

Prevention and management of pain in the neonate: An update

A joint statement with the American Academy of Pediatrics



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ABSTRACT

The prevention of pain in neonates should be the goal of all caregivers because painful exposures have the potential for deleterious consequences. Those neonates at greatest risk for neurodevelopmental impairment due to preterm birth (eg, the smallest and sickest) are also most likely to be exposed to the greatest number of painful stimuli in the neonatal intensive care unit (NICU). Although there are major gaps in our knowledge regarding the most effective way to prevent and relieve pain in neonates, proven and safe therapies are currently underutilized for routine minor, yet painful, procedures. Every health care facility caring for neonates should implement an effective pain prevention program that includes strategies for the following: routinely assessing pain; minimizing the number of painful procedures performed; effectively using pharmacological and nonpharmacological therapies for the prevention of pain associated with routine minor procedures; and eliminating pain associated with surgery and other major procedures.

Key words: *Management; Neonates; Pain; Prevention*

INTRODUCTION

Objectives

The present updated statement is intended for health care professionals caring for neonates (preterm to one month of age). The objectives are to:

1. emphasize that, despite increased awareness of the importance of pain prevention, neonates in the NICU continue to be exposed to numerous painful minor procedures daily as part of their routine care;
2. present objective means of assessing neonatal pain by health care professionals;
3. describe effective strategies to prevent and treat pain associated with routine minor procedures; and
4. review appropriate methods to prevent and treat pain associated with surgery and other major procedures.

Background

The prevention of pain in neonates is an expectation of parents. However, there are major gaps in our knowledge regarding the most effective way to accomplish this. The prevention of pain is important not only because it is an ethical expectation, but also because of potential deleterious consequences of

repeated painful exposures. These consequences include altered pain sensitivity (which may last into adolescence) and permanent neuroanatomical and behavioural abnormalities, as found in animal studies. It appears that altered pain sensitivity can be ameliorated if effective pain relief is provided. The present updated statement deals primarily with pain prevention.

ASSESSMENT OF PAIN AND STRESS IN THE NEONATE

Clinical implications

1. Caregivers should be trained to assess newborns for pain using multidimensional tools.
2. Newborns should be assessed for pain routinely, and before and after procedures.
3. The chosen pain scales should help guide caregivers in the provision of effective pain relief.

REDUCING PAIN FROM BEDSIDE CARE PROCEDURES

Neonates in the NICU often experience painful procedures during routine care, such as needle insertions, suctioning, gavage tube placement and tape removal, as well as stressful disruptions, including diaper changes, chest physical therapy, physical examinations, environmental stimuli and nursing evaluations. Despite increased awareness by caregivers that neonates in the NICU frequently experience pain, effective pain relief for these routine procedures is often underutilized.

Clinical implications

1. Care protocols for neonates should incorporate a principle of minimizing the number of painful disruptions in care as much as possible.
2. A combination of oral sucrose/glucose and other nonpharmacological pain reduction methods (non-nutritive sucking, kangaroo care, facilitated tuck, swaddling and developmental care) should be used for minor, routine procedures.
3. Topical anesthetics can be used to reduce pain associated with venipuncture, lumbar puncture and intravenous catheter insertion when time permits, but are ineffective for heel stick blood draws. Repeated use of topical anesthetics should be limited.

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4. The routine use of continuous infusions of morphine, fentanyl or midazolam in chronically ventilated preterm neonates is not recommended due to concern about short-term side effects and lack of long-term outcome data.

REDUCING PAIN FROM SURGERY

1. Any health care facility providing surgery for newborns should have an established protocol for pain management. This requires a coordinated, multidimensional strategy and should be a priority in perioperative management.
2. Sufficient anesthesia should be provided to prevent intraoperative pain and stress responses to decrease postoperative analgesic requirements.
3. Pain should be routinely assessed using a scale designed for postoperative or prolonged pain in newborns.
4. Opioids should be the basis for postoperative analgesia after major surgery in the absence of regional anesthesia.
5. Postoperative analgesia should be utilized as long as pain assessment scales document that it is required.
6. Acetaminophen can be used after surgery as an adjunct to regional anesthetics or opioids, but there are inadequate data on pharmacokinetics at gestational ages under 28 weeks to permit calculation of appropriate dosages.

REDUCING PAIN FROM OTHER MAJOR PROCEDURES

Intercostal drains

Analgesia for chest drain insertion should comprise all of the following:

1. General nonpharmacological measures;
2. Slow infiltration of the skin site with a local anesthetic before incision unless there is life-threatening instability.

If there is inadequate time to infiltrate before the insertion of the chest tube, local skin infiltration after achieving stability may reduce later pain responses and later analgesic requirements.

3. Systemic analgesia with a rapidly acting opiate, such as fentanyl.

Chest drain removal

Analgesia for chest drain removal should comprise the following:

1. General nonpharmacological measures; and
2. A short-acting, rapid-onset systemic analgesic.

Intubation

This topic will be discussed further in a statement by the American Academy of Pediatrics and the Canadian Paediatric Society.

Retinal examination and surgery for retinopathy of prematurity

1. Although there are insufficient data to make a specific recommendation, retinal examinations are painful, and pain relief measures should be utilized. A reasonable approach would be to administer local anesthetic eye drops and oral sucrose.
2. Retinal surgery should be considered major surgery, and effective pain relief, based on opiates, should be provided.

Circumcision

Pain relief for circumcision should always be provided. The American Academy of Pediatrics has published a separate statement on this subject. For more information, please refer to the full text of this position statement (Pediatrics 2006;118:2231-2241 or <<http://pediatrics.aappublications.org/cgi/reprint/118/5/2231>>).

For more information, please refer to the full statement, which can be found in Pediatrics 2006;118(5):2231-41 or online at <<http://aappolicy.aappublications.org/cgi/reprint/pediatrics;118/5/2231.pdf>>

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The recommendations in this statement do not indicate an exclusive course of treatment or procedure to be followed. Variations, taking into account individual circumstances, may be appropriate. Internet addresses are current at time of publication.