

# Feeling the urge to push!

Programmed Intermittent and Patient Controlled Epidural dosing for women during labour.

## An epidural is one of the most effective forms of pain relief for women during labour.... BUT ....

an epidural is commonly associated with a number of **adverse effects** including **leg weakness** and occasionally complete **lower limb numbness**. These outcomes can prevent a woman from actively moving during labour, **often extending the duration** of labour and potentially contributing to an instrumental delivery. Instrumental deliveries are associated with **increased length of stay**, and **complications** such as 3<sup>rd</sup> degree tear and haemorrhage.

The patient controlled dosing aspect empowers **women to have control** of their pain during labour through **self-administering** an epidural dose by pressing a button which delivers an extra dose of the drug via the epidural pump.

## The aim of the project

was to implement a **new** epidural technique called **programmed intermittent epidural bolus (PIEB)** combined with **patient controlled epidural analgesia (PCEA)** for women during labour. This new technique involves an intermittent timed epidural dose being given via a pump automatically every hour in addition to a patient self-administered dose using a hand-held button if needed. Significant **reductions in local anaesthetic** requirements, without diminishing maternal satisfaction, resulting in a reduction of adverse local anaesthetic effects in labour outcomes have been reported in the literature.

## In preparation for the project, the existing Obstetric Epidural chart

was reviewed and revised. Prescribing prompts for PIEB + PCEA and a prompt for the assessment of leg weakness were added to the chart. A trial of the chart undertaken at Blacktown and Westmead Hospitals successfully demonstrated useability of the chart particularly prescription of medications via the epidural route and record of epidural insertion. It also demonstrated that midwives could **record the care associated with managing a woman in labour who had an epidural**.

## New epidural pumps

with PIEB and PCEA capabilities which had recently become available in Australia were purchased. Software in the new Cadd Solis<sup>®</sup> epidural pump enables a programmed intermittent epidural dose to be given combined with a patient controlled dose via a hand-held button, at safe intervals without exceeding maximum permitted hourly dose limits.

**Education and training resources developed** at Blacktown Hospital were used to help support the implementation of PIEB + PCEA at Westmead and Auburn Hospitals.

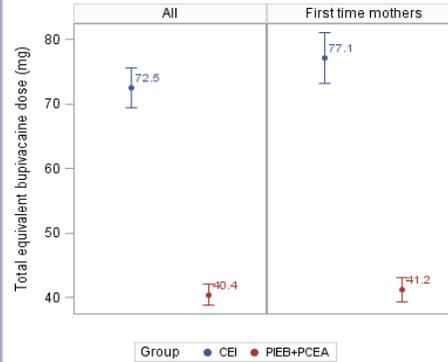
## A prospective cohort controlled study

investigated outcomes from 188 women who received an epidural via the traditional continuous infusion method and subsequently on 209 women who received an epidural using the new technique at Blacktown Hospital. Women using PIEB+PCEA, used considerably less of the drug ropivacaine, which resulted in a significant reduction of leg weakness and length of time for the second stage of labour.

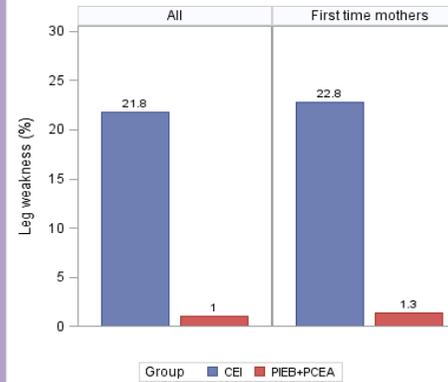
## The reduction of leg weakness

associated with an epidural can **improve** the process of **labour and birth** due to the woman's increased ability to move into a more effective position for birth. By reducing the length of second stage of labour, particularly for first time mothers, PIEB + PCEA may contribute to **reducing** the risk of an **instrumental delivery**.

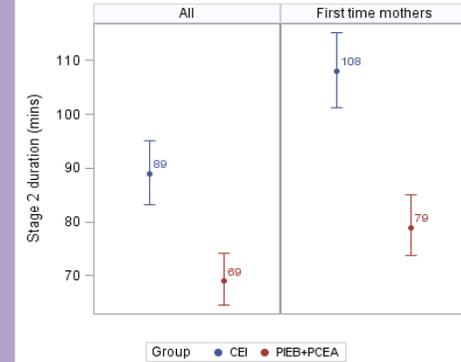
Total equivalent bupivacaine dose in women receiving epidural analgesia for labour (mean and standard errors)



Leg weakness in women receiving epidural analgesia for labour



Duration of stage 2 of labour in women receiving epidural analgesia for labour (mean and standard errors)



## The average total equivalent bupivacaine dose

required during labour was almost **halved** from 72.5mg to 40.4mg using the new technique of programmed intermittent epidural bolus combined with patient controlled epidural analgesia (PIEB+PCEA), compared to the traditional continuous epidural infusion (CEI). In first time mothers, a larger reduction was observed.

## Leg weakness

was experienced by about **1 in 5** women (21.8%) who received the traditional continuous epidural infusion (CEI). This was significantly **reduced to about 1 in 100** women (1%) using the new technique of programmed intermittent epidural bolus combined with patient controlled epidural analgesia (PIEB+PCEA). Similar effects were observed in first time mothers.

## The second stage of labour

was **shortened** by an average of **20 minutes** using the new technique of programmed intermittent epidural bolus combined with patient controlled epidural analgesia (PIEB+PCEA), compared to the traditional continuous epidural infusion (CEI). **First time mothers** experienced a much more prominent average **reduction of 29 minutes**.

## Feedback from patients

regarding their experience of labour using the new epidural pump continues to be **positive** with women expressing an ability to **'feel the urge to push'** without significant pain. Women have also expressed greater mobility during their labour, with midwives reporting some women being able to stand at the edge of the bed or use a birthing stool during their delivery. Two patients recently compared their experience of the new epidural with a continuous epidural infusion for their previous births:

*"it was good because you could manage your own pain. I couldn't do that last time. I could feel the contractions but not the pain. I could also move my legs"* BH May 2016

*"In 2012 I had the standard epidural, with that one I couldn't move my legs. With the new epidural I could move my legs when I needed to and still had good pain relief. I felt in control with being able to use the button"* AI May 2016.

The patient controlled component of the new technique **embodies the empowerment given to women** during labour via the hand-held button which enables them to self-administer additional pain relief as they feel is needed. This respects the fundamental desire of women to have an element of control of their pain management during labour.



Emily Edmonds is now a participant on an International Nurse Advisory Group for Smiths Medical.

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