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Using accelerometers to monitor activity in dairy heifer calves

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Background

- accelerometers are used to monitor activity in dairy cows
  - oestrus
  - health e.g. lameness, mastitis
- previous studies of calf activity show changes with age
  - limited continuous data from birth

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Aims

- to determine the activity profile of dairy heifer calves from birth to 35 days of age
- to investigate the diurnal pattern of activity in calves of different ages

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Animals:

- 18 Holstein-Friesian heifer calves
- recruited at birth (day 0)
- Jan to March 2016

Housing:

- individual hutches
  - internal area - 2.1 x 1.2 m
  - external area - 1.5 x 1.2 m
- straw bedded

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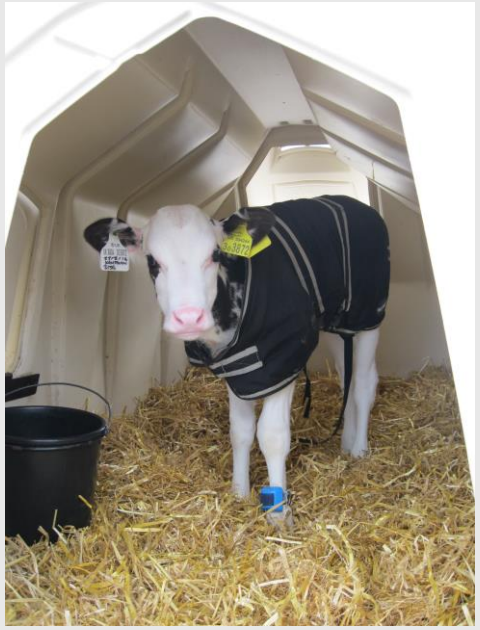
Feeding management:

colostrum

- 2 feeds of 2 litres on day 0

milk replacer

- 23% CP, 20% oil, 150 g/l
- 2.8 litres twice daily
- 6.00 - 7.00am & 2.30 - 3.30pm
- *ad libitum* concentrate & water



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Accelerometers:

- IceQubes, IceRobotics, Edinburgh, UK.
- attached at birth for 35 days
- data downloaded every 4 to 5 days

Output:

- 15 minute time blocks
- minutes lying / standing
- number of lying bouts
- number of steps

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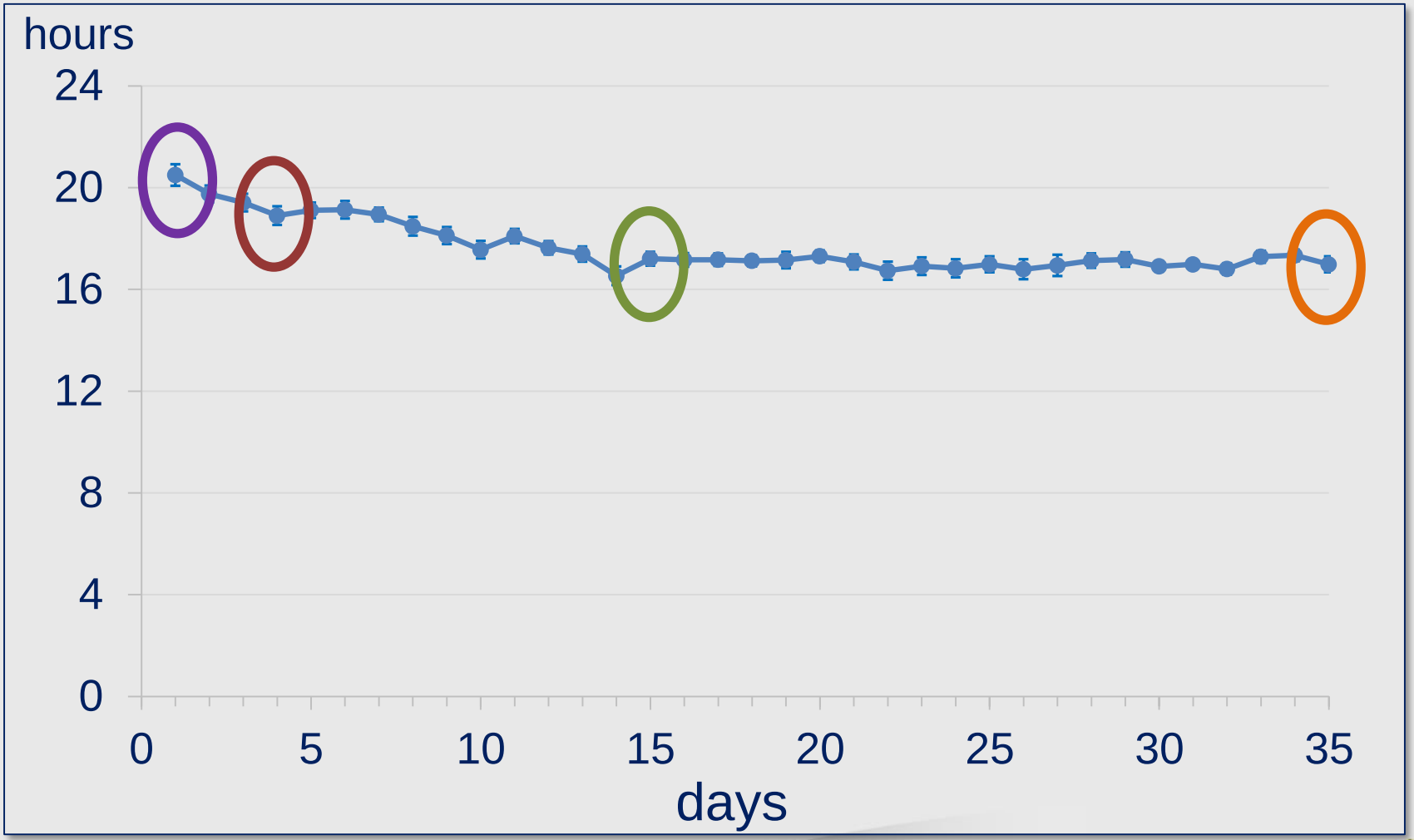
Total daily lying time



