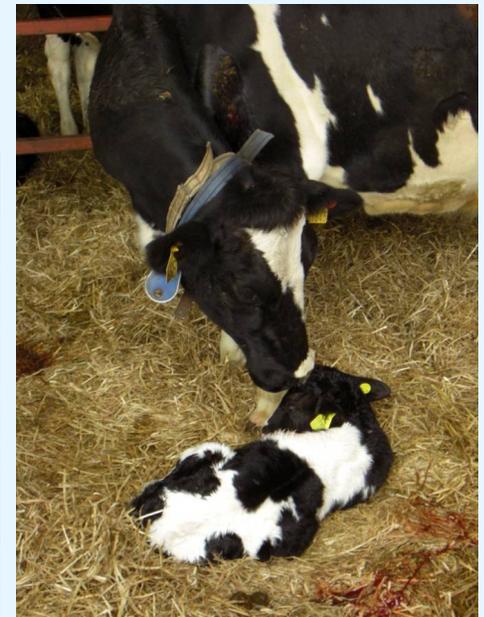


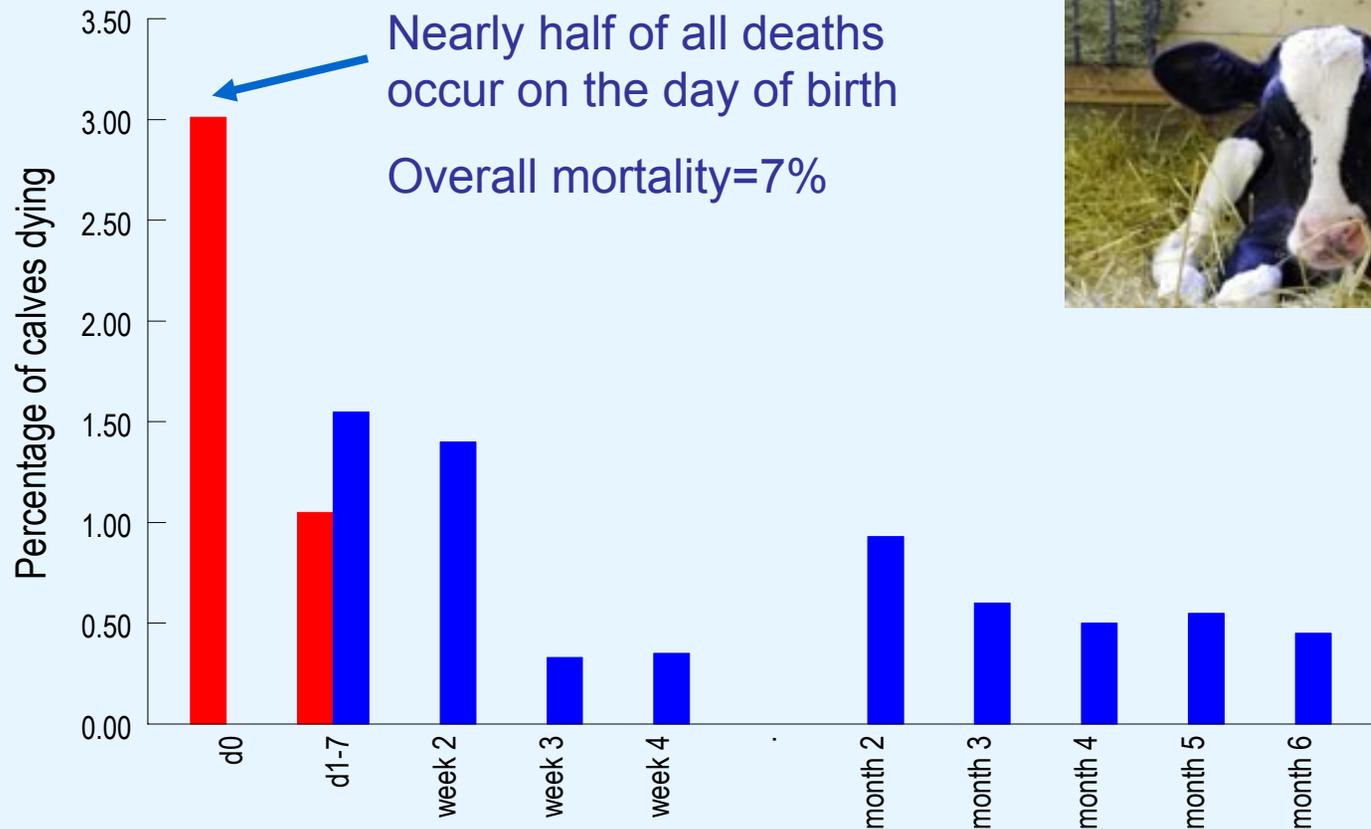
Impact of a difficult birth process on maternal and neonatal health and development

