

Comparison of outcome of low-risk labour in an isolated general practice maternity unit and a specialist maternity hospital

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SUMMARY. *The outcome of labour of 185 low-risk pregnancies at an isolated general practitioner maternity unit was compared with that for 185 comparable low-risk pregnancies at a specialist maternity hospital. No difference was found in mode of delivery or in the proportion of women requiring no analgesia, although significantly more women in the general practice group received analgesia beyond nitrous oxide. There was a significantly higher level of intervention in labour in the maternity hospital group in the form of fetal monitoring and augmentation of labour. The duration of first stage of labour was longer and meconium staining less frequent in the general practice group. Fourteen (7.6%) of the general practice group were transferred in labour to the specialist unit.*

The results suggest that where considerations for selection of low-risk pregnancy permit, the general practice maternity unit can provide a distinctive style of intrapartum care with minimum intervention.

Introduction

THE past 30 years have seen several important trends in maternity care. Home confinement, common in the 1930s, became increasingly unusual as hospital confinement increased. At first this was often in general practitioner beds but the role of the general practitioner in intrapartum care has now diminished from 45% of deliveries in 1963 to less than 15% in 1980.¹ These trends have been given momentum by several influential reports.²⁻⁴ In parallel with the increase in specialist intrapartum care there has been a trend towards greater technological intervention in labour in both normal and complicated cases.

Although there has been a marked decline in perinatal mortality rate during this period it is uncertain to what extent this is due to the changes in obstetric practice.⁵ There is particular uncertainty over the role of isolated general practitioner maternity units. They are staffed by midwives and general practitioners with or without specialist involvement. The activities of 116 of these units in England and Wales were recently surveyed by Cavenagh⁶ who found that just under 4% of deliveries took place in them and they had a very low overall perinatal mortality rate. Despite this a number of these units have been closed in recent years and more are threatened.

Can a case be made for retention of these isolated general practice units for delivery of selected low-risk patients? Studies from Canada⁷ and New Zealand,⁸ where, because of geographi-

cal isolation, very many confinements occur in small isolated units, have shown no evidence of increased perinatal mortality rate for small units. In Britain, because women booking for general practitioner confinement are selected for lower risk, valid comparisons must use measures of outcome for comparable groups of women. Taylor and colleagues⁹ studied comparable low risk groups in different geographical areas and found no adverse consequences for delivery in isolated general practice units. Klein and colleagues¹⁰ compared outcome for general practitioner and consultant shared care for comparable groups in an integrated general practice/consultant maternity unit and found an increase in intervention under the shared care system without evidence of improved outcome.

The presence of Keynsham maternity unit, six miles from Bristol maternity hospital provided an opportunity for a similar comparison of style of management of labour and outcome of delivery in comparable low risk groups booked for an isolated maternity unit and a specialist maternity hospital in the same geographical area. The general practice unit has 20 beds and nine experienced midwives and is used by 30 local general practitioners for antenatal, intrapartum and postpartum care. Approximately 140 women per year are booked for delivery at the unit (total for the health district in 1985: 3661 deliveries). Transfers in labour are either to Bristol maternity hospital or Royal United hospital, Bath, which is another consultant unit also six miles distant.

Method

General practice group

The hospital notes of all women booked and going into spontaneous labour at the Keynsham maternity unit between 1 August 1983 and 31 January 1985 were examined. (Labour was diagnosed when regular uterine contractions of at least one in 10 resulted in progressive cervical dilatation.) Normally only women with low-risk pregnancy are accepted for delivery at the general practice unit. For the purpose of this study we applied the strict exclusion criteria as follows: nullipara under 20 or over 30 years of age; multipara under 18 or over 35 years of age; height 1.54 m or less; parity greater than four; previous stillbirth, neonatal death or severely congenitally abnormal infant; previous low birth weight infant (under 2.5 kg); previous Caesarean section, hysterotomy, myomectomy or other significant gynaecological surgery; previous serious obstetric complication, for example abruption, eclampsia; medical disorder; multiple pregnancy; rhesus negative with antibodies; elevated alpha-fetoprotein; antenatal haemoglobin under 10 g dl⁻¹; or malpresentation persisting after 34 weeks gestation.¹

This provided a group of 155 multiparae and 30 nulliparae who went into labour at the unit. Those women who were subsequently transferred to a specialist unit in the perinatal period were included in the general practice group. The women were then grouped by social class using husband's occupation.¹¹

Specialist group

The specialist group was obtained from women booked and delivered at the Bristol maternity hospital from 1 January 1984

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to 31 March 1985 as computer data relating to 1983 were not readily available. Information relating to all aspects of obstetric care is inserted into a computer by the midwife at delivery, so a comparable low risk group could be selected easily. A computer programme was designed using the same exclusion criteria to those applied to the general practice group. There were no non-Caucasians in the general practice group so pregnancies involving non-Caucasian women were excluded. Women not going into spontaneous labour were also excluded. All women fulfilling the criteria for low risk pregnancy and delivered during the study period were thus identified by the computer.

