CA18105

RIBMINS

Risk-based meat inspection and integrated meat safety assurance

Case 5: *Toxoplasma gondii* in sheep slaughter

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1. Final hosts: Felidae

   Intermediate hosts: all warm-blooded animals

2. *Toxoplasma gondii* in livestock/wildlife

3. *Toxoplasma gondii* in (sheep) meat

- Prevalence (around 50%)

- Killing options (cooking and freezing)

4. *Toxoplasma gondii* in humans

- Usually no or mild flu-like symptoms in humans

- Serious consequences for immunocompromised or unborn fetus

- Infection routes
    - food, water, soil contaminated by cats
    - Meat of intermediate hosts containing tissue cysts
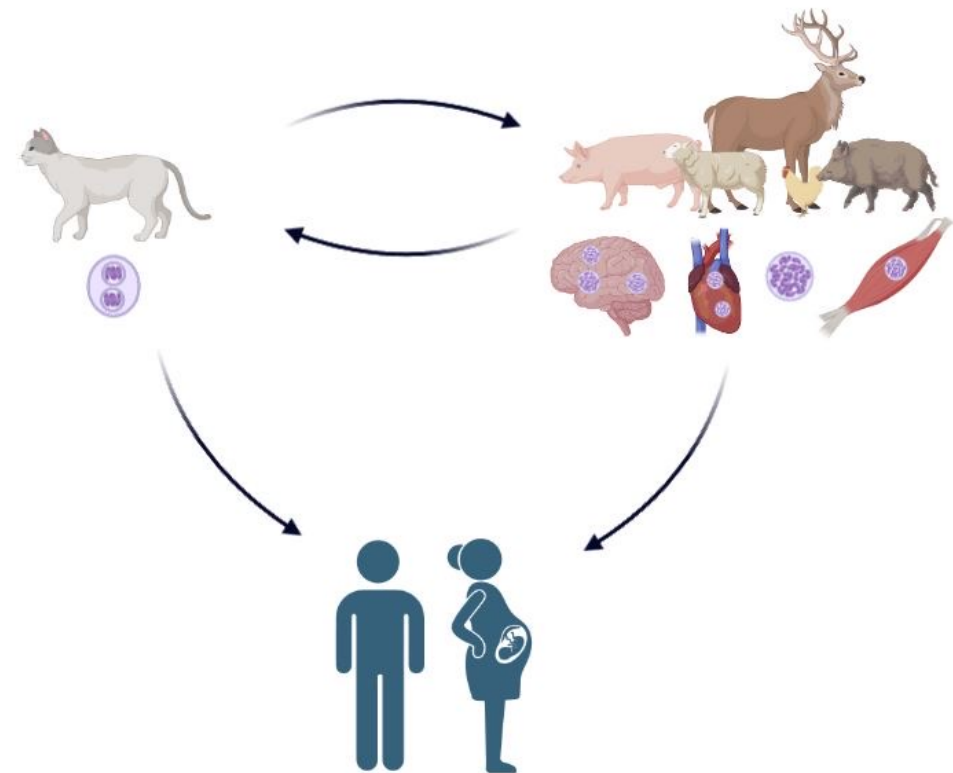
Lydia Engel, created with BioRender.com

Farms

- 3 different farms
- 3 different risk levels
- Most important risk factors:
  - Grazing areas
  - Wildlife
  - Feed Storage conditions
  - Drinking water
  - Biosecurity