Cathy Dwyer



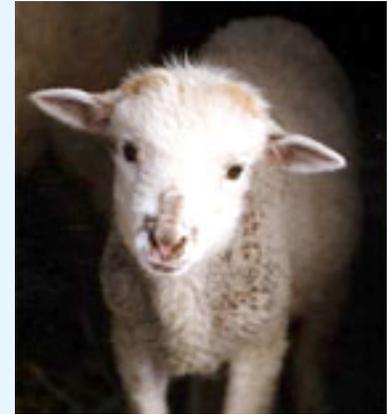
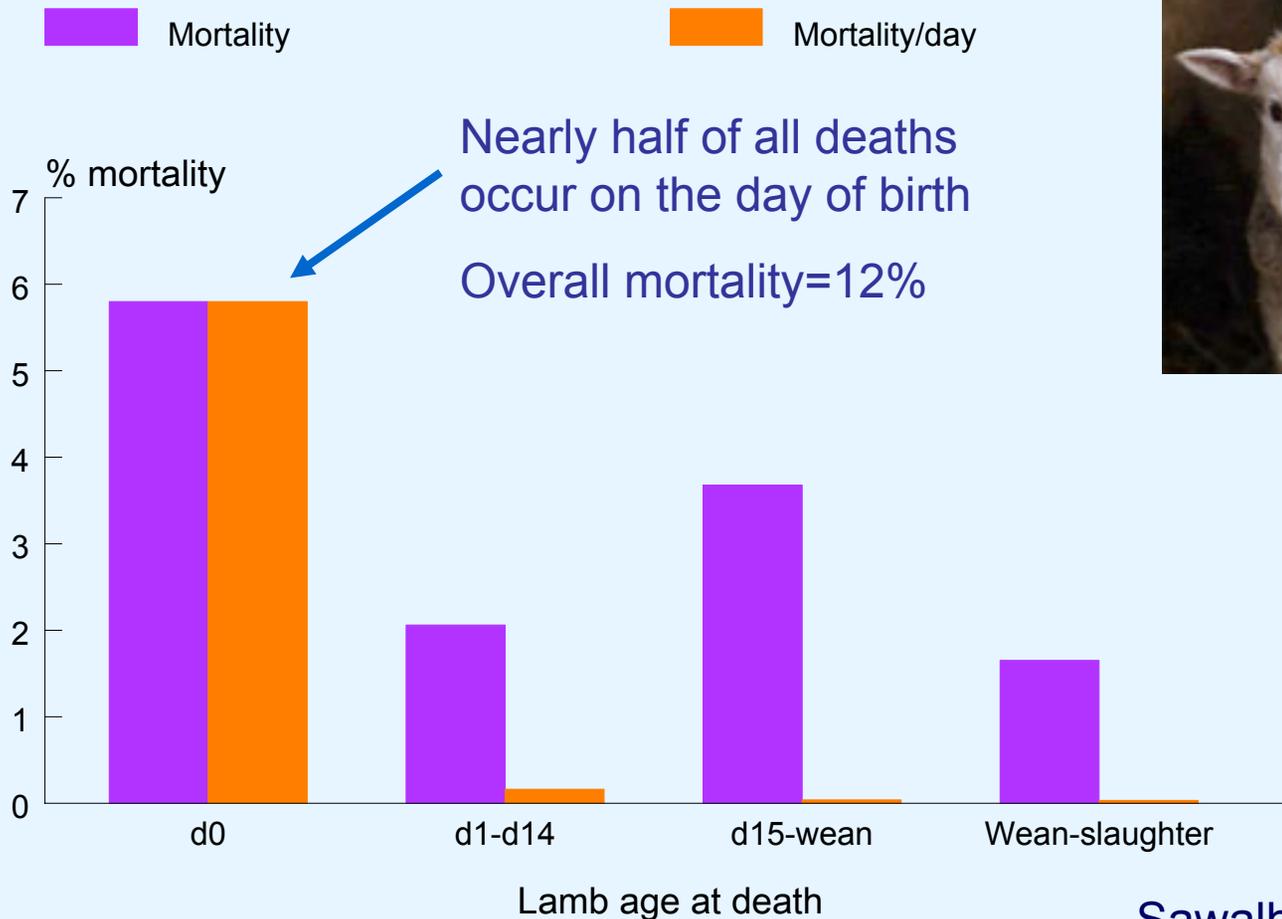
Birth is intrinsically risky!

