

An analysis of 3,199 patients booked for delivery in general-practitioner obstetric units

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SUMMARY. The outcome of 3,199 women booked for delivery in six general-practitioner obstetric units in one year was analyzed.

Five per cent cancelled their bookings, 26 per cent were transferred to a consultant unit after referral for routine problems of pregnancy (mainly postmaturity), and 14 per cent were transferred for problems arising in labour (principally uterine inertia). One per cent were transferred after confinement.

Fifty-four per cent were delivered successfully in the general-practitioner units.

There were 3,037 live births, 27 stillbirths and 22 neonatal deaths. Nine stillbirths and nine neonatal deaths resulted from congenital abnormalities, while two stillbirths and 11 neonatal deaths were due to immaturity. There were 25 sets of twins and one set of triplets. Seventy-five babies were abnormal, 105 weighed less than 2,500g, and 198 over 4,000g.

In this series almost 60 per cent of eventual perinatal deaths were transferred during pregnancy, and over 85 per cent before delivery.

The perinatal mortality of all women initially booked for a general-practitioner unit who delivered was 15.9. The perinatal mortality of the 1,795 births in the six general-practitioner obstetric units was 3.9.

Introduction

IN 1972 the Derbyshire Obstetric Group decided to study six general-practitioner obstetric units (GPUs) to assess the pattern of care provided by local general-practitioner obstetricians. Five of the units were in

Derbyshire and one was in Leicestershire. The study was prospective, involving all women booked between 1 October 1973 and 30 September 1974.

The units varied in size from Ashbourne in rural Derbyshire (ten beds) to the Nightingale Hospital in Derby (34 beds). The other units were Holbrook (22 beds), Babington (19 beds), Darley Hall (13 beds) and Ashby de la Zouch (13 beds). The Nightingale (N/G), Holbrook (HOL), Babington (BAB), and Ashbourne (ASH), referred to the Derby City Hospital, while Darley Hall used Scarsdale Hospital in Chesterfield. Ashby (ABY) referred mainly to the Derby City Hospital but also to Leicester.

A total of 3,199 bookings were followed to an ultimate outcome (Table 1).

Method

Information on each patient was collected on a questionnaire; a doctor was attached to each unit to verify that this was done correctly. In the event of a patient not being admitted as expected the general practitioner was asked for information, and if the patient was referred to a consultant details were obtained from the hospital records.

Results

Cancelled bookings and miscarriages

Altogether 159 women cancelled their bookings. Seventy women miscarried in the first trimester, some being referred to a consultant, whilst others were managed at home. Three miscarriages in the second trimester and one missed abortion were referred to a consultant. Eighty-five cancellations were made for non-medical reasons. Fifty women moved from the area, 19 altered their booking to another general-practitioner unit, and five to a home confinement. Nine were not pregnant and two could not be traced.

Table 1. Outcome of patients booked for delivery at general-practitioner obstetric units.

	Patients	Babies	Stillbirths	Neonatal deaths	Perinatal deaths	% of viable cases	% PNDs
Bookings for GPUs	3,199						
Cancellations	85						
Miscarriages*	74						
	159						
Viable pregnancies	3,040	3,064†	27	22	49		
Transfers to CUs							
During pregnancy	817	837†	16	13	29	26.9	59.2
In premature labour ¹	55	55					
Transfers to CUs from GPUs			8	5	13	14.3	26.5
Before labour	22	22					
During labour	358	359					
All CU deliveries	1,252	1,273†	24	18	42	41.2	85.7
All GPU deliveries	1,788	1,791	3	4	7	58.8	14.3

* Four admitted to CUs after referral in pregnancy.

† In addition to this figure, three patients were referred to the consultant in pregnancy but no details of outcome or delivery were recorded.

¹ Forty admitted from home, 15 transferred soon after admission to GPUs.

Parity

The majority of women booked were either primigravidae (1,348) or para ones (1,031). Eighteen patients were para four or more and 293 women had had at least one miscarriage.

Admissions to the general-practitioner units

A total of 2,183 women were admitted to the general-practitioner units. There were 1,788 successful deliveries there and 395 women were transferred to a consultant unit. One hundred and fifteen (five per cent) were admitted for induction of labour, the remainder being in labour when admitted. The principal reason for induction was postmaturity (97 women); seven women were

induced for pre-eclamptic toxæmia (PET), four for oedema, and seven for unspecified reasons. Nine women had an artificial rupture of membranes (ARM) to aid a poorly established first stage of labour.

