

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

Guideline Responsibilities and Authorisation

Department Responsible for Guideline	NICU
Document Facilitator Name	Kimberley Fraser (RN) Hugh Douglas (Anaesthetist)
Document Facilitator Title	RN NICU Anaesthetist
Document Owner Name	Chantelle Hill
Document Owner Title	CNM NICU
Disclaimer: This document has been developed by Waikato District Health Board specifically for its own use. Use of this document and any reliance on the information contained therein by any third party is at their own risk and Waikato District Health Board assumes no responsibility whatsoever.	

Guideline Review History

Version	Updated by	Date Updated	Description of Changes
2	Kimberley Fraser and Hugh Douglas	Jan 2018	3 yearly update
1	Kimberley Fraser	Oct 2013	First version

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

Contents

1. Overview	3
1.1 Purpose.....	3
1.2 Scope:.....	3
1.3 Patient group:	3
1.4 Definitions	3
1.5 Epidural Anaesthesia.....	3
2. Clinical Management	6
2.1 Competency required	6
2.2 Equipment.....	6
2.3 Prescriptions and drugs:	6
2.4 Procedure	7
2.4.1 Epidural infusions protocol.....	7
2.4.2 Epidural boluses protocol	7
2.4.3 Transfer of care/handover	7
2.4.4 Monitoring for infants on opioids.....	8
2.4.5 Epidural catheter care.....	9
2.4.6 Removal of epidural catheter	10
2.4.7 Line Changes.....	10
3. Evidence Base	11
3.1 References.....	11
3.2 Associated documents.....	11
Appendix 1: Neonatal Pain, Agitation & Sedation Scale	12
Appendix 2: Scoring Scale	13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

1. Overview

1.1 Purpose

To ensure safe and effective post-operative management of a neonate with an epidural catheter for the administration of epidural anaesthesia.

The doses and management advice are designed specifically for neonates and infants being cared for in NICU.

Note:

The Department of Anaesthesia provides a Paediatric Acute Pain Management Service (PAPS) which is involved in the treatment of all types of acute pain, including epidural pain management.

For in-hours consultation, call the paediatric anaesthetist rostered to paediatrics pain for that week on Amion Directory.

For out-of-hours problems, phone the Anaesthetic Registrar covering Obstetrics (23470) who will consult with the on-call Paediatric Anaesthetist if unable to resolve the problem.

1.2 Scope:

For neonates

1.3 Patient group:

Neonates and infants in NICU

1.4 Definitions

Epidural anaesthesia	Anaesthesia produced by the injection of an anaesthetic into the lumbar area of the spine in the space between the spinal cord and the dura, which eliminates sensation from the point of insertion downward.
Medical staff	In NICU, they include Nurse Practitioner Neonatology, Clinical Nurse Specialist, or registrar and paediatrician.

1.5 Epidural Anaesthesia

Mixtures of diluted local anaesthetic (LA) and opioids infused into the epidural space can provide virtually complete analgesia for selected procedures, especially in patients with compromised or potentially compromised respirator function, such as babies with Chronic Lung Disease (CLD). Epidural catheters can be placed either via the thoracic, lumbar, caudal or trans-sacral routes. The catheter is inserted by the Anaesthetist at the time of surgery.

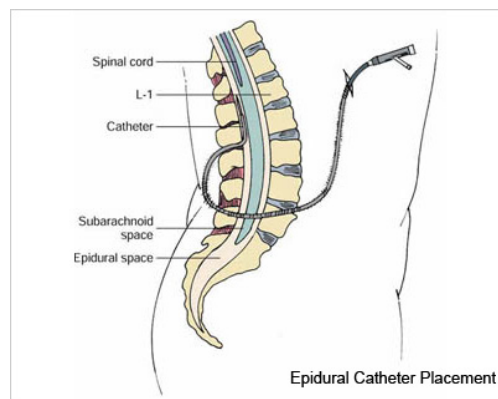
Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

In epidural analgesic administration the drug diffuses slowly into the subarachnoid space of the spinal canal and then into the cerebral spinal fluid (CSF), which carries it directly into the spinal area, bypassing the blood-brain area.

Epidural analgesia helps manage acute or chronic pain, including moderate to severe postoperative pain.

Neonates and some ex-premature infants (up to 60 weeks post-conceptual age) may be sensitive to opioids. If they require opioid analgesics then the method and doses should be discussed with the Consultant involved.

The epidural catheter is placed in the epidural space at a level appropriate to the procedure.



