[13] Stanton AN, Downham MAPS, Oakley JR, Emery JL, and Knowelden J. Terminal symptoms in children dying suddenly and unexpectedly at home. *Br Med J* 1978;ii:1249-51.
[14] Tylden E. What kind of cot death? *Br Med J* 1978;i:1345.
[15] Hinton PE. What kind of cot death? *Br Med J* 1978;i:1345.
[16] Lynch MA. Child abuse: the critical path. *Journal of Maternal Child Health* 1976; July: p 25-9.
[17] Lewis E. Inhibition of mourning by pregnancy: psychopathology and management. *Br Med J* 1979;ii:27-8.
[18] Limerick Lady, Downham MAPS. Support for families bereaved by cot death: joint voluntary and professional view. *Br Med J* 1978;i:1527-9.

(*Accepted 19 February 1980*)

When do pregnant women attend for antenatal care?

HAZEL SIMPSON, G WALKER

Summary and conclusions

The case records of a representative sample of 313 women from four health districts in the North-east Thames Health Region were reviewed to determine the stage of pregnancy at which they contact antenatal services. Patients seeking care (when a blood specimen was obtained) after 20 weeks' gestation ranged from 6% to 26%. These women were more likely to be of higher parity and immigrants. Appreciable delays in obtaining an early blood specimen, or in referral to a hospital antenatal clinic, were due to delay by hospitals in giving appointments and, to a lesser extent, to slowness of general practitioners in referring patients or taking blood.

Introduction

The development of prenatal diagnosis for certain conditions, in particular neural tube defects and Down's syndrome, has made abortion possible when the diagnosis is made early in pregnancy. The availability of such screening is becoming more general[1]; to be effective women need to contact antenatal services preferably by 16 weeks' gestation, and certainly by 20 weeks.[2] This would be particularly important if the time limit for abortion in the 1967 Act was greatly reduced, although any change now seems unlikely in the near future.[3-5]

In May 1979 the North-east Thames Regional Health Authority agreed to fund a prenatal screening programme for Down's syndrome, neural tube defects, and thalassaemia, at an approximate annual recurrent cost of £310 000.[6] There are, however, no routine data on time of first contact of pregnant women with antenatal services. Studies carried out elsewhere have shown that around 60% of women attend for antenatal care by 16 weeks' gestation but that 25% have not attended for antenatal care by 20 weeks.[7-10] We decided to carry out a survey in the North-east Thames Region to determine the proportions of women contacting the services at various times and the reasons for the delay for those attending late.

North-east Thames Regional Health Authority, London W2 3QR
HAZEL SIMPSON, MSC (social medicine), MFCM, senior registrar

Department of Community Health, London School of Hygiene and Tropical Medicine, London WC1E 3HT
GODFREY WALKER, MSC (social medicine), MFCM, senior lecturer (present appointment: senior lecturer, Evaluation and Planning Centre, Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine)

Methods

We studied samples of the births in four districts representing different parts of the region: Tower Hamlets, an inner city district; East Roding, artisan-suburban; Enfield, commuter-suburban; and Chelmsford, a county town and rural district (fig 1). All the births

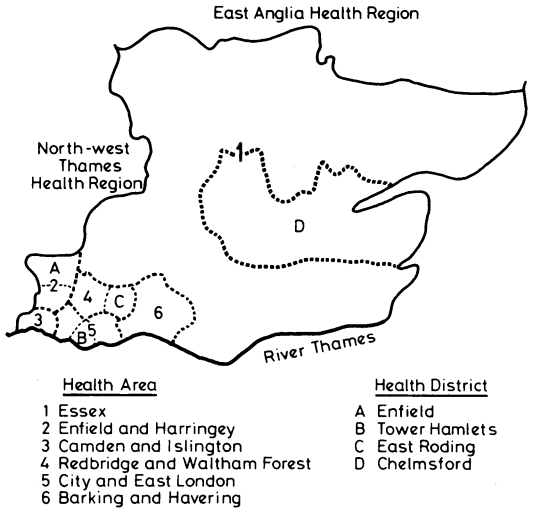

FIG 1—Districts and areas in the North-east Thames Health Region from which samples of births taken.

