

# Why behaviour matters when it comes to calf performance

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# What is our challenge?

- Do we meet our targets for growth (and health)?
  - Double birth BW by weaning
    - 40-45 kg to 80-90kg
  - Breed at 12-14 months
    - 350-400 kg
  - Gives birth at 22-23 months
    - 80-90% of mature BW
    - 575-625 kg
  - Stay healthy!!!

# Why is that growth and health important?

- Greater lactational performance after calving are associated with:
  - Greater pre-weaning ADG
  - Greater DMI at weaning
  - Greater BW at first calving
  - Fewer days of illness before 4 mo
  - Fewer antibiotic treatments

# What is our challenge?

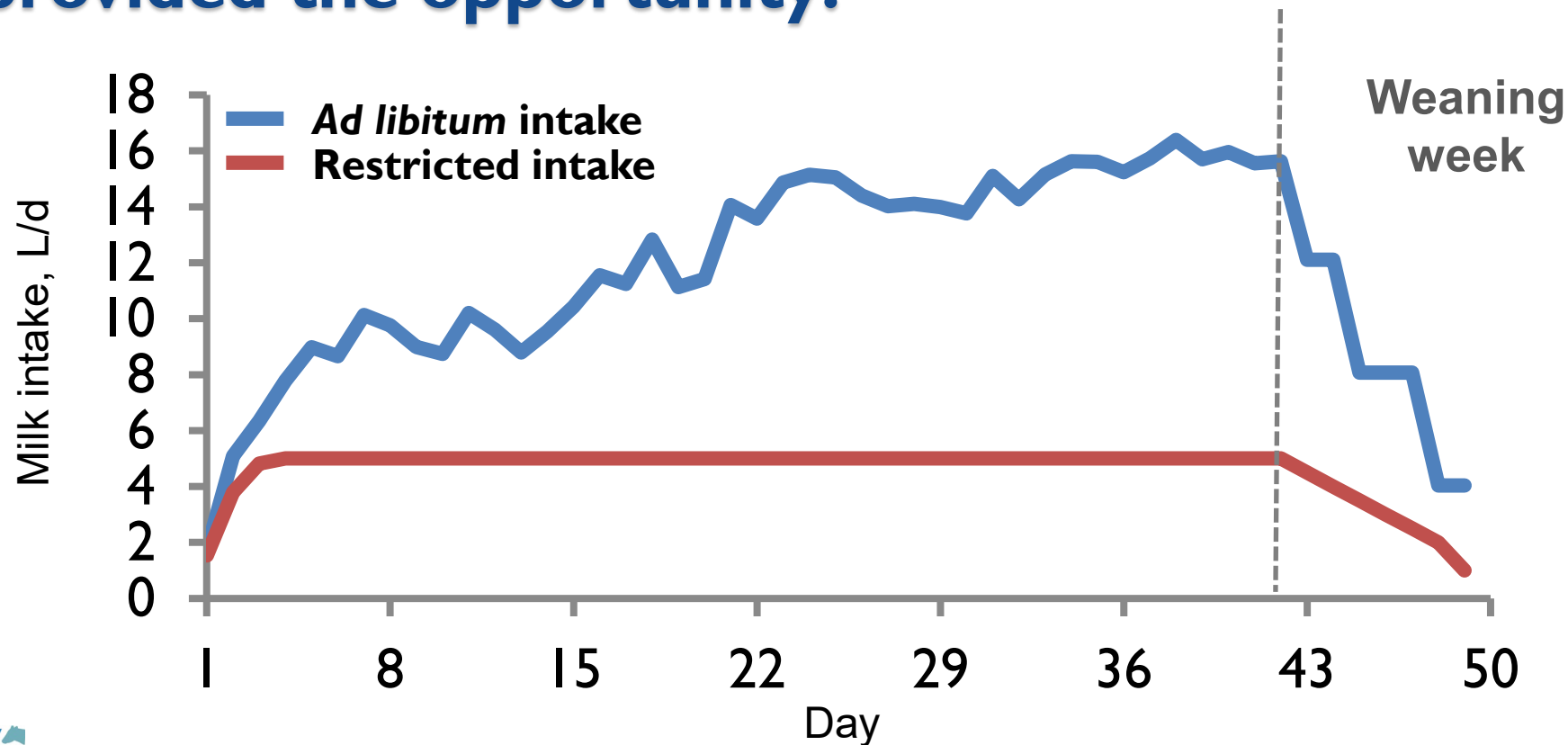
- Do our management practices promote good behaviour?
  - Behavioural patterns...
    - can have immediate consequences on nutrient consumption and growth
    - are learned and develop early in the life of a ruminant and may have long-term implications!

