

Bedside Measurements of Fetal Scalp Lactate for Non-reassuring Fetal Heart rate Patterns

A feasibility study

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Aim

To assess the feasibility and performance of bedside fetal scalp lactate measurement for non-reassuring fetal heart rate (FHR) patterns during labour.

Methods

Between September 1, 2011 and December 31, 2012, a bedside fetal scalp lactate measurement device was used to obtain information on the fetal acid-base status in cases of persistent or deteriorating abnormal fetal heart rate traces according to FIGO-criteria.

Lactate <4.2mmol/L	Lactate 4.2-4.8 mmol/L	Lactate ≥ 4.8 mmol/L
Normal	Re-assessment within 1h	Threatening metabolic acidose

After delivery, lactate measurements were linked with data on mode of delivery, cord blood pH and neonatal status.

Results

- 197 fetal scalp lactate measurements were performed in 139 pregnancies, which is 4.7% (139/2929) of the total population.
- 47 pregnancies (33.8%) had >1 lactate measurement: 37 (26.6%) were measured twice, 9 (6.5%) three times and one (0.7%) four times.
- Technical or sampling failure rate of lactate measurement was 3.0% (6/197)

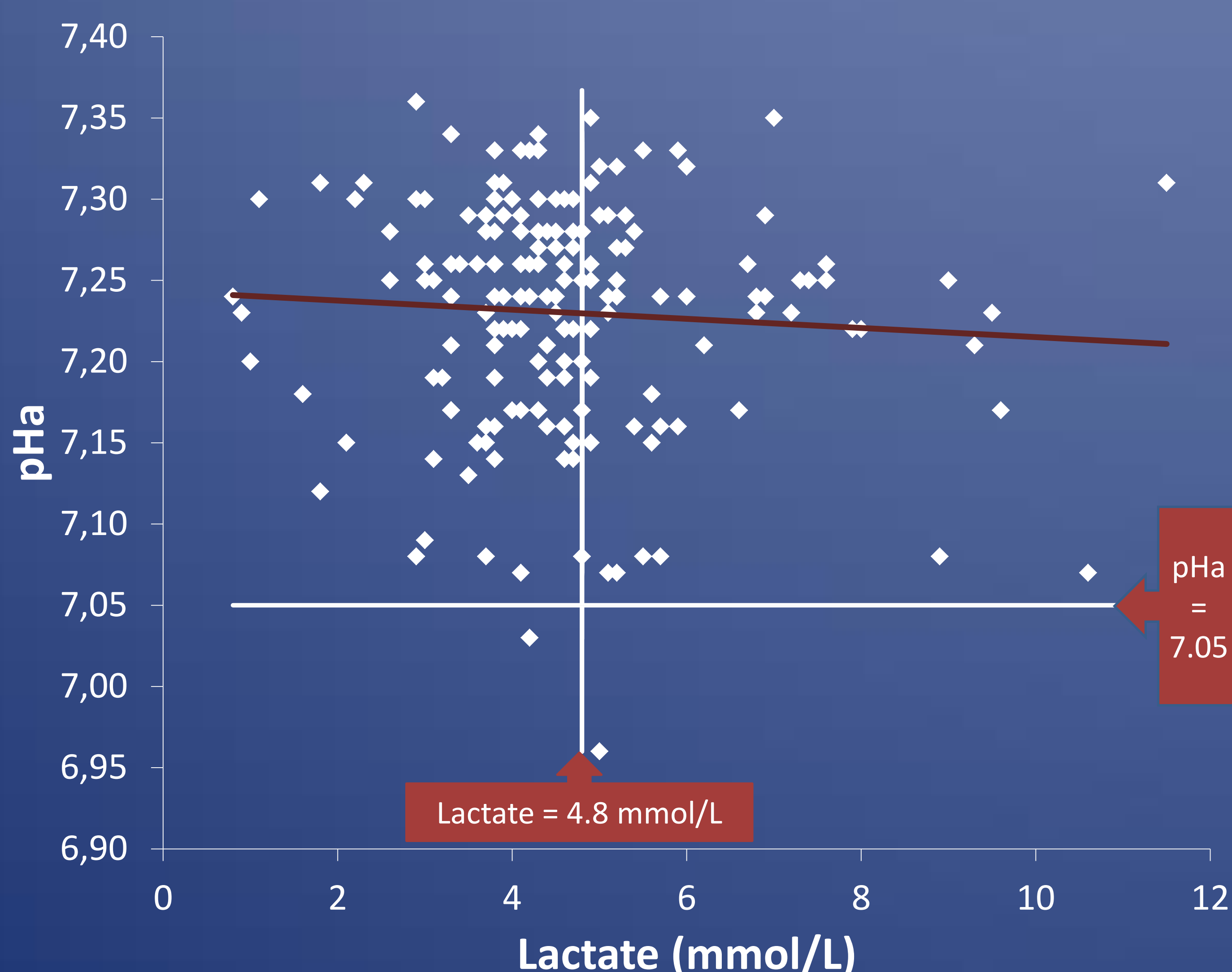


Figure: Fetal scalp lactate values in relation to arterial umbilical cord pH measurements at birth (pHa). The red line represents the trend between the two parameters. The graph also shows two reference lines: pHa of 7.05 and lactate of 4.8 mmol/L.

<4.2mmol/L	4.2-4.8 mmol/L	≥4.8mmol/L
32.4% (45/139)	25.2% (35/139)	41.7% (58/139)
Caesarean section for fetal distress 11.1% (5/45)	Caesarean section for fetal distress 11.4% (4/35)	Caesarean section for fetal distress 31.0% (18/58)
Instrumental delivery for fetal distress 17.8% (8/45)	Instrumental delivery for fetal distress 14.3% (5/35)	Instrumental delivery for fetal distress 24.1% (14/58)

- 2 babies (0.7%) were born with metabolic acidosis, of which one showed fetal scalp lactate ≥ 4.8 mmol/L.
- 60.6% (83/137) of the healthy babies with non-reassuring heart rate were born without need for instrumental delivery or caesarean section for fetal distress.

1. Bedside measurement of fetal scalp lactate is feasible.
2. Measurement of the fetal scalp lactate is useful to guide management of labour with non-reassuring FHR, as 60.6% of the women in our study group delivered a healthy baby without need for operative delivery for fetal distress.
3. Our study group is too small to draw valid conclusions on performance of lactate measurement at current cut off values.