in two one-week periods (22 February-1 March and 23-30 August 1978) were included. We obtained copies of birth notifications, which give the baby's name and place of birth. The mother's hospital case notes were traced by obtaining her record number from either the consultant or the general practitioner maternity ward where she had been delivered, the hospital master patient index, or a computer printout at the London Hospital. We extracted the following data from the notes: type of antenatal care (hospital, general practitioner, or shared); date of last menstrual period; date of general practitioner's referral letter; date of hospital booking visit; date of first antenatal attendance at hospital; date when first blood sample was taken; "ethnic group"; and husband's or partner's occupation, or if she was single the woman's. The date of the last menstrual period was used as the basis for estimating gestational age. When the date of the last menstrual period was uncertain, or there was a discrepancy with fundal height, the result of ultrasound examination, if carried out, was used. When gestational age could not be estimated by these means it was calculated from the date of birth and estimated maturity.

The proportion of case notes traced was: Tower Hamlets, 90% (70 notes); East Roding, 90% (65); Enfield, 72% (67); and Chelmsford 79% (111). The main reasons for failure to retrieve notes was that many were in transit between the maternity units and the district central records office (Chelmsford), and a five-month backlog of

unsorted notes due to lack of clerical staff (North Middlesex Hospital). No details were sought for the eight births that occurred outside hospital or the six in hospitals in other regions—that is, 14 out of 384.

Results

Most pregnant women living in Tower Hamlets had total hospital antenatal care, while in Chelmsford very few did (table I). The lowest proportion of women having care shared between general practitioner and consultant was in Tower Hamlets (24%); the proportion was about three-quarters in the other three districts. The general practitioner's referral letter was present in 97% of case notes for women resident in Tower Hamlets and East Roding, 89% in Enfield, but only 56% in Chelmsford. This low proportion in Chelmsford resulted partly from the fact that many general practitioners provided total care (19%). But for 40 of the 88 women having shared care in Chelmsford there was no referral letter in the delivery case notes. For 36 of these women, however, there was a copy of a reply from the obstetrician acknowledging the request for booking. From these replies we could not establish the time between requesting a hospital antenatal appointment and the time when the women attended the obstetric booking clinic.

There was pronounced variation between the different districts in the social characteristics of the women included in the samples (table II).

As early screening for neural tube defects requires a blood sample we considered that the time of the first blood test done for any reason during pregnancy in these women gave the most reasonable indication of the probable pattern of first time contact for a future prenatal screening programme. In many instances blood had been taken either before referral to hospital or at the booking visit (table III). Only five out of the 313 case notes reviewed did not have a record of at least one blood test.

By 16 weeks most women had visited a hospital antenatal clinic (where presumably a blood sample could have been obtained) or had had blood taken by their GP (table IV). From their case notes, however, a substantial minority of women in Tower Hamlets (26%) and Chelmsford (18%) did not appear to have had blood taken, or visited a hospital antenatal clinic, by 20 weeks. The proportion in Chelmsford was reduced to 10% on more detailed inquiry of their GPs (see next section).

TABLE I—*Types of antenatal care. (Percentages in parentheses)*

Health district	Total hospital care	Total GP care	Shared care*	Not known	Total
	No	No	No	No	No
Tower Hamlets	49 (70)	2 (3)	17 (24)	2 (3)	70 (100)
East Roding	15 (23)	2 (3)	48 (72)	2 (3)	67 (100)
Enfield	7 (10)	7 (11)	51 (79)	0 (0)	65 (100)
Chelmsford	2 (2)	21 (19)	88 (79)	0 (0)	111 (100)

*Usually referred to consultant by GP for one antenatal visit in the second trimester, then seen by GP until 32-36 weeks, followed by alternate visits.

TABLE II—*Characteristics of women included in samples. (Percentages in parentheses)*