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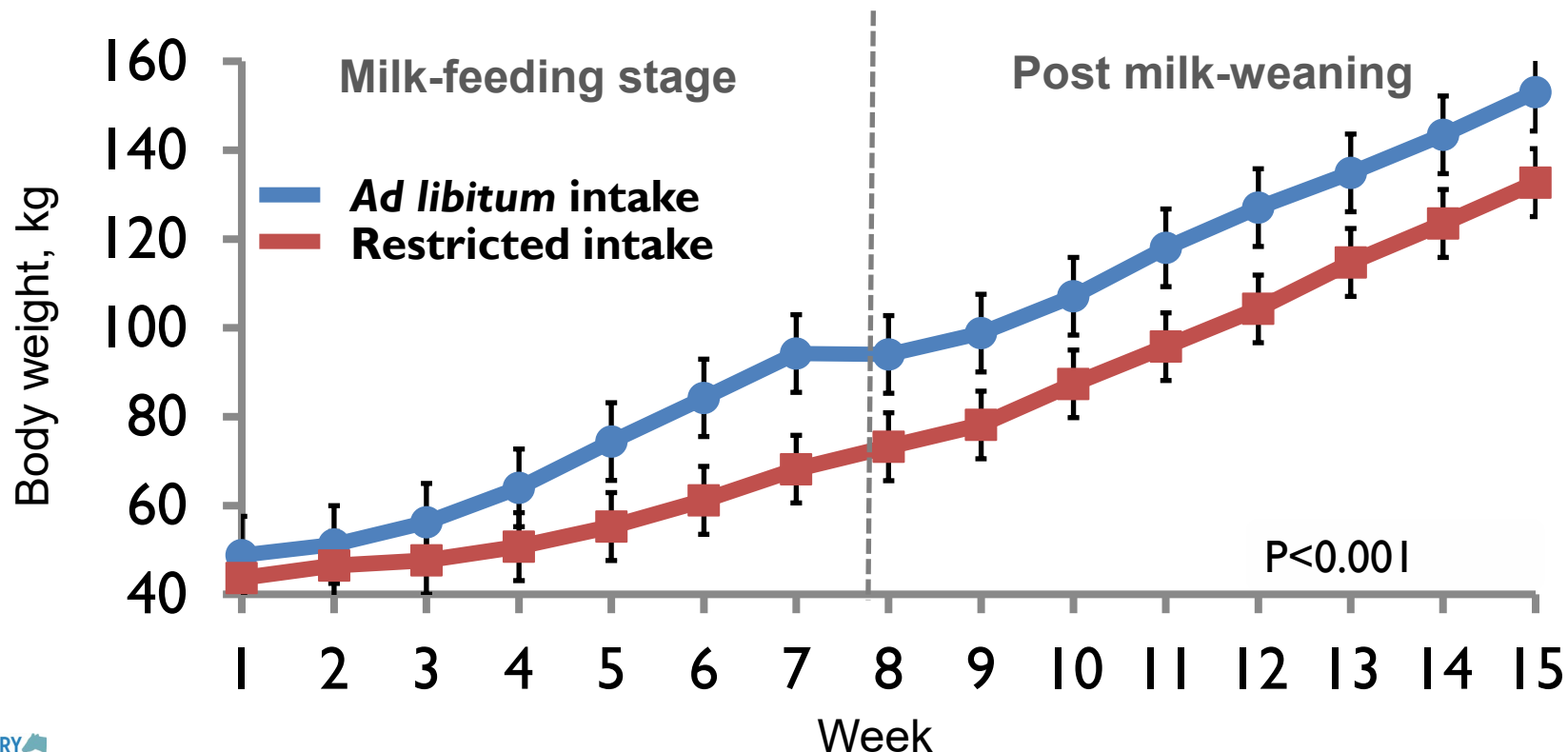
- Areas that may be bottle-necks to our targets for growth and health and behaviour...
  - Colostrum feeding
  - Milk feeding level
  - Weaning
  - Solid feed consumption
  - Housing management

**A calf needs access to milk in  
sufficient quantities...**

# Calves will drink high amount of milk when provided the opportunity!



# As result higher growth is achieved and weight advantage is maintained...





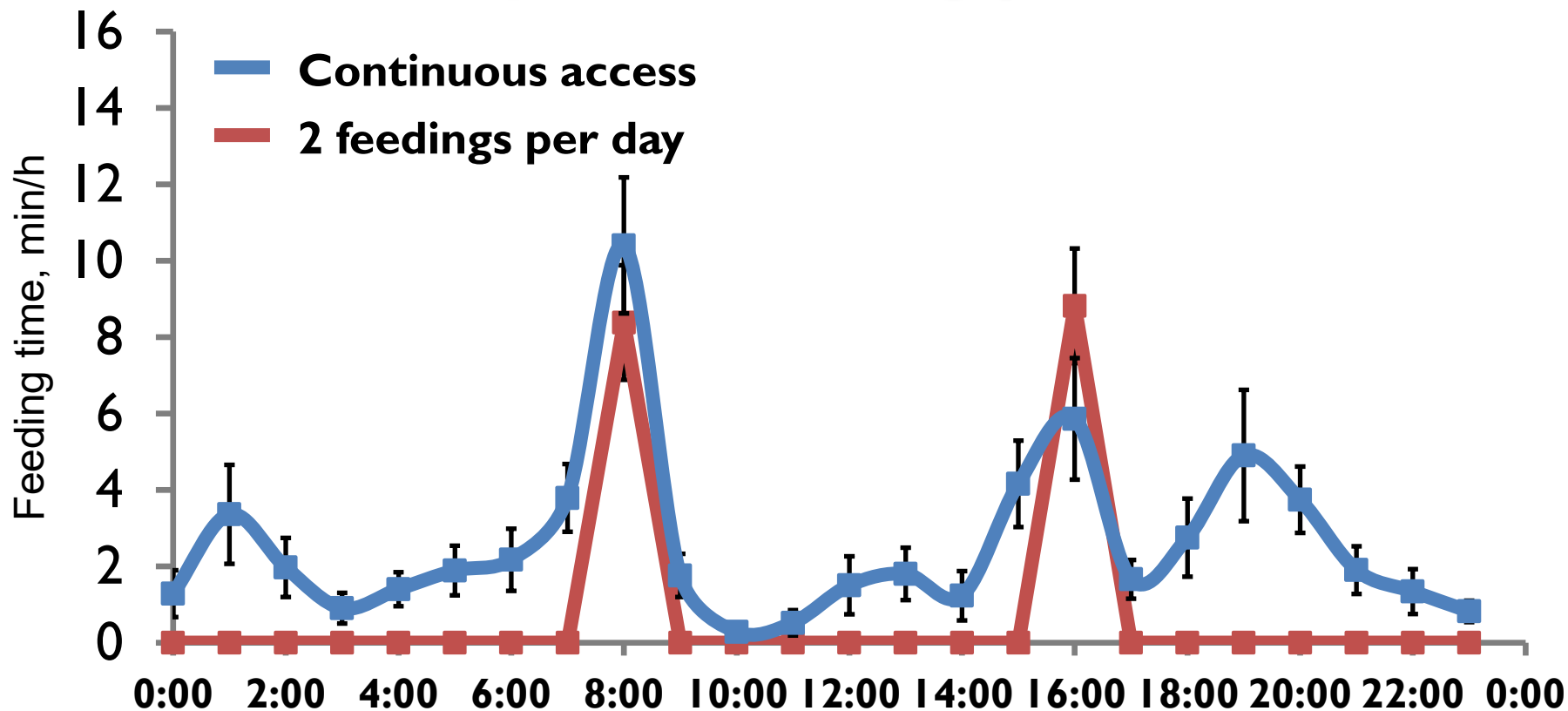
# Immediate and long-term effects...

