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Cow calf separation on dairies – Summary of current evidence

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Outline

- Why is the dairy industry more aware of the issue?
- Selected evidence regarding
  - Welfare and behaviour
  - Health and disease transmission
  - Gut microbiome
  - Economics and yield

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Why is the wider dairy industry interested in late cow calf separation?

- “Social contract” – calf separation one of the biggest concerns by consumers in many regions of the world

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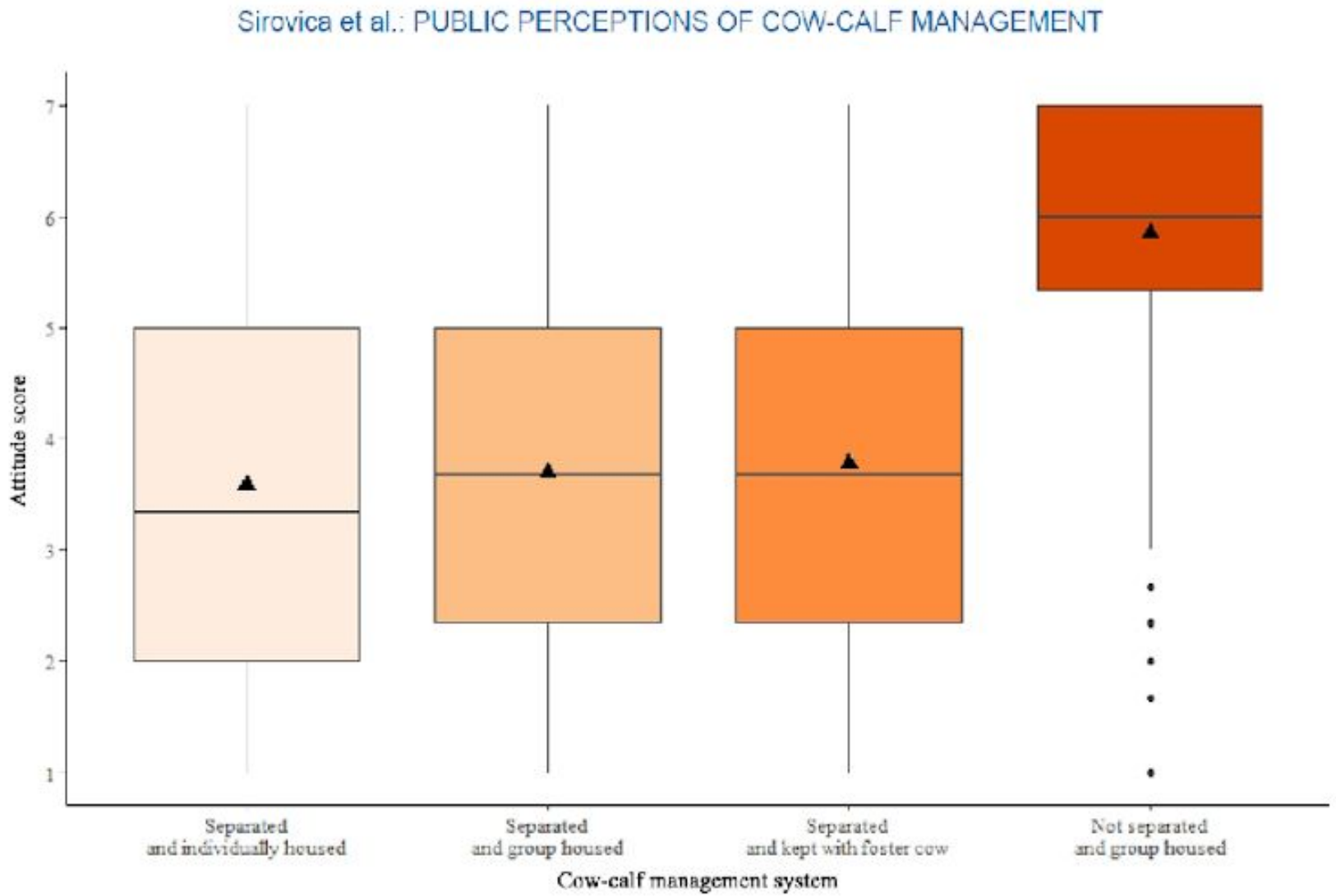
Sirovica et al., 2022 (USA)