	Health districts			
	Tower Hamlets	East Roding	Enfield	Chelmsford
Ethnic group				
European/Caucasian	41 (59)	51 (78)	61 (91)	110 (99)
Indian subcontinent	19 (27)	13 (20)	3 (4)	0 (0)
African	4 (6)	0 (0)	1 (1)	0 (0)
West Indian	4 (6)	0 (0)	1 (1)	0 (0)
Other	1 (2)	0 (0)	0 (0)	0 (0)
Not known	1 (2)	1 (2)	1 (1)	1 (1)
Total	70 (102)*	65 (100)	67 (98)*	111 (100)
Marital status				
Single	13 (18)	1 (2)	6 (9)	8 (7)
Married/cohabiting	57 (82)	64 (98)	59 (88)	103 (93)
Not known	0 (0)	0 (0)	2 (3)	0 (0)
Total	70 (100)	65 (100)	67 (100)	111 (100)
Parity				
0	29 (41)	27 (42)	35 (52)	51 (46)
1	25 (36)	28 (43)	18 (27)	44 (40)
2	8 (11)	6 (9)	11 (16)	10 (9)
3	2 (3)	2 (3)	2 (3)	5 (5)
≥4	6 (9)	2 (3)	1 (1)	1 (1)
Total	70 (100)	65 (100)	67 (99)*	111 (101)*
Social class†				
I and II	8 (11)	11 (17)	9 (13)	22 (20)
III	16 (23)	25 (38)	25 (37)	50 (45)
IV and V	38 (54)	26 (40)	32 (48)	35 (32)
Unemployed	4 (6)	1 (2)	1 (1)	1 (1)
Student	4 (6)	1 (2)	0 (0)	0 (0)
Not known	0 (0)	1 (2)	0 (0)	3 (3)
Total	70 (100)	65 (101)*	67 (99)*	111 (101)*

*Do not add up to 100 due to rounding.
†Based on husband's or partner's occupation if married or cohabiting, and women's occupation if single.[11]

TABLE III—*Relationship of a blood test to date of booking.** *(Percentages in parentheses)*

Health district	Blood test before booking	Blood test at booking but before antenatal visit	Blood test at first antenatal visit	Blood test later or not recorded	Total
	No	No	No	No	No
Tower Hamlets	5 (8)	24 (34)	38 (55)	3 (4)	70 (101)†
East Roding	5 (8)	7 (11)	47 (72)	6 (9)	65 (100)
Enfield	1 (2)	29 (43)	33 (49)	4 (6)	67 (100)
Chelmsford	43 (39)	6 (5)	55 (50)	7 (6)	111 (100)

*Data abstracted from delivery records.
†Does not add to 100 due to rounding.

TABLE IV—*Women having had a blood test or attended a hospital antenatal clinic by gestational age.** *(Percentages in parentheses)*

Health district	Gestational age			
	16 weeks	17-20 weeks	≥20 weeks	Total
	No	No	No	No
Tower Hamlets	35 (50)	17 (24)	18 (26)	70 (100)
East Roding	45 (69)	16 (25)	4 (6)	65 (100)
Enfield	54 (80)	9 (13)	4 (6)	67 (99)‡
Chelmsford	74 (67)	17 (15)	20† (18)	111 (100)

*Data abstracted from delivery records.
†Reduced to eight (10%) after contacting general practitioners (see next section).
‡Does not add to 100 due to rounding.

LATE ATTENDERS

There is generally agreed to be insufficient time to carry out the full prenatal neural tube defect screening procedures—serum α-fetoprotein estimation followed, where indicated, by amniocentesis and abortion—if a woman has not had blood taken by 20 weeks' gestation. We therefore decided to scrutinise the care that had been given to those women from Tower Hamlets and Chelmsford districts who appeared, from their hospital records, to have contacted services at later than 20 weeks' gestation. A letter was sent to the general practitioners of all these patients requesting further information.

Out of 20 patients in Chelmsford, two had left Essex and further details were not available; eight had in fact had blood taken by their general practitioner before being referred to hospital; the remaining 10 patients had not had blood taken. Of these 10 patients, four were not given a hospital appointment until after 20 weeks' gestation although their GP had referred them at between 13 and 17 weeks. One patient was seen by her GP for shared care at 13 weeks' gestation and a referral letter was sent a week later. She did not keep her initial hospital appointment and had her first blood sample taken at 22 weeks. One woman, whose general practitioner was providing total obstetric care, was first seen at 13 weeks' gestation and given repeated appointments to have blood taken, which she did not keep. A sample was eventually taken at 34 weeks. Two patients contacted their general practitioner late (at 26 and 30 weeks). Two patients having shared care were not referred by their general practitioner until 21 weeks, although he had seen them earlier than this (at 11 and 13 weeks).