Induction in the general-practitioner units

Table 2 shows the methods of induction used in the six general-practitioner units. The one syntocinon drip was supervised by the general practitioner throughout its use and resulted in a normal delivery and a live birth. The Ashby unit attracted attention through its use of buccal oxytocin, either as a principal means of induction or combined with an ARM. Clearly, inductions were more frequently attempted at this unit—nearly three times the number attempted at the larger

Table 2. Induction in the general-practitioner units.

Method of induction	HOL	BAB	N/C	ASH	ABY	D.H.	Total
ARM	8	14	19	1	5	9	56
ARM and buccal oxytocin	—	—	—	—	34	—	34
Buccal oxytocin	—	—	—	—	11	—	11
Sweep and buccal oxytocin	—	—	—	—	4	—	4
Sweep	—	1	1	—	—	7	9
Syntocinon drip	1	—	—	—	—	—	1
Total number induced	9	15	20	1	54	16	115
Total number of women admitted to unit	477	238	710	137	455	166	2,183
Transferred for failed induction	6	2	6	—	5	3	22
Percentage of inductions transferred	66	13	30	—	9	19	19

Nightingale unit. The use of buccal oxytocin also produced the lowest 'failed induction' rate in the series. Although buccal oxytocin is accepted generally as being less scientifically administered than its intravenous counterpart, it undoubtedly achieved the desired result without any apparent ill effects.

Delivery in the general-practitioner units

The number of women delivered in the general-practitioner units totalled 1,788. Four hundred and twelve were delivered at Holbrook, 191 at Babington, 532 at the Nightingale, 110 at Ashbourne, 399 at Ashby, and 144 at Darley Hall. A delivery was recorded for each baby, thus a twin delivery was tabulated as two separate events. (The same system was used for the consultant unit except when twins were delivered by lower segment caesarean section, when one LSCS was recorded.)

Of the 47 'forceps' deliveries, 37 were for 'prolonged second stage', four for 'fetal and maternal distress', one for a second twin, and five for unstated reasons (Table 3).

One stillbirth was a spontaneous breech delivery of a macerated baby with hydrocephalus. The other two were normal, one died during delivery due to obstruction of the shoulders; it weighed over 4,000g. No cause was found for the third stillbirth. Two babies with congenital heart disease (one with renal abnormalities) died within a week, and normal twins delivered at 28 weeks died within 24 hours (Table 4).

The commonest abnormalities were suspected dislocation of the hip, talipes, cleft palate and hare lip, hypospadias, congenital heart disease and haemangiomas.

Problems occurring after delivery

The flying squad treated four retained placentas at general-practitioner units and removed 31 cases of retained placenta and 12 cases of post partum haemorrhage to consultant units. Other cases transferred were three each for pyrexia and third-degree tear and one each for hypertension and lost broken suture needle. General practitioners dealt with 15 post partum haemorrhages.

Table 3. Analysis of the 1,791 deliveries in general-practitioner units (1,788 women, 1,785 single pregnancies, and three twin pregnancies).

<i>Method of delivery</i>	<i>Number</i>	<i>Percentage</i>
Normal birth (cephalic presentations)	767	42.8
Normal birth and episiotomy	481	26.9
Normal birth and tear	489	27.3
Breech—manual delivery	5	0.4
Breech—forceps	2	
Forceps (other than breech)	47	2.6
<i>Total</i>	<i>1,791</i>	<i>100.0</i>

Table 4. Outcome of the 1,788 confinements in the general-practitioner units

Live births	1,788
Stillbirths	3
Twin deliveries	3
Neonatal deaths	4
Abnormal babies	30
Babies under 2,500g	26
Babies over 4,000g	102

Perinatal mortality of 1,795 total births in the six general-practitioner units was therefore 3.9.

Table 5. A comparison of the general-practitioner attendance at delivery and after delivery for suturing.

	<i>HOL</i>	<i>BAB</i>	<i>N/C</i>
Number in unit	412	191	532
General-practitioner attendance at delivery	102	55	144
Percentage	25	29	27
General-practitioner attendance after delivery	143	31	181
Percentage	35	16	34
	<i>D.H.</i>	<i>ASH</i>	<i>ABY</i>
Number in unit	144	110	399
General-practitioner attendance at delivery	68	17	75
Percentage	47	15	19
General-practitioner attendance after delivery	21	1	90
Percentage	15	1	23

General-practitioner supervision and attendance

Table 5 shows a comparison between the units of the presence of the doctor at the confinement, or attending afterwards for suturing. Some general practitioners would have also attended during the first stage of labour but this was not recorded. The figures for Ashbourne are low, particularly with reference to the number of general practitioners attending to suture. Since there were 11 episiotomies and 31 tears at this unit it seems likely that the questionnaires were not completed accurately in this respect.

