



Evaluation of the introduction of carbetocin as the primary uterotonic in operative birth at a tertiary obstetric unit

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BACKGROUND

Carbetocin is a long-acting oxytocin analogue.

It was introduced at Nottingham University Hospitals (NUH) as the primary prophylactic uterotonic for operative births (caesarean and assisted vaginal birth) in January 2025. Prior to this syntometrine had been used in vaginal births, and oxytocin at vaginal births in hypertensive women and at all caesarean sections.

Carbetocin has been shown to reduce the risk of post-partum haemorrhage (PPH)^{1,2}. It also negates the use of postnatal oxytocin infusions, this was felt to be important following NPS advice against drawing up postnatal oxytocin infusions prior to birth. This project aimed to audit adherence to the use of carbetocin in operative births and its effectiveness in reducing PPH.

AIMS

- 100% switch to carbetocin usage as the primary uterotonic for operative births (LSCS and instrumental) across theatres and labour suite at NUH following its introduction in January 2025.
- Assess change in PPH following the switch to carbetocin.
- Assess change in use of additional uterotonics following the switch to carbetocin.

METHODS

Following approval of the project from the Trust governance team, 200 operative births were identified and analysed retrospectively.

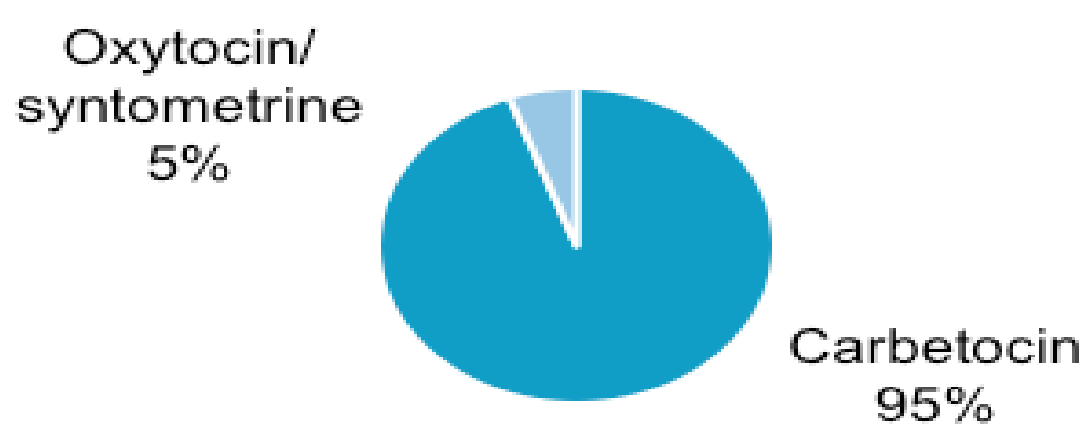
These consisted of 100 pre and 100 post introduction of carbetocin across the Trust.

Data were extracted including hospital number, campus of birth, date of birth, mode of birth, category of caesarean, total blood loss (TBL) and birth location.

21 births had inadequate data, so a total of 179 births were included, 88 prior to and 91 post introduction of carbetocin. Following collation of the data, unpaired t-tests and fisher exact tests were used to compare the two groups with respect to blood loss, additional uterotonics and incidence of PPH.

RESULTS

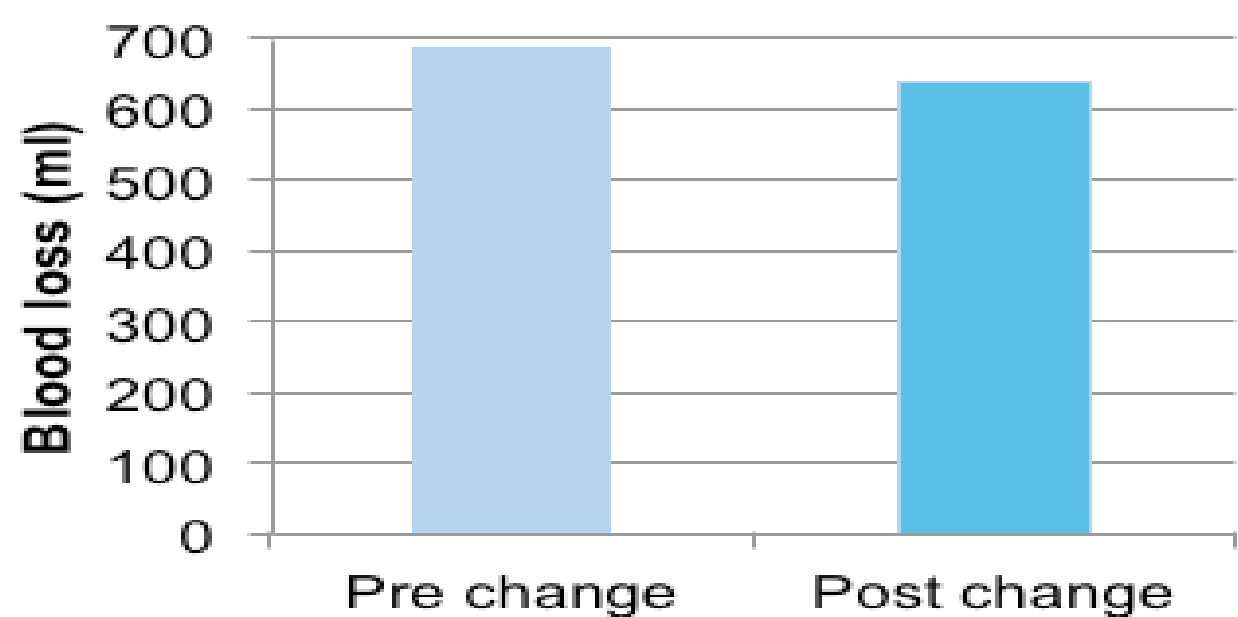
Compliance with introduction of carbetocin