Calf Mortality



Birth is intrinsically risky!

Lamb Mortality



Difficult deliveries



- Births requiring human intervention to deliver the offspring, or excessively prolonged births
- Associated with an increase in offspring mortality in cattle, sheep, pigs and horses
- Are there additional costs to the mother and offspring of a difficult birth process?

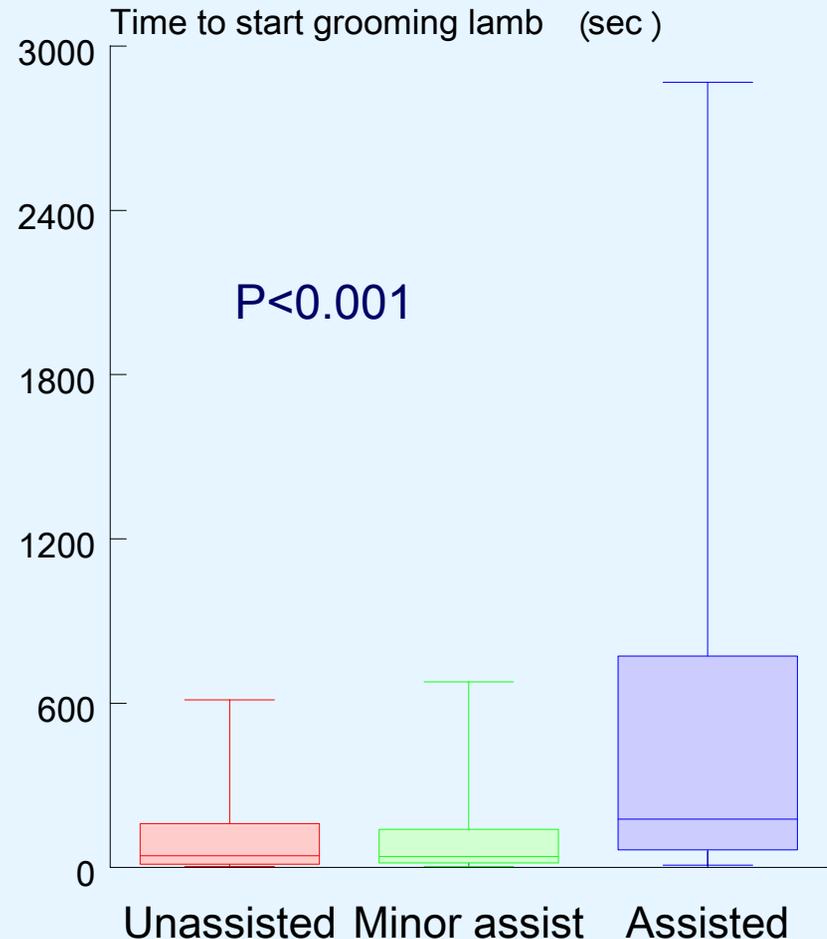
Parturition and the mother



- Parturition is painful – when does that pain become unacceptable?
- Little/no research on use of analgesics during parturition in animals
 - Stress effects on parturition of administering analgesics
 - Impact on underlying physiological processes, e.g. oxytocin, opioids
 - Beneficial with assisted deliveries?
- Effect of pain on expression of maternal behaviour and maternal health

