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## **Cochrane Nursing Care Field – Cochrane Review Summary**

Prepared for the

## **American Journal of Nursing**

***TITLE: Automated mandatory bolus versus basal infusion for maintenance of epidural analgesia in labour***

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- **Background:**

The pain experienced by women during labour is caused by contractions of the uterus and pressure of the cervix and is impacted by psychosocial influences, previous pain experiences and obstetric interventions, for example oxytocin augmentation. Epidural analgesia is one of the most commonly used pain management techniques for this type of pain. It involves injections of local anaesthetics, for example bupivacaine, and/or opioids including fentanyl and sufentanil, into the epidural space, resulting in numbness and weakness in the lower part of the body, thereby reducing pain levels.

There are two techniques used to maintain effective epidural analgesia during labour, automated mandatory boluses and basal infusion. These techniques differ in the timing of top-up doses, following the administration of an initial bolus. The dosing is delivered intermittently in the automated mandatory bolus technique compared to continual administration of the drug(s) in a basal infusion. The spread and distribution of drugs is thought to be greater in the automated mandatory boluses technique, related to the higher injectate pressure near site of injection (Hogan, 2002), and this has been linked to more effective pain relief and a reduced risk of motor blockade. This technique is the one employed in patient-controlled epidural analgesia, a method that allows patients to control the timing of bolus doses. This method has been associated with a number of positive outcomes including a reduction in breakthrough pain requiring anaesthetic intervention and increased patient satisfaction (Fettes, 2006; Lim, 2005; Sia, 2013; Wong, 2006).

- **Objective/s:**

The primary objective of this review was to assess the effects of automated mandatory bolus versus basal infusion for maintaining epidural analgesia during labour.

- **Intervention/Methods:**

The review included parallel-group randomised controlled trials (RCTs) that compared the use of automated bolus with basal infusion for providing epidural analgesia pain relief during labour. The participants included pregnant term women requesting epidural analgesia during labour.

The primary outcomes included:

1. Risk of breakthrough pain with the need for anaesthetic intervention;
2. Risk of caesarean delivery;
3. Risk of instrumental delivery.

The secondary outcome measures considered were duration of labour analgesia; local anaesthetic consumption per hour; maternal satisfaction and Apgar scores.

- **Results:**

There were 12 studies included in this review, representing a total of 1121 participants. Ten studies enrolled only healthy nulliparous women while the remaining two studies also included healthy parous women at term.

The authors reported a significant reduction in the risk of breakthrough pain and in local anaesthetic consumption per hour with automated mandatory boluses compared to basal infusion, based on moderate-certainty evidence. There was little or no difference identified to the risk of caesarean delivery for automated mandatory boluses compared to basal infusion, (15% and 16% respectively) based on low certainty evidence. No difference was identified), the risk the difference in the duration of labour analgesia (moderate-certainty evidence) or the of instrumental delivery (low-certainty evidence) or. An increase in maternal satisfaction was noted with automated mandatory boluses compared to basal infusion and no differences were identified in Apgar scores between the two techniques.

- **Conclusions**

The authors concluded that here is predominantly moderate-certainty evidence that automated mandatory bolus is similar to basal infusion for maintaining epidural analgesia during labour for all measured outcomes and may have the benefit of decreasing the risk of breakthrough pain and improving maternal satisfaction while also decreasing the amount of local anaesthetic needed.

- **Implications for Practice:**

Pain management is integral to the safe and effective management of women in labour. Pain is an individual experience influenced by a myriad of factors including duration of labour, psychosocial influences, previous pain experiences and obstetric interventions. Therefore effective pain management should reflect this, and allow for the administration of pain medications to be tailored to individual patients, as is the case with the use of automated mandatory boluses, especially where a patient controlled epidural analgesia device is employed.

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