



# Impact of meloxicam administration in cows prior to caesarean on the transfer of passive immunity in calves



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# Analgesia and C-section ...

## Detection and management of pain in cattle

- Growing interest
- Preventive or Rescue analgesia: **variability among practitioners +++**

Procedure	% (n=2644 practitioners)							
	NSAIDs		Xylazine		Local anaesthetic		None	
	Europe	France	E	F	E	F	E	F
Caesarean	68,1	15,8	60,3	54,7	98,4	95,4	0,3	1,5

Huxley et al., 2010

- Few studies mainly focused on cows on the putative benefit of NSAID around surgery
- **Pain assessment difficult**

# Objective of the study

## Main hypothesis

- Providing better analgesia in cows prior to caesarean could be associated with « improved » maternal behaviour, especially regarding colostrum intake (3Q rules)
    - No effect expected on colostrum quality but
    - Earlier intake ?
    - Longer intake ?
- Leading to improved IgG level in calves sera

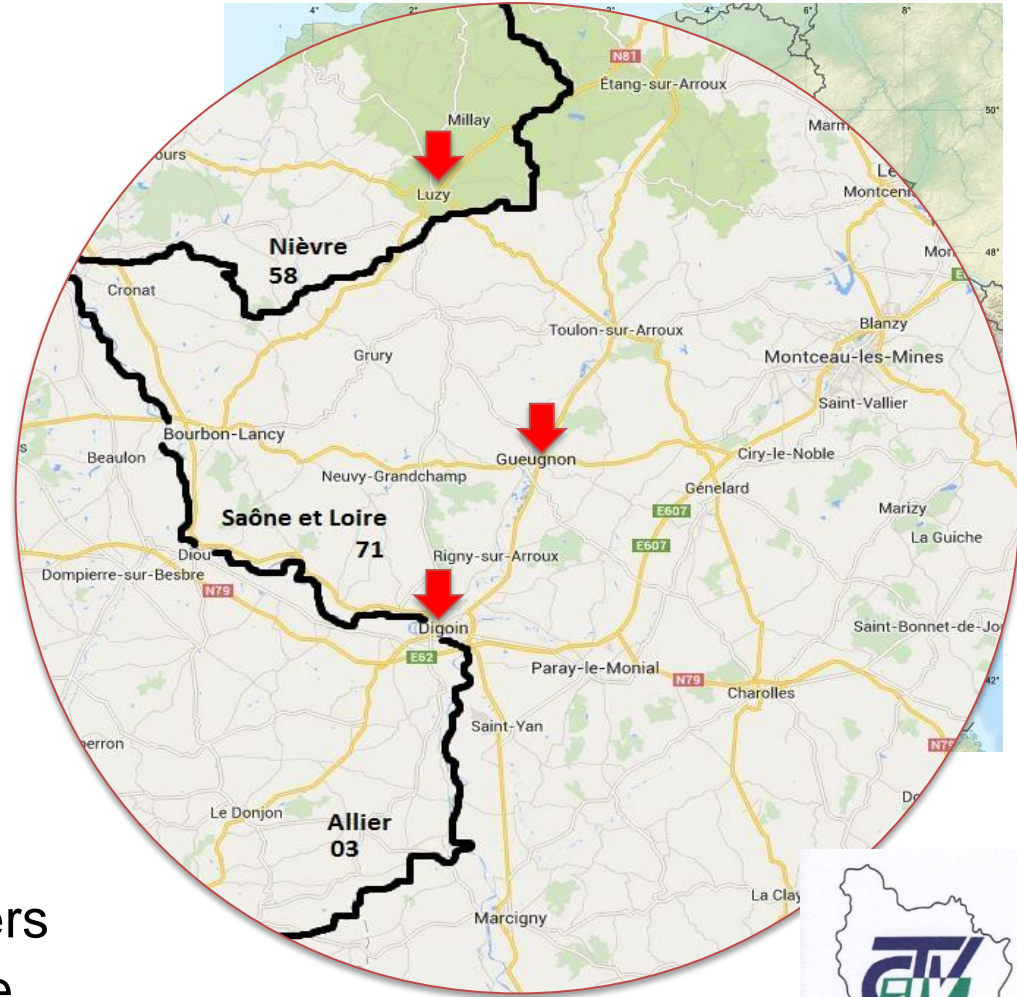


## Objective

Investigate the putative benefit of providing analgesia (through NSAIDs) prior to caesarean on the transfer of passive immunity

# Material and Methods

- **Burgundy**
  - High beef cattle density
  - Charolaise Breed
  - Caesarean ++
- **One breed**
  - Charolaise
  - To avoid breed influence on colostrum quality
- **Monitor/investigator**
  - Monitor (Faculty staff)
  - Investigator: 3 practitioners
  - Partner : GTV Bourgogne



