

# Different clinic, prevalence and risk factors after outbreak of *Mycoplasma Bovis* in two dairy herds

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## Introduction

- ***Mycoplasma bovis* (*M. Bovis*): Genus *Mycoplasma*, Class *Mollicutes***  
Causing substantial economic losses in cattle  
Highly contagious, antimicrobial resistance, asymptomatic carriers  
Cows: predominantly mastitis, arthritis  
Young stock and calves: pneumonia, otitis media and arthritis
- **Aim of this study: to compare the distribution of *M. bovis* on two Dutch dairy herds with an acute outbreak.**

## Materials and methods

- An acute outbreak was defined as: several dairy cows with clinical signs of mastitis and/or arthritis within a two-week period, confirmed by a positive test result for *M. bovis* (culture, PCR or ELISA).
- The farms were visited 5 times, with a 3-wk interval (v0, v2, v5, v8 and v11).
- Samples were collected from diseased dairy cows and randomly selected animals from three age groups: 10 calves (1-6 m), 13 young stock (6-24 m) and 13 cows.
- The presence of *M. bovis* was examined by culture of individual and bulk milk samples and by PCR of conjunctival fluid and environmental swabs.
- The presence of antibodies against *M. bovis* in serum was tested by an indirect ELISA (K302 BioX).
- Risk factors for introduction and transmission of *M. bovis* were recorded using a risk assessment list.

## Results (table 1)

- In herd A, of 11 clinical cows 9 had arthritis and 2 mastitis. In herd B, of 6 clinical cows 6 had mastitis and none had arthritis.
- The seroprevalence in cows increased in both herds between the first (v0) and third (v5) visit and decreased afterwards. In herd A serologically positive young stock and calves were only present at v5, while in herd B there were already positive animals at v0.
- In herd A, PCR positive conjunctival fluid samples were found at all visits in all groups. In herd B most PCR positive samples in cows were detected at v0 and v2, while young stock and calves were positive during v0-v8. After eleven weeks (v11) all groups were conjunctival fluid PCR negative in herd B.
- The bulk milk was culture positive in both herds at v0 and in herd A also at v11.
- Environmental samples of herd A were PCR positive at v0 and v11, while in herd B the samples were positive at v0 and nearly negative on v11.
- Not all animals with typical clinical signs of *M. bovis* were removed from the herds.
- In contrast to herd B, herd A purchased animals, had poor ventilation at calf housing, poor hygiene in general and high somatic-cell count or mastitis cows were not milked separately.

## Conclusions and recommendations

Results implicate that transmission of *M bovis* in herd A has not stopped after three months (v11), while it seems to have in herd B, which might be related to differences in biosecurity measures in both herds. If a herd experiences a *M. bovis* outbreak, focus on biosecurity measures is advised to minimize transmission to other animals and to control clinical *M. bovis*.