- Lesser indication of stress (Thomas et al., 2001; Krachun et al., 2010)
- Improved immune function (Smith et al., 2002)
- Improved efficiency of feed conversion (Jasper and Weary, 2002)
- Earlier age at first breeding (Raeth-Knight et al., 2009)
- Improved lactational performance (Soberon and Van Amburgh, 2013)

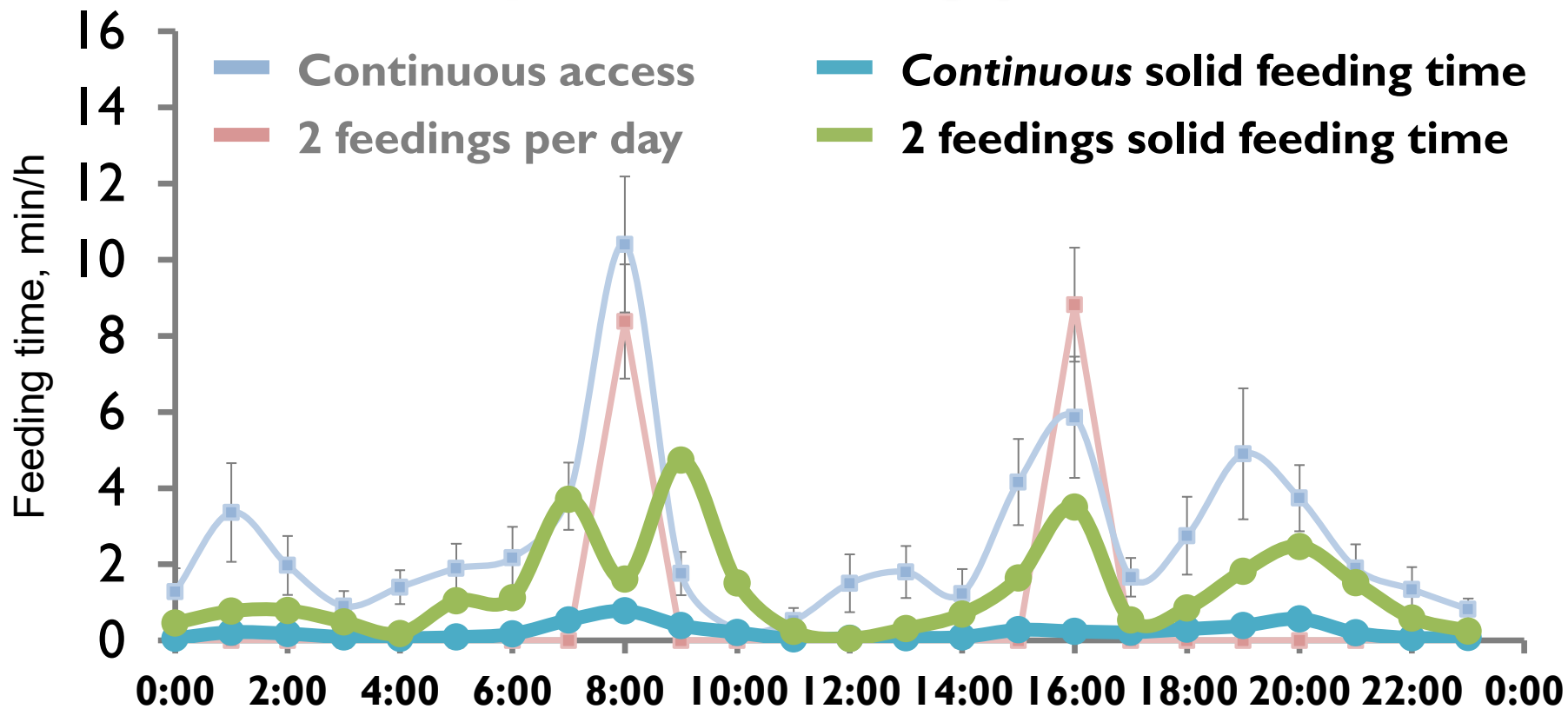
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- Improvements in eating patterns?

# Milk availability and feeding patterns



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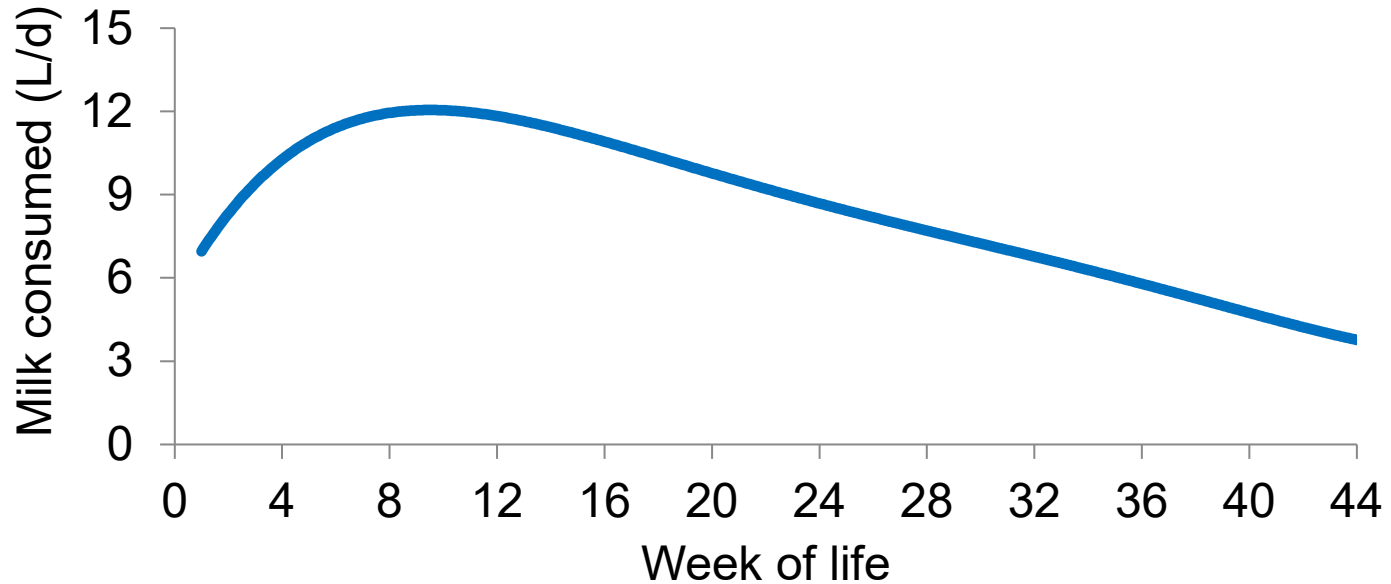
- Calves with continuous access to milk consumed their solid feed:
  - at a slower rate
  - in smaller meals
  - with longer pauses while eating
  - with a lesser response to feed delivery