In order to make standards of antenatal care as comparable as possible only women registered with general practice vocational training practices were included in the final list. This method yielded 696 eligible low-risk women (393 nulliparae and 303 multiparae) who were divided by social class using the same method as the general practice group. Cases were then selected by random methods to obtain exactly the same numbers of nulliparae and multiparae with identical social class structure to the general practice group.

The various obstetric variables — transfers during labour for the general practice group, management of labour and maternal and neonatal outcome — were obtained from the hospital records of both groups. The Z test was used to test for significant differences between groups.

Results

The two groups were almost identical with respect to age and smoking habits (74.0% of the specialist group and 77.3% of the general practice group were non-smokers). The mean infant birthweight was 3.47 kg in both groups. Mean parity in multiparous women was 1.33 for the specialist group and 1.65 for the general practice group. These findings suggest there was no major selection bias.

Transfers in labour

Fourteen (7.6%) of the 185 women in the group were transferred to a specialist unit after going into labour at the general practice unit. Seven were multiparae and seven were nulliparae, representing 4.5% and 23.3% of multiparae and nulliparae respectively. Seven women were transferred for delay in the first stage, two for second stage delay, two for abruption or heavy show, two for pre-eclampsia and one woman was transferred for cord prolapse. Of these 14 transfers 10 had a normal vaginal delivery, one had Keilland forceps rotation, one had low forceps and two had a Caesarean section. One baby delivered by Caesarean section for cord prolapse had an Apgar score of less than 6 at one minute but did not require intubation.

Obstetric practice

Table 1 compares the management of labour for the two groups. The low level of use of monitoring techniques, augmentation and epidural anaesthesia in the general practice group reflects the unavailability of these facilities at the unit; women in the general practice group receiving these had all been transferred. Similarly, Caesarean section is not undertaken at the unit. The mode of delivery and numbers requiring no analgesia were strikingly similar in the two groups. However, 77 women (41.6%) received analgesia beyond nitrous oxide in the general practice group compared with only 52 women (28.1%) in the specialist group ($P < 0.01$). This was due to greater use of pethidine in the general practice group more than outweighing the excess of epidural anaesthesia in the specialist group.

Table 1. Management of labour for the two groups of women.

	Number (%) of women	
	Specialist group (n = 185)	General practice group (n = 185)
Augmentation	19 (10.3)	3 (1.6)***
<i>Monitoring techniques</i>		
Cardiotocography	133 (71.9)	8 (4.3)***
Scalp electrode	30 (16.2)	2 (1.1)***
Scalp pH	5 (2.7)	0 (0) *
<i>Analgesic use in labour</i>		
None	26 (14.0)	23 (12.4)
Nitrous oxide only	107 (57.8)	83 (44.8)*
Pethidine/promethazine ± nitrous oxide	32 (17.3)	71 (38.4)***
Epidural	19 (10.3)	4 (2.2)**
General anaesthetic	1 (0.5)	2 (1.1)
<i>Mode of delivery</i>		
Spontaneous vaginal	174 (94.0)	173 (93.5)
Low forceps/vacuum	10 (5.4)	9 (4.9)
Keilland forceps	0	1 (0.5)
Caesarean section	1 (0.5)	2 (1.1)

n = total number of women.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

Maternal outcome

Table 2 shows maternal outcome for the two groups. The difference in duration of first stage of labour must be interpreted with caution because it is difficult to be exact about the time of onset of labour and the criteria may have been interpreted differently in the two units. The excess of perineal tears in the specialist group and episiotomy in the general practice group presumably reflects midwife preference. Whether or not to perform an episiotomy is decided by the midwife except in in-

Table 2. Maternal outcome for the two groups of women.

	Number (%) of women	
	Specialist group (n = 185)	General practice group (n = 185)
<i>Length of labour</i>		
First stage of labour > 12 hr	1 (0.5)	23 (12.4)***
Second stage of labour > 1 hr	15 (8.1)	17 (9.2)
<i>Condition of perineum</i>		
Intact	52 (28.1)	50 (27.0)
Tear without episiotomy	90 (48.6)	76 (41.1)
Episiotomy with or without tear	43 (23.2)	59 (31.9)
<i>Other problems</i>		
Postpartum haemorrhage (estimated blood loss > 500 ml)	5 (2.7)	17 (9.2)**
Urinary retention	1 (0.5)	2 (1.1)
Anaemia (Hb < 10 g dl ⁻¹)	2 (1.1)	11 (5.9)*
Postpartum pyrexia	2 (1.1)	5 (2.7)
Evacuation vulval haematoma	2 (1.1) (GA)	0 (0)
Retained placenta	2 (1.1) (GA)	0 (0)
Chest infection	1 (0.5)	0 (0)

