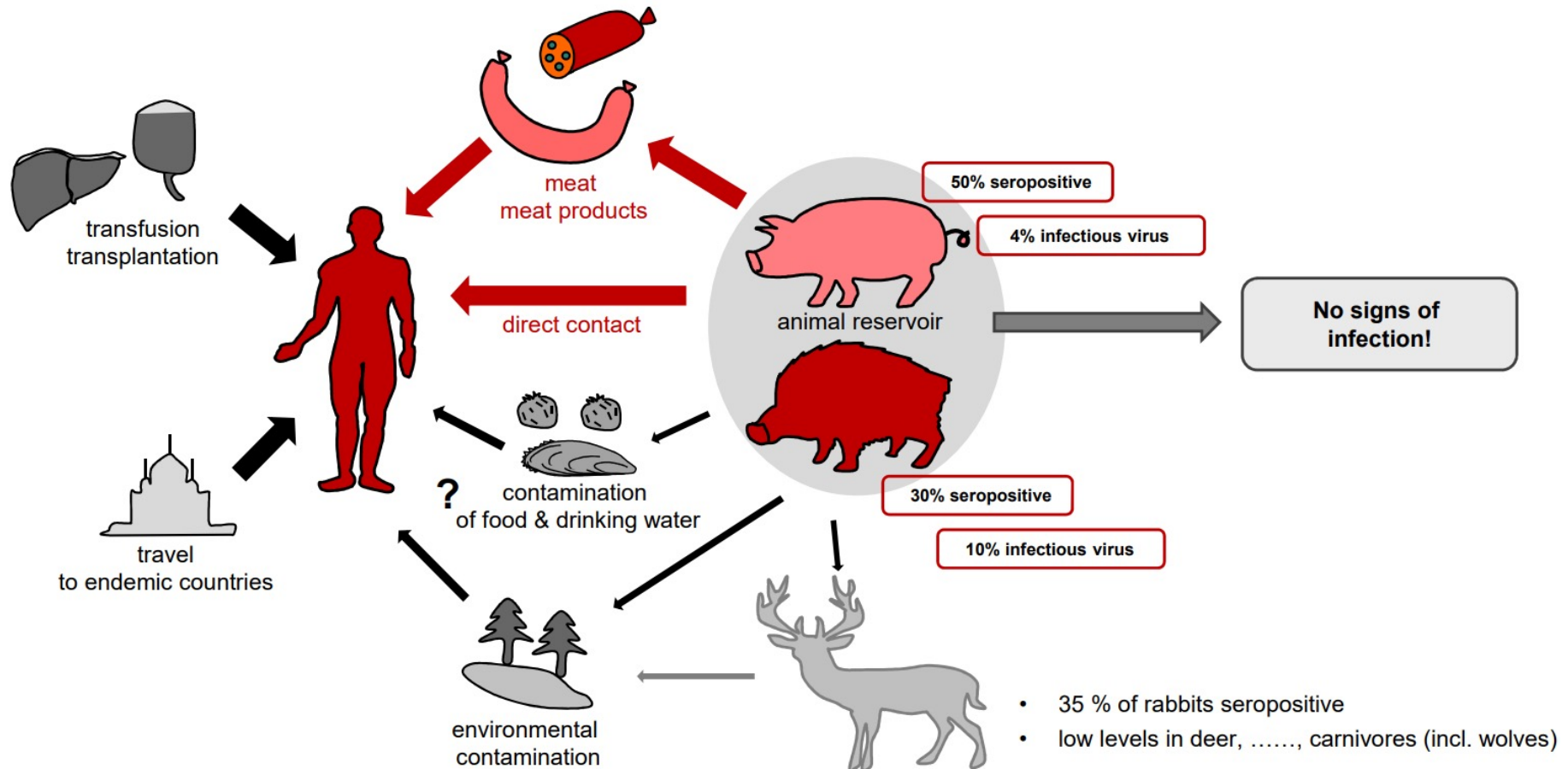
Risk categorisation of farms and abattoirs: the case of hepatitis E virus in pigs