Transfer from general-practitioner unit to consultant unit

In addition to women transferred for problems arising in labour this group includes 22 women transferred for failed induction, 15 premature labours admitted to the general-practitioner unit and 40 premature labours sent from home directly to the consultant unit by the general practitioner (Table 6).

The high general-practitioner attendance rate at the Nightingale and its close proximity to the consultant unit produced the highest transfer rate (Table 7).

Possibly some of the 'suspected breech', 'multiple pregnancy', 'hypertension', and PET groups might have been referred earlier but most reasons were unforeseeable.

Outcome of the transferred and premature labour groups

These 435 patients, one with twins, produced seven abnormal babies, 27 weighing less than 2,500g and 32 more than 4,000g. There were eight stillbirths and five neonatal deaths (Table 8).

Table 6. Reasons for transfer from general-practitioner unit to consultant unit.

Reason	Number	Percentage
Prolonged 1st stage inadequate labour	192	48.8
Fetal distress and/or maternal distress	60	15.2
Prolonged 2nd stage	23	5.8
Suspected breech	23	5.8
Other	23	5.8
Failed induction	22	5.6
Premature labour	15	3.8
PET	10	2.5
Intrapartum haemorrhage	10	2.5
Hypertension	8	2.0
Suspected multiple pregnancy	6	1.5
Prolapsed cord	3	0.7
Total	395	100.0

Table 7. A comparison of the transfer rates between units.

Unit	Number of women transferred	Percentage
N/G	178	25.0
BAB	47	19.7
ASH	27	19.7
HOL	65	13.6
D.H.	22	13.3
ABY	56	12.3
Total	395	18.1

Table 8. The deliveries of 395 women transferred from the general-practitioner unit and 40 admitted in premature labour directly to the consultant unit (435 women, 434 single pregnancies and one twin pregnancy).

Delivery	Number	Percentage	General-practitioner unit percentage
Normal birth (cephalic)	85	19.5	42.8
Normal birth and episiotomy	162	37.1	26.9
Normal birth and tear	32	7.3	27.3
Normal birth and epidural	3	0.7	—
Breech (assisted)	9	2.1	0.4
Breech forceps	10	2.3	—
Ventouse	2	0.5	—
Forceps (excluding breech, including three failed ventouse)	119	27.3	2.6
LSCS (including one failed forceps)	13	3.0	—
No details	1	0.2	—
Total	436	100.0	100.0

The stillbirths were: a macerated microcephalic directly admitted prematurely, and seven transfers, one each for prolapsed cord, deep transverse arrest, accidental haemorrhage, fetal distress (meconium inhalation) and sudden absence of fetal heart, and two for breech presentation in early labour. No cause of death was apparent in the last three cases (Table 9).

Two neonatal deaths were due to premature delivery at 26 and 28 weeks, and one each to congenital heart lesion, Down's syndrome and bleeding following external cephalic version at 34 weeks resulting in LSCS.

Referral to the consultant in pregnancy

The majority of women referred to a consultant were subsequently booked for confinement in the specialist unit. A small percentage (six per cent) were referred back to the general practitioner for continued care. Approximately one in four were referred, sometimes for a combination of conditions.

Postmaturity was the commonest single cause for referral, although in many cases less than 14 days had elapsed at the time of referral (Table 10). When postmaturity is considered with postmaturity and additional minor factors, this group accounts for 31 per cent of referrals. Similarly breech and PET with other minor causes of concern account for just over 20 per cent, and hypertension and antepartum haemorrhage (APH) are responsible for a further 15 per cent.

Thus, slightly less than 70 per cent of referrals were made for routine problems of pregnancy which were unforeseeable at the time of general-practitioner unit booking. Referrals for high head, small for dates, associated medical condition, spontaneous rupture of membranes (where labour did not ensue), and other

Table 9. Reasons for the forceps and caesarean section deliveries in the women transferred in labour.

<i>Forceps</i>	
Prolonged second stage ± other factors	48
Deep transverse arrest	29
Fetal distress	19
Maternal distress	7
Others (including three failed ventouse)	13
Prematurity	3
<i>Total (excluding ten breech)</i>	119
<i>LSCS</i>	
Fetal distress	4
Inadequate labour (including one failed induction)	3
No details (including one failed forceps)	3
Prolapsed cord	1
Brow presentation	1
Breech	1
<i>Total</i>	13

Table 10. Principal reasons for referral to consultant in pregnancy.