Reference: www.universitypaincentres.com

Advantages:

- Almost complete pain relief
- Reduced need for invasive ventilation post operatively
- Reduced analgesic requirement
- Less sedation/opioid side effects
- Suitable for all ages groups
- Potentially earlier handling (therefore easier for families), fewer complications and earlier discharge

Disadvantages:

- Requires epidural catheter
- No patient participation
- Urinary retention and pruritus may increase

Contraindications:

- Head injury/raised ICP
- Coagulopathy
- Local or systemic infection
- Progressive neurological deficit

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 4 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

- Patient/parent refusal
- Structural deformities of the spine
- Conditions where it is imperative to prevent hypotension
- Hypotension/Hypovolaemic: although hypotension doesn't usually occur in neonates, they are parasympatetically driven, therefore mostly due to something else.

Complications:

- Signs and symptoms:
 - Increased sensory motor block from below the level of epidural insertion site and possible loss off sphincter control. Contact Anaesthetist **IMMEDIATELY**. It is a medical emergency and prompt action must be taken to prevent irreversible damage to the spinal cord which results in paralysis.
- Toxicity
- Haematoma
- Late signs include muscle twitching, convulsions and coma
- Infection/abscess
- Trauma
- Dural puncture
- Backache
- Ineffective
- Hypotension
- Motor weakness
- Urinary retention
- Unpleasant paraesthesia ("pins & needle")
- Sedation
- Respiratory depression
- Nausea and vomiting
- Itch

See Section 8 of the Handbook or refer to PAPS Prescription Form (Trouble shooting guidelines) for Management of Complications.

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 5 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

2. Clinical Management

2.1 Competency required

Registered Nurse who has completed orientation on Continuous Positive Airway Pressure (CPAP).

2.2 Equipment

- Use 50ml BD Blastipak syringe
- Dressing Pack
- Sterile Gloves
- Dressing, e.g. Opsite/Tegaderm (if removing line)

2.3 Prescriptions and drugs:

Epidural orders are prescribed on the PAPS Prescription Form by the Department of Anaesthesia only. Syringe changes are recorded on the Drug Administration Record of the PAPS Prescription Form.

Summary of drug used:

- Ropivacaine 0.1%
- Fentanyl 0-5 micrograms/ml
- Clonidine 0-1 micrograms/ml

Standard mixture is ropivacaine 0.1% with fentanyl 2 microgram/ml

- Mix 25ml of ropivacaine 0.2% (50mg) and 100 microgram of fentanyl (2ml) with 23ml of sodium chloride 0.9% to total volume of 50ml.
In consultation with the Anaesthetist the fentanyl may be removed from this mixture.
Check prescription thoroughly.

Dosage:

- Correct drug dosage is important to avoid toxicity.
- High concentrations of local anaesthetic (LA) in blood can lead to systemic toxicity (caused for example by high rates of infusion or inadvertent vascular injection).
- Usual time frame 2-3 days only.
- Particularly vulnerable –heart, brain, lips – highly vascular

Ropivacaine:

- Ropivacaine 0.1% is standard
- In order to avoid LA toxicity, maximum doses must not be exceeded
- Think in **mg/kg** not ml/kg
- Ropivacaine 0.1% =1mg/ml

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 6 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

Age	Max Infusion		Duration
< 6 months	0.2mg/kg/hr	0-0.2ml/kg/hr	24-48 hrs
> 6 months	0.4mg/kg/hr	0-0.4ml/kg/hr	24-72 hrs

Fentanyl:

Fentanyl 2 microgram/ml is standard

- <6 months Fentanyl is reduced to 0-1 microgram/ml
- >6 months Fentanyl may be up to 5 microgram /ml

Clonidine:

Clonidine 0.12 microgram/kg/hr is the suggested regime

- Mix 30 microgram in 50ml and run at 0.2ml/kg/hr
- Use preservative free solution (i.e. Catapres 150 microgram /ml)
- May cause sedation
- May be useful in postoperative spasticity (e.g. cerebral palsy)

2.4 Procedure

2.4.1 Epidural infusions protocol

Infusion can be managed within the prescribed rates by certificated Nursing Staff according to patient comfort.

2.4.2 Epidural boluses protocol

There may be occasions when there is inadequate analgesia while using an epidural infusion. A top-up bolus may improve the analgesia and should be considered before resorting to some other form of analgesia.

- Bolus orders are prescribed by the Department of Anaesthesia only.
 - The size of the bolus (in mls) may be equal to the hourly rate (in mls).
 - The rate of the bolus is to be administered over 10 minutes.
 - If this does not resolve the pain then a review of the pain management should be sought.
- Following a bolus, observations must be performed quarter hourly for one hour – see 2.4.4

2.4.3 Transfer of care/handover

Each time the responsibility for the infant transfers from one nurse to another, both the transfer nurse and the receiving nurse must check:

- The prescription is complete and legibly signed.
- The settings in the pump match the prescription.