# Targets for milk feeding...

- Ideally over **8 L per day**
  - $\geq 1000$  to 1200 g of milk solids per day
  - Calves can easily handle 8 to 12 L of milk per day!
    - High growth and good health!
- Optimize the number of meals/feedings per day

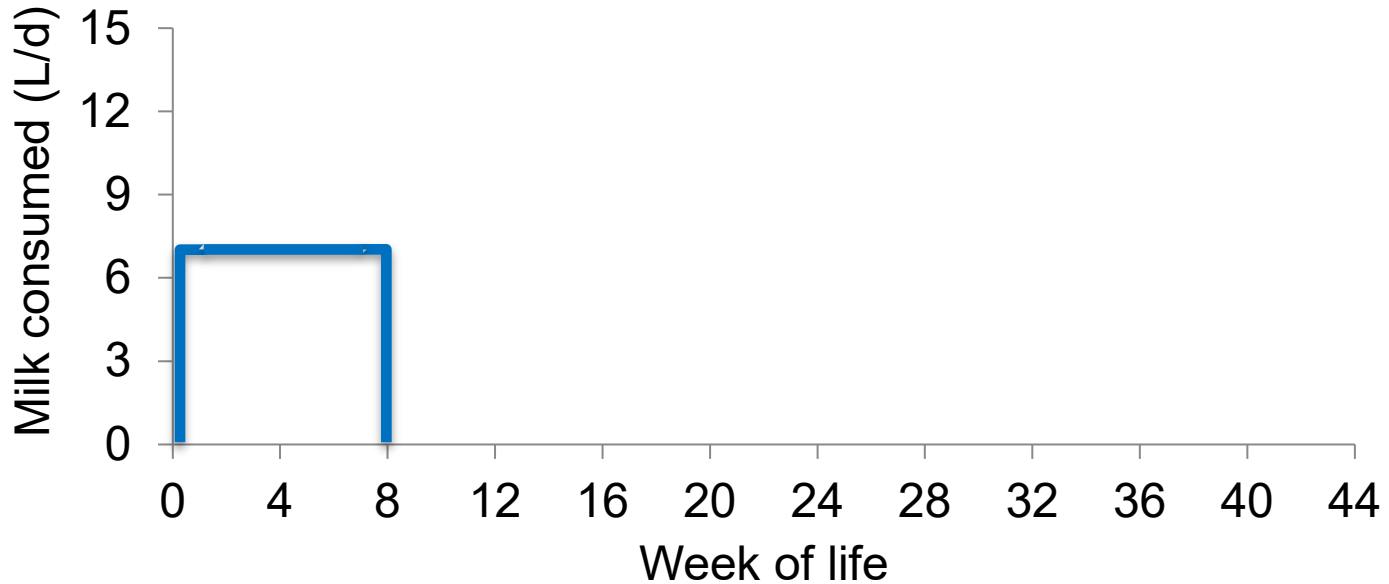
**One of the biggest challenges we have  
(especially when feeding appropriate levels  
of milk) is successful weaning...**

