Outcome of women booked into an isolated general practice maternity unit over eight years

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SUMMARY. The outcome of pregnancy of 1303 women admitted for delivery (including those transferred after admission) at an isolated general practitioner maternity unit over the period 1978–85 was studied. The outcome following change of booking before admission was also assessed for the years 1982–85. The crude perinatal mortality rate was 1.5 per 1000 for all admissions between 1978 and 1985. Of the women admitted in 1978–85 7.4% were transferred after admission while for those booked at the unit in 1982–85 11.3% had their place of booking changed. A higher proportion of nulliparous women than multiparous women were transferred or had their place of booking changed. The main reasons for transfer after admission were delay in the first stage of labour (21.9%), spontaneous rupture of membranes not in labour (16.7%) and hypertension (15.6%), and for change of booking postmaturity (26.9%) and hypertension (16.4%).

Sufficient information concerning risk of transfer and change of booking may now be available from studies of isolated general practice maternity units for pregnant women at low risk to make an informed choice of place for delivery.

Introduction

THE involvement of general practitioners in intrapartum care has diminished from 45% of deliveries in 1960 to less than 15% in 1980.[1] Uncertainty over the safety of isolated general practitioner maternity units is one of several factors contributing to this decline. However, assessing the safety of these units has proved difficult[2] because women booked for delivery are selected for low risk and outcome is likely to be better than an unselected group delivering at a specialist unit. Furthermore, outcome at isolated general practice maternity units is misleadingly good if those who have changed booking or have been transferred to a specialist unit in labour are excluded. There are also problems with measuring safety. Perinatal mortality rate, the most objective measure of safety, is a crude indicator of the quality of maternity care. In addition, perinatal death is a rare event in low-risk pregnancy and large numbers are needed for interpretation. Morbidity measures allow conclusions from smaller numbers but assess quality more than safety.

The studies of Taylor[3] and Cavenagh[4] tackled these problems by pooling data from many isolated units and by including outcome of transferred cases. Taylor also used a matched low-risk group delivering in a consultant unit for comparison, and measured perinatal mortality and morbidity. Two other studies have looked at isolated general practice maternity units in sparsely populated rural areas.[5,6]

This paper presents a descriptive study of the quality of care, including the perinatal mortality rate, for a single isolated general practice medical unit in a semi-rural suburban area. To obtain a large number of women a period of eight years was studied. To our knowledge this is the first study to include outcome for women whose bookings are changed as well as those transferred after admission.

Keynsham maternity unit is situated six miles (15 minutes by ambulance) from each of two specialist units in Bristol and Bath. Travelling time by car is prolonged by dense traffic. Experienced midwives staff the 20 beds, eight of which are used for postnatal care of women transferred from specialist units. Ten general practices use the unit for intrapartum obstetrics. There are no facilities for Caesarean section and no specialist anaesthetic or paediatric cover on site but neonatal resuscitation facilities are available. Normally general practitioners attend deliveries — they attended 88% of deliveries in 1985. Bookings are made for low-risk women by the general practitioner and midwife with advice from the general practitioner medical officer who may accept responsibility for intrapartum care of women from other general practitioners at their request. Criteria for judging 'low-risk' pregnancy broadly correspond to those advocated by Stirrat.[1]

Cooperation with the specialist unit enables women who are doubtfully low risk or who later enter a high-risk category to be referred for an opinion or booking into the specialist unit at any time in their antenatal, intranatal or postnatal care.

Method

Records of all women booked and admitted for delivery at the general practice unit were analysed for the period 1978–85. Parity and whether the women delivered at the unit or were transferred to a specialist unit were recorded, with indications for transfer where appropriate. Mode of delivery was recorded in all cases and significant perinatal complications were noted where data could be reliably obtained.

Reliable data for change of booking was unavailable before 1982. Thus, for women whose booking was changed to a specialist unit after 24 weeks gestation but before admission to the unit, data was recorded for the period 1982–85. Women who moved out of the area or whose bookings were cancelled before 24 weeks gestation were excluded. Information was obtained from hospital records, general practitioners and community midwives.