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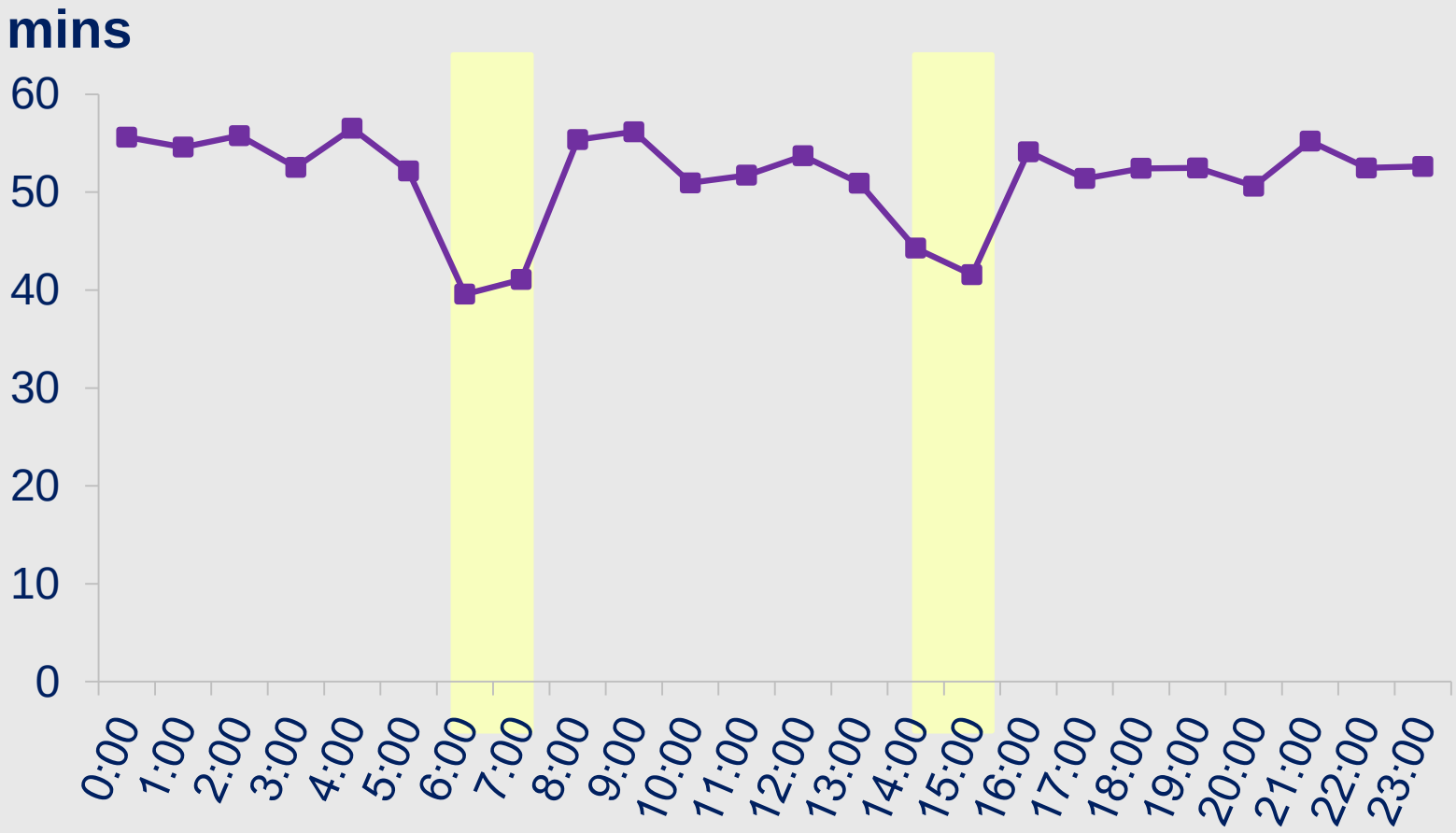
Diurnal lying pattern – day 1



