

Pain management in neonates

Introduction

- Neonates cannot verbalize their pain, they depend on others to recognize, assess and manage their pain.
- Neonates are frequently subjected to painful procedures, with the most immature infants receiving the highest number of painful events.

What is pain?

An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.

How do neonates express pain?

- Flexion and adduction of affected limb
- Distinct facial expressions
- Specific features of a **pain "cry"** that has unique spectrographic characteristics to distinguish it from other types of cry (pain cry vs. hunger cry)

Acute procedural pain/post operative pain

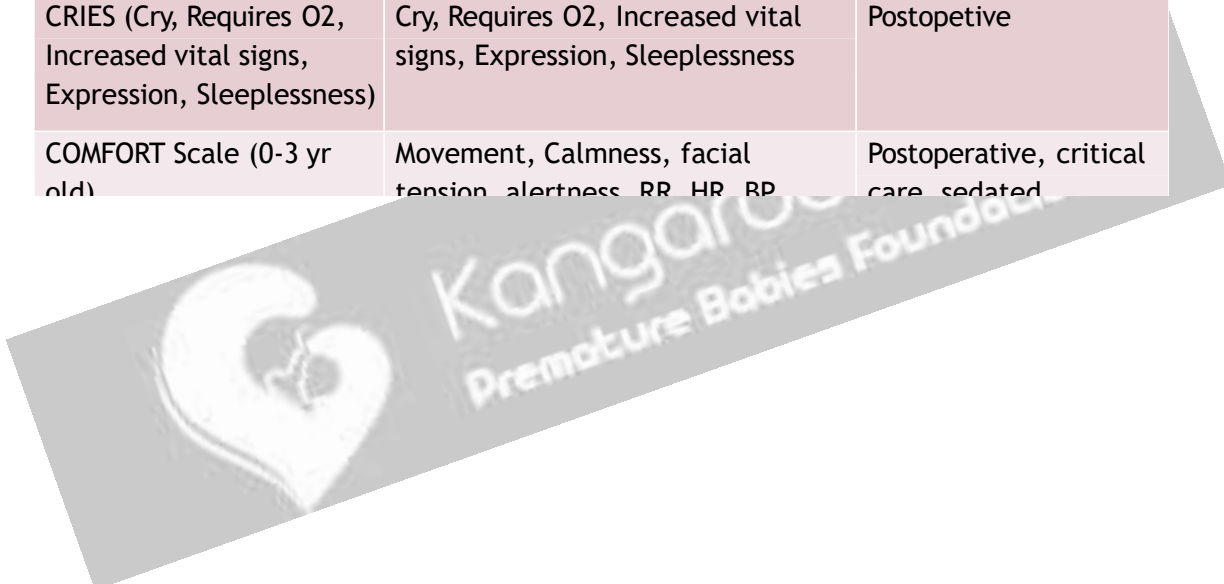
There are many scores to assess intensity of neonatal pain

- PIPP (Premature Infant Pain Profile) (27 wks – term)
- NIPS (Neonatal Infant Pain Scale) (28-38 wks)
- NPASS (Neonatal Pain, Agitation and Sedation Scale)
- CRIES score (32-60 wks)

Character, location, duration and rhythm cannot be measured. There are scales to assess chronic pain in neonates.

HOW TO ASSESS PAIN IN NEONATES

Scale	Variables	Type of pain
PIPP (Premature Infant Pain Profile) (27 wks - term)	HR, SpO2, Facial expression, takes state and GA into account	Procedural, Postoperative (minor)
NIPS (Neonatal Infant Pain Scale) (28-38 wks)	Facial expression, crying, breathing pattern, arm and leg movements, state of arousal	Procedural
NFCS (Neonatal Facial Coding System)	Facial actions	Procedural
N-PASS (Neonatal pain, Agitation, and Sedation Scale)	Crying, irritability, behavioral state, facial expression, extremity tone, vital signs	Postoperative, Procedural, Ventilated
CRIS (Cry, Requires O2, Increased vital signs, Expression, Sleeplessness)	Cry, Requires O2, Increased vital signs, Expression, Sleeplessness	Postoperative
COMFORT Scale (0-3 yr old)	Movement, Calmness, facial tension, alertness, RR, HR, BP	Postoperative, critical care, sedated