Results

Transfer after admission

Between 1978 and 1985 there were 1303 women booked and admitted to the unit: 18.2% were multiparas and 81.8% nulliparas. Of these 1207 (92.6%) delivered at the unit and 96 (7.4%) were transferred for maternal and fetal indications. Among those transferred 46 were nulliparous and 50 were multiparous. This represents a transfer rate of 19.4% for all nulliparous women and 4.7% for all multiparous women admitted to the unit. Table 1 shows the maternal and fetal indications for transfer after admission, ranked in order of frequency. There was more than one indication in some cases. The main reasons for transfer were delay in the first stage of labour (21.9%), spontaneous rupture of membranes not in labour (16.7%) and hypertension (15.6%).

Table 2 compares mode of delivery and peripartum complications for women who were and were not transferred for mater-

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Table 1. Indications for transfer after admission to general practice maternity unit, 1975–85.

	Number (%) of women ($n = 96$)
First stage delay	21 (*21.9*)
Spontaneous rupture of membranes (not in labour)	16 (*16.7*)
Hypertension	15 (*15.6*)
Fetal distress	11 (*11.4*)
Postmaturity	8 (*8.3*)
Antepartum haemorrhage	7 (*7.3*)
Breech presentation	5 (*5.2*)
Second stage delay	5 (*5.2*)
Retained placenta	4 (*4.2*)
Rupture of membranes (not in labour) before 37 weeks	2 (*2.1*)
Malpresentation/fetal abnormality	2 (*2.1*)
Puerperal pyrexia	2 (*2.1*)
Labour before 37 weeks	1 (*1.0*)
Request for epidural anaesthesia	1 (*1.0*)
Prolapsed cord	1 (*1.0*)
Third degree tear	1 (*1.0*)
Postpartum haemorrhage	1 (*1.0*)

n = total number of women admitted and transferred.

Table 2. Mode of delivery and perinatal complications for women who delivered at the unit and those transferred to specialist unit, 1978–85.

	Number (%) of women	
	Delivered at unit ($n = 1207$)	Transferred after admission (maternal and fetal indications) ($n = 96$)
Spontaneous vaginal delivery	1165 (*96.5*)	67 (*69.8*)
Assisted vaginal breech	3 (*0.2*)	3 (*3.1*)
Low forceps/vacuum	39 (*3.2*)	14 (*14.6*)
Keilland forceps	0 (*0*)	2 (*2.1*)
Caesarean section	0 (*0*)	10 (*10.4*)
Retained placenta	15 (*1.2*)	4 (*4.2*)
Postpartum haemorrhage > 500 ml	71 (*5.9*)	5 (*5.2*)
Low birthweight (2000–2500 g)	10 (*0.8*)	4 (*4.2*)
Perinatal mortality	2 (*0.2*)	0 (*0*)

n = total number of women admitted.

nal and fetal indications. All the low birth weight babies survived. The two perinatal deaths were a macerated stillbirth at 37 weeks gestation (cause unknown) and an early neonatal death owing to cystic fibrosis. This represents a gross perinatal mortality rate of 1.5 per 1000 for all 1303 booked admissions.

A further 10 (0.8%) mothers were transferred as emergencies with their babies for the following neonatal indications: hyperbilirubinaemia (three); respiratory distress syndrome (two); pneumonia (one); ABO blood group incompatibility (one); oesophageal atresia (one); cleft palate (one); imperforate anus and other anomalies (one). The outcome was satisfactory in all cases except one baby with multiple congenital abnormalities who died at 34 days.

A further seven women who were not booked for delivery at the unit were transferred after admission, five prior to delivery and two with their babies.

Change of booking before admission

Between 1982 and 1985 637 women were booked for delivery at the unit. Twenty had miscarriages, 10 moved away, five changed booking before 24 weeks and eight changed booking at unknown gestation. Of the remaining 594 bookings (16.3% nulliparas; 83.0% multiparas; 0.7% unknown parity), 67 (11.3%) were changed before admission to the unit (20 of these were nulliparous, 43 were multiparous and four of unknown parity), 481 (81.0%) finally delivered at the unit and the remaining 46 were transferred after admission.