# Weaning...how should this occur for the calf?

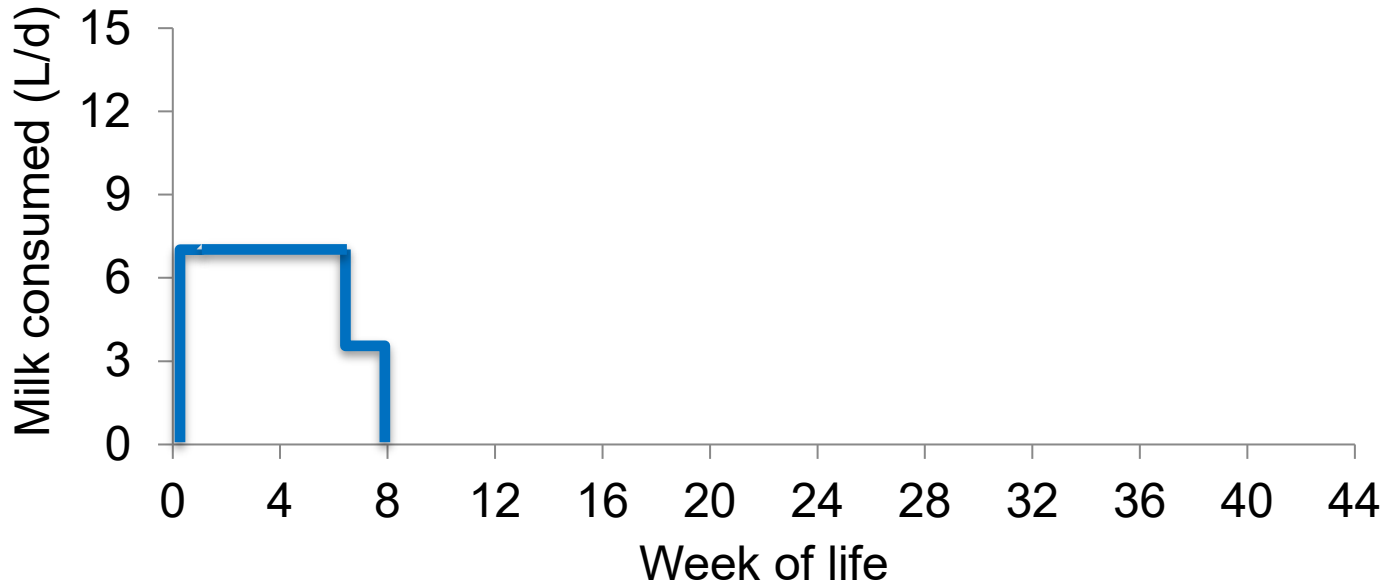




# Weaning...how does this occur for the calf?



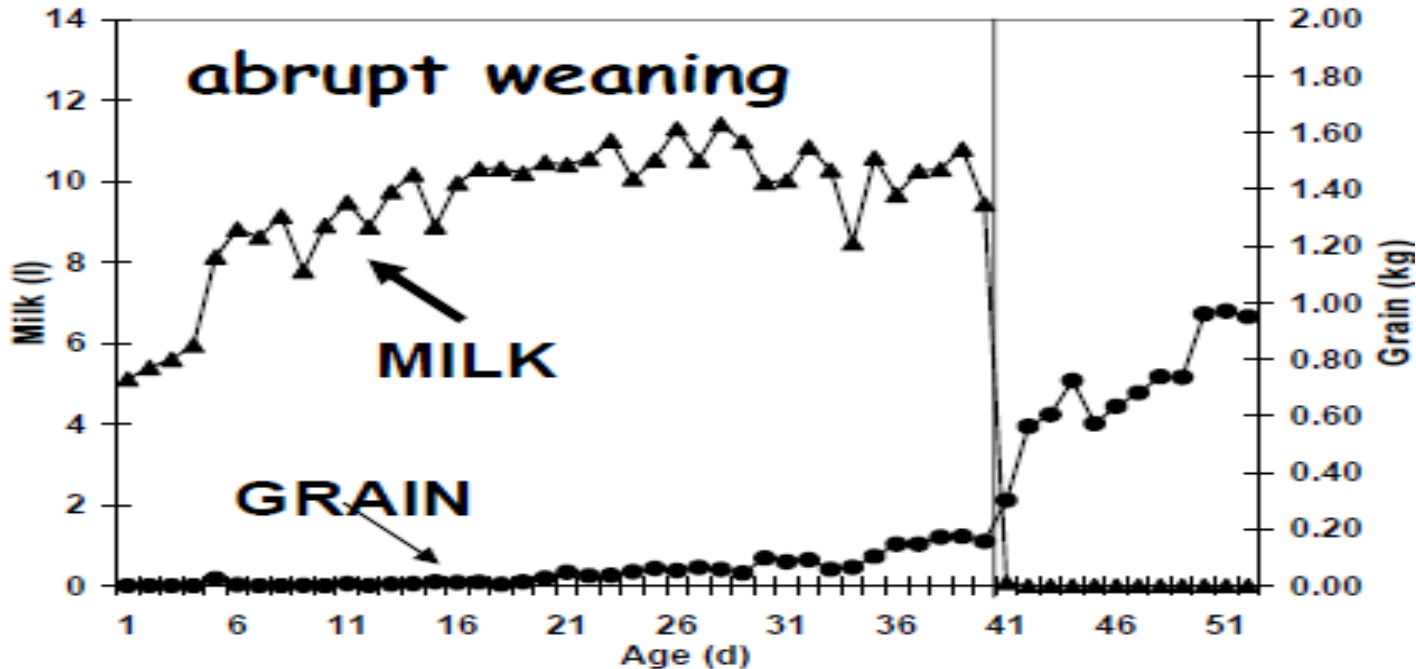
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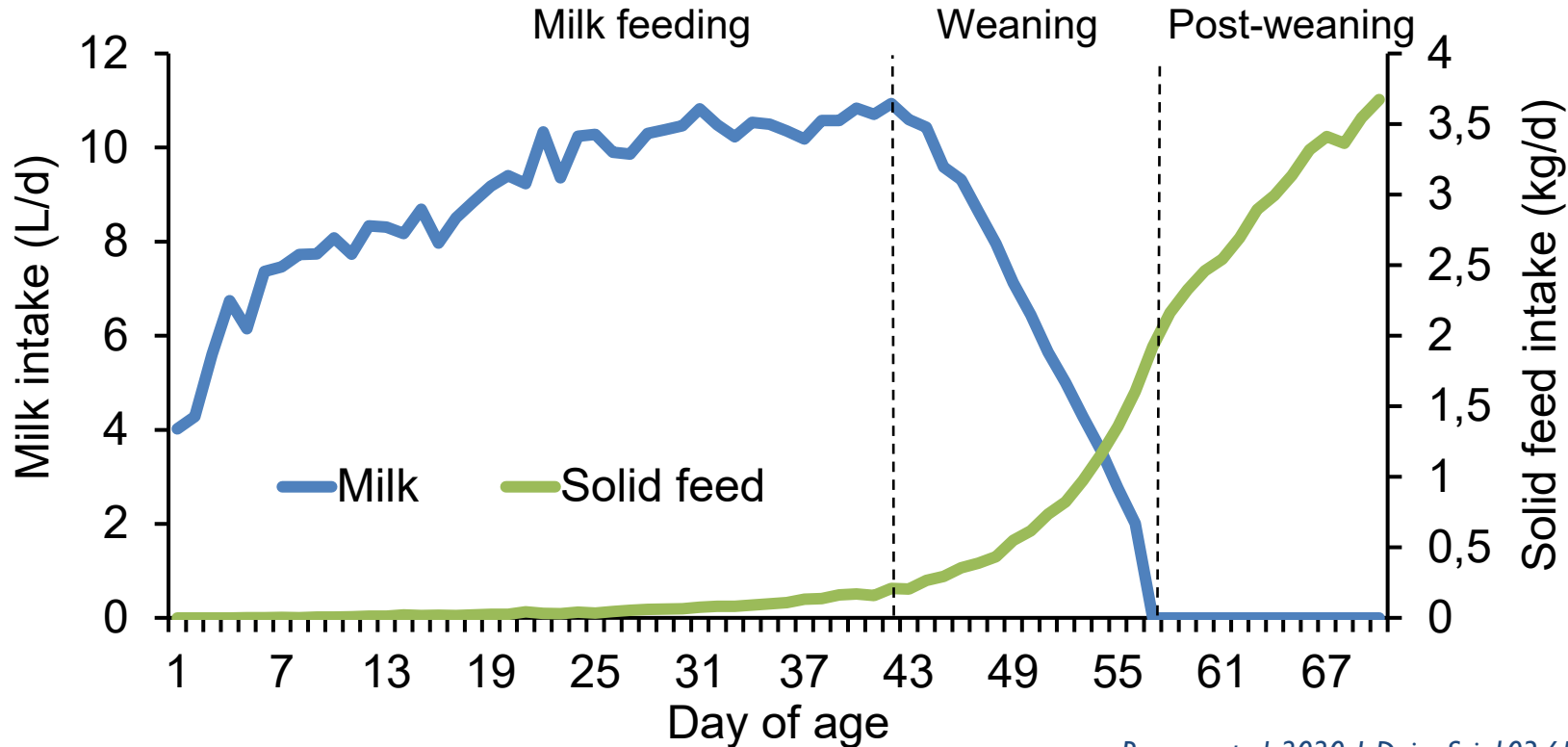
# Weaning off milk...