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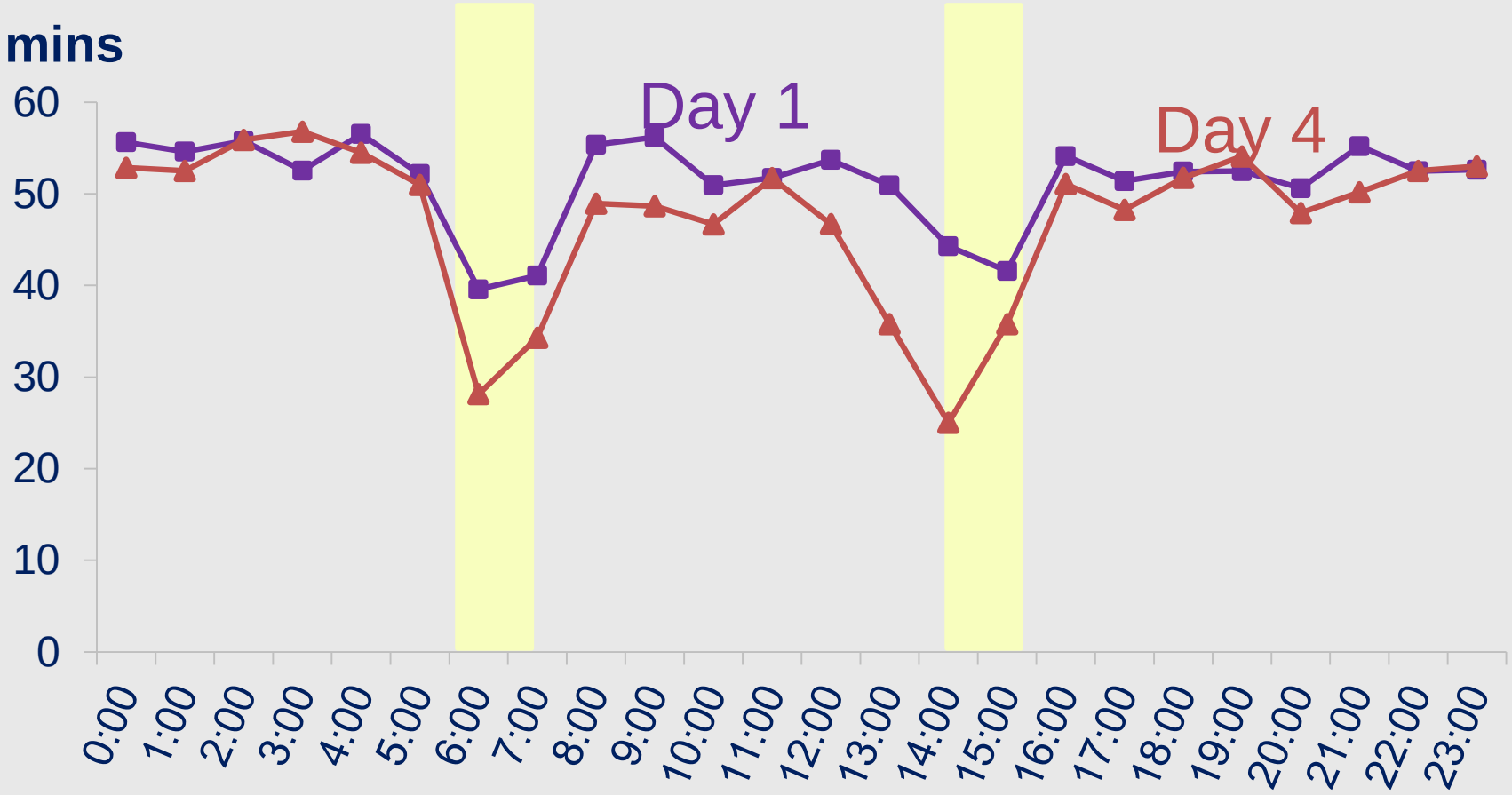
Diurnal lying pattern



