YVERSUNDHED – 1. KALVS KØER – Økonomisk optimal produktion af kælvekvier

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Den Danske Dyrlægeforening
STØTTET AF promilleafgiftsfonden for landbrug
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Dagsorden

- Kaffe og rundstykker
- Velkomst og introduktion til workshoppen
- ”Ischaemic teat necrosis and bovine other sites with DD” Roger Blowey UK
- ”Starting them right, a guide to the first few milkings” David Reid, Rocky Ridge Dairy Consulting
- Frokost
- Litteratur review og DMS muligheder – yversundhed 1. kalvs køer, Michael Farre, HusdyrInnovation, SEGES
- Besætningsgennemgang + malkning
- Opsamling og afrunding

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Project outlines – udder health 1. lactating cows

- Focus period calving to 150 days in milk
- Mapping management in the period from two weeks prepartum until 150 DIM
- Herds are selected from the national data base for a semi structured interview
- Focus areas in the interview; management routines, facilities, calving routines and post calving milking

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Milk Quality Terminology and Background Information

- Subclinical disease is defined as abnormalities of function that are detectable only by diagnostic or laboratory tests
- Detection of subclinical mastitis is possible only by use of indirect tests or bacteriological analysis of milk samples
- Cows are usually considered to have subclinical mastitis when the SCC of a quarter exceeds about 200,000 cells/ml but lower thresholds (such as 100,000 cells/ml) may indicate the occurrence of mastitis in heifers.
- Prepartum heifers often become exposed to these pathogens when they are in contact with moisture, mud, and manure in precalving areas

Introduction – mastitis in 1. lactating cows

- Coagulase-negative staphylococci (CNS) are the main cause of bovine intramammary infections (Vanderhaeghen et al., 2015)
- It`s also abundantly present in extramammary habitats such as teat apices, sawdust and air (Piessens et al., 2011)
- Intramammary infection in early lactation caused by CNS does not generally have a negative effect on subsequent productivity

Review on intramammary infections

Table 1. Prevalence of intramammary infection in heifers before, at first calving, and in early lactation as reported in different studies[1]

Stage and study	No. of herds (heifers)	No. of samples	Sample level	Infectious agent				
				Noninfected	CNS	CPS	Env	Other
Prior to first calving								
Oliver and Mitchell, 1983	1 (32)	252	Q	71.1	22.1	1.2	9.6	—
Trinidad et al., 1990	4 (97)	370	Q	25.4	52.9	14.9	2.7	0.8
Oliver et al., 1992	1 (115)	460	Q	39.3	52.8	1.7	4.3	1.7
Myllys, 1995	—[2]	236	Q	61.0	28.8	4.7	4.6	0.8
Aarestrup and Jensen, 1997	20 (180)	554	Q	62.6	28.9	0.4	6.7	1.6
Fox et al., 1995	28 (1,583)	4,950	Q	64.0	21.8	2.8	7.7	3.5
Oliver et al., 1997	1 (82)	314	Q	34.4	55.1	3.2	5.7	8.3
Middleton et al., 2005	2 (183)	663	Q	53.4	37.3	3.9	3.9	1.5
At first calving								
Oliver and Mitchell, 1983	1 (32)	128	Q	68.8	18.8	0.8	12.5	0.8
Cook et al., 1992	—[2]	525	C	43.0	43.0	6.0	—	8.0
Oliver et al., 1992	1 (41)	164	Q	55.4	39.0	0.6	4.9	—
Pankey et al., 1991	11 (382)	1,533	Q	81.7	11.4	0.7	4.8	1.7
Roberson et al., 1994a	18 (828)	828	C	45.0	39.0	8.0	13.0	—
Myllys, 1995	(160)	236	Q	71.5	18.5	4.6	3.9	1.5
Nickerson et al., 1995	5 (600)	600	C	58.4	27.9	8.0	4.2	1.4
Fox et al., 1995	28 (1,583)	4,950	Q	64.0	21.8	2.8	7.7	3.5
Pankey et al., 1996	11 (382)	458	Q	68.3	21.8	0.9	12.9	—
Parker et al., 2007a	5 (255)	252	Q	87.7	5.2	1.6	5.6	—
In early lactation								
Oliver and Mitchell, 1983	1 (32)	252	Q	87.3	7.5	0.4	4.8	0.4
Timms and Schultz, 1987	2 (51)	204	Q	78.5	18.6	0.0	0.0	—
Matthews et al., 1992	1 (36)	144	Q	81.2	15.3	3.5	—	—
Myllys, 1995	—[2]	527	Q	71.5	18.6	4.5	3.8	1.5
Aarestrup and Jensen, 1997	2 (180)	713	Q	63.1	19.3	6.7	8.1	2.1
Oliver et al., 1997	1 (42)	172	Q	41.9	46.0	1.7	7.0	3.4
Piepers et al., 2010	20 (191)	762	Q	51.3	35.3	3.5	4.8	2.2