- Undernourishment may occur if calves do not consume and digest sufficient quantities of solid feed
- Need to consider methods of improving solid feed consumption...
  - Method of reducing milk intake
  - Timing of weaning
  - Type of feed consumed
  - Water

# Abrupt weaning initiates solid feed consumption only after weaning...

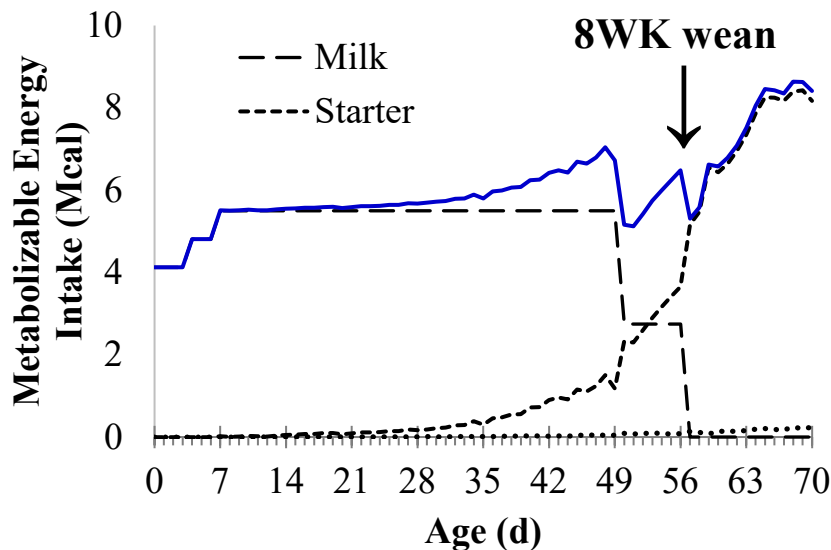
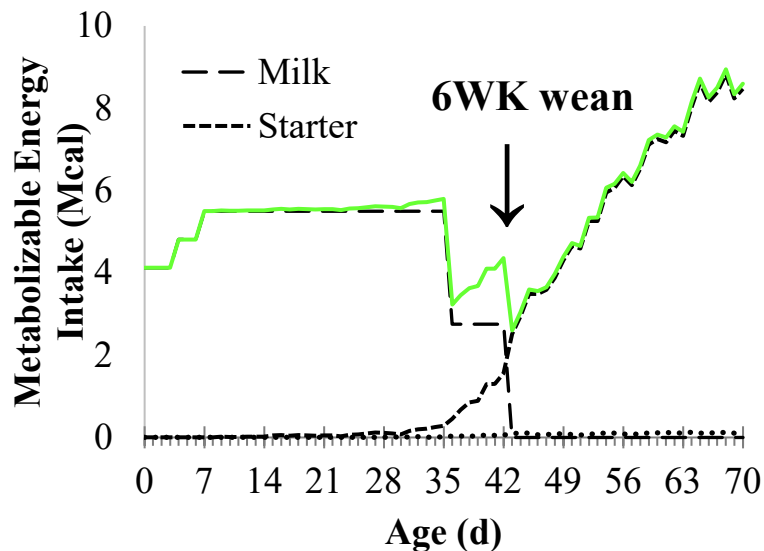


# Gradual weaning encourages earlier increase in solid feed intake...



**Another simple way to encourage  
more solid feed intake is to wean  
later...**

# Intake of metabolizable energy intake is maintained across weaning when weaning later...



# What about the type of solid feed consumed?

- Starter concentrate
  - VFAs and papillae growth
- Fiber/forage
  - rumen wall muscle and volume