Assisted delivery and maternal behaviour (sheep)

- Longer labour = longer to start grooming (licking) lamb after birth ($P < 0.05$)
- Longer labour = less grooming in first 2 hours after birth ($P < 0.01$)
- Tend to make fewer maternal bleats ($P = 0.1$)



Assisted delivery and maternal behaviour (dairy)



- Assistance did not alter the onset of maternal behaviour – although there was considerable individual variation
- Assisted cows showed only a few postnatal indicators of pain compared to unassisted cows, we are still investigating pain indicators during labour

Longer-term effects on the mother (cattle)



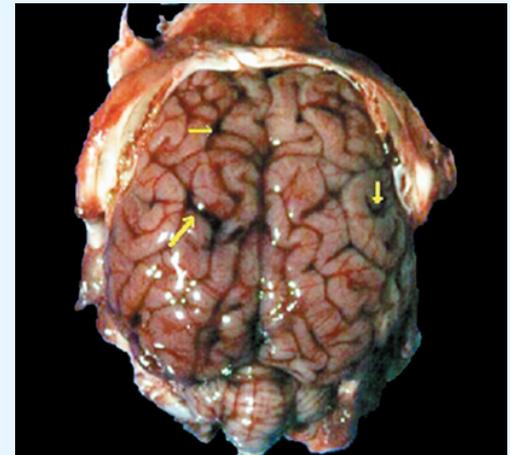
- **Decreases milk yield in dairy cows** (Tenhagen et al., 1999; Sophie Eaglen, Alice Barrier)
- **Increases culling rates, especially in primiparous cows**
- **Increases incidence of mastitis (beef and dairy;** Menzies et al., 2003; Tenhagen et al., 1999)
- **Increases infertility in beef and dairy;** appears to related to length of labour in beef (Doornbos et al., 1984) (Sophie Eaglen, Alice Barrier)

