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Introduction

- Programmed Intermittent Epidural Bolus (PIEB) analgesia for labour has been shown in the literature to provide superior pain control and reduces the risk of motor weakness.¹
- It appears to be evolving into the preferred method of epidural analgesia delivery in the US.^{2, 3} And now is becoming a more popular choice in the UK.
- We have used the same PIEB Standard Protocol (SP) since 2015 in over 8000 deliveries.
- In 2022 a second Enhanced Protocol (EP) was introduced, with higher doses of local anaesthetic, with the aim of reducing call-backs and maintaining low side effect profiles, for those requiring higher doses of analgesia, providing more a personalised approach.

Methods

- Inclusion Criteria
- All functioning labour room epidurals requiring clinician intervention.
- Exclusion criteria
- Non functioning epidurals / Failed to top up for LSCS.

- Parturients with inadequate analgesia received a clinician bolus of 10-15mls of 0.1% I-bupivacaine + 2mcg/ml fentanyl, then were started on the Enhanced Protocol.
- Primary outcome: number of clinician call-backs.
- Secondary Outcomes: motor block, adverse events.

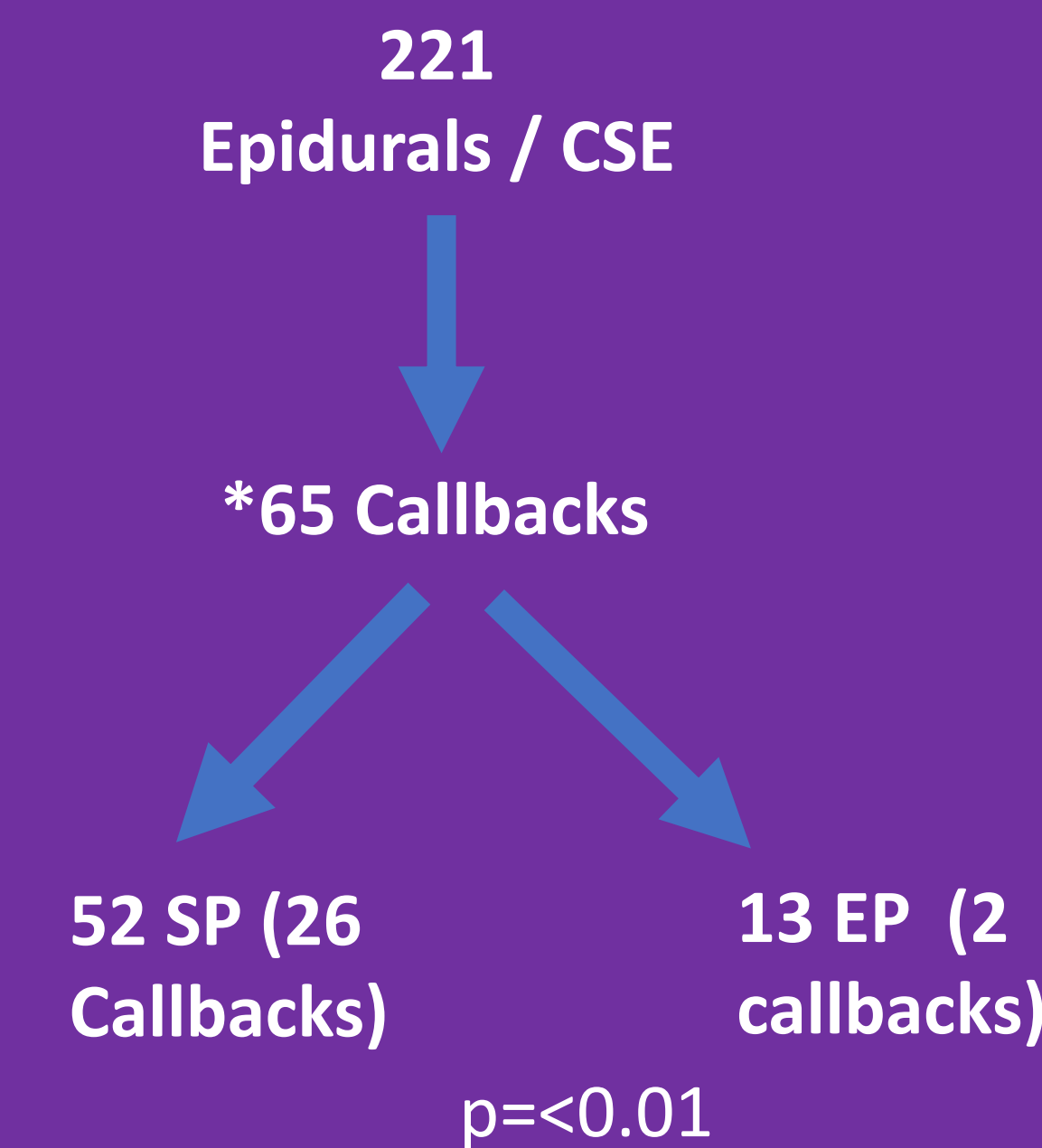
- Data was collected at the point of care, demographic data retrospectively from the Euroking maternity system, and subsequently compared with two previous service evaluations in 2016 and 2021.

