Continuity of care by a midwife team versus routine care during pregnancy and birth: a randomised trial

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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.

Health technology
Continuous care during pregnancy and birth from a team of midwives was compared with routine care from a variety of midwives and doctors.

Type of intervention
Antenatal care and intrapartum care.

Economic study type
Cost-effectiveness analysis.

Study population
Women attending the antenatal clinic of a tertiary referral, university hospital. Most women were white, more than half were married, more than half were non-smokers, and the mean age was 26.5 years for the intervention group and 26.1 years for the control group.

Setting
University hospital (antenatal clinic and delivery suite). The economic study was carried out in Newcastle, New South Wales, Australia.

Dates to which data relate
Participants were entered into the study between May 1991 and June 1992. Each participant was followed until just after the birth, with a final questionnaire six weeks after the birth. Costs were based on records collected at the same time. The price date was not reported.

Source of effectiveness data
Evidence of effectiveness was based on a single study.

Link between effectiveness and cost data
Costing was based on the same sample as that used in the effectiveness study. Costing was undertaken retrospectively and based on the medical records of participants.

Study sample
Each group needed to be at least 360 strong since this is the optimum number of women which can be cared for by one team of six midwives in a year and only one such team was available.1,700 women attended the antenatal clinic between May 1991 and June 1992 and were assessed for eligibility. Those who opted for shared care with their general
practitioner (816, 48%) and those with a substance abuse problem (30, 1.8%) were excluded. Of the remaining 854 who were invited to participate, 814 agreed (refusal rate of 4.7%). Participants were stratified according to risk, based on criteria for assessing eligibility for birth centre care, and parity. Each group was then allocated to team care (405) or the control group (409) by computer-generated random assignments. Power calculations were used to determine the sample size and the authors state that this was large enough to detect clinically important differences in outcome.

**Study design**
The study was a single centred randomized controlled trial. Block randomisation was used. The blocks were:

1. Higher risk primipara: 92 women, 43 allocated to team care and 49 to routine care;
2. High risk multipara: 183 women, 90 to team care and 93 to routine care;
3. Low risk primipara: 304 women, 151 to team care and 153 to routine care;
4. Low risk multipara: 235 women, 121 to team care and 114 to routine care.

Complete medical results were available for 758 women. Loss to follow up, resulting from participants moving out of the area, was stated to be the same for both groups (not statistically different) but numbers were not given. Loss due to miscarriage was 8 in the team care group and 19 in the routine care group. This was, statistically, significantly different (OR, 0.44; 95% CI: 0.20-0.94). A follow-up period was six weeks after delivery. Maternal satisfaction was measured by questionnaires completed antenatally, at two days and at six weeks after delivery. Questionnaire response declined from 75.2% to 53.3% over the three questionnaires. Blinding was not possible due to the nature of the intervention.

**Analysis of effectiveness**
Analysis was based on intention to treat. Primary outcome measures were antenatal (attendance at antenatal classes, admissions, gestation at delivery, type of onset of labour, use of analgesia or anaesthesia, length of labour, type of delivery, reason for operative delivery, and injury to the perineum) and neonatal events (Apgar scores, resuscitation, birthweight, sex, admissions to neonatal intensive care, type of feeding on discharge, and death), and maternal satisfaction. Confounding factors, risk and parity, were accounted for in the study design by blocking. The groups were similar in sociodemographic, physical and medical characteristics.

**Effectiveness results**
Team care women were more likely to attend antenatal classes (OR 1.73; 95% CI:1.23-2.42, they were less likely to use pethidine during labour (OR 0.32; 95% CI: 0.22-0.46) and they were more likely to labour and deliver without intervention (OR 1.73; 95% CI: 1.28-2.34). Babies of team care mothers received less neonatal resuscitation (OR 0.59; 95% CI: 0.41-0.86). There was no difference in Apgar scores at 5 minutes (OR 0.86; 95% CI: 0.29-2.57). Maternal satisfaction was greater with team care on all three elements: information-giving, participation in decision making and relationships with caregivers.

**Clinical conclusions**
Continuity of care provided by a small team of midwives results in a more satisfying birth experience than routine care with fewer adverse maternal and neonatal outcomes.

**Measure of benefits used in the economic analysis**
The clinical study measured multiple outcomes. No single measure of effectiveness was derived. <DIRECT COSTS>>
The Australian national cost weights for diagnosis-related groups (DRGs) were applied to the outcomes of women for whom complete results were available. This was done retrospectively by a clerk blinded to the study, was based on the medical records, and covered inpatient costs. The cost of intervention and comparative care was estimated by analysing midwives’ salaries. No discounting was used as the time period was less than one year. Costs and quantities were not
reported separately. No price dates were given.

**Currency**
Australian dollars (Aus$).

**Sensitivity analysis**
No sensitivity analysis was carried out.

**Estimated benefits used in the economic analysis**
No benefits were estimated. The economic study compared the costs of the intervention and the standard form of antenatal care.

**Cost results**
The total costs of acute inpatient care were Aus$1,088,067 for team care women and Aus$1,145,837 for routine care women. The cost for neonatal intensive care were Aus$178,627 for team care and Aus$171,169 for routine care. The average cost per delivery was Aus$3,333.4 for team care women and Aus$3,484.1 for routine care women. These costs cover inpatient costs. Antenatal care costs were Aus$653 for each team care woman and Aus$688 for each routine care woman.

**Synthesis of costs and benefits**
Costs and benefits were not combined.

**Authors' conclusions**
Continuity of care provided by a small team of midwives resulted in a more satisfying birth experience at less cost than routine care and fewer adverse maternal and neonatal outcomes. Although a much larger study would be required to provide adequate power to detect rare outcomes, the study found that continuity of care by a team of midwives was as safe as routine care.

**CRD COMMENTARY - Selection of comparators**
A justification was given for the comparator used. Antenatal, intrapartum and early postnatal care from a variety of doctors and midwives working in the antenatal clinic, the delivery suite and postnatal area was considered as standard practice. You, as a user of this database, should consider whether this is a standard form of antenatal care in your setting.

**Validity of estimate of measure of benefit**
The clinical evidence was based on a randomised trial, however, several sources of bias remain due to the unblinded nature of the study. These problems were clearly discussed by the authors. Data was not used selectively.

**Validity of estimate of costs**
The analysis of costs was not carried out with the same attention to detail as the clinical study. The use of AN-DRGs as the measure of inpatient care costs gives only a blanket generalisation and, since prices and quantities are not given, costs can not be generalised outside Australia. Some costs associated with antenatal outpatient care, such as doctors' time, were not included.

**Other issues**
The authors’ conclusions seem to be justified, although some reservations may arise from the potential biases discussed by the authors. No single measure of benefit was derived for the economic analysis, and hence comparison with other economic evaluations may not be possible.

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