

## Introduction

Remifentanil Patient Controlled Analgesia (PCA) is a well-established method of providing labour analgesia. Following publication of RemiPCA SAFE network data, our department has moved to an adjustable dosage regime - 30mcg/dose being the default starting dose, with 20mcg/dose being available for those weighing <50kg and in cases of intrauterine death<sup>1</sup>. Dose escalation in 10mcg/dose increments can occur (following review by an anaesthetist) to a maximum of 40mcg/dose in cases of inadequate analgesia.

## Aim

We aimed to review the use of this adjustable regime and consider its effects on patient analgesia, side effects and neonatal outcomes.

## Method

Consecutive patients receiving remifentanil PCAs were identified via the labour ward controlled drug books between 19/05/2023 and 18/09/2023. Identified patients notes were then examined to determine demographic information, indications and contraindications to remifentanil use, effectiveness of analgesia, side effects, mode of delivery and neonatal outcomes. A consecutive cohort receiving epidural analgesia was also identified between 01/11/2023 – 31/12/2023. Data are presented as median [IQR] or as count (%).

Caldicott guardianship was obtained and ethical approval deemed unnecessary by the West of Scotland research ethics service.

|                                          | Remifentanil PCA<br>n=92 | Epidural Analgesia<br>n= 88 |
|------------------------------------------|--------------------------|-----------------------------|
| BMI (Kg/m <sup>2</sup> , (median [IQR])) | 28.3 [25.0-31.0]         | 28.2 [24.6-31.2]            |
| Parity (median [IQR])                    | 0 [0-1]                  | 0 [0-1]                     |
| Gestation (median [IQR])                 | 39 [38-40]               | 39 [38-40]                  |
| Mode of Birth (n {%})                    |                          |                             |
| <i>SVD</i>                               | 64 (69.6%)               | 37 (42.0%)                  |
| <i>Instrumental delivery</i>             | 12 (13.0%)               | 29 (33.0%)                  |
| <i>Caesarean section</i>                 | 16 (17.4%)               | 22 (25.0%)                  |
| Apgar score at 1 min (median [IQR])      | 9 [8-9]                  | 9 [8-9]                     |
| Apgar score at 5 min (median [IQR])      | 9 [9-9]                  | 9 [9-9]                     |
| Neonatal resuscitation required (n {%})  | 4 {4.4%}                 | 9 {10.2%}                   |
| Neonatal unit admission (n {%})          | 1 {1.1%}                 | 8 {9.1%}                    |

Table 1: Comparisons between epidural anaesthesia and remifentanil PCA

## Results

Overall, 130 patients received remifentanil PCA during the study period. Notes were available in 92 cases. Median pain score reduction was 4/10 [2/10-6/10]. Supplemental oxygen was required in 35.3% (30/85). Dose was increased in 17.6% (13/74) and reduced in 1 patient (1%). Epidural anaesthesia was requested in 14% (13/92) of patients treated with remifentanil PCA. Comparisons between epidural anaesthesia and remifentanil PCA are as shown in Table. 1.

## Discussion

We demonstrate effectiveness, side-effect profile and epidural conversion rates of an adjustable-dose remifentanil PCA regime which are in keeping with published literature<sup>1</sup>. Comparisons to epidural anaesthesia revealed differences in mode of birth and neonatal outcomes which were consistent with event rates reported previously<sup>2</sup>. Such studies showed confounding factors to be responsible for these differences and this is likely to be the case in this study. Ongoing data collection and review is, however, required.

## References

- 1 Melber AA, Jelting Y, Huber M, Keller D, Dullenkopf A et al. Remifentanil patient-controlled analgesia in labour: six-year audit of outcome data of the RemiPCA SAFE Network (2010-2015). International Journal of Obstetric Anesthesia. 2019; 39: 12-21.
- 2 Kearns RJ, Shaw M, Gromski PS, Ilodromi S, Lawlor DA et al. Association of Epidural Analgesia in Women in Labor With Neonatal and Childhood Outcomes in a Population Cohort. Journal of the American Medical Association Network Open. 2021; 4: e2131683.