In Tower Hamlets no patients were found to have had blood taken by their general practitioner. Of the 17 apparent late attenders the general practitioner had no details of the pregnancies for three women,

and one did not reply to the request for further information. For 10 of the remaining 13 women the main reason for delay was either that they first contacted their general practitioner late (in six cases)—from 18 to 32 weeks' gestation—or (in four cases) that although they had seen their doctor initially at seven to 15 weeks, they did not attend the hospital antenatal clinic for the given appointment. Three of these four women repeatedly failed to keep their appointments and attended late in pregnancy (at 24, 24, and 25 weeks). The general practitioner did not refer two patients until a late stage (19 and 24 weeks) although he had first seen them at 11 and 13 weeks' gestation. In one case the delay appeared to be partly due to late referral by the GP (at 19 weeks' gestation, he having first seen her at 13 weeks) and then non-attendance at the hospital.

COMPARISON OF CHARACTERISTICS OF EARLY AND LATE ATTENDERS IN TOWER HAMLETS AND CHELMSFORD DISTRICTS

In Tower Hamlets a significantly higher proportion ($p<0.5$) of late attenders than other women were immigrants and of parity three or greater. In Chelmsford the late attenders were not significantly different from those attending earlier (see table V).

TABLE V—*Characteristics of early (less than 20 weeks' gestation) and late attendance (20 weeks' gestation and above) in Tower Hamlets and Chelmsford. (Percentages in parentheses)*

	Health districts			
	Tower Hamlets		Chelmsford	
	Early attenders	Late attenders	Early attenders	Late attenders
	Ethnic group			
European/Caucasian	36 (68)	6 (35)	100 (99)	10 (100)
Indian subcontinent	7 (13)	11 (65)	0 (0)	0 (0)
African	4 (8)	0 (0)	0 (0)	0 (0)
West Indian	4 (8)	0 (0)	0 (0)	0 (0)
Other	1 (2)	0 (0)	0 (0)	0 (0)
Not known	1 (2)	0 (0)	1 (1)	0 (0)
Total	53 (101)*	17 (100)*	101 (100)	10 (100)
	Marital status†			
Single	11 (21)	2 (12)	7 (7)	1 (10)
Married/cohabiting	42 (79)	15 (88)	94 (93)	9 (90)
Not known	0 (0)	0 (0)	0 (0)	0 (0)
Total	53 (100)	17 (100)	101 (100)	10 (100)
	Parity			
0	27 (51)	2 (12)	47 (47)	4 (40)
1	18 (34)	7 (41)	41 (41)	3 (30)
2	6 (11)	2 (12)	7 (7)	3 (30)
3	0 (0)	2 (12)	5 (5)	0 (0)
≥4	2 (4)	4 (24)	1 (1)	0 (0)
Total	53 (100)	17 (101)*	101 (101)*	10 (100)
	Social class†			
I and II	6 (11)	2 (12)	21 (21)	1 (10)
III	10 (19)	6 (35)	48 (48)	2 (20)
IV and V	32 (60)	6 (35)	32 (32)	3 (30)
Unemployed	1 (2)	3 (17)	0 (0)	1 (10)
Student	4 (8)	0 (0)	0 (0)	0 (0)
Not known	0 (0)	0 (0)	0 (0)	3 (30)
Total	53 (100)	17 (99)*	101 (101)*	10 (100)

*Do not add up to 100 due to rounding.
†Based on husband's or partner's occupation if married or cohabiting, and women's occupation if single.[11]

DELAY BETWEEN SENDING GP'S REFERRAL LETTERS AND ATTENDANCE AT A HOSPITAL ANTENATAL CLINIC

Women may present late for their first hospital visit for various reasons: they may contact their general practitioner when their pregnancy is well advanced; he may delay referring the patient; or there may be delays in obtaining a hospital antenatal appointment. The general practitioner's referral letter was sent to hospital at 13·4 weeks' gestation on average in Tower Hamlets, at 12·9 weeks in Chelmsford, at 10·7 weeks in East Roding, and at 10·2 weeks in Enfield.

The delay between sending a referral letter and the first hospital visit was calculated for women having shared and total hospital care. The median delay fell within the third week for Enfield, the fourth for East Roding and Tower Hamlets, and the sixth for Chelmsford (fig 2).