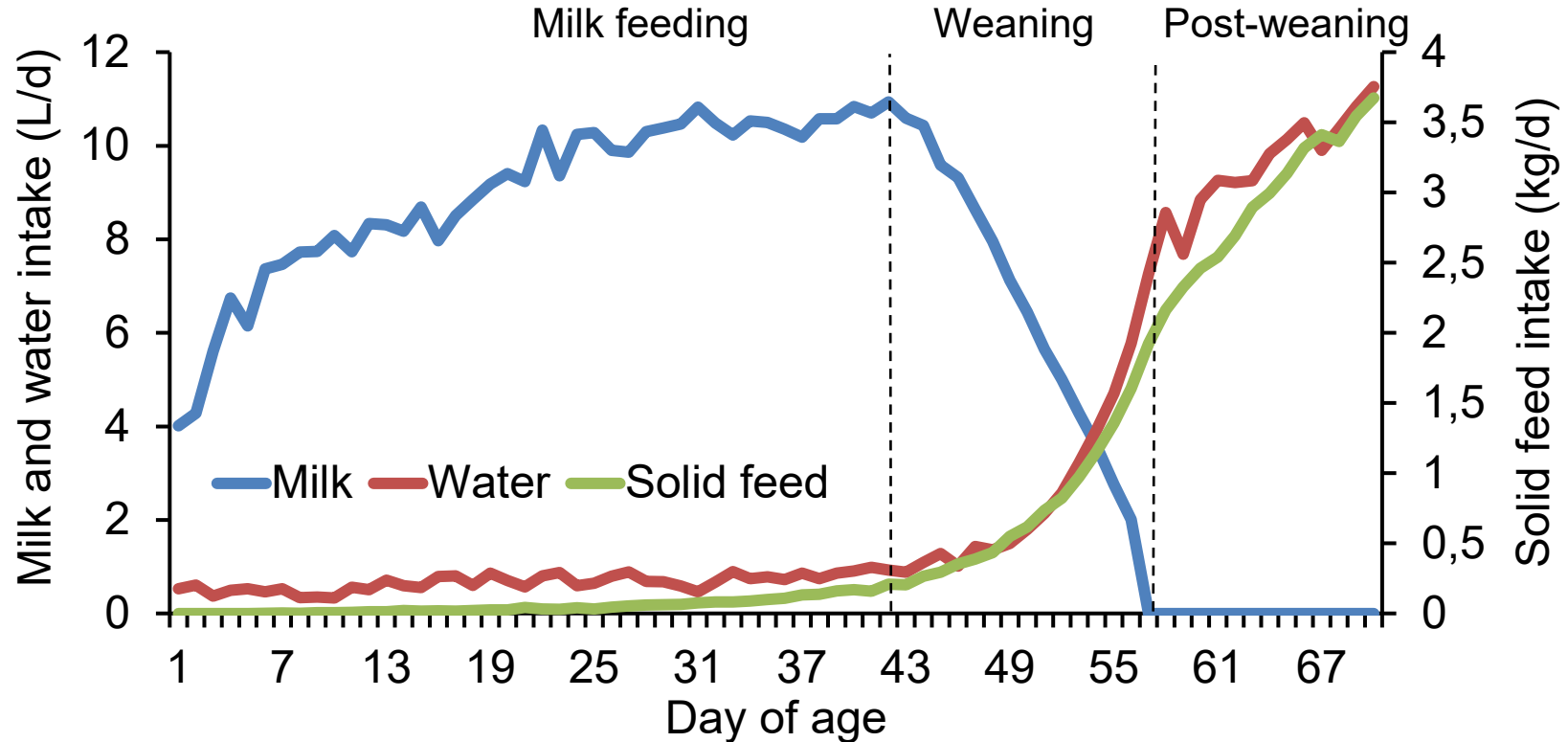
# Forage provision early in life may...

- Promotes solid feed consumption before and after weaning (Khan et al., 2011; 2012; Terré et al. 2015)
- Improve rumen environment, papillae health, and promote greater rumen VFA absorption (Beharka et al., 1998; Khan et al., 2011; Beiranvand et al., 2014; Terré et al. 2015)
- Minimize the learning dietary sorting behavior early in life (Miller-Cushon et al. 2013)

# Best practices for solid feed provision pre-weaning...

- Provide a starter concentrate
  - High quality – 20-22% protein
  - Palatable
- Provide a forage source

# Don't forget water for milk-fed calves...



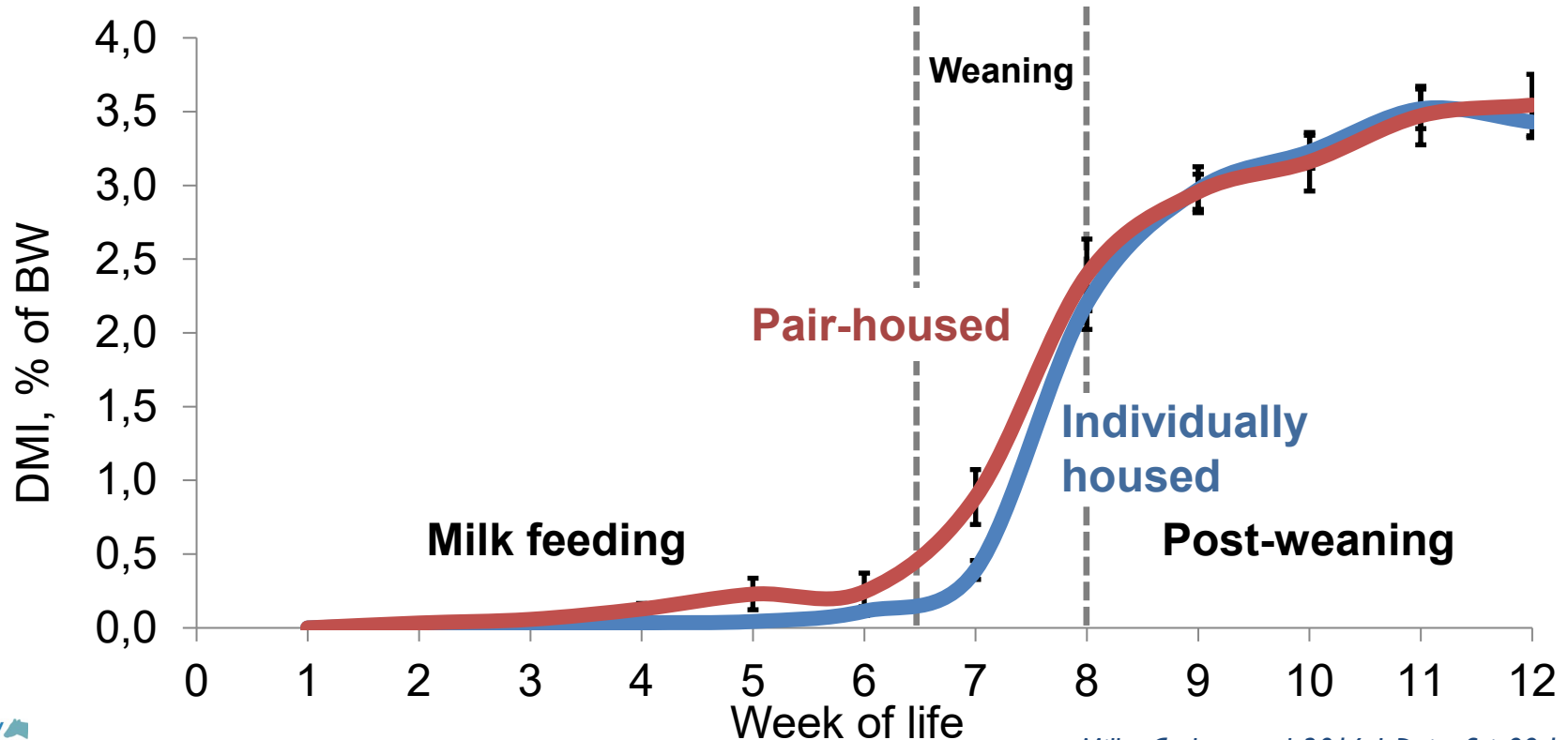
# **What else may help promote better weaning and eating behaviour in dairy calves?**