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 7 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

- The epidural giving set is correctly and securely connected to the epidural filter.
- The filter and the epidural infusion lines are appropriately identified with yellow 'Epidural Line CAUTION' stickers
- All observations are within normal parameters and documented appropriately.
- Assess catheter migration by looking at the markings on the catheter.

2.4.4 Monitoring for infants on opioids

Infants on opioids by any route require the following recordings:

- Blood pressure (BP)
- Respiratory rate
- Oxygen saturation
- Pulse
- Pain and sedation assessment (refer to Appendix 1 and 2 Neonatal Pain, Agitation and Sedation (N-Pass) Pain Scale)

Every observation is to be recorded on the PAPS Pain Recording Chart in conjunction with standard NICU Observation Procedures.

Opioid Observation Protocol

- Before opioid ----> baseline recordings
- Following opioid/bolus -----> every 15 minutes for one hour
- Then ----->every hour while epidural insitu, monitor BP every 2 hours
- Must have continuous oximetry if on infusion/Nurse Controlled Analgesia (NCA)
- All patients with indwelling catheters/lines (including epidural and regional catheters) must have their temperature checked and documented at least every 4 hours.
- Record the catheter position, check hourly insertion site and the measurement for slippage against measurement documented in notes/PAPS prescription form.
- Some leakage from the insertion site is normal in neonates. Report if the infant appears in pain or the dressing has excessive leakage.
- Should have normal leg movement, if leg movement has minimised or stopped, notify the Paediatric Anaesthetist immediately this is a medical emergency and prompt action must be taken.

For opioid infusions, NCA and single dose opioids oral (PO), intravenous (IV), subcutaneous (SC), or Intramuscular (IM)):

Pain assessment of infants on epidurals and regional infusions

Pain assessment is done by using the Neonatal Pain, Agitation and Sedation (N-Pass) Pain Scale which uses behavioural cues and physiological variables. The score is rated from -10 to +10 using professional judgement. A low score does not necessarily indicate pain medication, or an increase in pain medication is not justified.

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 8 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

Determine the neonate's pain level using the Neonatal Pain, Agitation and Sedation (N-Pass) Pain Scale – see Appendix 1 and 2. NICU Medical Staff and PAPS to advise on any changes required to the analgesia/sedation.

2.4.5 Epidural catheter care

- Do not replace dressing unless absolutely necessary. If a catheter requires redressing the Department of Anaesthesia should be contacted. Routine dressing changes on short term catheters are not recommended due to risk of dislodgement and infection.
- The catheter should be secured with a combination of Tegaderm/Opsite and Hyperfix/Sleek tape or similar.



- Infants must have IV access to allow for immediate administration of emergency drugs.
- The tubing from the syringe to the epidural catheter will incorporate an antibacterial filter.
- Never connect any 3-way taps or injection ports in epidural line.
- Antiseptic agents, such as chlorhexidine, betadine or alcohol must not come in contact with the epidural catheter or tubing as they are neurotoxic, and the main problem with neurotoxicity is during insertion. Brief cleaning around the site without prolonged contact should not be a problem.
 - Ensure skin around insertion site is dry and residual antiseptic agent does not come in contact with the epidural catheter.
 - It is safe to use the cleansing agents (e.g. chlorhexidine in alcohol), as per Central Venous Line procedures, if required to change drug solution as it is not coming into contact with the Epidural catheter.
- The catheter tubing has graduations at regular intervals: record catheter position, check insertion site and the measurement hourly for slippage against measurement documented in notes/PAPS prescription form.
- Take special care of all connections.
- **INADVERTANT DISCONNECTION** – Cover the disconnected epidural catheter with sterile dressing and contact anaesthetist **IMMEDIATELY**.

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 9 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

2.4.6 Removal of epidural catheter

- Get confirmation from the Anaesthetist.
- Before removing the catheter it is important to check the coagulation status to ensure the patient is not coagulopathic or receiving anticoagulants (e.g. heparin, noxaparin, dalteparin, warfarin or clopidogrel).
- Removal of the catheter is performed under aseptic technique undertaken by or under supervision of an epidural certificated nurse (refer to NICU procedures for removing a central venous line)
- Inspect site for signs of infection or inflammation; and if indicated, send swab for culture and sensitivity, document and advise Anaesthetist.
- Check with the NICU medical staff whether to send the catheter tip to the laboratory.
- It is important to confirm that the whole catheter had been removed intact. The catheter has a blue spot at the very tip. Advise Anaesthetist immediately if the catheter is not intact.
- Cover site with gauze and Opsite for 24 hours.
- Document actions in clinical notes.
- Monitor site every 2-4 hourly during cares for one week post removal.