[1]Percentage of mammary quarters (Q) or mammary glands, composite (C) that have a subclinical infection (CPS = coagulase-positive staphylococci; Env = environmental pathogens, non-*agalactiae* streptococci, and gram-negative rod-shaped organisms; and other pathogens) or are free of infection (noninfected).

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Early lactation incidence rate mastitis

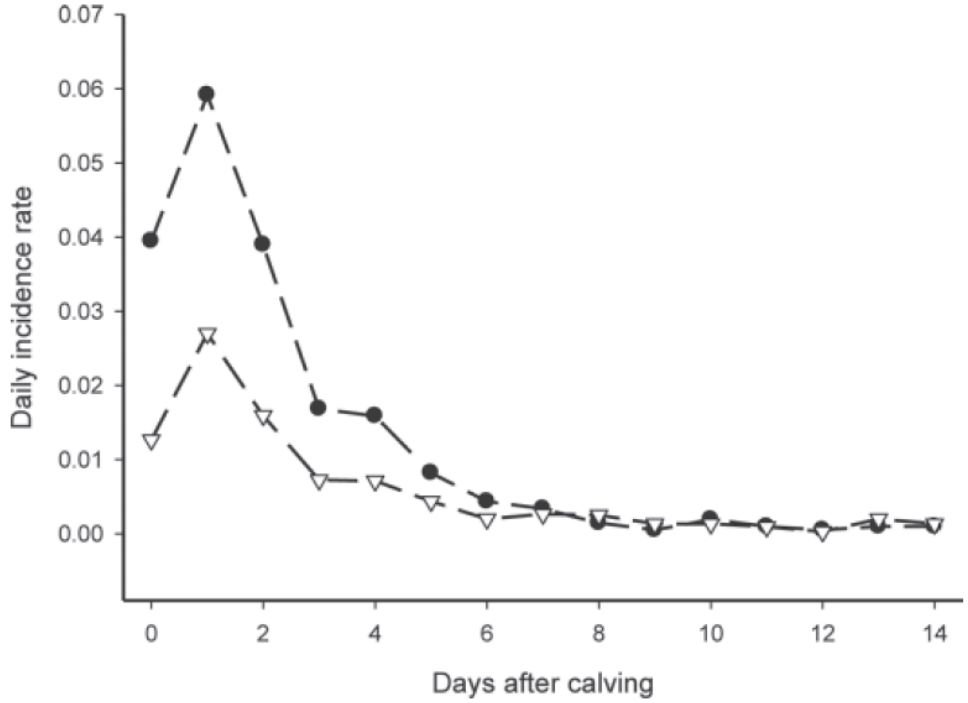

Figure 1. Early lactation daily incidence rate of clinical mastitis for heifers (●) and cows (parity >1; ▽) from 30 New Zealand dairy herds (data derived from McDougall et al., 2007a).