	Farm A				Farm B				Farm C			
	Yes	No	not known	Score	Yes	No	not known	not applicable	Yes	No	not known	not applicable
Location												
Remote		x					x				x	
Near other farms and animals		x		low	x			high-medium	x			high-medium
Region and climate												
Temperate and humid		x			x			medium-high	x			medium-high
Arid, dry	x			low		x				x		
Farming system												
Intensive		x				x				x		
Semi-Intensive	x			medium	x			mdium	x			medium
Extensive		x				x				x		
Grazing in fenced areas	x			low-medium	x					x		
Grazing in open areas		x			x			high	x			high
Grazing in one location		x				x				x		
Grazing in many, different locations	x			high	x			high	x			high
				MEDIUM								
Old animals mostly - high risk			x			x					x	
Young animals mostly - low risk			x			x					x	
Feed												
Commercial feed (Yes / No)	x			low	x			low	x			low
Good storage of feed (no access to rodents and cats)	x			low		x				x		
Poor storage of feed		x			x			medium	x			high
Pasture / grazing	x			high	x			high	x			high
Hay	x				x				x			
Drinking water												
Public (controlled) water supply	x			low	x			low				
Well		x				x			x			high
Streams and ponds		x				x			x			high
Clean drinking facilities	x			low	x			low		x		high
Unclean drinking facilities		x				x			x			
Bosecurity												
Cleaning and disinfection of sheds etc.	x			low	x			medium		x		high

Farms

- 3 different farms
- 3 different risk levels
- Most important risk factors:
  - Rodents
  - Cats

	Farm A					Farm B					Farm C			
	Yes	No	not known	Score		Yes	No	not known	not applicable		Yes	No	not known	not applicable
Visitor control														
Strict visitor policy. Controlled access to farm	x					x						x		
Provision of designated and/or disposable clothing and footwear fo	x						x					x		
				low					medium					high
Rodents														
Professional pest control in place	x						x					x		
Rodent control in place	x					x						x		
No rodent control in place		x					x				x	cats are the rodent control		
				low					medium					high
No visible evidence of rodent activity (faeces, burrows, routes chewed materisls e			x					x						
Visible evidence of rodent activity (faeces, burrows, routes chewed materisls etc.			x					x						
Cats														
No evidence of cats	x													
Small cat population		x				x								
High cat population		x					x				x			
Farm cats only		x				x								
Stray cats present		x				x					x			
				low					medium					high
Floor and bedding														
Clean straw	x						x					x		
Wet, dirty straw		x				x	anual cleaning				x			
				low					medium					high
Solid floor			x					x					x	
Slatted floor			x					x					x	
Toxoplasma status														
Farm prevalence: L, M, H or No data			10-20%					20-40%				x		
Region prevalence: L, M, H or No data			40%					60-80%				x		

WG3   Sheep abattoirs – The case

Abattoirs

- 3 different abattoirs
- 3 different risk levels
- Key differences between abattoirs

Toxoplasma gondii in the abattoir

- Critical FSMS components (freezing etc.)
- How effective can *Toxoplasma gondii* be controlled in the abattoir presently

Results

Abattoir FSMS performance score	4.96	out of	21	=	23.6%	performance
Abattoir FSMS performance category	Low					
Abattoir FSMS performance score	9.58	out of	21	=	45.6%	performance
Abattoir FSMS performance category	Medium					
Abattoir FSMS performance score	16.25	out of	21	=	77.4%	performance
Abattoir FSMS performance category	High					

Risk manager: What would you do?

- High risk farms to adequate abattoirs (freezing, serological screening)

- Young animals to low performance abattoirs

- Designate meat from high-risk farms, as to 'not be consumed raw'

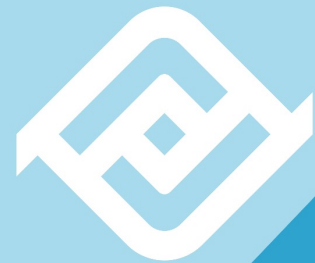- Increase frequency of testing in high-risk farms

Toxoplasma gondii suggestions and future control options

- Currently no legislation regarding control of *T. gondii* in the meat chain

- Better and more serological screenings in farms and abattoirs

- Molecular biological testing of meat with sensitive methods

  - serological positive animals do not have to harbour infective tissue cysts

- Bioassay to demonstrate infectivity

- Testing of sick animals and carcasses that will undergo further examinations

- In between facilities to control animal transfer

- Monitoring systems for wildlife