# Material and Methods

- Inclusion criteria

- « Healthy cows » / Caesarean
- Absence of colostrum milking by the farmer
- Absence of controlled/forced colostrum intake
- Cows in free barn
- Willingness of the farmer



- Exclusion criteria

- Cows suffering from uterus torsion
- Abortion or twins
- Sick cows (lameness, BRD)
- Cows receiving sedation with xylazine

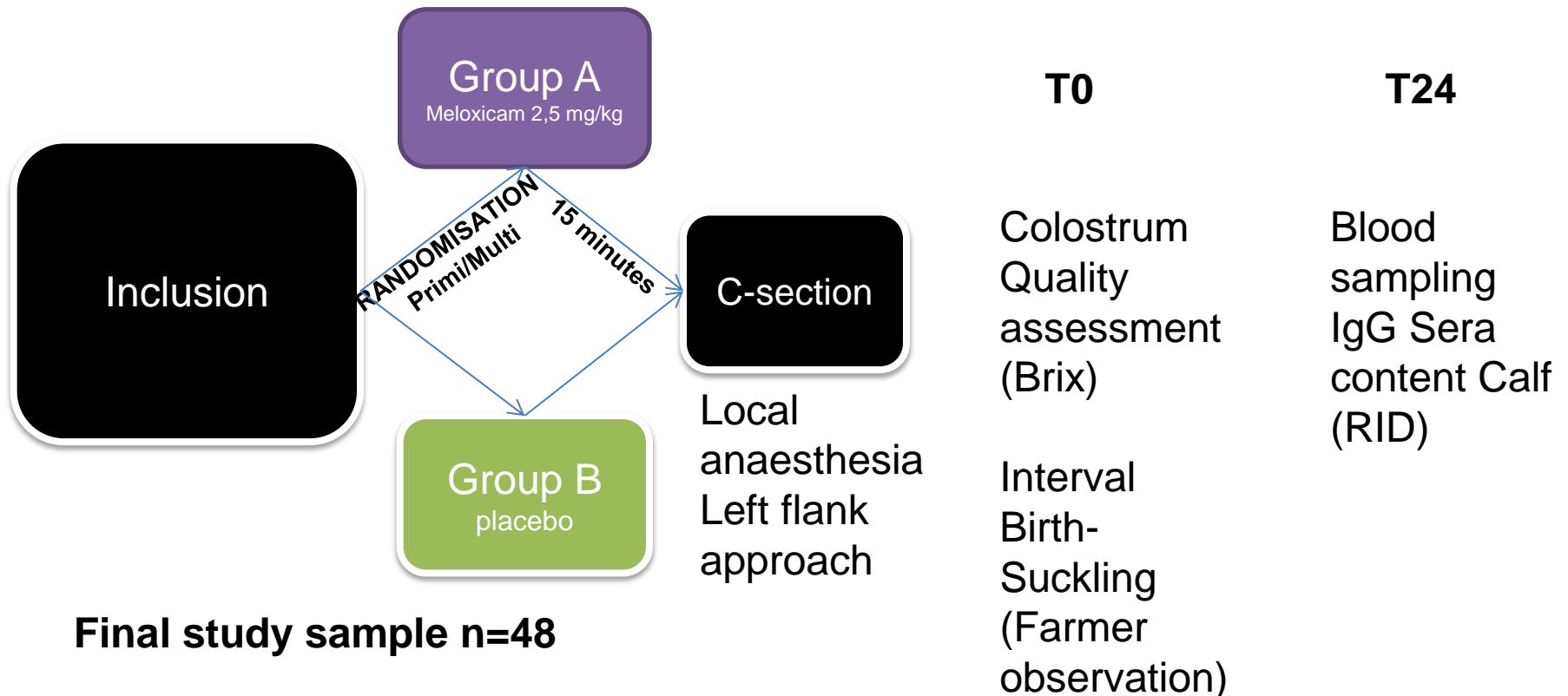


# Study Protocol

## Study Sample size

### Hypothesis

- « Basal » IgG sera = 12 g/L & Increase in treated group : 20%
- → 46 cows (23 per group)



# Strategy of analysis

- Similarity of treatment groups
  - Age, parity, colostrum quality



- Comparison of delay for first suckling according to treatment groups
- Comparison of IgG sera level according to treatment groups

- Quantitatively: Mean
- Qualitatively ( $\leq 15\text{g/L}$  vs  $> 15\text{g/L}$ )
- Logistic regression

$\leq 15\text{g/L}$  vs  $> 15\text{g/L}$  = Treatment group + Parity + Colostrum Quality + Delay before 1<sup>st</sup> suckling