2.4.7 Line Changes

- Line changes are very infrequent, often once or never for each infant. The wrong solution being connected to and injected into the epidural catheter can lead to disastrous complications.
- Medical staff **MUST** be present for all line changes to ensure no inadvertent solutions are attached to the epidural catheter.
- Signed by two nurses that the connection was made to the right line when changing fluids.

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 10 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

3. Evidence Base

3.1 References

- Muncater, A. (2016) (Ed.). *Paediatric Acute Pain Management Handbook*. (6th ed). Waikato DHB.
- Chumbley, G & Thomas, S. (2010). Care of the patient receiving epidural analgesia. *Nursing Standard*, 25,9, p35-40.
- Wolters Kulwer (2016). Epidural analgesia administration, pediatric. *Lippincott Procedures*.
- Verger, J.T., & Lebet, R.M. (Eds.). (2008). *AAACN procedure manual for pediatric acute and critical care*. St. Louis, MO: Saunders
- Standard 54. Intraspinal access devices. Infusion therapy standards of practise. (2016). *Journal of Infusion Nursing*, 39, S119-S120. (Level VII)
- Infusion Nurses Society, (2011). *Policies and procedures for infusion nursing* (4th ed.).
- Infusion Nurses Society. (2014). *Policies and procedures for infusion nursing of the pediatric patient* (2nd ed.). Boston, MA: Infusion Nurses Society.

3.2 Associated documents

- Waikato DHB NICU Nursing Procedure: Central Venous and Umbilical Venous Line Management (4936)
- Waikato DHB NICU Nursing Guideline: Neonatal pain and sedation: Assessment and nursing management (1684)

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 11 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

Appendix 1: Neonatal Pain, Agitation & Sedation Scale

N-PASS: Neonatal Pain, Agitation, & Sedation Scale

Assessment Criteria	Sedation		Sedation/Pain	Pain / Agitation	
	-2	-1	0/0	1	2
Crying Irritability	No cry with painful stimuli	Moans or cries minimally with painful stimuli	No sedation/ No pain signs	Irritable or crying at intervals Consolable	High-pitched or silent-continuous cry Inconsolable
Behavior State	No arousal to any stimuli No spontaneous movement	Arouses minimally to stimuli Little spontaneous movement	No sedation/ No pain signs	Restless, squirming Awakens frequently	Arching, kicking Constantly awake or Arouses minimally / no movement (not sedated)
Facial Expression	Mouth is lax No expression	Minimal expression with stimuli	No sedation/ No pain signs	Any pain expression intermittent	Any pain expression continual
Extremities Tone	No grasp reflex Flaccid tone	Weak grasp reflex ↓ muscle tone	No sedation/ No pain signs	Intermittent clenched toes, fists or finger splay Body is not tense	Continual clenched toes, fists, or finger splay Body is tense
Vital Signs HR, RR, BP, SaO₂	No variability with stimuli Hypoventilation or apnea	< 10% variability from baseline with stimuli	No sedation/ No pain signs	↑ 10-20% from baseline SaO ₂ 76-85% with stimulation - quick ↑	↑ > 20% from baseline SaO ₂ ≤ 75% with stimulation - slow ↑ Out of sync/fighting vent

© Loyola University Health System, Loyola University Chicago, 2009
(Rev. 2/10/09) Pat Hummel, MA, APIN, NNP, PNP
All rights reserved. No part of this document may be reproduced in any form or by any means, electronic or mechanical without written permission of the author. The author cannot accept responsibility for errors or omission or for any consequences resulting from the application or interpretation of this material.

Premature Pain Assessment

 + 1 if <30 weeks gestation / corrected age

Assessment of Sedation

- Sedation is scored in addition to pain for each behavioral and physiological criteria to assess the infant's response to stimuli
- Sedation does not need to be assessed/scored with every pain assessment/score
- Sedation is scored from 0 → -2 for each behavioral and physiological criteria, then summed and noted as a negative score (0 → -10)
 - A score of 0 is given if the infant has no signs of sedation, does not under-react
- Desired levels of sedation vary according to the situation
 - "Deep sedation" → goal score of -10 to -5
 - "Light sedation" → goal score of -5 to -2
 - Deep sedation is not recommended unless an infant is receiving ventilatory support, related to the high potential for hypoventilation and apnea
- A negative score without the administration of opioids/ sedatives may indicate:
 - The premature infant's response to prolonged or persistent pain/stress
 - Neurologic depression, sepsis, or other pathology