Visit in week:	Herd A												Herd B																													
	Serology - serum <sup>1</sup>					PCR - con fluid <sup>2</sup>					Culture - milk <sup>3</sup>		Cl <sup>4</sup>	Cu <sup>5</sup>	Serology - serum					PCR - con fluid					Culture - milk		Cl	Cu														
	0	2	5	8	11	0	2	5	8	11	0	2	5	8	11		0	2	5	8	11	0	2	5	8	11	0	2	5	8	11	0	2	5	8	11		0	2	5	8	11
<b>Cows (&gt;24m) with typical signs of <i>M. bovis</i></b>																																										
cow1	5					3					1					M	†	4	4				3	1				1	0				M	†								
cow2	5					3					1					A	†	3	3	2	0	0	0	3	0	1	0	1	0	0	0	0	M									
cow3	5					0					1					A	†	2	5	2	2	1	0	1	0	0	0	1	0	0	0	0	M									
cow4	5					0					0					A	†	1	1	1	0	0	0	2	0	0	0	0	0	0	0	0	M									
cow5	3	0	0	0		1	0	0	2		0	0	1	0		A		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	M									
cow6	5	5	3	2		0	0	0	1		0	0	0	0		A		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	M									
cow7	5	3	2			2	0	0			0	0	0	0		A		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	M									
cow8	0					0					0					AM	†	0					0					0					M									
cow9	0	3	1	0		1	0	0	2		0	0	0	0		A		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	M									
cow10	0	1				0	0				0	1				A	†	0					0					0					M									
<b>Cows (&gt;24m) randomly selected</b>																																										
cow1	3	2	2	1	0	1	0	0	0	2	0	0	0	0	0			2	2	2	1	1	0	2	0	0	0	0	0	0	0	0										
cow2	2	4	5	5	5	0	0	0	0	0	0	0	0	0	0			1	2	1	1	1	1	0	0	0	0	0	0	0	0	0										
cow3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0			1	1	1	1	2	1	0	0	0	0	0	0	0	0	0										
cow4	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0			1	1	1	1	1	0	1	0	0	0	0	0	0	0	0										
cow5	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0			1	0	0	1	0	0	2	0	0	0	0	0	0	0	0						M				
cow6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0			0	1	0	0	0	0	0	0	0	0	0	0	0	0	0										
cow7	0	0	0	0	0	2	0				0							0	0	0	1	0	1	3	0	0	0	0	0	0	0	0	1									
cow8	0					0					0							0	0	0	0	0	2	0	1	0	0	0	0	0	0	0										
cow9	0					0					0							0	0	0	0	0	2	0	0	0	0	0	0	0	0	0										
cow10	0					0					0							0	0	0	0	0	2	0	0	0	0	0	0	0	0	0										
cow11	0					0					0							0	0	0	0	0	2	0	0	0	0	0	0	0	0	0										
cow12	2	1	0	0		3	5	0	1		0	0	0	0	0			0	0	0	0	0	1	0	0	0	0	0	0	0	0	0										
cow13	1	0	0	0		0	0	0	2		0	0	0	0	0			0	0	0	0	0	2	0	0	0	0	0	0	0	0	0										
cow14	1	1				0	1				0	0						0	0	0	0	0	0	0				0	0													
cow15	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0			0	0	0	0	0	2	1	0	0	0	0	0	0	0	0										
cow16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
cow17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0										
cow18	0					0					0							0					0					0														
cow19	0					4	2				0	0						0					4	2				0	0													
cow20	0					0	1				0	0						0					0	1				0	0													
<b>Young stock (6-24m) randomly selected</b>																																										
young1	0	1	5	4	4	0	0	2	0	0	0	0	0	0	0			0	2	1	1	1	0	0	0	0	0	0	0	0	0	0										
young2	0	0	5	2	1	0	0	0	3	0	0	0	0	0	0			2	1	1	0	0	0	0	0	0	0	0	0	0	0	0										
young3	0	0	5	2	0	0	0	0	3	0	0	0	0	0	0			1	1	1	1	0	0	0	0	0	1	0	0	0	0	0										
young4	0	0	4	1	0	0	0	3	0	1	0	0	0	0	0			0	1	1	1	0	0	0	3	0	0	0	0	0	0	0										
young5	0	0	3	1	1	0	0	2	0	2	0	0	0	0	0			0	0	0	1	1	0	0	0	0	0	0	0	0	0	0										
young6	0	0	1	1	1	0	0	0	2		0	0	0	0	0			0	1	0	0	0	4	3	3	0	0	0	0	0	0	0										
young7	0	0	0	2	0	0	0	3	0	2	0	0	0	0	0			0	0	0	0	0	0	0	0	0	2	0	0	0	0	0										
young8	0	0	0	1	0	0	0	2	0	1	0	0	0	0	0			0	0	0	0	0	0	2	0	0	0	0	0	0	0											
young9	0	0	0	0	0	1	0	2	0	3	0	0	0	0	0			0	0	0	0	0	0	1	0	0	0	0	0	0	0											
young10	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0			0	0	0	0	0	1	0	0	0	0	0	0	0	0											
young11	0	0	0	0	0	0	1	0	2		0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0											
young12	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0											
young13	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0											
<b>Calves (1-6m) randomly selected</b>																																										
calf1	0	0	2	1	1	0	0	0	0	1	0	0	0	0	0			3	3	3	4	3	0	0	0	1	0	0	0	0	0	0										
calf2	0	0	0	2	1	0	0	1	0	1	0	0	0	0	0			2	2	2	2	3	1	0	0	0	0	0	0	0	0	0										
calf3	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0			2	3	3	1	0	0	0	1	0	0	0	0	0	0	0										
calf4	0	0	0	0																																						