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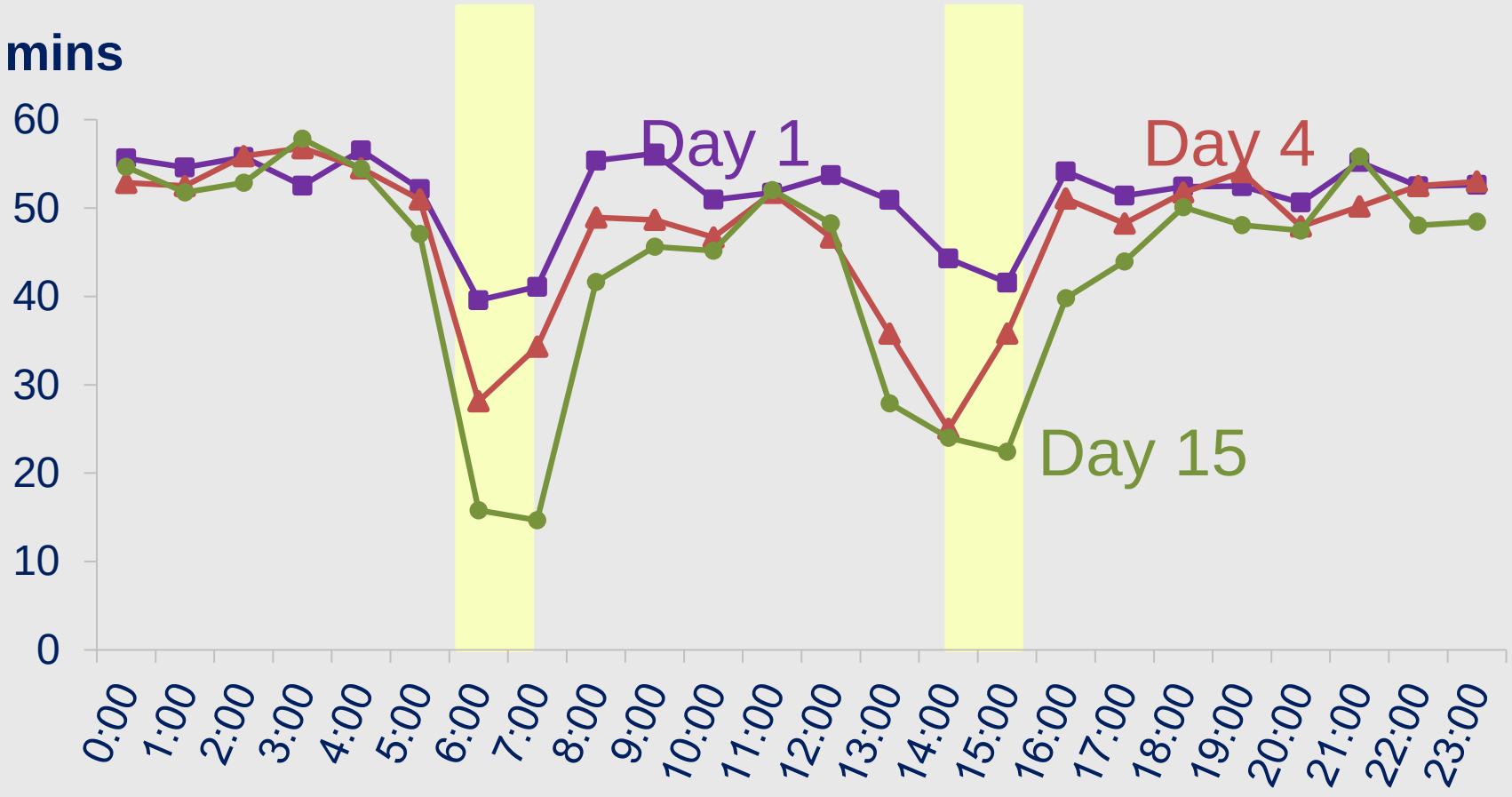
Diurnal lying pattern