Paralysis/Neuromuscular blockade

- It is impossible to behaviorally evaluate a paralyzed infant for pain
- Increases in heart rate and blood pressure at rest or with stimulation may be the only indicator of a need for more analgesia
- Analgesics should be administered continuously by drip or around-the-clock dosing
 - Higher, more frequent doses may be required if the infant is post-op, has a chest tube, or other pathology (such as NEC) that would normally cause pain
 - Opioid doses should be increased by 10% every 3-5 days as tolerance will occur without symptoms of inadequate analgesia

Assessment of Pain/Agitation

- Pain assessment is the fifth vital sign - assessment for pain should be included in every vital sign assessment
- Pain is scored from 0 → +2 for each behavioral and physiological criteria, then summed
 - Points are added to the premature infant's pain score based on the gestational age to compensate for the limited ability to behaviorally communicate pain
 - Total pain score is documented as a positive number (0 → +11)
- Treatment/interventions are suggested for scores > 3
- Interventions for known pain/painful stimuli are indicated before the score reaches 3
- The goal of pain treatment/intervention is a score ≤ 3
- More frequent pain assessment indications
 - Indwelling tubes or lines which may cause pain, especially with movement (e.g. chest tubes) → at least every 2-4 hours
 - Receiving analgesics and/or sedatives → at least every 2-4 hours
 - 30-60 minutes after an analgesic is given for pain behaviors to assess response to medication
 - Post-operative → at least every 2 hours for 24-48 hours, then every 4 hours until off medications

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 12 of 13

Epidural Care & Management for Neonates and infants in Newborn Intensive Care Unit (NICU)

Appendix 2: Scoring Scale

Scoring Criteria

Crying / Irritability

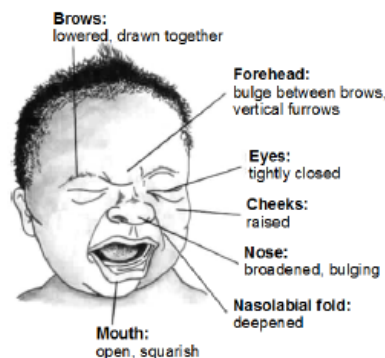
- 2 → No response to painful stimuli
 - No cry with needle sticks
 - No reaction to ETT or nares suctioning
 - No response to care giving
- 1 → Moans, sighs, or cries (audible or silent) minimally to painful stimuli, e.g. needle sticks, ETT or nares suctioning, care giving
- 0 → No sedation signs or No pain/agitation signs
- +1 → Infant is irritable/crying at intervals - but can be consoled
 - If intubated - intermittent silent cry
- +2 → Any of the following
 - Cry is high-pitched
 - Infant cries inconsolably
 - If intubated - silent continuous cry

Behavior / State

- 2 → Does not arouse or react to any stimuli:
 - Eyes continually shut or open
 - No spontaneous movement
- 1 → Little spontaneous movement, arouses briefly and/or minimally to any stimuli
 - Opens eyes briefly
 - Reacts to suctioning
 - Withdraws to pain
- 0 → No sedation signs or No pain/agitation signs
- +1 → Any of the following
 - Restless, squirming
 - Awakens frequently/easily with minimal or no stimuli
- +2 → Any of the following
 - Kicking
 - Arching
 - Constantly awake
 - No movement or minimal arousal with stimulation (not sedated, inappropriate for gestational age or clinical situation)

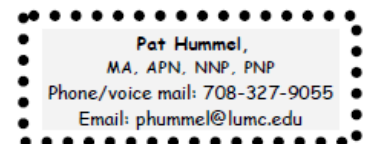
Facial Expression

- 2 → Any of the following
 - Mouth is lax
 - Drooling
 - No facial expression at rest or with stimuli
- 1 → Minimal facial expression with stimuli
- 0 → No sedation signs or No pain/agitation signs
- +1 → Any pain face expression observed intermittently
- +2 → Any pain face expression is continual



Facial expression of physical distress and pain in the infant

Reproduced with permission from Wong DL, Hess CS: Wong and Whaley's Clinical Manual of Pediatric Nursing, Ed. 5, 2000, Mosby, St. Louis


Pat Hummel,
 MA, APN, NNP, PNP
 Phone/voice mail: 708-327-9055
 Email: phummel@lumc.edu

Doc ID:	2835	Version:	02	Issue Date:	1 JUN 2018	Review Date:	1 JUN 2021
Facilitator Title:	Registered Nurse			Department:	NICU		
IF THIS DOCUMENT IS PRINTED, IT IS VALID ONLY FOR THE DAY OF PRINTING							Page 13 of 13