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Objectives of the case study

- Hepatitis E Virus (HEV) is a zoonotic pathogen and the causative agent of hepatitis E in humans. Most infections do not have clinical symptoms. Mortality rate 0.5%-5%
- Pigs (and wild boars) are the main reservoir of the virus worldwide and the virus has a high prevalence on most pig farms. Pigs do not show signs of infection
- The disease in humans is under reported
- Pig-to-human transmission of HEV occurs via consumption of contaminated inadequately cooked pork/pork products, but **liver** in particular is where it is most found in infected pigs. HEV is not present in muscles (meat)
- No current vaccination available

HEV Transmission



Main risk factors at the farm level

- The probability for pork consumers to be exposed to HEV is high:
 - infection close to slaughter
 - late infection or longer infectious period
 - pigs at slaughter have an active HEV infection (they are viremic or HEV is present in feces or liver)



	Farm A			
	Yes	No	not known	not applicable
Closed farming system	x			
If yes: are sows housed in groups such that the risk is increased?	x			
Risk-increasing batch-rearing system used?	x			
All-In-All-Out	x			
Heat treatment of feed	x			
Commercial feed used	x			
Byproducts at risk used		x		
Sufficient cleaning and Disinfection	x			
Possibility of co-infection with PRRSV and/or PCV2	x			
Indoor holding with possibility to have access to outdoor		x		
Permanent outdoor holding		x		
Bird control	x			
Insect control			x	
Contact to other animals than birds (wildlife)		x		
Professional pest control		x		
Presence of domestic animals on premises	x			
Presence of stray animals on premises	x			
Access of other animals to the stable (pets, e.g. cats)		x		
Straw bedding	x			
Solid floor	x			
Slatted floor	x			
Controlled access to the stable			x	
Provision of clothing and footwear			x	
The same tools/equipment used for all compartments in a stable		x		
Microbiological safe water	x			
Antibiotic group treatments		x		

FSMS-Cs assessment criteria and levels

Pig abattoir

Assessment levels / options / categories

Score

1	FCI as it is now	The abattoir systematically collects, analyses and responds to the information in the FCI, prior to sending it to the CA	1,00
2	FCI with additional WG2 suggestions (= improved FCI)	Collected FCI includes FCI according to the legislation and the additional WG2 suggestions (i.e. improved FCI)	1,00
3	Financial penalisation of farmers	The abattoir does not systematically apply financial penalisation of farmers as a response to dirty livestock (C, S & P) and birds	0,00
4	Preselection of herds before slaughter (WP2)	For all relevant hazards, the abattoir systematically applies risk based categorisation of herds or farms or suppliers, including transport for adapting the slaughter process. Animals without information are treated as high risk.	1,00
5	Logistic slaughter	The abattoir systematically applies logistic slaughter principles (slaughtering order) to address different levels of risk from animals of different states of health and cleanliness	1,00
6	Adapting line speed	Abattoir systematically does proactively adapt the speed of the line to the level of hazard present on live animals	1,00
7	GMPs & GHPs	(score this component in its own, separate Tab)	1,00
8	Hygiene assessment systems (SCORE FIXED)	The abattoir is systematically hygiene assessed only by internal sources through audits. The abattoir systematically implements measures to follow up non-conformities	0,50
9	Staff training	(score this component in its own, separate Tab)	0,75
10	Other PRPs (pest control, storage conditions etc.) (SCORE FIXED)	Visual inspection and documentary evidence (including from internal and external audits) indicate that some / a number of PRPs relevant to carcass meat safety are NOT implemented and monitored et	0,50
11	HACCP	(score this component in its own, separate Tab)	0,75
12	Carcass interventions at slaughter	No intervention	0,00
13	Chilling	Blast freezing	1,00
14	Carcass freezing	The abattoir occasionally applies freezing of carcasses to respond to specific hazards	0,50
15	Use different sale channels (SCORE FIXED)	The abattoir occasionally uses different sales channels to control pathogens, depending on the level of risk on the carcass, but it is not systematically	0,50
16	Inform and follow up with farms	The abattoir systematically informs the source farms of meat inspection findings and lab results on pathogens and does follow up with the aim of hazard reduction at source	1,00
17	Monitoring and continuous improvement (SCORE FIXED)	(score this component in its own, separate Tab)	0,50
18	Microbiological testing	(score this component in its own, separate Tab)	0,75
19	Communication (SCORE FIXED)	Some evidence of an internal and external communication chain on food safety issues is present	0,50
20	Internal auditing	(score this component in its own, separate Tab)	1,00