# Results & Discussion

- Treatment groups

	Group A (NSAIDs)	Group B	p-value
n	22	26	-
Age (years)	3.7	4.3	> 0,1
Calving rank	1.7	2.2	> 0,1
Surgery duration (min)	27	26	> 0,1
Colostrum quality (% BRIX)	26.2	26.8	> 0,1

Group A similar to Group B

Effective randomisation



# Results & Discussion

- Delay before first suckling

	Mean (hours)	Median (hours)	SE
Lot A	3.5	3	2.8
Lot B	3.7	2	3.7



No difference (p-value : 0,8739)

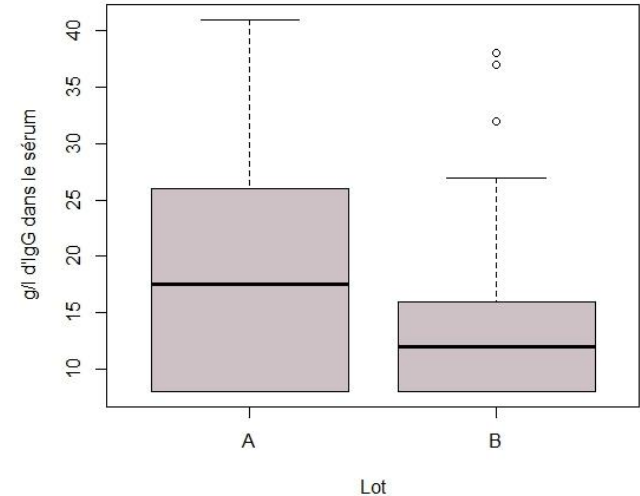
→ Mainly due to calf vitality (no effect of NSAIDs on dam)

# Results & Discussion

- IgG level on calf sera

	Mean (IgG g/L)	Median (IgG g/L)	SE
Group A	18.3	17.5	9.9
Group B	15.2	12	9.8

→ Trend IgG group A > group B (p=0,061)



	≤ 15 g/l IgG	> 15 g/l IgG
Lot A	8	14
Lot B	18	8

→ Group A > Group B (p< 0,05)

→ Higher IgG level on calf sera in calves from treated dams

# Results & Discussion

- **Multivariate analysis**
  - 2 variables kept after univariate step ( $p < 0,2$ )
  - Treatment group (A vs B)
  - Delay before first suckling (<1h / [1-4h] / > 4h)

Effect	Adjusted mean	OR	CI 95%
Treatment A (NSAIDs) (ref: none) ( $p=0,03$ )	24.1 vs 17.8	3.88	1.01-14.96
Delay for 1st suckling < 1h vs >4h ( $p=0,02$ )	28.4 vs 15.2	5.90	1.12-31.15

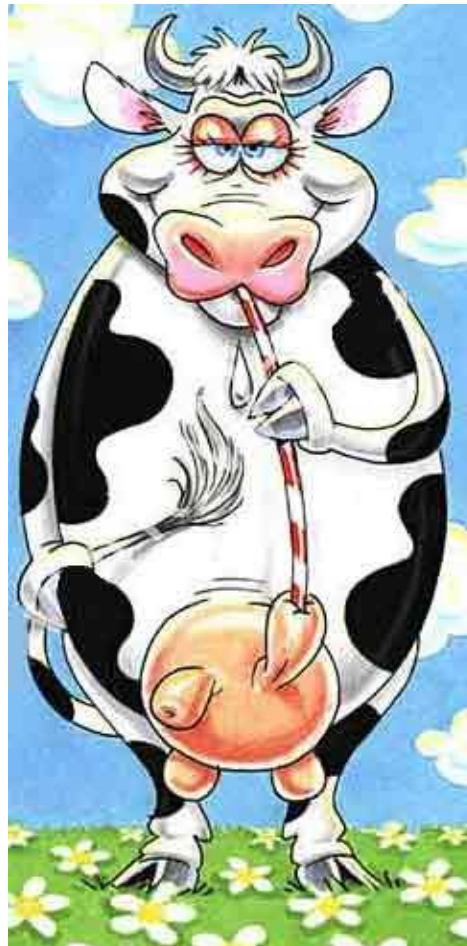
Confirmation of crucial role of early suckling (Quickly)  
Confirmation of the benefit of providing analgesia to the dam

# Conclusion and Perspective

- Increased IgG levels in sera of calves from treated dams
- According to 3Q rules (Moran, 2002) :
  - Quality : similar quality Group A vs Group B
  - Quickly : similar delay Group A vs Group B
  - Quantity : hypothesis : longer intake, increased quantity
- Hypothesis → NSAIDs (meloxicam) allowed longer or more frequent colostrum intake within the first 24 hours
- Original study focused on calves
- Argument for both farmers and vets to increase the use of analgesic drugs in cattle, especially around caesarean

# Thank you for your attention

## Questions ?



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