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Welfare and performance:

- Meagher et al. 2019: Review on welfare and performance
  - Separation within 24 hours reduces acute distress response of cows and calves
  - Late separation had long term behavioural benefits on calves (confidence, novel object)
  - Reduced saleable milk during sucking period, but not thereafter
  - Increased calf weight gain when separated late
- Mac et al., 2023: Measuring cow bahaviour at 1 and 100 day separation
  - 100 day separation led to more vocalisation and activity and more time spent eating and ruminating by cow and less time spent at the barrier

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Review of effects on cow and calf health

- Beaver et al., (2019):
- Mastitis and calf scour: no effect or benefit of late separation
- Johne's disease: cow calf contact no significant risk factor.

- Clegg et al. (2009) estimate Johne's herd prevalence in Irish dairy herds
  - 19.6 % for dairy
  - 6.3 % for beef
- However, a Johne's monitoring and control programme should be in place
- □ no consistent evidence in support for early separation

- Benefit of "transition milk" (natural milk on day 2-3):
  - Higher growth rates, less diarrhoea due to immunological factors and stimulation of intestinal development (van Soest et al., 2022, Karger et al., 2021).
  - This can be fed
    - Natuarally (late separation)
    - Milked separately (management issue)
    - As transition milk replacer (cost and management)

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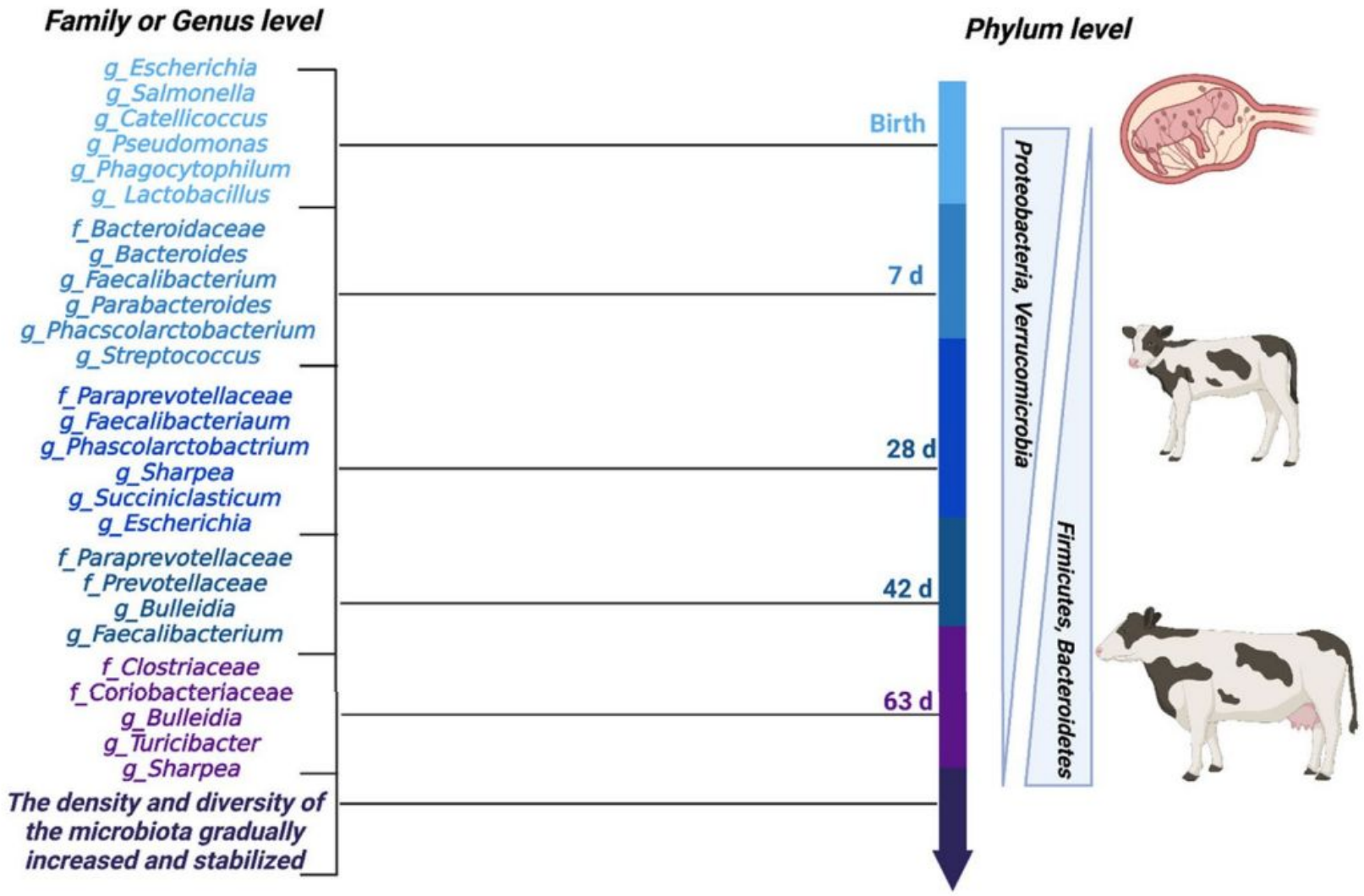
Development of the gut microbiome in calves (Du et al. 2023)



