

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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