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Early lactation clinical mastitis

- The early lactation period of dairy heifers is characterized by a high incidence rate of CM
- More than 30% of cases in a lactation occurring in the first 2 weeks of lactation (Barkema et al.,1998b; Nyman et al., 2007; Olde Riekerink et al., 2008)
- Most common udder pathogens isolated from cases of CM in heifers are major pathogens such as *Staph. aureus*, *Streptococcus dysgalactiae*, *Streptococcus uberis*, and *Escherichia coli* (McDougall et al., 2007b; Persson Waller et al., 2009)
- It remains a challenge to quantify the influence of each of the factors; e.g., causative pathogen, duration of infection before calving, persistence or cure of infection in early lactation, host immunity (Piepers et al., 2009)

Effect on Future Udder Health

- Heifers with an elevated SCC in early lactation maintain higher SCC throughout their first lactation (Coffey et al., 1986; De Vliegher et al., 2004)
- Intramammary infections in early lactation caused by minor pathogens have no effect on SCC for the remainder of the first lactation (Kirk et al., 1996; Compton et al., 2007)
- Alternatively results in an SCC in first lactation between that of noninfected heifers and heifers infected by major pathogens at calving (Piepers et al., 2010)
- This finding suggests that CNS infections present in early lactation may persist and this has been confirmed for a number of CNS species (Piessens et al., 2011; Supre et al., 2011)