Discussion

Early contact by pregnant women with antenatal services is advocated in an attempt to identify those at particular risk of developing complications so that these might be prevented.[12 13] This is especially important if there is to be sufficient time to undertake prenatal screening for neural tube defects.[2] The reasons for relatively late contact with service are various.

Our survey showed that women booking after 20 weeks' gestation are more likely to be immigrants and of higher parity. Suitable health education, in general and through the health services (for instance, by health visitors and in general practitioners' surgeries), might help to persuade these groups to contact services earlier. Just as important, general practitioners need to be reminded of the importance of early referral to hospital when care is to be shared or transferred to the responsibility of a consultant. Facilities could be made more widely available for general practitioners to take blood at the desired stage of pregnancy and to send it to the district pathology department. Hospital antenatal clinics should be arranged so that the delay between receipt of the general practitioner's referral letter and an appointment for an antenatal clinic is kept to a minimum.

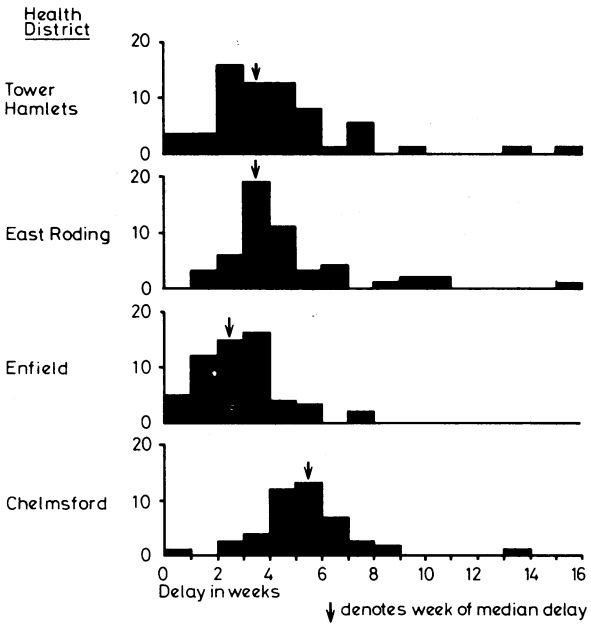

FIG 2—Delay in being seen after sending of GP's referral letter.

As many of the factors associated with delay in obtaining early blood specimens from pregnant women are organisational, financial penalties such as have been suggested[14] for women who attend late for antenatal care would not seem justified. Equally, reducing the gestational age at which legal abortion can be carried out on medical grounds would seem unwise.[15]

Unless a high proportion of women contact antenatal services early and blood is taken, the impact of prenatal screening programmes for neural tube defects, from a community viewpoint, will fall far short of its potential.

We thank the obstetricians, general practitioners, and medical record officers without whose co-operation the study would not have been possible. Professors E Alberman and J N Morris kindly commented on an earlier draft of the paper. The study was carried out for the North-east Thames Regional Advisory Group on Preventive Health Services.

Requests for reprints should be addressed to GW.

References

[1] Wald N, Cuckle HS, Harwood CA. Screening for open neural tube defects in England and Wales. *Br Med J* 1979;ii:331.
[2] Chamberlain J. Human benefits and costs of a national screening programme for neural tube defects. *Lancet* 1978;ii:1293-6.
[3] Tunkel V. Abortion: how early, how late, and how legal? *Br Med J* 1979;ii:253-6.
[4] Anonymous. No case for an abortion Bill. *Br Med J* 1979;ii:230.
[5] Russell W. Abortion bill in overdrive. *Br Med J* 1979;ii:1452.
[6] North-east Thames Regional Health Authority. *Regional prenatal screening service*. London, May 1979.
[7] Clarke PC, Gordon YB, Kitau MJ, Chard T, Letchworth AT. Screening for foetal neural tube defects by maternal plasma alpha-foeto-protein determination. *Br J Obstet Gynaec* 1977;**84**:563-73.
[8] Clarke M. Feasibility of serum-α-fetoprotein screening for fetal neural tube defects. *Lancet* 1977;i:1098-9.
[9] Heward JA, Clarke M. Communications to an antenatal clinic. *Br Med J* 1976;i:1201-4.
[10] Holland M. *Towards healthy babies: the prevention of cerebral palsy*. London: Spastics Society, 1979:14-5.
[11] General Register Office. *Census 1951—Classification of occupations*. London: HMSO, 1956.
[12] Report of the Committee on Child Health Services. *Fit for the future*. London: HMSO, 1976. (Court Report.)
[13] British Paediatric Association/Royal College of Obstetricians and Gynaecologists Liaison Committee. *Recommendations for the improvement of infant care during the perinatal period in the United Kingdom*. London: BPA/RCOG, 1978.
[14] Department of Health and Social Security/Child Poverty Action Group. *Reaching the consumer in the ante-natal and child health services*. London: DHSS-CPAG, 1978: 34-5.
[15] Pembrey M. Why Corrie's Bill must give prenatal tests more leeway. *Guardian* 1980 Feb 1:12 (col 1).