The reason for change of booking was available for 59 of the 67 women (Table 3). More than one indication was present in some cases. The most common problems were postmaturity (26.9% of cases) and hypertension (16.4%).

Outcome of labour

The outcome of labour was recorded where data could be obtained (Table 4). The data are presented in this form to illustrate the extent to which including transferred and changed booking cases influences the outcome of the groups as a whole. Ninety per cent of all women booked had a spontaneous vaginal delivery.

The three perinatal deaths represent a gross perinatal mortality rate of 5 per 1000 for 1982–85 (3 per 1000 excluding lethal congenital abnormality).

Discussion

Considerable uncertainty exists over the safety and desirability of isolated general practice maternity units. This study shows that a low overall perinatal mortality rate can be achieved after booking at an isolated unit: 5 per 1000 crude for all bookings 1982–85 and 1.5 per 1000 crude for all admissions including transfers 1978–85. In his recent study of 116 isolated general practice maternity units Cavenagh[4] found a very similar crude perinatal mortality rate of 5.2 per 1000 for those 85 units able to provide data on outcome of all booked cases, including those who delivered elsewhere. For those who delivered at the general practice units (18 832 births) he gave a crude rate of 1.1 per 1000 (1.7 per 1000 in our study). At Penrith, Young[6] found a rate of 4.7 per 1000 for all women starting labour (including transfer) and 0.87 per 1000 for those delivering in the maternity unit. In Canada, Black[5] found no significant difference in mortality rate between communities having access to different levels of

Table 3. Indications for change of booking at the maternity unit, 1982–85.

	Number (%) of women ($n = 67$)
Postmaturity	18 (*26.9*)
Hypertension	11 (*16.4*)
Breech presentation	7 (*10.4*)
Placental dysfunction/weight loss	7 (*10.4*)
Change of mind (mother)	6 (*9.0*)
Antepartum haemorrhage/placenta praevia	4 (*6.0*)
Labour/ruptured membranes before 37 weeks	4 (*6.0*)
Malpresentation/suspected fetal abnormality	3 (*4.5*)
Medical disorder arising after booking	3 (*4.5*)
Depression	1 (*1.5*)
Intrauterine death	1 (*1.5*)
Multiple pregnancy	1 (*1.5*)
Polyhydramnios	1 (*1.5*)
Rhesus antibodies	1 (*1.5*)
Poor obstetric history	1 (*1.5*)
Home birth	1 (*1.5*)
Not known	8 (*11.9*)

n = total number of women whose booking was changed.

Table 4. Outcome of labour for all women booked, all transferred and all delivered at the maternity unit, 1982–85.

	Number (%) of women		
	All booked at unit at 24 weeks[a] ($n=594$)	All admissions to unit[b] ($n=527$)	All deliveries at unit ($n=481$)
Spontaneous vaginal delivery	535 (*90.1*)	497 (*94.3*)	466 (*96.9*)
Breech	4 (*0.7*)	0 (*0*)	0 (*0*)
Low forceps/vacuum	33 (*5.6*)	25 (*4.7*)	15 (*3.1*)
Keilland forceps	2 (*0.3*)	1 (*0.2*)	0 (*0*)
Caesarian section	10 (*1.7*)	4 (*0.8*)	0 (*0*)
Retained placenta	8 (*1.3*)	7 (*1.3*)	5 (*1.0*)
Postpartum haemorrhage > 500 ml	43 (*7.2*)	41 (*7.8*)	36 (*7.5*)
Apgar <6 at 1 min	18 (*3.0*)	12 (*2.3*)	5 (*1.0*)
Low birthweight < 2500 g	16 (*2.7*)	10 (*1.9*)	9 (*1.9*)
Perinatal death	3 (*0.5*)	1 (*0.2*)	1 (*0.2*)
Incomplete data	10 (*1.7*)	0 (*0*)	0 (*0*)

n = total number of women. [a]Including transfers and changes of booking. [b]Including transfers after admission.

obstetric care. Our low perinatal mortality rate is partly achieved through careful antenatal selection before booking, a willingness to change booking if problems arise and an ability to transfer in emergency after admission to the unit.