Protocols

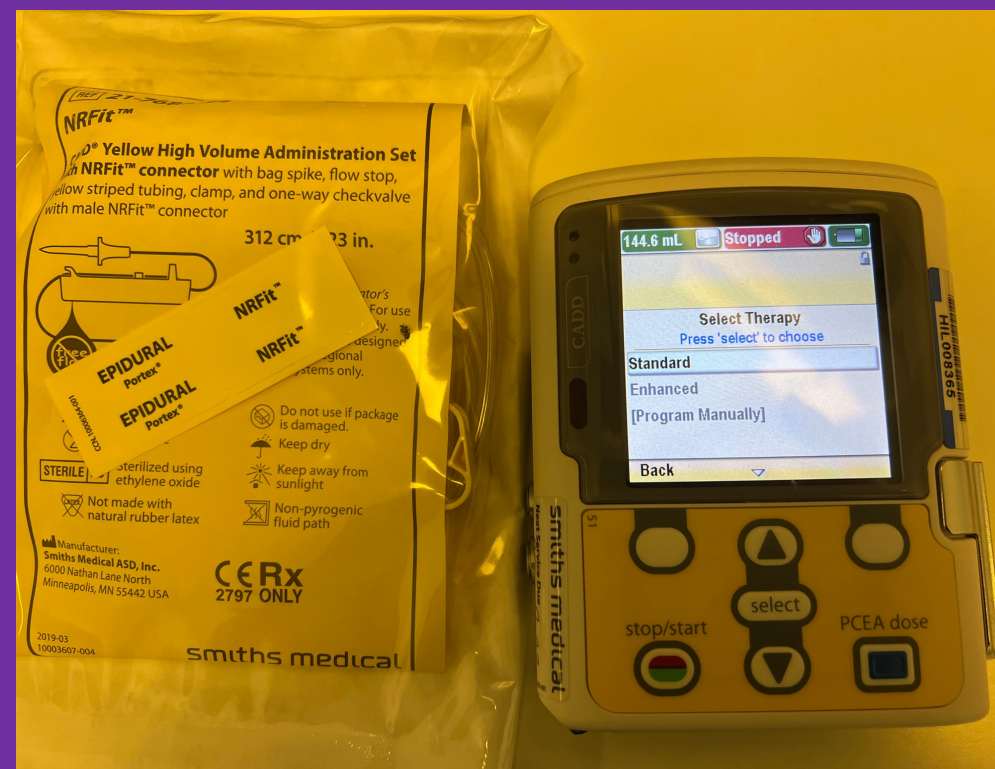
STANDARD (SP) 7mls bolus – 60 mins – PCEA Dose 6mls – Lockout 20mins