Abattoir FSMS performance score **14,25**

Notes for the user

Abattoir FSMS performance category **High**

System	C1. Farm-related data (input)	Are farm-related data used as an input to inform and adapt the slaughter process?	The abattoir collects the relevant on-farm HEI information routinely, sets limits and acts accordingly.
	C2. Type of product produced (output)	Does the abattoir produce raw material destined for less than thoroughly cooked products?	No raw material is produced for less than thoroughly cooked products.

Process	C3. Scalding	Is the time-temperature combination applied at the scalding step appropriate to control the main hazards?	Duration of scalding: 5 min Temperature of scalding: 65 °C
	C4. Singeing	How effective is/are the singeing step(s) in controlling the main hazards?	The abattoir applies two or more singeing steps with appropriate monitoring and corrective actions taken.
	C5. Evisceration	Is evisceration conducted in a way that faecal contamination is controlled?	The evisceration steps are conducted in a hygienic way, faecal contamination monitoring is in place for 100% of carcasses and follow-up is demonstrably in place.
	C6. Head cutting/removal	To what extent is the head-related contamination controlled?	Head is removed prior to deboning and lymph nodes are not at risk of being cut during slaughter.
	C7. Tongue cutting	To what extent is the tonsil-related contamination controlled?	Tongues are cut out of-line, separately from the carcass.
	C8. Chilling	How effective is the chilling kinetics to control the main hazards?	The time for carcasses to reach 7°C since singeing is less than 18 hours and the abattoir monitors the chilling kinetics properly and takes corrective actions.

Performance	C9. Microbiological results	To what extent does the hygienic way of working limit the risks of microbiological contamination in practice?	Less than 1% of daily average enterobacteriaceae counts are >2 Log.
	C10. FSMS performance	To what extent is the Food Safety Management System properly designed and implemented to address the relevant hazards?	The outcome of the FSMS performance evaluation is higher than 67% of the maximum score.
	C11. Food safety culture and responsiveness	To what extent is the food safety culture and responsiveness of the quality assurance team satisfactory?	The quality assurance team detects non-conformities and have appropriate follow-up actions. It responds to the non-compliances detected by Veterinary Services or other external auditors in a diligent and appropriate manner.

Outcome	On a scale ranging from 0 (lower risk) to 100 (higher risk), the overall ranking score is:	2,8
	Meaning that the abattoir is	low risk

Risk management options and conclusions

- Risk categorization of the farms is key to mitigate the risk of HEV. Controls of risk factors at farm level are more effective (biosecurity measures, infection period-slaughter, vaccination, production system etc)
- Abattoir risk categorization not useful for HEV as for other pathogens(Salmonella). HEV present in liver and GHP and FSMS not main solution to reduce presence
- Case study conclusion: High risk farms to low risk abattoirs. High risk farms animals sent to slaughter to abattoirs where raw material are destined to be heat treated. On this case, risk categorization of the abattoir would be useful.
- At abattoir level the only intervention that would mitigate risk of HEV is heat treatment or cooking

Risk management Options and Conclusions

- Liver is the main risk:
 - Heat treated or cooked before placing in market
 - PRC test/rapid test of samples at abattoir
 - Classification or labelling of livers in accordance of farm of origin(high or low risk products)
 - Full condemnation of livers coming from high risk farms or from all farms
 - Increase of awareness and increase of knowledge (e.g. research)
 - Risk communication. Society trends and cultural aspects