

Newborns in ICUs often undergo painful procedures, most without pain medication

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An examination of newborn intensive care finds that newborns undergo numerous procedures that are associated with pain and stress, and that many of these procedures are performed without medication or therapy to relieve pain, according to a study in the July 2 issue of *JAMA*.

"Repeated invasive procedures occur routinely in neonates [a baby, from birth to four weeks] who require intensive care, causing pain at a time when it is developmentally unexpected. Neonates are more sensitive to pain than older infants, children, and adults, and this hypersensitivity is exacerbated in preterm neonates. Multiple lines of evidence suggest that repeated and prolonged pain exposure alters their subsequent pain processing, long-term development, and behavior. It is essential, therefore, to prevent or treat pain in neonates," the authors write.

"Effective strategies to improve pain management in neonates require a better understanding of the epidemiology and management of procedural pain."

Ricardo Carbajal, M.D., Ph.D., of the Hôpital d'enfants Armand Trousseau, Paris, and colleagues collected data on neonatal pain, based on direct bedside observations in intensive care units (ICUs) in the Paris region. The study, conducted between September 2005 and January 2006, included data on all painful and stressful procedures and corresponding analgesic (a medication used to relieve pain) therapy from the first 14 days of admission collected within a 6-week period from 430 neonates admitted to tertiary care centers. The average gestational age was 33 weeks, and the average intensive care unit stay was 8.4 days.

During the study period, neonates experienced 60,969 first-attempt procedures, with 42,413 (69.6 percent) painful and 18,556 (30.4 percent) stressful procedures; 11,546 supplemental attempts were performed during procedures including 10,366 (89.8 percent) for painful and 1,180 (10.2 percent) for stressful procedures. Examples of painful procedures that were performed include nasal and tracheal aspiration (removal of fluid), heel stick and adhesive removal. The average number of all procedures per neonate was 141 and the average number of procedures per day of hospitalization was 16. Each neonate experienced a median (midpoint) of 115 procedures during the study period and 16 procedures per day of hospitalization. Of these, each neonate experienced a median of 75 painful procedures during the study period and 10 painful procedures per day of hospitalization.

Infants received specific analgesia for a median of 20 percent of the painful procedures performed during the study period. Of the 42,413 painful procedures, 907 (2.1 percent) were performed with pharmacological-only therapy, 7,734 (18.2 percent) with nonpharmacological-only therapy, 164 (0.4 percent) with both, and 33,608 (79.2 percent) without specific preprocedural analgesia.

Further analysis indicated that prematurity, parental presence during procedures, neonates undergoing surgery, daytime performance (7 a.m. to 6 p.m.), and day of hospitalization (2-14 days) were associated with greater use of specific preprocedural analgesia, whereas mechanical ventilation, noninvasive ventilation, and the administration of nonspecific concurrent analgesia were associated with less frequent use of specific preprocedural analgesia.

"Advances in neonatal care in recent decades with increased survival of immature and sick neonates have led to an increased number of invasive procedures that may cause pain in these vulnerable neonates. The prevention of pain in critically ill neonates is not only an ethical

obligation, but it also averts immediate and long-term adverse consequences," the researchers write. "... strategies to reduce the number of procedures in neonates are needed urgently. The American Academy of Pediatrics recently emphasized the need to incorporate a principle of minimizing the number of painful disruptions in neonatal care protocols. Such strategies would aim at bundling interventions, eliminating unnecessary laboratory or radiographic procedures, using transcutaneous measurements when possible, and minimizing the number of procedures performed after failed attempts."

"The knowledge that some vulnerable neonates underwent 153 tracheal aspirations or 95 heel sticks in a two-week period should elicit a thoughtful and relevant analysis on the necessity and the risk-benefit ratio of our clinical practices."

Source: JAMA and Archives Journals

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