

Specially Trained Registered Nurses Can Safely Manage Epidural Analgesia Infusion in Laboring Patients

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Purpose: To discover evidence for defining the registered nurse's (RN's) role in the management of epidural analgesia in the labor and delivery setting.

Design: The Labor Epidural Nurse Safety (LENS) study consisted of two parts. The first part was a 10-year retrospective review of the outcomes of 2,568 laboring women for whom epidural catheters had been placed and verified by an anesthesiologist or certified registered nurse anesthetist, then continuous epidural infusion initiated, and basal rate or patient-controlled epidural analgesia (PCEA) dose increased, if needed, within specified parameters by specially trained labor and delivery RNs. The second part compared the outcomes of the neonates born to the 2,568 women in the first part of the study with neonates born to mothers who received PCEA with a continuous infusion initiated and managed exclusively by anesthesiologists and/or certified registered nurse anesthetists at two control sites.

Methods: Maternal outcomes were quantified by incidences of clinically significant hypotension and sentinel events, such as respiratory distress, cardio/respiratory distress, loss of consciousness, and seizures. Evidence of neonatal outcomes was collected by comparing Apgar scores.

Findings: No sentinel events occurred, and there was no increase in maternal hypotensive events in the RN-managed group. There were no statistically significant differences in Apgar scores between the experimental and control groups.

Conclusion: Specially trained RNs can safely initiate continuous infusions and increase the basal rate of epidural analgesia infusions or PCEA doses administered to laboring women, after insertion and confirmation of correct catheter placement by a qualified anesthesia provider; without adversely affecting maternal and fetal/neonatal outcomes.

Keywords: labor, epidural, analgesia, nurse, manage.

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Conflict of interest: None to report.

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1089-9472/\$36.00

<http://dx.doi.org/10.1016/j.jopan.2015.01.008>

THE FIRST USE of epidural analgesia in obstetrics was reported by Graffagnino and Seyler in 1938.¹ Since then, epidural analgesia has been used with increasing frequency to manage pain during labor and delivery.^{2,3} With the widespread use of epidural analgesia came the need to define the role of the registered nurse (RN) in the management of this therapy. Both anesthesia and nursing organizations have published position statements based on expert opinions as evidence-based data are lacking.⁴⁻¹⁰

Defining the RN's role in the management of labor epidural analgesia is a critical undertaking because a challenge in supply and demand of this method of pain control in small hospitals has occurred at a national level. The most recent Obstetric Anesthesia Workforce survey found that only 3% of small hospitals (100 to 500 births annually) provided in-house anesthesia coverage, and mid-sized hospitals (500 to 1,499 births annually) had experienced a decrease in in-house anesthesia coverage.³ Often, interventional anesthesia management in the community setting has been limited, for example, to one-shot spinal analgesia.³ At the same time, demand for labor epidural analgesia has increased; in 2008, 61% of laboring women in a 27-state reporting area received epidural analgesia, and the number of women who desire epidural analgesia continues to rise.²

On a national level, controversy surrounding the RN's active role in the management of epidural analgesia in laboring patients was growing in the early 2000s.^{5,6} Some experts asserted that RNs should not perform activities such as initiation and rate adjustments of established continuous epidural analgesia infusions in laboring patients.^{7,10} Other experts supported the RN's role in the management of pain relief during labor, including initiating continuous infusions and increasing the rate of epidural analgesia infusions administered to laboring women after insertion and confirmation of correct epidural catheter placement by a qualified anesthesiologist or certified registered nurse anesthetist (CRNA).^{4,9,11} Obstetric anesthesia experts underscored the belief that women requesting epidural analgesia during labor should not be deprived of the therapy based on lack of anesthesiologist coverage and proposed solutions.⁹

Boards of nursing in several states had begun to exclude nurses in labor and delivery from perform-

ing these tasks, and many hospitals restricted the role of the RN in the management of epidural analgesia in laboring patients.⁵ These constraints in RN practice in the management of labor pain occurred at the same time that RNs and nurse midwives in other countries, such as the United Kingdom and Australia, were establishing an abundant experience of safely performing the same tasks with epidural infusions in laboring patients.¹²⁻¹⁴ The impact of this RN role restriction on the availability of epidural analgesia for women who desire the therapy is unknown, but nonetheless concerning.³

The Labor Epidural Nurse Safety (LENS) study was undertaken to determine if specially trained RNs could initiate and increase the rate of labor epidural analgesia continuous infusions without adversely affecting maternal and fetal/neonatal outcomes. The overarching goals of the LENS study are to expand the RN's role in the management of labor pain and help bridge the gap between anesthesia providers and their patients who receive epidural analgesia during labor.

Literature Review

The literature was searched from 2000 to 2013 in MEDLINE, Cumulative Index to Nursing and Allied Health Literature, Health Source: Academic Edition, PubMed, and Cochrane Database of Systematic Reviews. Although no research that addressed the RN's role in the labor epidural infusions in the United States was found, a substantial body of literature demonstrating the safety and efficacy of continuous epidural infusions and patient-controlled epidural analgesia (PCEA) during labor was identified and reviewed.¹⁵⁻²⁷ PCEA allows patients to manage their own pain by pressing a button on an infusion device to deliver a dose of analgesic; it has been shown to be a highly effective mode of labor pain management.²⁸ The prevalence of patients safely and effectively managing their own labor pain, according to their individual needs, underscores the appropriateness of specially trained RNs being able to perform similar functions.^{4,11}

Research Methods

The LENS study consisted of two parts. The first part was a 10-year retrospective medical records review of the outcomes of 2,568 laboring women for whom epidural catheters had been placed and

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