(*Accepted 26 February 1980*)

Prospective controlled trial comparing colostomy irrigation with "spontaneous-action" method

N S WILLIAMS, D JOHNSTON

Summary and conclusions

Thirty randomly selected patients with permanent colostomies entered a prospective controlled trial comparing colostomy irrigation with spontaneous action. Each patient was interviewed and examined before irrigation was begun and again after the technique had been used for three months. Each then reverted to spontaneous action for a further three months and was then reassessed.

Eight patients abandoned irrigation and 22 (73%) adhered to the protocol. Irrigation caused no mishaps or complications. The mean time spent managing the stoma was 45±SEM 9 min/24 hours during spontaneous action and 53±9 min/24 hours during irrigation. This difference was not significant. The numbers of bowel actions weekly were 13±SEM 2 during spontaneous action and 6±1 during irrigation ($p<0.01$). Irrigation reduced odour and flatus in 20 patients and enabled 12 out of 18 to stop using drugs and seven to discard their appliance. Irrigation also improved the social life of 18 patients and the working conditions of eight out of 14.

These findings show that some patients may not be suitable for irrigation but that for many it is better than the conventional British method of colostomy management. With modern apparatus the technique is safe.

Introduction

The best way of managing a colostomy at home is debatable. In Britain the most commonly used method is "spontaneous action," which means that by dietary manipulation and the use of drugs the colostomy is induced to act once or twice daily at predictable times.[1] Fewer than half of all patients achieve this ideal, however,[2 3] and about 60% have difficulties with their appliance owing to skin allergy, soreness, leakage, odour, and flatus.[2]

The alternative method is colostomy irrigation, which is popular in America and reportedly eliminates many of the problems associated with natural evacuation.[4-6] There is no record of a controlled clinical comparison of the two methods, however, and we therefore decided to conduct such a trial.

Patients and methods

Twenty-four men and six women aged 17-78 years (mean 58·4 years) were admitted to the trial. Each had had a permanent colostomy constructed after abdominoperineal excision of the rectum a mean of 6·3 years before and were using spontaneous action as the only method of colostomy care. The patients were selected at random from those attending for routine follow-up at a rectal clinic. The only contraindications to entry to the trial were lack of bathroom facilities, severe locomotor handicaps, or stenosis of the colostomy.

Patients were interviewed at the beginning of the trial and any abnormality of the stoma recorded. Blood was taken for a full blood count and measurement of serum urea and electrolyte concentrations. They were then taught the irrigation method and instructed to use it for three months, at first daily but reducing the number of irrigations at their discretion. After three months the patients were interviewed and examined and the blood investigations repeated. Patients then reverted to the spontaneous-action method for a further three months and were then reassessed. Throughout the trial each patient recorded the number of bowel actions daily, the time spent managing the stoma, and the frequency of irrigation.

Irrigation technique—Figure 1 shows the components of the cone-type irrigation set. The flow-control clamp is closed and the reservoir filled with tepid water. The clamp is opened to fill the tubing with water, then closed again, and the reservoir is suspended above the shoulder, the patient being seated on the toilet. The drainage sleeve is next secured round the patient's waist, so that its upper end lies around the stoma and its lower end hangs between the legs into the bowl (fig 2). The cone is then lubricated and inserted into the stoma, but only far enough to allow the irrigating fluid to flow into the intestine without escaping. The flow-control clamp is then opened and 250-500 ml fluid allowed to flow into the colon.

University Department of Surgery, General Infirmary, Leeds LS1 3EX
N S WILLIAMS, MB, FRCS, lecturer in surgery
D JOHNSTON, CHM, FRCS, professor of surgery