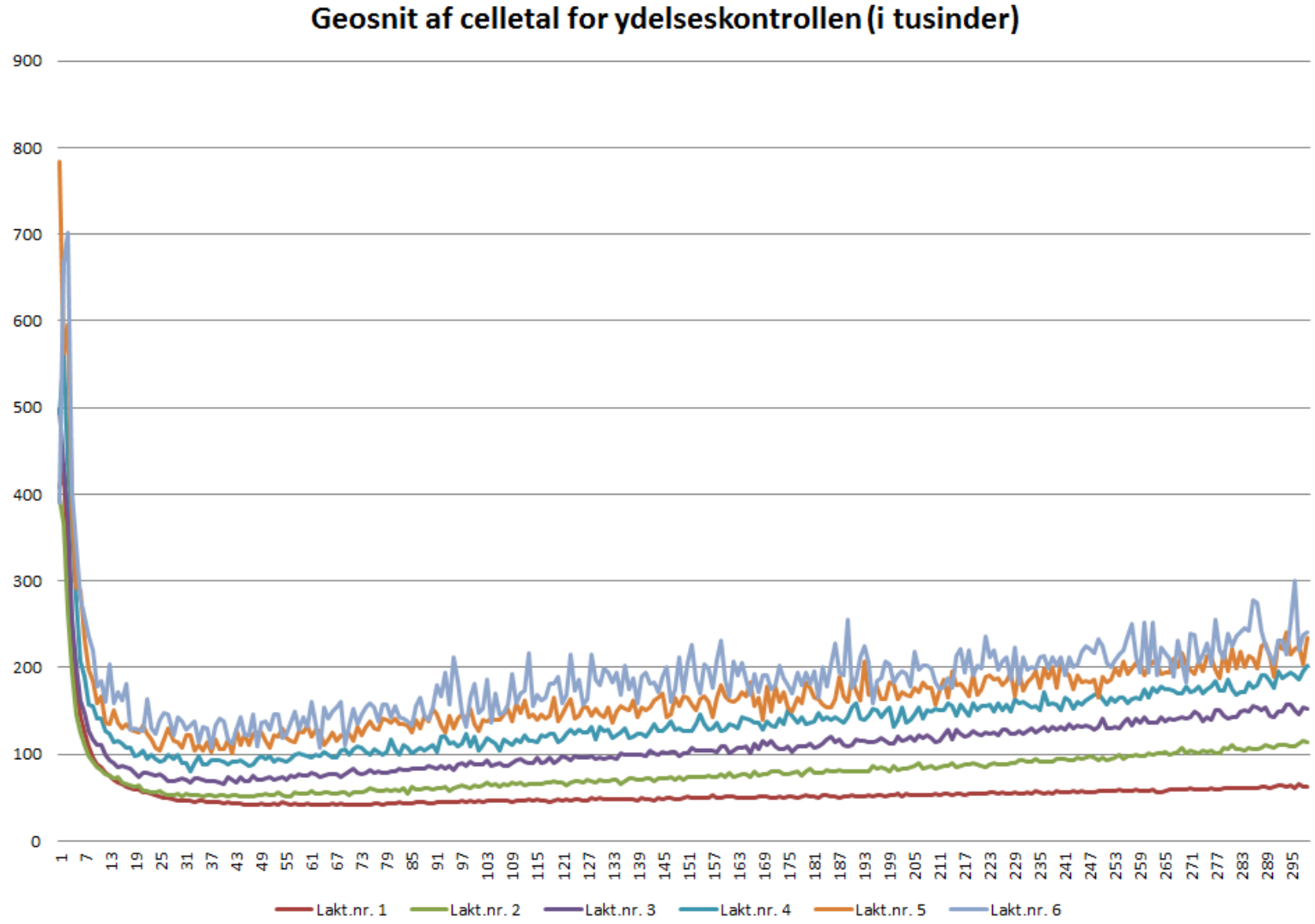
Effekt on future milkproduction

- **Clinical mastitis;**
  - Milk yield losses during the lactation in heifers with CM around calving vary from less than 1% (Myllys and Rautala, 1995; Barnouin and Chassagne, 2001) to 5% (Oltenacu and Ekesbo, 1994)
- **Subclinical mastitis;**
- Intramammary infections due to CNS in heifers in early lactation had no negative effect on average milk production during early to mid lactation (Kirk et al., 1996)
- Reportes from Compton et al. (2007a) illustrates that yield at first test-day and average daily milk yield over the entire lactation were higher in heifers with CNS IMI postpartum than in heifers with no pathogens isolated

Diagnostics – the first month

- At the first DHI test – 90 % should have SCC < 200.000 cells/ml
- Remember it is a composit sample – you still need the CMT paddle!
- Quaters positive on CNS later then 5 days can be regarded subclinical infected
- The lack of bacterial growth from a single milk sample is not always diagnostically, because about 50% of milk samples obtained from quarters with high SCC with be microbiologically negative (Makovec and Ruegg, 2003).

Dynamic post calving – SCC in Denmark



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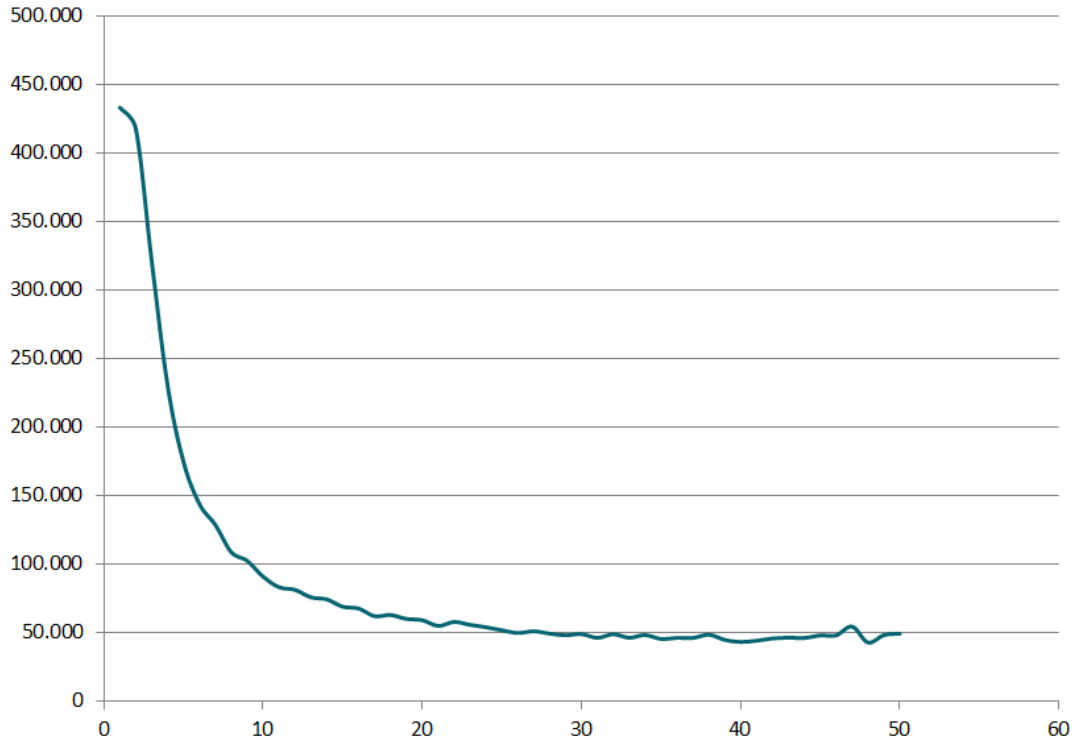
Dynamic post calving – SCC in Denmark 1. lacation