GA = under general anaesthesia.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

strumental delivery. A recorded postpartum haemorrhage of 500 ml or over was more common at the general practice unit ($P < 0.01$) and there was an excess of identified anaemia in this group ($P < 0.05$). These findings must be interpreted cautiously; the estimation of blood loss can be only approximate and the midwives at the isolated unit may have recorded this potentially serious complication with more vigilance. Some of the excess of postpartum anaemia in the general practice group will be due to a higher level of identification, for all women at the general practice unit have a postpartum haemoglobin estimation but only selected women at the hospital.

Neonatal outcome

Table 3 summarizes the findings for neonatal outcome. The excess of meconium staining in the specialist group is likely to be a real difference since this complication is carefully recorded at both units. Laryngoscopic visualization of the cords is undertaken in all cases of meconium staining at the hospital but not at the unit. Neonatal intubation was undertaken only when meconium aspiration may have occurred. No meconium aspiration pneumonia occurred in either group. The only death was a lethal congenital abnormality in the general practice group. This baby was born at the general practice unit with normal Apgar scores but with facial dysmorphism, colonorectal atresia and other abnormalities. The baby was transferred to hospital soon after birth but died after four weeks of intensive care. Three other babies required transfer to specialist care because of cleft palate (one), jaundice (one) and mild respiratory distress (one).

Table 3. Neonatal outcome for the two groups of babies.

	Number (%) of babies	
	Specialist group (n = 185)	General practice group (n = 185)
Meconium staining	34 (18.4)	14 (7.6)**
Apgar < 6 at 1 minute	8 (4.3)	10 (5.4)
Neonatal intubation	7 (3.8)	0 (0) **
<i>Infant feeding</i>		
Breast	119 (64.3)	130 (70.3)
Bottle	66 (35.7)	55 (29.7)

** $P < 0.01$.

Discussion

This study has shown a markedly higher level of intervention in labour in the specialist group in the form of fetal monitoring and augmentation of labour. There was also an excess of meconium staining of liquor and consequent neonatal laryngoscopy in the specialist group. The duration of the first stage of labour appeared to be longer in the general practice group, although it is difficult to be certain about timing the onset of labour. However, Klein¹⁰ found a similar increase in duration of first stage in his general practice group and his findings also showed greater intervention and more frequent fetal distress in the specialist group. It is tempting to attribute a cause and effect relationship between intervention on the one hand and shorter labour and more fetal distress on the other, but the design of the study cannot confirm this. Unlike Klein¹⁰ and Taylor⁹ who both found an excess of instrument delivery in their specialist groups, mode of delivery in our study was very similar between the two groups. The apparent excess of postpartum haemorrhage in the general practice group is difficult to explain unless it is due to differences in estimation; Klein¹⁰ did not report haemorrhage and Taylor⁹ found an excess of postpartum haemorrhage in his specialist group.

Some differences, such as the frequency of episiotomy and perineal tear, are likely to reflect midwife preference, since the numbers of women with an intact perineum were very similar. The numbers having no analgesia were similar in the two groups. However, more women in the general practice group received analgesia beyond nitrous oxide. This was surprising and differs from the findings of both Taylor⁹ and Klein,¹⁰ who found greater use of analgesia in specialist care. It may be simply a local phenomenon whereby midwives at the general practice unit are more ready to supplement nitrous oxide with pethidine than midwives at the specialist unit who know they have access to epidural anaesthesia if necessary. The excess of pethidine in the general practice group did not produce any excess of low Apgar scores.

The 7.6% of women in labour who were transferred to a specialist unit underline the need for an isolated general practice unit to have specialist services available even when strict antenatal selection criteria are used. All those transferred in our study had a satisfactory outcome, although they had the discomfort of a 15 minute ambulance journey. The numbers are too small to comment on the safety of transfer. However, a study by the same authors shows no evidence of adverse effects for 96 transfers in labour over eight years.¹²

This study was too small to demonstrate clearly the safety of confinement in an isolated general practice unit. However, the larger comparative studies from overseas^{7,8} and in the UK⁹ suggest that there is no additional risk to mother or baby. Tew,⁴ using statistical techniques to re-analyse the 1970 British Births data, concluded that perinatal mortality is significantly higher in consultant obstetric hospitals than in general practice maternity units. However, the validity of Tew's methods has been questioned.⁵

