Uncomplicated pregnancy: clinical pathway genesis based on the nursing process
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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
A clinical pathway for early discharge for uncomplicated vaginal delivery was examined. The programme covered five areas of the nursing process. More specifically, assessment, diagnosis, planning, intervention, and evaluation. A multidisciplinary team of obstetrical and paediatric nurses, paediatricians, neonatologists, obstetricians, perinatologists, social workers and hospital administrators developed the programme. Multiparous patients were discharged within 24 hours and primiparous patients were discharged within 48 hours.

Type of intervention
Other: Patient care management.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised gravidas with uncomplicated antepartum, intrapartum and postpartum courses, with a vaginal delivery of the newborn between 38 and 42 weeks' gestation with weight appropriate for gestational age by the appropriate intrauterine growth curves. The newborns were required to have normal and stable vital signs, successful feedings, and no abnormalities precluding discharge.

Setting
The setting was secondary care. The economic study was carried out in the USA.

Dates to which data relate
The effectiveness and resource use data were gathered from March to August 1994 for the control group and from March to August 1996 for the intervention group. The price year was not reported.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

Link between effectiveness and cost data
The costing was carried out retrospectively on the same sample of patients as that used in the effectiveness analysis.

Study sample
The use of power calculations was not reported. All eligible patients identified at the study centre during the timeframe considered in the analysis were enrolled. It was not stated whether some patients were excluded from the study sample for any reason. There were 1,042 patients in the control group and 1,050 patients in the intervention group.
Study design
This was a prospective comparative study with historical controls, which was conducted at the MAMC in Tacoma (WA), USA. The data were obtained from hospital records. Follow-up phone consultations were carried out at 48 hours and 5 days. The overall follow-up lasted 6 months. No loss to follow-up was reported.

Analysis of effectiveness
It appears that all the patients included in the initial study sample have been considered in the analysis of effectiveness. The outcome measures used were:

- the total and mean number of hospital days;
- the number of maternal and newborn hospital readmissions postpartum;
- the number of maternal and newborn unscheduled clinic visits; and
- the number of maternal and newborn emergency visits.

Patient satisfaction with the pathway was evaluated using a Likert visual scale with 17 pertinent questions. The score ranged from 1 (worst) to 5 (best). The authors did not discuss the baseline comparability of the study groups.

Effectiveness results
The average satisfaction score was 3.8, suggesting "excellent” satisfaction with the early discharge programme.

The total number of hospital days was 2,668 in the control group and 1,965 in the intervention group, (p<0.05). The mean numbers of hospital days were 2.56 (control) and 1.87 (intervention), respectively, (p<0.05).

There were 3 (0.2%) maternal hospital readmissions postpartum in the control group versus 7 (0.6%) in the intervention group. The odds ratio (OR) was 2.32 (95% confidence interval, CI: 2.17 - 6.92; p<0.05). However, these admissions were not clinically significant because they were all for postpartum mastitis or endometritis, and they occurred after 48 hours of hospital discharge.

There were 9 newborn hospital readmissions in the control group versus 12 in the intervention group, (p>0.05).

The number of maternal unscheduled clinic visits was 123 in the control group and 237 in the intervention group, (p<0.05). The numbers of newborn unscheduled clinic visits were 106 (control) and 216 (intervention), respectively (OR 3.03, 95% CI: 2.18 - 4.27; p<0.05).

The number of maternal emergency visits was 55 in the control group and 67 in the intervention group, (p>0.05). The number of newborn emergency visits was 42 in each group, (p>0.05).

Clinical conclusions
The effectiveness analysis showed that the new clinical pathway was effective in reducing the length of stay postpartum and was associated with high patient satisfaction. However, the numbers of maternal readmissions and newborn unscheduled clinic visits were significantly higher in comparison with standard care.

Measure of benefits used in the economic analysis
The health outcomes were left disaggregated and no summary benefit measure was used in the economic analysis. In effect, a cost-consequences study was carried out.

Direct costs
Discounting was not relevant since the costs per patient were incurred during a short time. The unit costs and the quantities of resources used were not presented separately. The health services considered in the economic evaluation were obstetric/postpartum and paediatric care. These included room and bed costs, supplies and salaries. The cost/resource boundary was not explicitly stated. Resource use was estimated using actual data derived from a review of the hospital charts of those patients involved in the effectiveness study. The source of the cost data was not reported. The price year was not given.

**Statistical analysis of costs**
Statistical tests were carried out to test the significance of differences in the estimated costs.

**Indirect Costs**
The indirect costs were not considered.

**Currency**
US dollars ($).

**Sensitivity analysis**
Sensitivity analyses were not carried out.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The total costs were $3.2 million in the control group and $2.4 million in the intervention group, (p<0.05).

The daily cost of obstetric/postpartum care was $3,126 in the control group and $2,285 in the intervention group, (p<0.05).

The daily cost of paediatric care was $509 in the control group and $463 in the intervention group, (p<0.05).

**Synthesis of costs and benefits**
The costs and benefits were not combined because a cost-consequences analysis was conducted.

**Authors' conclusions**
The implementation of the clinical pathway for early discharge after uncomplicated vaginal delivery was successful. It resulted in high patient satisfaction and reduced the costs in comparison with standard care, despite an increase in the rate of maternal readmissions and newborn unscheduled clinic visits.

**CRD COMMENTARY - Selection of comparators**
The choice of the comparator, standard care before the implementation of the new clinical pathway, was appropriate. The authors described the characteristics of the study intervention. You should decide whether they are valid comparators in your own setting.

**Validity of estimate of measure of effectiveness**
The analysis of effectiveness was based upon an observational study. The evidence for the control group was gathered.
retrospectively. The main drawback of such a design was the fact that the two study groups were not studied concurrently and factors other than the implementation of the clinical pathway could have affected the results of the analysis. In fact, the authors did not demonstrate that other important changes in the management of uncomplicated vaginal delivery did not occur during the timeframe of the study. Moreover, the baseline comparability of the two groups of patients was not commented upon. The use of a fully prospective and randomised study would have been more appropriate. Power calculations were not performed to justify the size of the sample. The authors stated that a far larger group of patients should have been enrolled to show no change in maternal or newborn readmissions, as reported in an earlier study. The study sample was not selected on the basis of strict inclusion criteria, but it appears to have been representative of the study population. However, the effectiveness evidence came from a single military institution, which might limit the generalisability of the study results to other settings or medical centres.

**Validity of estimate of measure of benefit**
No summary benefit measure was used in the analysis because a cost-consequences analysis was conducted.

**Validity of estimate of costs**
The authors did not report explicitly the perspective that was adopted in the study. In addition, the source of the cost data was not provided, although it could have been the study centre. Information on the cost analysis, such as the unit costs, quantities of resources used and price year, was not reported satisfactorily, which could make it difficult to replicate the study in other settings. The cost estimates were specific to the study setting and no sensitivity analyses were carried out. Overall, the cost analysis represented a secondary aim of the study.

**Other issues**
The authors did not compare their findings with those from published studies. They also did not address the issue of the generalisability of the study results to other settings. Sensitivity analyses were not carried out, which reduces the external validity of the analysis. The study referred to uncomplicated vaginal deliveries and this was reflected in the conclusions of the analysis. The authors noted only a few limitations to the validity of their study.

**Implications of the study**
The study results suggested that a clinical pathway for early discharge after uncomplicated vaginal delivery can be safely implemented, and it could result in improvements in patient care and cost-savings.

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None stated.

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**Other publications of related interest**

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