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Risk factors at herd level 1.

- The causative pathogens involved (major versus minor pathogens)
- Heifers raised in herds with ineffective fly control were more likely to be infected with contagious mastitis pathogens in early lactation (Piepers et al., 2011)
- Immunity
- Contact of heifers with older cows before calving, increases the risk of clinical mastitis

  after calving and separation of heifers from older cows is generally recommended (Barkema et al., 1999)
- The level of management response to ensure only endemic appearance

Risk factors at herd level 2.

- When udder edema occurs, the circulation of blood and lymph fluid through the udder is impaired and the function of the milk secreting cells is disrupted
- Prepartum milking of affected heifers has been shown to reduce the risk of developing mastitis (McDougall, et al., 2009)
- Difficult to control and establish a control program to prevent risks such as; season, location of herd, stage of pregnancy e.g.

Practical management at herd level

- Teat spray pre calving (Lopez-Benavides et al., 2009)
- Vaccination pre-partum with StartVac® (S. Piepers et al., 2017)
  - Less severe inflammatory response after inoculation
  - No substantial milk drop post partum
- Imrestor® is approved by the FDA to reduce the incidence of clinical mastitis by up to 28% in the first 30 days of lactation in periparturient replacement dairy heifers

Pre partum prevention outside Europe

- Prepartum intramammary treatment, 65 % cure rate (Nickerson, 2009; Sampimon, et al., 2009)
- Unlike intramammary treatments, systemic antibiotics administered to heifers have not been shown to be effective in reducing the prevalence of mastitis (McDougal et al., 2005)
- In most countries injectable is off-label treatment for prepartum treatment
- Prepartum internal teat-sealant, 68% reduction on clinical mastitis post partum (Parker, K. I et al., 2007)

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Current recommendation and control program

- Specific recommendations to prevent and control mastitis in late gestation in periparturient heifers are not part of the current NMC mastitis and prevention program
- Control and prevention is currently based on avoidance of inter-sucking among young stock, fly control, optimal nutrition, and implementation of hygiene control and comfort measures, especially around calving

Hvilke muligheder har vi i Danmark?

Brug de data der ligger I DMS!!

- Udfordringer med yversundhed ved kvierne kan være frustrerende
- Gå systematisk frem i DMS
- Brug CMT og mælkeprøver
- Så finder du et svar og en løsning

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Overblik i besætningen via nøgletal

