

## Neonatal Facial Coding System (NFCS) for Pain Evaluation in Newborn Infants

Overview: Grunau and Craig used facial actions to monitor pain in newborn infants. This can be used to monitor pain in premature and full-term infants. The authors are from British Columbia Children's Hospital and the University of British Columbia in Vancouver.

Facial actions monitored:

- (1) brow lowering (lowering and drawing together of the brow can result in brow bulge)
  - (2) eyes squeezed shut
  - (3) deepening of the naso-labial furrow (fold)
  - (4) open lips (any separation of the lips is an occurrence)
  - (5) vertical mouth stretch
  - (6) horizontal mouth stretch
  - (7) taut tongue (cupping of the tongue)
  - (8) chin quiver (high frequency vibration of the chin and lower jaw)
  - (9) lip pursing (tightening the muscles around the lips to form an "oo")
- In addition a tenth activity was monitored in preterm infants:
- (10) tongue protrusion (this is a "no pain" response in full term infants)

Action	Points
did not occur	0
occurred	1

where:

- A modification might be to include a category for partial action scored at 0.5 points.

number of features present = SUM(points for all 10 facial actions)

Interpretation:

- minimum score: 0
- maximum score for premature infants: 10
- maximum score for full term infants: 9

Performance:

- Both facial activity and heart rate increased with a painful procedure with the increase in facial activity more closely paralleling the initiation of the invasive event.
- Inter-observer reliability was high.
- I would imagine performance would be better with a starting point at a baseline score of 0 rather than trying to measure an incremental increase starting at a higher point.

Subsets involving 3 or 4 facial actions can also be used usually in conjunction with cry.

#### References:

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