TITLE: Epidural Analgesia During Childbirth: Safety and Guidelines

DATE: 30 July 2015

RESEARCH QUESTIONS

1. What is the clinical evidence regarding the safety of epidural analgesia for mothers and babies during and after childbirth?

2. What are the evidence-based guidelines regarding the use of epidural analgesia during childbirth?

KEY FINDINGS

One health technology assessment, three systematic reviews (two with meta-analysis), and one evidence-based guideline were identified regarding the safety and recommended use of epidural analgesia during childbirth.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Methodological filters were applied to limit retrieval to systematic reviews, guidelines, and safety data. Results of a second focused search (with main concepts appearing in the title or subject heading) were also included. For the focused search, methodological filters were applied to limit retrieval to randomized controlled trials and randomized controlled trials, non-randomized studies. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and July 15, 2015. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

<table>
<thead>
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<th>Table 1: Selection Criteria</th>
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<td><strong>Population</strong></td>
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<td><strong>Intervention</strong></td>
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| **Comparator**             | Q1: No epidural analgesia  
Q2: No comparator |
| **Outcomes**               | Q1: Safety:  
• Surgical/delivery outcomes (increased C-section rates, duration of labour);  
• Infant health (e.g., respiratory distress syndrome, lower Apgar score, mortality);  
• Maternal health (e.g., post-partum hemorrhage, mortality, infection)  
Q2: Guidelines regarding the use of epidural analgesia during childbirth, including when epidural is safest |
| **Study Designs**          | Health technology assessments, systematic reviews, meta-analyses, evidence-based guidelines |

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by evidence-based guidelines.

One health technology assessment, three systematic reviews (two with meta-analysis), and one evidence-based guideline were identified regarding the safety and recommended use of epidural analgesia during childbirth.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One health technology assessment,¹ three systematic reviews²⁻⁴ (two with meta-analysis)¹,²⁴ and one evidence-based guideline⁵ were identified regarding the safety and recommended use of epidural analgesia during childbirth.

The health technology assessment by Health Quality Ontario¹ reported no difference in the rate of caesarean delivery between women experiencing spontaneous labour that received epidural for analgesia versus those that did not. However, in addition to a 43% increase in caesarean delivery due to fetal distress, there was also a 19% increase in oxytocin augmentation for women managed with an analgesia epidural when compared to the non-epidural analgesia group.¹ Overall, epidural analgesia during labour was reported to have no influence on the likelihood of caesarean section in low-risk women.¹

The systematic review with meta-analysis² reported on neonatal safety for up 24 hours with common doses of fentanyl and sufentanil supplied in an epidural or spinal technique for labour analgesia. No significant differences in Apgar scores less than seven at one and five minutes, in Neurological and Adaptive Capacity Scores at two or 24 hours, or in umbilical cord artery pH or
vein pH were observed.\(^2\) In congruence with the aforementioned health technology assessment,\(^1\) the review of systematic reviews by Jones et al.\(^3\) and the systematic review with meta-analysis by Anim-Somuah et al.\(^4\) reported an increase in caesarean sections for fetal distress in women receiving epidural analgesia when compared with placebo or opioids, but no difference in the rates of caesarean section overall. In addition, women receiving epidural analgesia experienced more instrumental vaginal births for fetal distress along with other side effects, including motor blockade, urinary retention, hypotension, or fever.\(^3-4\) The Anim-Somuah et al. systematic review\(^4\) additionally reported increased risk for longer second stage labour and oxytocin administration in women receiving epidural analgesia. Neonates were not affected by epidural administration based on five minute Apgar scores.\(^4\)

The Spanish evidence-based guideline from the Basque Office for Health Technology Assessment\(^5\) recommends that women asking for neuraxial analgesia should be informed of the potential adverse events. Listed risks include hypotension, fetal heart rate alterations, urinary retention and incontinence, pruritus and fever, and lengthening of second stage labour leading to an increased risk of instrumental birth.\(^5\) In addition, they recommend the use of any low dose neuraxial technique (either epidural or combined) when the women requests it, a blood pressure measurement obtained while establishing neuraxial analgesia and upon the administration of each new dose, and continuous fetal electronic monitoring of fetal heart rate within 30 minutes of neuraxial analgesia and after each bolus of 10 mL or more.\(^5\) In addition, patient-controlled epidural analgesia is recommended; however, should resources permit, continuous perfusion and bolus dosing by hospital staff are recommended alternatives.\(^5\) Routine coagulation studies and routine intrapartum platelet count are not recommended prior to neuraxial analgesia administration.\(^5\)
REFERENCES SUMMARIZED

Health Technology Assessments

   See: Epidural Analgesia During Labour, pages 18-19;
   Summary, Table 16, page 27;
   Existing Guidelines For Technology, Table 24, page 40

Systematic Reviews and Meta-analyses

   PubMed: PM25011701

   PubMed: PM22419342

   PubMed: PM22161362

Guidelines and Recommendations

   See: Section on Neuraxial Analgesia
   Section on Potential Harms

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APPENDIX – FURTHER INFORMATION:

Previous CADTH Reports


Systematic Reviews and Meta-analyses

Comparative Dosing


Comparative Modalities


Comparison of Epidural Components


**Comparative Timing of Epidural**


**Alternate Comparators**

See: Pain Management, page 8

**Alternative Outcomes**


**Randomized Controlled Trials**


**Clinical Practice Guidelines**

**Review of Evidence-Based Guidelines**

Unspecified Methodology