STATUS	NØGLETAL (ENHED)	OPNÅET	REFERENCE VÆRDI	NEDRE ALARM	ØVRE ALARM	MÅL	OPNÅET VÆRDI I FORHOLD TIL SAMMENLIGNINGSGRUPPEN	RANGERING	GRAF	OPNÅET OVER TID
Sundhed - Yversundhed										
	Inficerede i alt (%)	34	33		22		20 28 34	456 / 490	Vis graf	
	Nyinficerede i alt (%)	18	18		10		11 15 18	449 / 490	Vis graf	
	Nyinf. 1. kalvs, 1. kontrol e. kælvn. (%)	22	25		8		8 15 22	455 / 489	Vis graf	
	Nyinf. øvr. kalvs, 1. kontrol e. kælvn. (%)	28	26		18		15 25 28	404 / 487	Vis graf	
	Nyinficerede i laktation (%)	17	16		10		10 15 17	446 / 489	Vis graf	
	Kronisk inficerede (%)	23	22		13		12 18 23	444 / 489	Vis graf	
	Kurerede i goldperiode (%)	59	50	69			57 75 59	352 / 486	Vis graf	
	Kurerede i laktation (%)	27	30	35			29 38 27	407 / 489	Vis graf	
	Sygdomslængde, laktation (Perioder)	3,7	3,3		2,8		2,6 3,4 3,7	407 / 489	Vis graf	
	Inficerede nykælvere, øvrig kalvs (%)	34	36		23		18 31 34	410 / 489	Vis graf	

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Bliver koen kureret ved vores behandling?

- Effekt af behandling kan vurderes ved;
  - Klinisk kureret
  - Bakteriologisk kureret
- Der kan opnås kureret kirtler ved:
  - Selvhelbredelse
  - Helbredelse ved behandling
- Vurdering af effekt på mælkeprøver:
  - Opfølgende prøver dag 7-14

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Behandlinger i laktationen

Sygdomsopgørelse, køer - Yverlidelser

Antal yverlidelser pr. måned sep 16 - aug 17

	Sep 16	Okt 16	Nov 16	Dec 16	Jan 17	Feb 17	Mar 17	Apr 17	Maj 17	Jun 17	Jul 17	Aug 17	S12 mdr.	2016	2015
Køer i perioden	455	452	454	458	464	469	465	466	473	479	478	478	466	443	407
Antal kælvninger	31	43	50	45	46	35	48	48	59	44	53	39	541	545	495
Yverbetændelse total	35	38	23	26	27	30	24	18	25	38	39	38	361	351	237
Andel nye yverbetændelser	8%	8%	5%	6%	6%	6%	5%	4%	5%	8%	8%	8%	77%	79%	58%
Yverbetændelse 1. kalvs	6	6	4	2	11	3	4	4	6	4			50	56	37
Yverbetændelse 2. kalvs	10	13	7	9	7	11	5	5	9	11	15	12	114	100	70
Yverbetændelse øvrige kalvs	19	19	12	15	9	16	15	9	10	23	24	26	197	195	130

Mælkeproduktionsopgørelse

Gns. celletal på kontroldato

Kontroldato:	20/6	18/7	15/8
Yktr. alle køer	546	549	699
- 1. kalvs	265	281	228
- 2. kalvs	365	493	531
- Øvrige	1.174	983	1.518
Mejeri	399	442	465

Køer med infektion (forhøjet celletal) på kontroldato

%-andel (og antal) på kontroldato:	20/6	18/7	15/8	Alarmgrænse
Inficerede i alt	34% (133)	37% (150)	39% (160)	22 %
Nyinficerede i alt	17% (47)	20% (55)	20% (53)	10 %
- 1. kontrol efter kælv., 1. kalvs	29% (5)	33% (5)	17% (2)	8 %
- 1. kontrol efter kælv., øvr. kalvs	25% (5)	12% (2)	31% (4)	18 %
- Øvrige (=nyinficerede i laktation)	16% (37)	19% (48)	20% (47)	10 %

(Infektion: Celletal/1000 over 200 for 1. kalvs og 200 for øvrige kalvs)