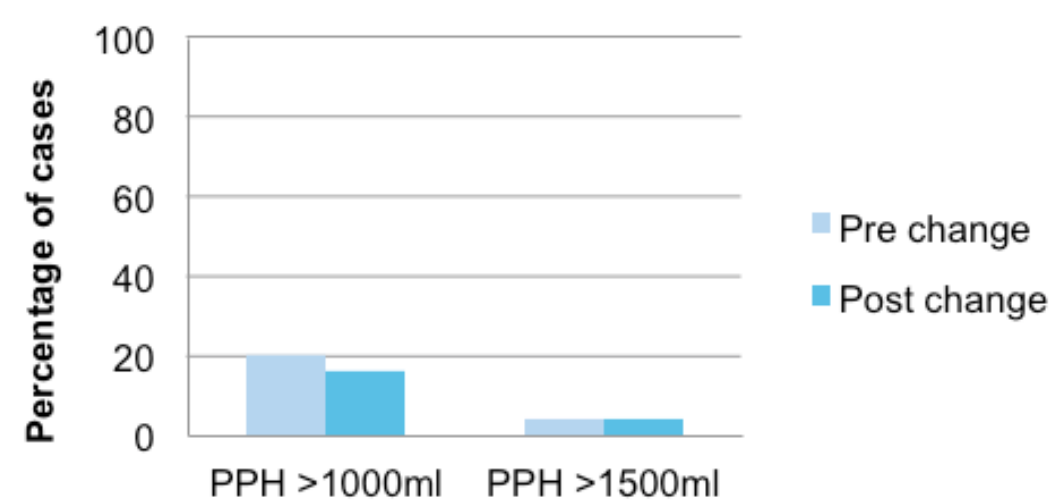
- 5% of the cases following the switch over to carbetocin were managed with oxytocin or syntometrine.
- 2 of these 5 cases were for instrumental births on labour suite- 40% of the instrumental births on labour suite during the study period.

Change in estimated blood loss

- 6.5% decrease in the average blood loss (within 24 hours of delivery) following the switch to carbetocin.
- This was not statistically significant (p=0.499).