<i>Reason</i>	<i>Number</i>	<i>Percentage</i>
Postmaturity ± other factors	272	31.2
PET ± other factors	96	11.0
Breech ± other factors	91	10.4
Hypertension ± other factors	71	8.1
APH ± other factors	63	7.2
Small for dates/ uncertain dates	35	4.0
High head	34	3.9
Suspected multiple pregnancy	33	3.8
Medical condition	21	2.4
Ruptured membranes	17	1.9
Hydramnios and/or fetal abnormality	14	1.6
Suspected intrauterine death (IUD)	7	0.8
<i>Total</i>	754	86.3

conditions made small but significant contributions to the total.

Altogether 873 women were referred to a consultant during pregnancy of whom 52 were returned to the care of their general practitioner. Of the remaining 821, three of those admitted to consultant units miscarried and one was treated for a missed abortion leaving 817 who reached viability.

The remaining referrals were for individual reasons ranging from Rhesus antibodies to requests for post partum sterilization, and a number of debatable reasons (slightly less than six per cent) which contra-indicated a general-practitioner unit booking (Table 11).

Most of the women who were returned to their general practitioner's care were delivered normally in the general-practitioner unit; if they were transferred it

Table 11. Debatable reasons for referral to the consultant unit.

<i>Reason</i>	<i>Number</i>	<i>Percentage</i>
Short stature (under 5 feet)	16	2.0
Elderly primigravida (over 30)	8	1.0
Elderly primipara and other factor	3	0.4
Para 5	2	0.2
Bad obstetric history	17	2.1
<i>Total</i>	46	5.7

was for an unforeseeable reason. However, three women referred to a consultant for APH subsequently haemorrhaged in labour at a general-practitioner unit and had to be transferred by flying squad. One baby was stillborn and another died shortly after being delivered by LSCS (for grade 1 placenta praevia); this baby had congenital heart disease.

Deliveries of women transferred to the consultant unit in pregnancy

Of the 817 women admitted to the consultant unit, 236 (29 per cent) were in labour and 570 (69 per cent) were not. Ten had ruptured membranes and one baby was born before arrival. Four hundred and ninety-four women (60 per cent of admissions) were induced (Table 12).

The forceps deliveries (other than breech) were for 42 cases of 'prolonged second stage', 33 of transverse arrest, 24 of fetal distress (six with maternal distress), eight twin babies, and 31 for individual or unstated reasons. The caesarean sections were for 12 cases of fetal distress, five of fulminating PET, four of placenta

Table 12. Methods of induction in the consultant units.

Method	Number	Percentage
ARM and syntocinon drip	366	74.1
Syntocinon drip	67	13.6
ARM	55	11.1
Membrane sweep	3	0.6
ARM and prostaglandins	3	0.6
Total	494	100.0

praevia, three of APH, six malpresentations, five poorly established labours and single cases of maternal distress, cord prolapse and placental insufficiency. The other reasons were unstated (Table 13).

Stillbirths and neonatal deaths

It was not possible to relate the stillbirth rate to national figures as the group was a selected one considered suitable for general-practitioner confinement. In the whole series of 3,199 women there were 27 stillbirths and 22 neonatal deaths. Three stillbirths and four neonatal deaths were delivered at the general-practitioner units (1,788 confinements); eight stillbirths and five neonatal deaths occurred in the group of women transferred from the general-practitioner unit (435 confinements) and the remaining 16 stillbirths and 13 neonatal deaths were born to women booked by the consultant (821 confinements; Table 14).

The perinatal deaths could be divided into two main groups—normal and abnormal babies. For normal babies the most striking cause was premature labour; eight women who went into premature labour produced 13 dead babies (Table 15). Six women who were referred to the consultant with a suspected intrauterine death delivered small, macerated babies, and 12 women, delivered at term, lost their babies.

Analysis of the abnormal babies

There were 75 babies born with some abnormality of whom 18 died (Table 16). There were 27 separate abnormalities recorded; the most common and most serious are in Table 17. In addition there were single cases of imperforate anus, diaphragmatic hernia, umbilical hernia, bilateral hydrocele, perineal cyst, skin tags, pilonidal sinus and a fractured clavicle. Two babies with heart murmurs, two with an undescended testicle, three with webbed toes, three haemangiomas,

Table 13. Analysis of the 839 deliveries of the 817 women booked by the consultant unit (795 single pregnancies, 21 twin pregnancies— one delivered by LSCS— one triplet pregnancy).