Perinatal mortality rate alone is not a sensitive indicator of quality of maternity care. This study also provides limited data on morbidity for the period 1982–85. There was a small incidence of low Apgar scores for deliveries at the unit. However, postpartum haemorrhage (Table 4) was relatively common and the incidence was similar to the transferred group. The comparative study undertaken at the same unit[7] had a similar finding. This must be interpreted cautiously because blood loss is a subjective assessment. The few published comparative studies[3,7,8] of low-risk pregnancies in general practice maternity units and specialist units show that infant morbidity tends to be lower in general practice units even when transfers are included in the outcome.

Two local general practices which book all low-risk women who wish to be delivered at the unit found that in 1986 approximately 50% booked at the unit and 45% delivered there. In a study of outcome by place of delivery in New Zealand Rosenblatt[9] found that 71% of women with access to a low technology isolated general practice unit delivered there. The equivalent proportion in the Canadian study[5] was 57% and Young[6] recorded 73%. This initial selection for low risk together with subsequent change of booking and transfer after admission represent a selection process intended to identify high-risk women requiring delivery at a specialist unit.

The selection process at the unit could have been improved in several ways. The patient with poor obstetric history (Table 3) should not have been booked at a general practice unit. It would have been preferable to identify breech presentation before admission and change the booking rather than have an emergency transfer (five cases). It could be argued that the low birthweight babies should have delivered in a specialist unit. However, the New Zealand study[9] relating place of delivery, perinatal mortality rate and birthweight suggests that delivery in a general practice maternity unit results in a lower mortality rate for all birth-weights except under 1500 g.

This study cannot establish whether or not the decisions taken by the general practitioner, midwife and pregnant woman to arrange transfer were correct. Nulliparas were transferred more often than multiparas (19.4% versus 4.7%). However, there were no mortalities in the transfer group, despite the occurrence of serious problems such as prolapsed cord. Furthermore, the overall transfer rate of 7.4% is relatively low: Cavenagh[4] reported 10% overall and Taylor[3] reported a 47.6% transfer rate from isolated general practice units. Klein[8] reported a 33.5% transfer rate within an integrated general practice maternity unit and specialist unit. It is interesting that the transfer rate of 7% from Penrith[6] is so similar to that of Keynsham maternity unit despite differences in the distance of the units from specialist facilities. Black[5] does not give transfer rates but the lower technology units were an average of 200 km from specialist units and transfer rates are likely to have been low. During 1978–81 the emergency transfer rate at Keynsham unit was 6.4% of admissions and this rose to 8.7% during 1982–85. During this latter period, the unit was (and remains) under threat of closure and this may have engendered extra caution.

The evidence suggests that selection of women at low risk for delivery at isolated general practice maternity units is compatible with a low perinatal mortality rate. While it is inevitable that emergency transfer will sometimes be necessary the rate needs to be no more than 10% (higher for nulliparas and lower for multiparas), even from units not equipped to undertake Caesarean section and general anaesthesia. The most appropriate indications for change of booking and for emergency transfer remain uncertain but the outcome in these cases does not appear to be poor. In Young's study[6] there were five perinatal deaths among 114 transferred mothers. However, he states that 'in only one case would the outcome probably have been happier if the isolated unit had never been there'.

For the low-risk woman who has access to an isolated general practice maternity unit it is now possible to provide information including risk of transfer to help her to decide where she wishes to have her baby. We believe the evidence is now sufficient to make an informed choice acceptable. Such a choice will be possible only if such units are retained and this is likely only if they are well used. They can provide a distinctive and safe contribution even when relatively close to a city and there is evidence of strong consumer demand for general practitioner maternity care.[10]

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