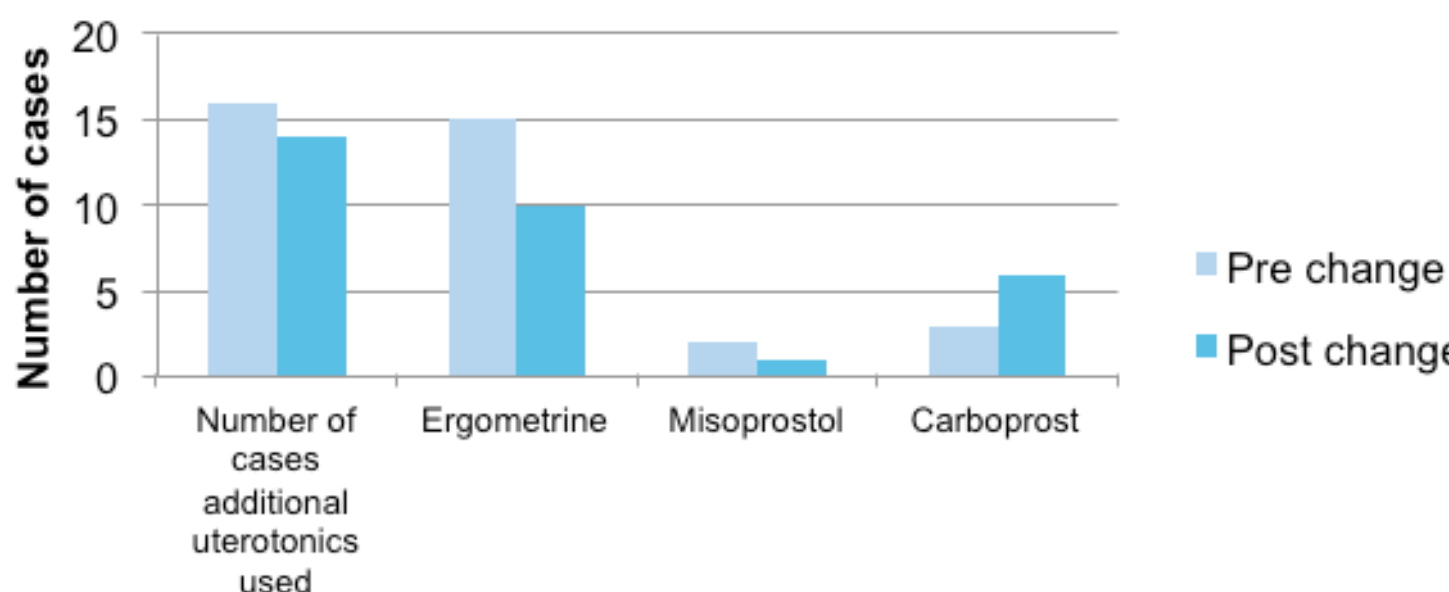
Improvement in incidence of PPH



- No change in the incidence of PPH (>1500ml) in the carbetocin group, both groups had an incidence of 4%.
- For a moderate PPH of >1000ml there is an improvement of incidence from 20% to 16%. (p=0.487).

Change in usage of additional uterotonics

- 18% (n=16) in the pre change group needed additional uterotonics compared to 15% (n=14) in the carbetocin group. The average number of additional uterotonics given per case reduced post the change over 0.22 vs 0.18.
- Overall there was a 20% decrease (p=0.565).



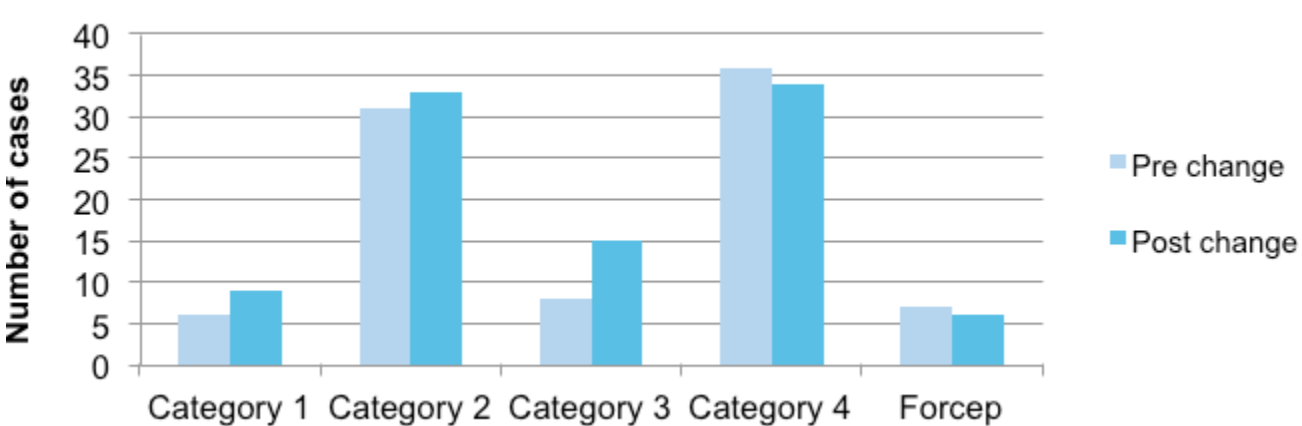
Tranexamic acid usage

- In the pre change group 34 patients (39%) were given tranexamic acid.
- In the post change carbetocin group 31 patients (34%) received it.

PPH risk scores

- The PPH risk scores between the groups were broadly the same.
- It is appreciated that not all risk factors carry the same weight in terms of risk.
- It does give a broad indication that the patients before the changeover did not have a much greater inherent PPH risk, 0.93 vs 1.34.

Elective vs emergency cases



- 40% of the cases in the pre change group were having elective sections.
- 37% in the carbetocin group.
- Overall the acuity of section was slightly higher in the carbetocin group.

CONCLUSION AND DISCUSSION

We did not reach the target of 100% compliance with carbetocin for operative birth and it is not fully embedded into practice yet. We are doing further work in this area including education and an assisted birth checklist for labour suite. It appears that labour suite has not adapted as well to the change as theatres, so we are mainly targeting interventions here.

Overall there was a reduction in total blood loss in women who received carbetocin rather than oxytocin or Syntometrine following operative birth across NUH maternity services. Whilst the numbers included in the study are small there appears to be a trend towards decreased PPH in the carbetocin group. The group who recieved carbetocin were also shown to have greater urgency of birth and more risk factors for PPH, despite this, the trend was still towards a decreased PPH risk in the group receiving carbetocin.

There is also a trend towards a reduction in additional uterotonics following the switch to carbetocin, including a reduction in the use of tranexamic acid. This is reassuring, although not statistically significant due to the small numbers involved.

Given the above NUH have continued to utilise carbetocin at all operative births as there has been no evidence of harm as a result and potentially some evidence towards a reduced risk.

Further work will focus on evaluation of carbetocin use and improvement in compliance at assisted vaginal birth outside theatre. There is consideration of a checklist for operative birth on labour suite which would include carbetocin.

REFERENCES

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