Effect on gut microbiome: Beaver et al., 2021

- Late separated calves:

  - more Lactobacillus sp. (some have been identified as improving weight gain and protecting against pathogens

  - more L-tryptophan biosynthesis

However: the early separated calves in the study were fed on waste milk, so effects could also be due to antibiotic residues.

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Barth 2020: Effects on milk yield and composition

- Control (separated) versus
  - Short term sucking (2 x 15 min), before milkings
  - Night time sucking (6pm – 5am), between milkings
  - 24 hour access (except during milking time)

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Barth 2020 – milk recorded yield, calves with cows for 100 days

Table 1. Performance of cows without and with contact to their calves up to 100 d after calving depending on duration of contact and stage of lactation

		Treatments (=daily duration of dam-calf contact)		
Stage of lactation (DIM)	Control (No contact)	Short-time[a] (2 × 15 min)	Night-time (18:00–05:00)	Whole day (24 h)
≤100	28.7 ± 6.22	8.2 ± 4.08	16.3 ± 4.84	12.6 ± 6.72
>100 … ≤200	23.1 ± 5.84	17.5 ± 5.29	24.5 ± 5.29	19.6 ± 4.80
>200 … ≤305	18.0 ± 5.77	12.8 ± 3.46	22.2 ± 6.23	15.0 ± 3.78
N 100/200/300	89/83/75	15/15/13	18/18/14	54/50/41

Data presented as mean values ± sd.
[a]Suckled before each milking.

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Night time contact performed best!

Economics – "Loss" of milk?

- Calves fed ad lib. can drink 10-12 litres per day
- Is this "lost" milk?
- Metabolic programming/epigenetics:
  - Calves fed ad lib give around 500 litres more milk in their first lacation (Kaske, 2010)
  - Every 100 g additional daily liveweight gain pre weaning results in about 100 litres of additional milk in the first lactation (Soberon et al., 2012).

- Lower milk yield after separation at 100 days – less oxytocin when milked with machine, cows used to calves react with disturbed milk ejection (incomplete milk-out leading to negative feed back and less milk production (Barth 2020)

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Further Info

https://literatur.thuenen.de/digbib_extern/dn065433.pdf