**Eating with a friend!!!**

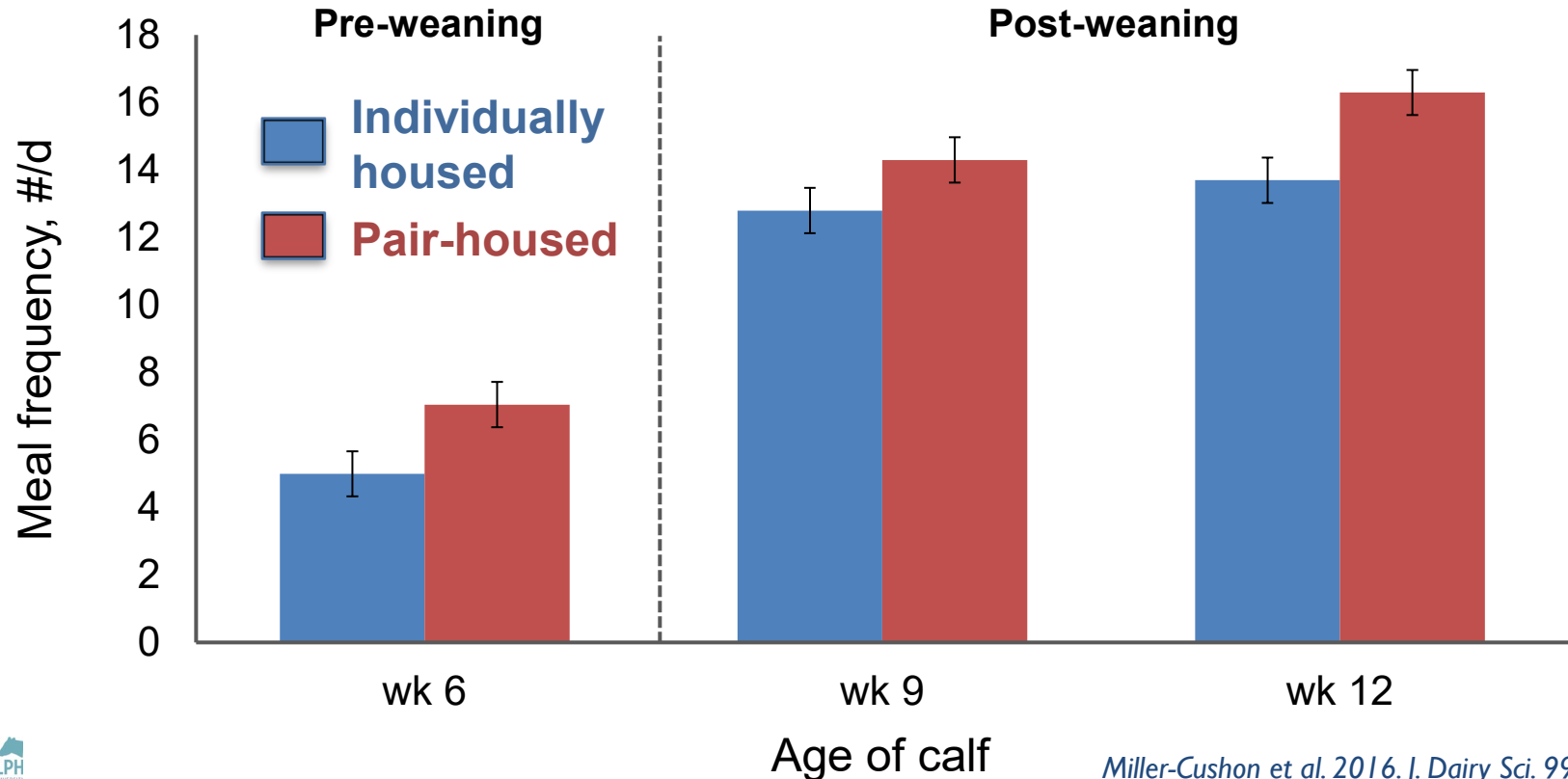
# Social feeding environment...

- Grouping calves reduces stress, and improves solid feed intake and growth through weaning

# Pair-housed calves consumed more concentrate prior to and during weaning...



# Pair-housed calves also developed healthier eating patterns...



# Take home messages:

- Ensure good growth and lifetime good behaviour and production...
  - Ensure sufficient milk is provided
  - Use a gradual weaning program
  - Wean at an age that optimizes growth post-weaning
  - Ensure calves eat quality starter...  
but also consider role of physically-effective forage
  - Don't limit water intake
  - Group house calves where possible
  - Only introduce one stressor at a time



# QUESTIONS???



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