Neonatal Infant Pain Scale

1. Facial expression



Relaxed – restful face/neutral expression

Score: 0

Grimace – Tight facial muscles

furrowed brow, chin & jaw

Score: 1

2. Cry

Whimper – Mild moaning, intermittent – 1

Vigorous cry – Loud cry, shrill, continuous – 2

3. Breathing patterns

Relaxed – Usual pattern for that baby – 0

Change in breathing – Indrawing, irregular, fast than usual, gagging, breath holding – 1

4. And 5 Arms and Legs

Relaxed – No muscular rigidity, occasional random movements – 0

Flexed/Extended – Tense straight arms/legs, rigid, rapid flexion/extension – 1

6. State of arousal

Sleeping/awake – Quiet, peaceful sleeping, occasional random legs/arm movements – 0

Fussy – Alert restless and trashing - 1

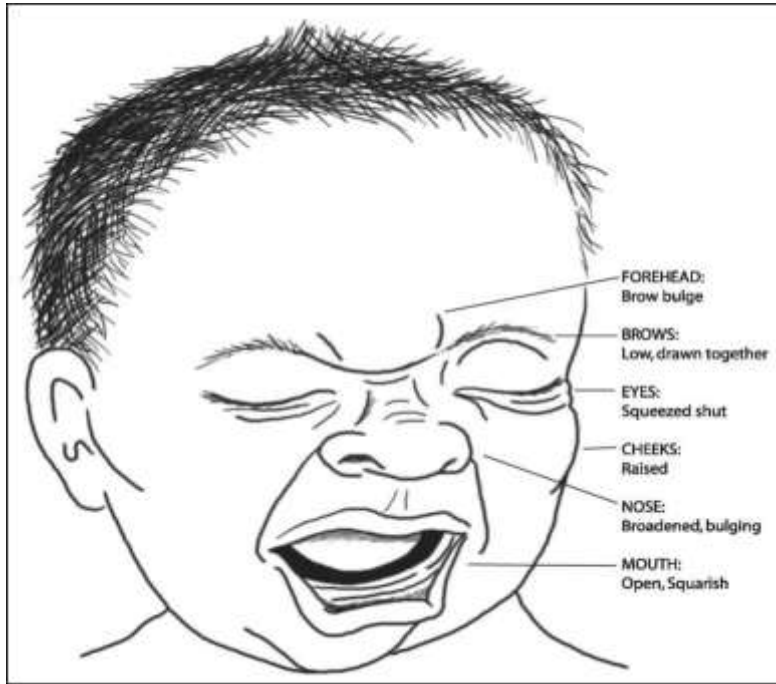
PIPP Scale

PIPP (Premature Infant Pain Profile)

ž (27 wks – term)

Indicators:

- ž (1) gestational age
- ž (2) behavioral state before painful stimulus
- ž (3) change in heart rate during painful stimulus
- ž (4) change in oxygen saturation during painful stimulus
- ž (5) brow bulge during painful stimulus
- ž (6) eye squeeze during painful stimulus
- ž (7) nasolabial furrow during painful stimulus



MANAGEMENT OF PAIN

□ Prevention is better than cure

Procedure	Prevention/Management
Removing adhesive tapes	Use ether, pull slowly
Burns from transcutaneous probes and cold light.	Frequent change of probes every 2 hrly. Careful use of cold light.
Diaper change, daily weights	Minimal handling
Rectal stimulation	Xylocaine jelly
Heel sticks, venipunctures	Sucrose 0.5ml 2 min before
Tracheal suctioning	Sedation
Lumbar puncture	EMLA patch, local anesthetic
NEC, meningitis, mechanical ventilation, chest tubes, postoperative	Sedation

Non pharmacological interventions

- facilitated tucking (holding the infant's extremities close to the body, promoting flexion), swaddling, nesting, use of non-nutritive sucking
- minimal handling protocols
- lowering noise levels in the NICU
- avoiding exposure to bright lights
- promoting of day/night light cycles.

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