Does carbetocin for prevention of postpartum haemorrhage at caesarean section provide clinical or financial benefit compared with oxytocin?

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The objective was to assess the clinical and cost implications of carbetocin or oxytocin, for the prevention of primary postpartum haemorrhage after caesarean section. The authors concluded that carbetocin did not provide any therapeutic benefit to the patient or the unit, and it had no cost advantage in low-risk patients, compared with oxytocin. There were several limitations to the methods of the study, and its reporting. The authors’ conclusions should be treated with caution.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to assess the clinical and cost implications of carbetocin or oxytocin, for the prevention of primary postpartum haemorrhage, following caesarean section.

Interventions
Five international units of oxytocin was compared with 100 micrograms of intravenous carbetocin.

Location/setting
UK/hospital.

Methods
Analytical approach:
The analysis was based on an eight-week study, of all caesarean births, at a District General Hospital in Bolton, UK. An extended analysis was conducted for low-risk caesarean deliveries. The authors did not report the study perspective.

Effectiveness data:
The effectiveness data were from a clinical service evaluation of a change in health policy, from oxytocin to carbetocin, for the prevention of haemorrhage after delivery. Data were collected on 110 women, who underwent caesarean section and received carbetocin, and 55 matched women, who underwent caesarean section and received oxytocin, in the eight weeks before the introduction of carbetocin. The two groups were matched for age, parity, body mass index, gestation, and co-existent medical problems. A number of clinical outcomes were considered, including the frequency of haemorrhage, blood loss, and transfusion requirements.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
A number of measures of benefit were considered, including the frequency of haemorrhage, blood loss, and transfusion requirements.

Cost data:
The costs included staff time (from delivery to leaving the theatre, the time in recovery, and the time in the delivery suite), analgesic and antiemetic medications, and consumables (syringes, needles, etc), from the delivery of the baby.
Analysis of uncertainty:
There was no analysis of uncertainty.

Results
The results were presented for all caesarean deliveries and for elective low-risk deliveries. No statistically significant differences were observed, across the range of clinical outcomes, between oxytocin and carbetocin.

For example, for all deliveries, there were five major postpartum haemorrhages out of 51 deliveries with oxytocin and 11 out of 107 with carbetocin (p=0.92). There were two transfusions out of 49 patients with oxytocin, and six out of 106 with carbetocin (p=0.68).

For low-risk deliveries, the cost of care was £80.21 with oxytocin and £98.73 with carbetocin (p=0.0097).

Authors' conclusions
The authors concluded that carbetocin did not provide any therapeutic benefit to the patient or the unit, and it had no cost advantage in low-risk patients, compared with oxytocin.

CRD commentary
Interventions:
The rationale for the selection of the two drugs was appropriate, with guidelines suggesting that carbetocin should replace oxytocin, for the prevention of haemorrhage, after caesarean section.

Effectiveness/benefits:
The clinical data came from an observational analysis, comparing two periods – before and after the introduction of carbetocin. The patients in each group were matched for several demographic and clinical characteristics, but there might have been other changes across the two periods that could have influenced the results. It was unclear if the study had sufficient power to detect significant differences between the two groups. A number of clinical outcomes were considered; most of them were disease specific and unlikely to be comparable with the outcomes of other interventions and conditions.

Costs:
The costs were poorly reported. The perspective was not stated, but appears to have been that of the hospital. The resource use was likely to have come from the patients in the clinical analysis, but the sources for the unit costs were not provided, making it difficult to comment on their validity. The unit costs were not reported and the total costs for all deliveries were not reported. The costs were treated deterministically, and the price year was not reported. No discounting was necessary, given the short time horizon of the study.

Analysis and results:
The results of the clinical analysis were clearly reported, but only the costs for low-risk deliveries were given. The clinical and economic outcomes were not combined. Uncertainty was not investigated. The results are likely to be specific to the authors’ UK setting, and not transferable to other settings.

Concluding remarks:
There were several limitations to the methods of the study, and its reporting. The authors' conclusions should be treated with caution.

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Bibliographic details