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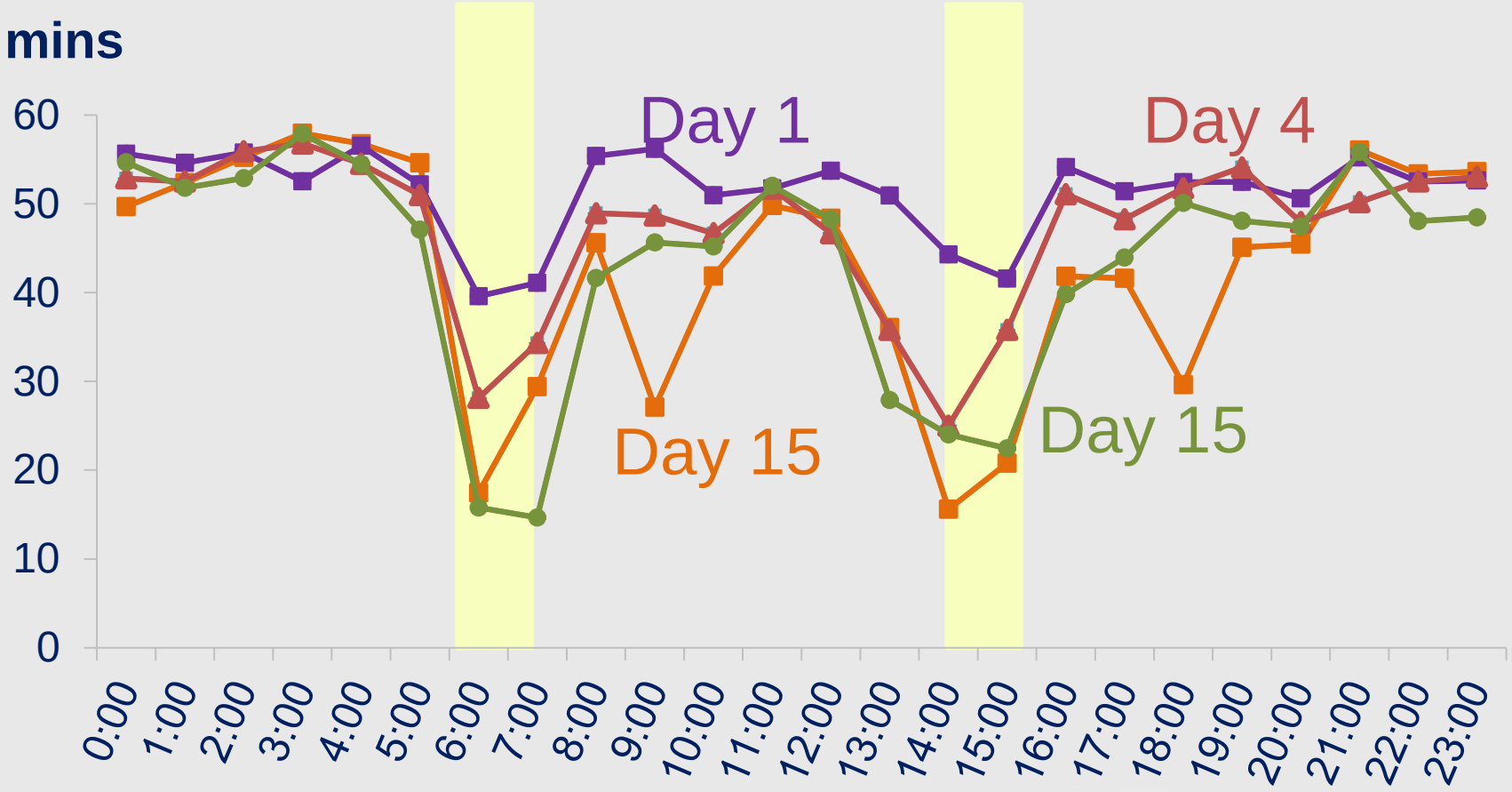
Diurnal lying pattern



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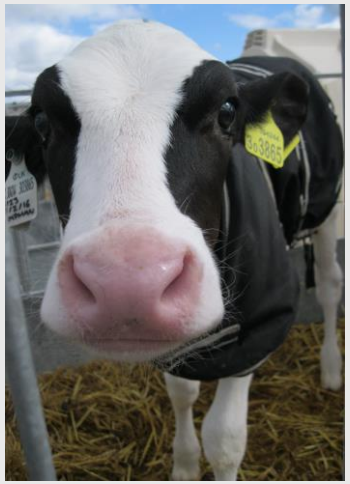
Conclusions

- Lying time decrease with increasing age
- There is a diurnal pattern to lying time
- This pattern is influenced by milk feeding time and changes with age



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