ENHANCED (EP) 9mls Bolus – 45 mins – PCEA Dose 6mls – Lockout 20mins

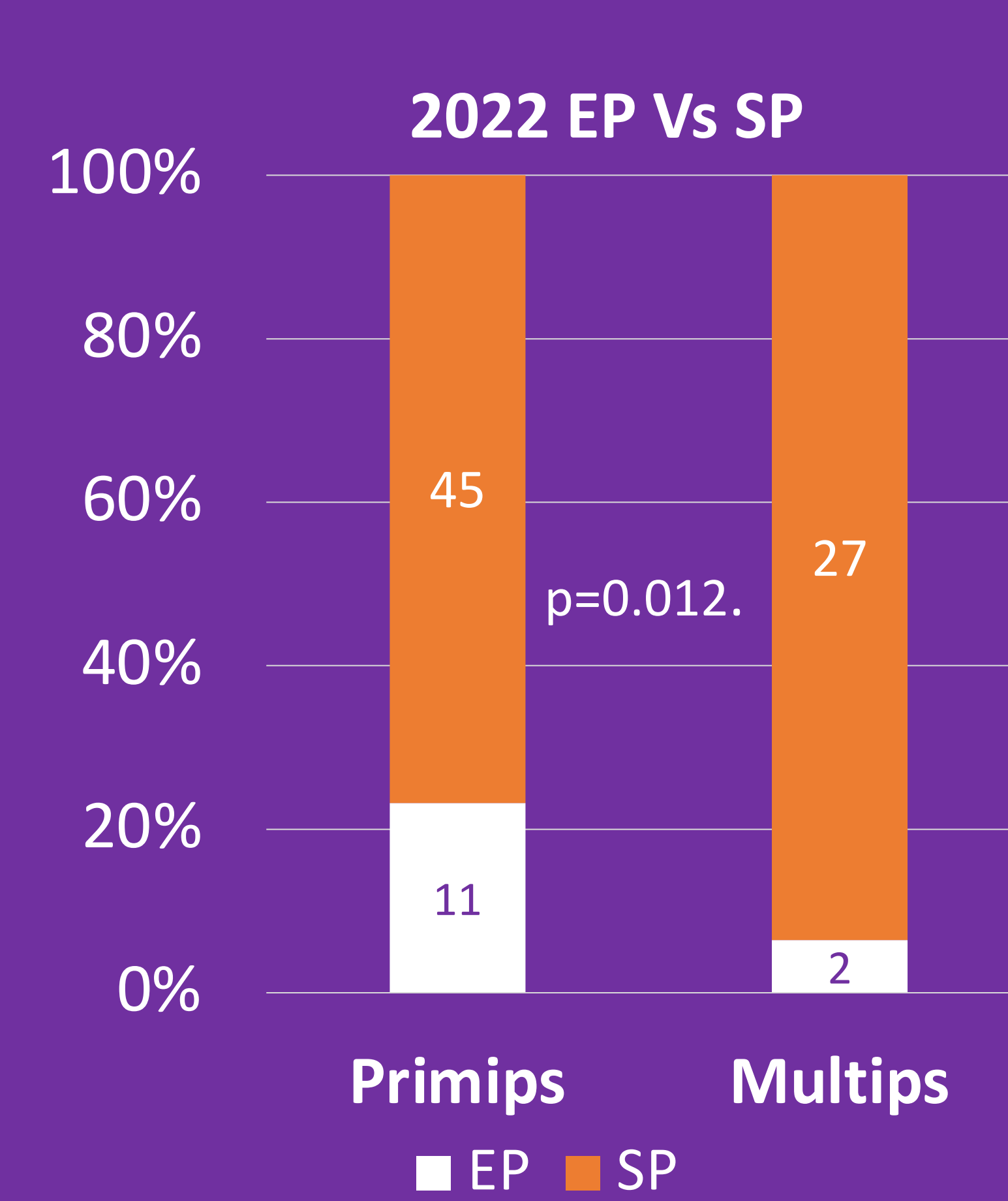
Combining audit data, each
callback as an event



CADD Solis pumps + NR Fit
Smiths medical



*Total Callbacks after 1st intervention: 15-20ml Bolus
Enhanced (EP) vs Standard Protocol (SP)



Audit Year	Total n. (EPI/CSE)	SVD	Instrumental	LSCS	Call-back Rate	Motor Block	Adv. Events (BP or Brady)
2016 (Pre EP)	78 (60/18)	32%	35%	33%	27/78 (33%)	1/78 (1.3%)	3/78 (3.8%)
2021 (Pre EP)	58 (41/17)	33%	31%	36%	20/58 (34%)	2/58 (3.4%)	2/58 (3.4%)
2022 (Post EP)	85 (71/14)	31%	35%	34%	18/85 (22%)	2/85 (2.3%)	2/85 (2.4%)
p-value		0.39	0.36	0.47	<0.01 (0.007)	0.46	0.3

References

- Wang X, Yuan S. Programmed intermittent epidural bolus in parturients: A meta-analysis of randomized controlled trials. Medicine. 2022. 101(5): p e28742.
- Callahan E, Yeh P, Carvalho B, George RB. A survey of labour epidural practices at obstetric anesthesia fellowship programs in the United States. Can J Anaesth. 2022.;69(5):591-596
- Roofthoof E, Barbé A, Schildermans J, Cromheecke S, Devroe S, Fieuw S, Rex S, Wong CA, Van de Velde M. Programmed intermittent epidural bolus vs. patient-controlled epidural analgesia for maintenance of labour analgesia: a two-centre, double-blind, randomised study. Anaesthesia. 2020 Dec;75(12):1635-42.

Results

- Complete data was collected on 85 parturients., with 7 Epidurals excluded as per exclusion criteria.
- Analgesia was initiated via epidural in 71 and via CSE in 14 parturients.
- 13 parturients were started on the Enhanced Protocol.
- There was no significant change in rate of motor block, adverse events or delivery method.
- 11 out of 56 placed on the EP were primiparous and augmented on oxytocin, compared to 2 out of 29 multiparous. This was deemed of statistical significance p=0.012.
- Evaluation of 65 call-backs from 221 labourers, combined from two previous audits in 2016 and 2021, demonstrated a statistically significant reduction in the call-back rate from 33.5% to 22% following the introduction of the Enhanced Protocol (p=<0.01).

Conclusions

- The PIEB protocol used at our unit has provided comparative high quality and safe analgesia for the majority of parturients^{1,3}
- Many have higher analgesic requirements and will benefit from increased doses of analgesia and a therefore a more personalised approach.
- Having a selection of protocols affords clinicians the ability to provide more personalised care.
- We noted a higher proportion of primiparous and long duration augmented labours required the Enhanced Protocol (p=0.012).
- The Introduction on an Enhanced Protocol reduced call-back rate, potentially reducing anaesthetic and midwifery workload.
- Methods to identify parturients who may require the Enhanced Protocol warrants further investigation.