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Celletal 1. kalvs køer

VÆLG KRITERIER OG KOLONNER | CELLETALSLISTE

DYR NR.	CELLETAL 6.SIDSTE	CELLETAL 5.SIDSTE	CELLETAL 4.SIDSTE	CELLETAL 3.SIDSTE	CELLETAL 2.SIDSTE	CELLETAL	YVERLIDELSE	GOLD BEH.	INFEKTIONS GRUPPE	LAKT. NR.	DG. E. KÆLV.	KG. EKM	PCT. AF TANK	KIRTELPR. GYLDIG TIL	UD-SÆT
05839					1648	126			Raske	1	75	19,5	0		
05851					1028	73			Raske	1	76	27,3	0		
05845					101	76			Raske	1	81	31,1	0		
05846					54	123			Raske	1	86	17,9	0		Ja
05820					2765	56			KurLak	1	88	8,1	0		
05815					142	14			Raske	1	90	22,1	0		
05841					468	237			Inf	1	94	30,5	0		
05827					102	19			Raske	1	95	36,1	0		
05843					121	179			Raske	1	98	40,7	0		
05830					184	13			Raske	1	99	33,3	0		
05675				3036	32	19			Raske	1	102	27,3	0		
05656				701	19	16			Raske	1	104	33,9	0		
05659				336	723	916			Inf	1	105	28,8	0		

Antal dyr: 183 - Antal valgte dyr: 183 - Beregningsdato: 28-09-2017 - Kontroldato: 15-08-2017 - Tærskel Infektion, 1. kalvs. Celletal*1000: 200 - Tærskel Infektion øvr. køer. Celletal*1000: 200

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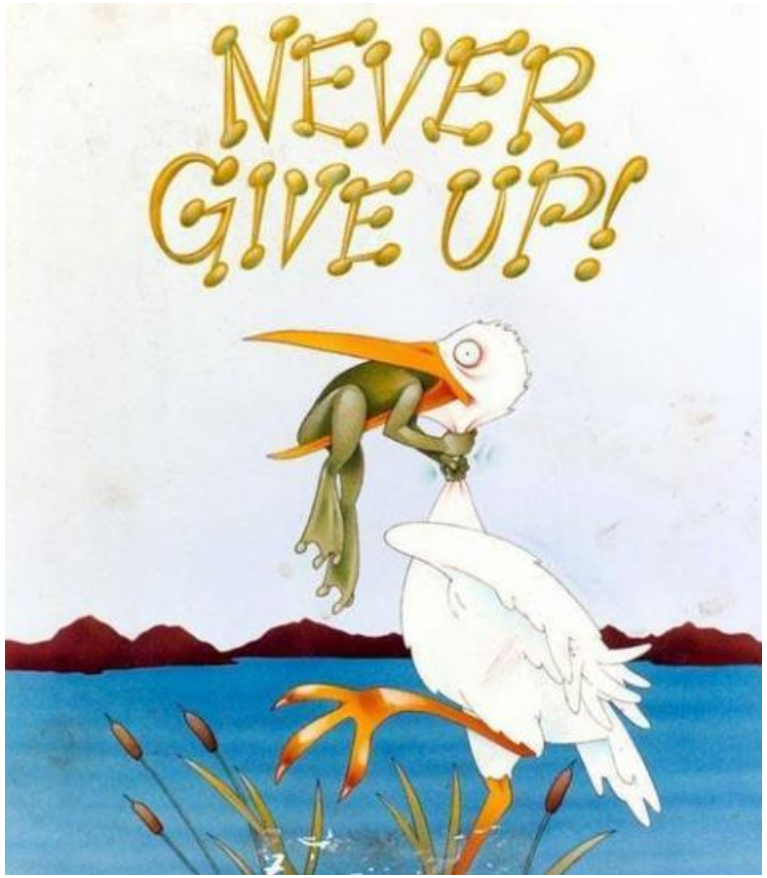
Hvorfor er yversundhed så vigtigt!



- Husk at bruge din viden som dyrlæge – så den skaber mest mulig værdi ved mælkeproducenterne
- Det er dyrlæger der har den specielle viden om epidemiologi, bakteriologi og patologi – som giver os et forspring i arbejdet med biologi i besætningerne

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Spørgsmål?

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