Pain in NICU Patients

- Newborns admitted to the neonatal intensive care unit (NICU) undergo many painful tests and procedures during their stay. Some common causes of pain in NICU babies include procedures that require needle sticks, such as an intravenous line or lab blood draws, post-surgical pain, skin rashes or sores, nephropathies, inflammation, or discomfort from tubes.
- Pain impulses in newborns and infants are transmitted along the non-myelinated C fibers, and the pain signal is less precise. The pain may be conducted slower in neonates, but the distance the pain stimuli must travel is much shorter and due to the lack of highly-developed neurotransmitters, newborns are not as capable of reducing pain impulses. Premature and newborn infants, which make up the majority of the NICU patients, may be even more sensitive to pain than older children.

Consequences of Unrelieved Pain

Unrelieved pain is very stressful for a newborn and causes many physiologic changes that have the potential to lead to further medical complications. Some of these changes include the following:

- Respiratory: Rapid shallow breathing, inadequate lung expansion, and inadequate cough
- Neurologic: Alkalosis, decreased O2 saturation, atelectasis, retention of secretions.
- Metabolic: Increased metabolic rate with increased perspiration.
- Gastrointestinal: Increased intestinal secretions and smooth muscle spincter tone.
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HOW DOES THE NURSE EFFECTIVELY ASSESS AND MANAGE PAIN IN THE NICU?

Nursing Role:
Assessment: It is the responsibility of the registered nurse (RN) to continuously and thoroughly assess the presence of pain in neonates. There are currently more than 7 pain scales used for this purpose. The three pain scales used as the focus of this project are the FLACC, NFCS, and CRIES scales.

Nursing Diagnosis: Acute pain related to post-operative incision as evidenced by physiologic alterations and high scoring on multiple pain scales.

Planning: The goal is to increase and maintain maximum comfort for the patient. A plan should be created that sufficiently addresses how a neonate’s pain will be assessed, managed, and evaluated throughout their entire length of care.

Intervention: Administer prescribed analgesics. Utilize other non-pharmacologic interventions such as sucrose solution, facilitated tucking, skin-to-skin care, music therapy, and the application of heat and cold.

Evaluation: The nurse must re-evaluate and monitor the effectiveness of the pain interventions that have been implemented and make modifications as appropriate.

Infant Pain Assessments:

- Assesses the presence or absence of 8 different facial movements to indicate the presence of pain.
- Used in preterm or full-term infants.
- Has been demonstrated as a reliable, feasible, and valid tool for assessing pain in the preverbal neonate.

FLACC

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<tr>
<td>F</td>
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<tr>
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<td>Limp</td>
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<tr>
<td>A</td>
<td>Activity level</td>
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<tr>
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<td>Consolability</td>
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<tr>
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<td>Cry</td>
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NFC

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<td>C</td>
<td>Cry</td>
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CRIES

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<td>Intermittent</td>
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<td>E</td>
<td>Extension</td>
</tr>
<tr>
<td>S</td>
<td>Sleep</td>
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Opioid Analgesic: Acetaminophen

- NSABP inhibits prostaglandin synthesis involved in the processes of pain.
- Used for mild to moderate pain and chronic pain.
- Non-Opioid Analgesic: Acetaminophen

- Acetaminophen works by raising the pain threshold.
- Used for relief of mild to moderate pain and is most often used for fever, inflammatory, and connective tissue conditions.
- Opioids: morphine, codeine, hydromorphone, methadone

- Opioids bind to opiate receptors in the CNS and alter the perception of and response to painful stimuli while producing generalized CNS depression.
- Typically only used for severe pain.

Pain Management Techniques

Pharmacologic Interventions

- Oral Nonsteroidal Anti-Inflammatory Drugs: Ibuprofen

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Non-Pharmacologic Interventions

Sucrose Solution:

- Can be used as a pain relief measure in preterm and term newborns up to 1 month of age. Sucrose activates the endogenous opioid system through taste.

Skin-to-Skin (Kangaroo Care):

- Highly encouraged as soon as possible after birth. Studies show that KC is effective in controlling physiologic variables and easing the transition into the world, both of which may be related to pain.

Cutaneous Stimulation:

- The application of touch to the painful area by rubbing or massaging the skin. Touching competes with the pain stimuli being transmitted from peripheral nerves and may reduce the pain.

Music Therapy:

- Live music can help distract the newborn baby during tests and procedures which decreases the state of arousal and behavioral response during painful stimuli.

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