Effects on the neonate



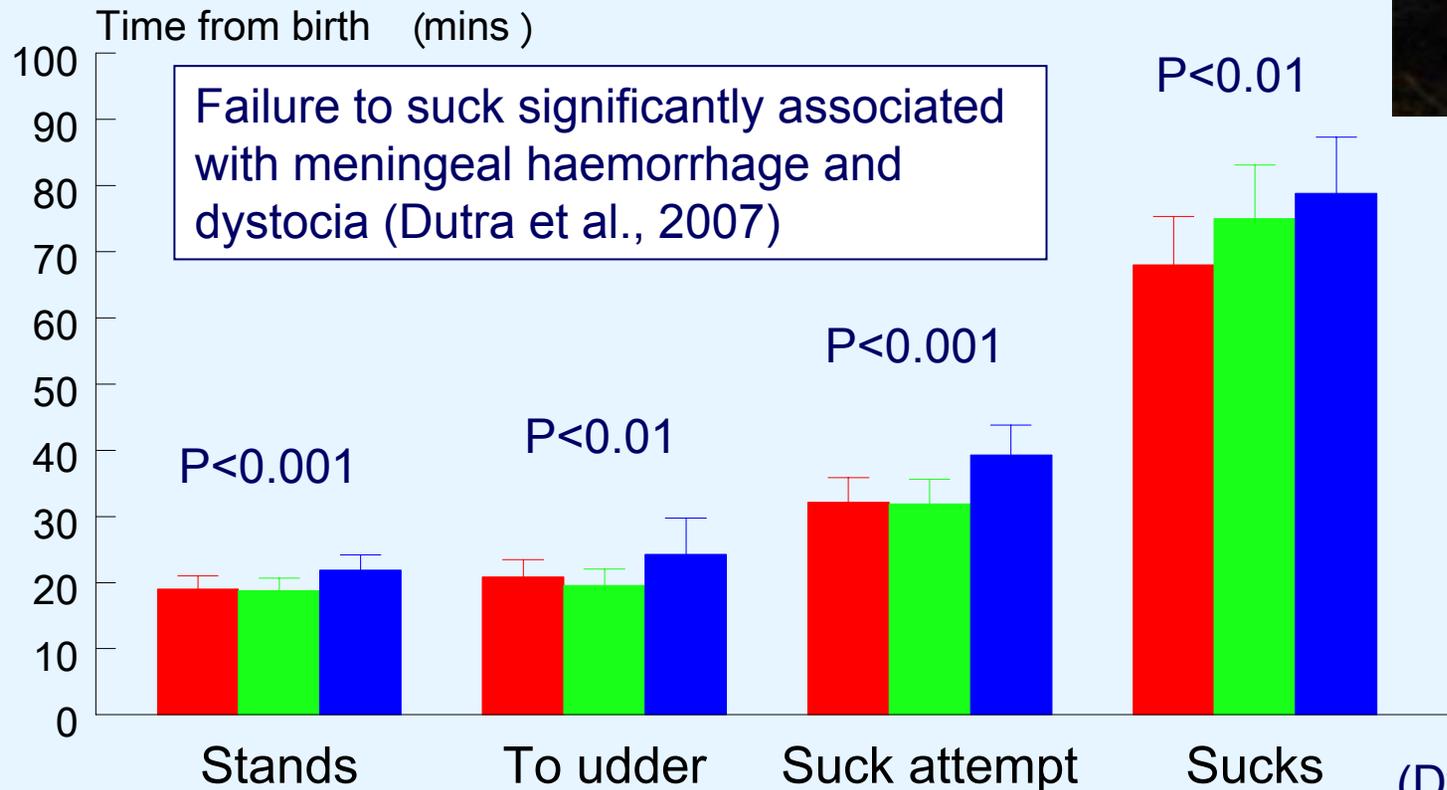
Parturition and the offspring

- Significantly more likely to die after an assisted delivery:
 - Asphyxia during delivery (70-90% stillborn piglets)
 - CNS haemorrhage (70-80% of calf and lamb perinatal mortalities)
 - Physical trauma during delivery (7% calves delivered with traction have fractures)
- Effects on adjustment to postnatal life