In terms of maternal satisfaction there seems to be a strong demand for general practitioner care. Taylor¹¹ undertook a postal survey of 562 mothers in Bath and found a strong preference for antenatal and postnatal services provided by general practitioners or neighbourhood hospitals. She also found that a majority of mothers would prefer delivery under general practitioner care when considerations of safety permit. A small but detailed study of maternal attitudes, experiences and satisfaction, comparing general practitioner with consultant shared care systems in an integrated general practice consultant unit, showed a small but consistent preference for the general practitioner system.¹³

This study, together with other published work already quoted, shows that general practice maternity units, whether integrated or isolated, can provide a distinctive style of intrapartum care with minimum intervention that is well suited to low-risk women and does not create additional risks. This is dependent on the availability of specialist colleagues and their facilities. Where an isolated general practice unit is available and a local general practitioner is willing to undertake intrapartum care a low-risk woman can make an informed choice between the two styles of care, aware of the possibility of transfer in labour. With greater encouragement from obstetric specialists and from the health authorities it is likely that more general practitioners would wish to provide (or allow their general practitioner colleagues to provide) intrapartum care and thereby respond to the wishes of the consumer.

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MRCGP EXAMINATION — 1988

The dates for the next two examinations are as follows:

May/July 1988

Written papers: Wednesday 4 May 1988 at centres in London, Manchester, Edinburgh, Newcastle, Cardiff, Belfast, Dublin, Liverpool, Leeds, Birmingham and Bristol. Oral examinations: in London from 20 to 29 June inclusive and in Edinburgh from 30 June to 2 July inclusive. The closing date for applications is Friday 26 February 1988.

October/December 1988

Written papers: Tuesday 25 October 1988 at centres in London, Manchester, Edinburgh, Newcastle, Cardiff, Belfast, Dublin, Liverpool, Leeds, Birmingham, Bristol and Exeter. Oral examinations: in Edinburgh on 5 and 6 December and in London from 7 to 12 December inclusive. The closing date for applications is Friday 2 September 1988.

The examination application fee for 1988 is £200 (re-application fee £150). Further details and an application form can be obtained from the Examination Administrator, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU.

INFECTIOUS DISEASES UPDATE

Influenza vaccine 1987/88

The advisory group on influenza vaccine this year recommends vaccine containing A/Singapore/6/86 (H₁N₁) like, A/Leningrad/360/86 (H₃N₂) and B/Ann Arbor/1/86 antigens for the usual 'at risk' groups of patients. Recent batches of Fluvirin (Evans), Influvac Sub-Unit (Duphar) and MFV-Ject (Servier) contain these strains.

Campylobacter food poisoning

Although in recent years the proportion of food poisoning from campylobacter has been increasing, this year it looks as though campylobacter infections may end up outnumbering salmonella by 2:1. Why this is happening is not clear — both infections are usually related to poultry consumption. Illnesses from salmonella usually start with diarrhoea and associated fever and vomiting. Campylobacter infections frequently start with 12 to 24 hours fever and sometimes abdominal pain prior to the diarrhoea.

Products available for sterilization

Following a previous update about sterilizing medical instruments (*July Journal*, p.310), there have been enquiries about what products are available through general pharmacies for disinfecting contaminated surfaces and other equipment that cannot be heat treated. The simplest method is to use household bleach diluted 1 in 10 or Milton solution 1%. (Milton available outside hospital is 2% and this may be diluted if it is felt necessary to do so.) Both the solutions cope readily with the human immunodeficiency and hepatitis B viruses.

Meningococcal infection

There has been an outbreak of meningococcal infection in Saudi Arabia and neighbouring countries which seems to have followed the influx of people to the region for the Mecca pilgrimage. It may be that this is an extension of the annual epidemic which occurs in sub-Saharan Africa from Sudan to the Gambia just before the summer rainy season. It involves meningococcus type A, for which vaccine is available from Merieux UK Ltd (on a named patient basis): one dose gives two to three years' protection. How long the outbreak will continue is uncertain but it would seem wise to consider vaccination for the next year or two until we know whether outbreaks will recur.

Poliomyelitis

The World Health Organization's expanded programme on immunization has a target of providing poliomyelitis vaccine for all children in the world by 1990. A recent review suggests that encouraging results have been achieved, especially in Latin America and China, but that the disease is still highly endemic in Southern Asia and Africa. This emphasizes the need for travellers to ensure they are protected.

Reye's syndrome

Since 1983 there has been an ongoing nationwide survey of this acute disease, mainly occurring in children, in which hepatic and cerebral complications cause a mortality of around 50%. There were 18 probable cases between August 1986 and March 1987, showing a downward trend from previous years. It may be that publicity about the association with aspirin ingestion has had some effect. Cases do occur, however, where there is no history of taking salicylates.

Suggestions for topics to include in future updates are welcomed and should be passed to the contributor, Dr E. Walker, Communicable Diseases (Scotland) Unit, Ruchill Hospital, Glasgow G20 9NB (041-946-7120), from whom further information about the current topics can be obtained.