Delivery	Number	Percentage	General-practitioner units %
Normal birth	188	22.4	42.8
Normal birth and tear	88	10.5	27.3
Normal birth and episiotomy	322	38.5	26.9
Normal birth and epidural	1	0.1	—
Breech— manual	24	2.8	0.4
Breech— forceps	25	2.9	
Ventouse	5	0.6	—
Forceps (excluding breech, including one failed ventouse)	138	16.4	2.6
LSCS (including five failed forceps and one failed ventouse)	45	5.4	—
No details of delivery	3	0.4	—
Total	839	100.0	100.0

Table 14. Outcome of the confinements booked by the consultant unit.

Outcome	Number	General-practitioner units
Live births	821	1,788
Twins	21	3
Triplets	1	—
Stillbirths	16	3
Neonatal deaths	13	4
Abnormal baby	38	30
Baby under 2,500 g	52	26
Baby over 4,000 g	64	102
PPH	7	15
Retained placenta	9	35
No details	3	—

two cephalohaematomas and three cord abnormalities were also recorded.

Discussion

This study revealed several points which were not appreciated at the onset of the trial. One unit studied used buccal oxytocin for induction, often combined with an ARM. This produced a failure rate roughly one third of the average for the other units. This method of induction used with care by skilled general practitioners produced no problems. Since 31 per cent of referrals in pregnancy to the consultant were for postmaturity (272 patients), clearly a more positive attempt at induction, even using the conventional ARM, would have yielded a significant number of normal confinements. Indeed a general practitioner skilled at carrying out ARMs could with benefit be appointed to general-practitioner units

Table 15. Analysis of the perinatal deaths of normal babies.

Associated factor	Number of women	Stillbirths	Neonatal deaths
<i>Deliveries at term</i>	12	10	2
APH in labour	1	1	—
Meconium inhalation	1	1	—
Cord prolapse	2	1	1
Placental insufficiency	1	1	—
Breech delivery	2	2	—
Compression of cord DTA	1	1	—
Obstruction of shoulders (general-practitioner)	1	1	—
No apparent cause (one general-practitioner)	3	2	1
<i>Premature labours</i>	9	4	11
Four single labours	4	1	3
Three twin labours (one general-practitioner)	3	1	5
One triplet labour	1	—	3
<i>Referred suspected IUD</i>	6	6	all macerated
Total	26	18	13

Table 16. Analysis of the perinatal deaths of abnormal babies.

Abnormality	Number of women	Stillbirths	Neonatal deaths
Spina bifida and/or hydrocephalus (one general-practitioner)	4	2	2
Microcephalic baby	1	1	—
Congenital heart disease (one general-practitioner)	3	—	3
Congenital heart disease and renal abnormality (general-practitioner)	1	—	1
Down's syndrome	1	—	1
Achondroplasia	1	—	1
Anencephaly	5	4	1
Hydrops fetalis	1	1	—
Conjoined twins (counted as one baby)	1	1	—
Total	18	9	9

Table 17. The most common abnormalities.

Abnormality	Number of cases	Number surviving
Suspected hip dislocation	9	9
Talipes	8	8
Cleft palate and hare lip	6	6
Hypospadias	5	5
Congenital heart disease	5	1
Spina bifida and/or hydrocephalus	5	1
Meningocele	2	2
Anencephaly	5	—
Microcephaly	2	1
Down's syndrome	2	1
Achondroplasia	1	—
Hydrops fetalis	1	—
Conjoined twins	1	—
Other	23	23
Total	75	57

to initiate induction for his colleagues where there is a positive diagnosis of postmaturity and no other additional factor requiring consultant attention. General-practitioner ARM induction is preferred by the patient to the usual 'ARM drip' of the consultant unit, the woman being 'free' to labour without the encumbrance of a drip and its forced contractions.

A referral rate of approximately 25 per cent during pregnancy suggested a conscientious approach by the general practitioners. This was also shown by the 27 per cent average attendance rate at delivery and the additional 20 per cent average attendance immediately after delivery for suturing.

The transfer rate from the general-practitioner unit at 18 per cent initially seems high. However, approximately half of these were patients whose first stage was poorly established and who were transferred in comfort for oxytocin induction.

Only about one fifth of transfers involved risk to the baby. Major problems, carrying a high risk in any unit, were transferred by flying squad. Only 15 per cent of the perinatal deaths occurred in the general-practitioner units out of 59 per cent of the deliveries. These figures show the efficiency of general-practitioner screening in obstetrics.

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