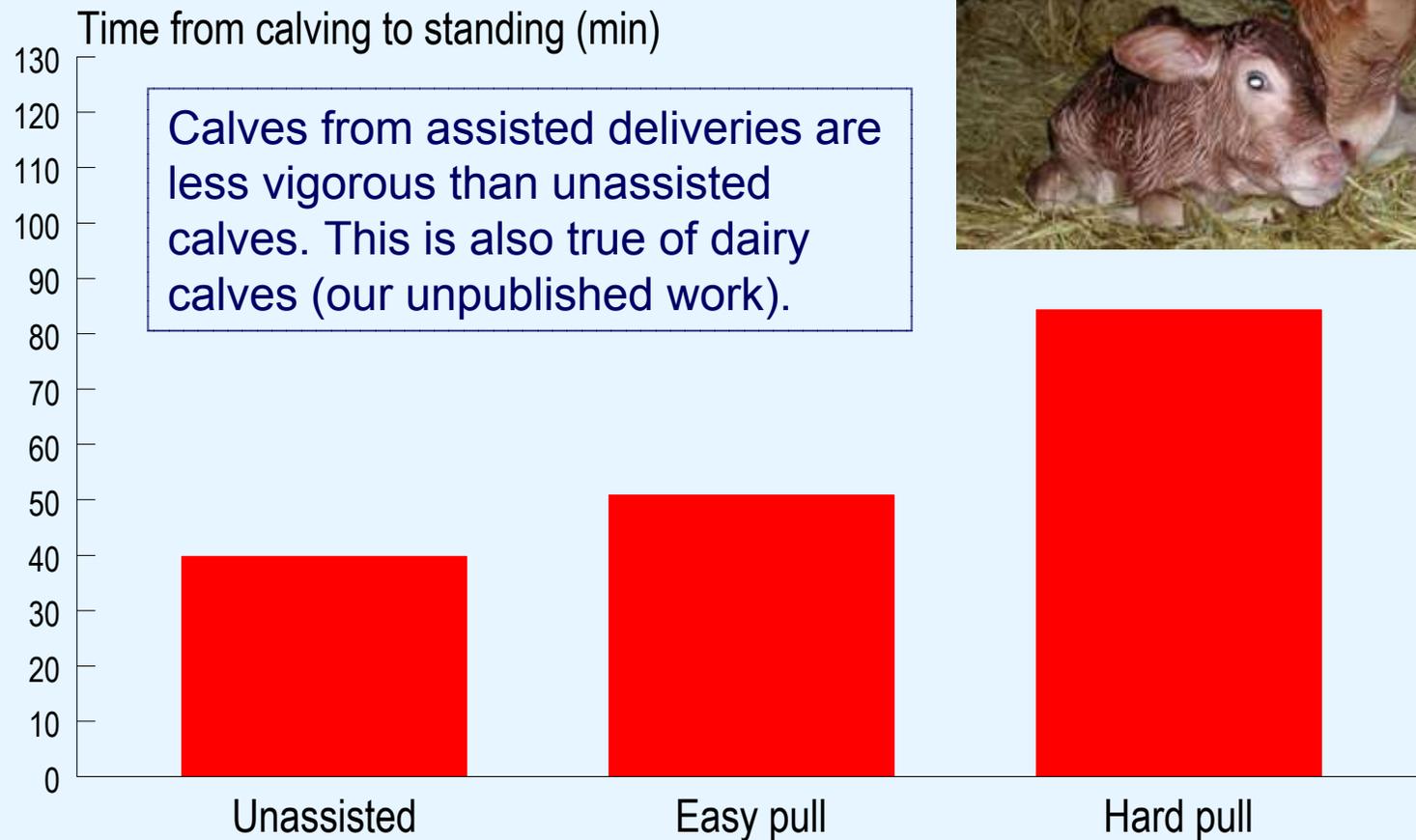


Effects of birth difficulty on offspring vigour

Unassisted Minor Assist Assisted

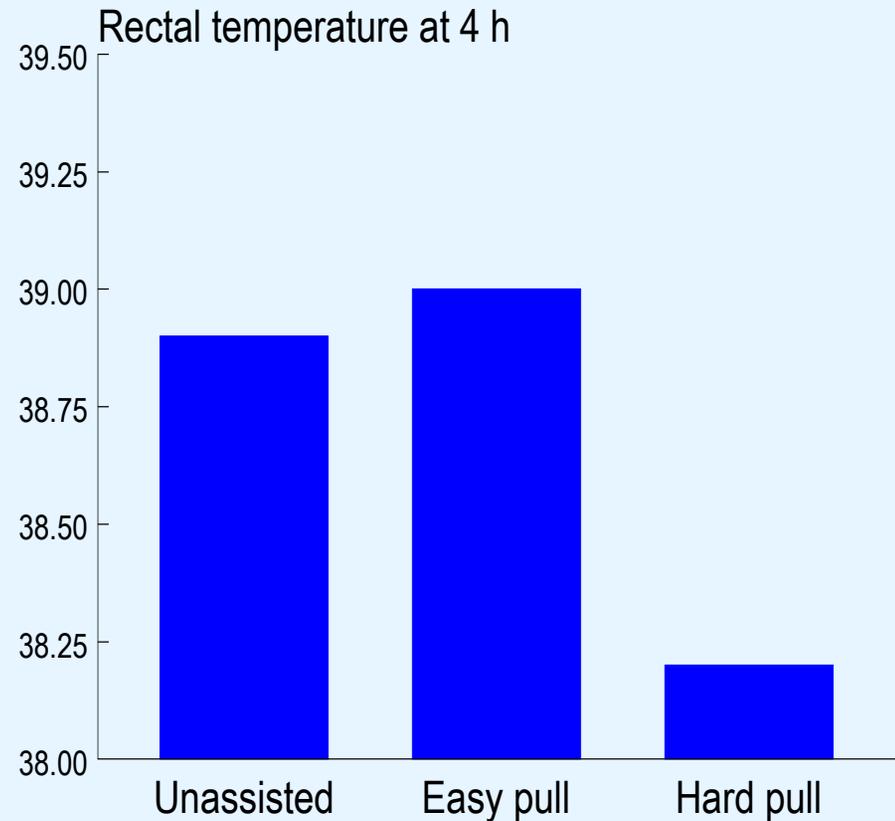


Birth difficulty and calf vigour (beef)



Effects of birth difficulty on offspring vigour

- Lower plasma IgG at 24 h in calves
- Higher plasma glucose in beef calves
- Higher plasma cortisol in lambs and calves
- Reduced ability to raise body temperature in response to cold:



(Bellows & Lammoglia, 2000)

Longer-term effects on the offspring (cattle)



- Lower growth rate and weaning weights in beef and dairy calves (Goonewardene et al., 2003; Barrier et al., 2009)
- Greater incidence of respiratory and digestive diseases to 120 days (Lombard et al., 2007)
- No effect on subsequent fertility of dairy heifers previously experiencing a difficult delivery (Barrier et al., 2009)
- Dairy heifers have lower subsequent milk yield if they themselves had a difficult birth (Sophie Eaglen)

Conclusions



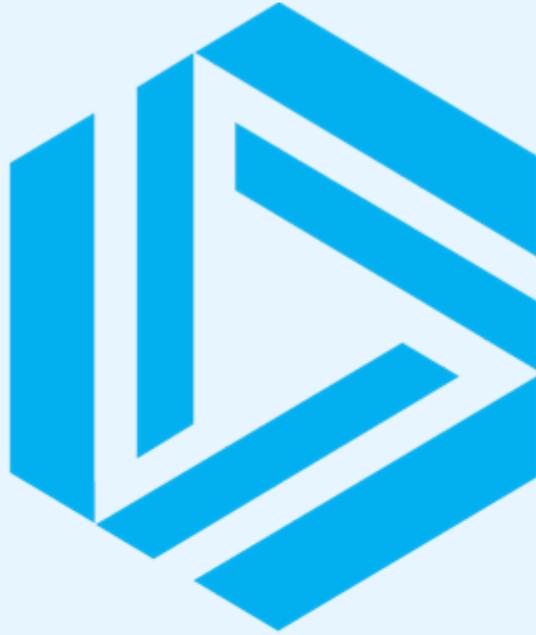
- Difficult births cause pain and stress to mothers and offspring and increase offspring mortality
- Longer term effects of a difficult delivery can affect health and welfare of mother and young
- Reducing the incidence of difficult deliveries will improve welfare and productivity

- Management to prevent dystocia:
 - Prenatal management of mother
 - Quiet, stress-free birth environment
 - Sire selection, especially for first time mothers
- Genetic selection to reduce incidence of dystocia
 - Heritability in sheep of 0.206 (MacFarlane et al., 2010)
- Sympathetic management of dystocia cases:
 - Care in the use of traction
 - Additional support to mother and young

Acknowledgements

- Sheep studies supported by Scottish Government RERAD, BBSRC, Suffolk Sheep Society
- Beef studies supported by RERAD and ITI Techmedia
- Dairy studies supported by Defra LINK in association with CIS, Cogent, Genus, MDC breeding, HUK and NMR (support PhD studies of Alice Barrier, with Marie Haskell and Alastair Macrae, R(D)SVS) , and Sophie Eaglen, with Eileen Wall and Mike Coffey); Elodie Ruelle





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