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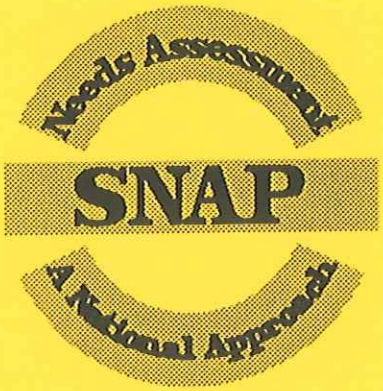

Increasing Choice in Maternity Care in Scotland

Issues for Purchasers and Providers

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Women's Health Network

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SNAP Reports currently available

Total Elective Hip and Knee Replacement - a comparative assessment
Cataract Surgery
Congenital Dislocation of the Hip
Global Needs Assessment - a screening tool for determining priorities
Breastfeeding in Scotland

SNAP Reports due to be published shortly

Inpatient Resources for Communicable Disease in Scotland
Cardiac Disease
Stroke
Mental Health

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Executive Summary

1 The Scottish Office Home and Health Department Policy Review on the Provision of Maternity Services recommends that there should be a shift from consultant-led care to midwife and general practitioner care. This shift, it was believed, would result in meeting the needs of mothers and provide efficiency gains without affecting outcome.

2 A number of Scottish randomised controlled trials to be published in 1995 will provide information about GP/midwife antenatal care, midwifery-led units and midwife-led care programmes. Outcome measures will include clinical, satisfaction and economic evaluations.

3 Women's organisations have campaigned for many years to obtain information about the type of service available to them, appropriate choice in the type of care they receive and continuity of care and carer.

4 The current maternity service in Scotland is provided by general practitioners, midwives and obstetricians. There are 66 630 births per annum, 99.5% of which occur in hospital (95% in a specialist hospital and 4% in general practitioner units). There are 24 specialist maternity hospitals and 28 general practitioner units.

5 Although 70% of deliveries are conducted by midwives, their involvement in the delivery of antenatal care is much less, varying from 3% to 33% by hospital.

6 An estimate of the number of women likely to benefit from a shift from consultant-led care to midwife/general practitioner care has been made by reviewing the SMR2 records for 322 543 deliveries taking place in Scotland between 1986 and 1990. Only 44% of all women (39% of primigravidae and 48% of multigravidae) had completely uneventful pregnancies and delivered spontaneously at term without any medical intervention. Evidence from research studies in Leicester and Aberdeen support these findings. Transfer of primigravidae in labour to the consultant unit is high.

7 Midwife-led units could be opened now within consultant-led maternity hospitals. If stand-alone midwifery units are to be developed then multigravidae with previously uncomplicated pregnancies would be the group of choice to deliver there.

8 Before opting for change in the type of maternity care, purchasers will have to be assured that staff are prepared for change, that they have obtained and maintained the appropriate skills and that retraining programmes are in place. It may not be possible initially to offer the complete DOMINO service (see Annex 1). However, the alternative of midwives having their own caseloads and planned early discharge should be considered.

9 The needs of the baby must not be forgotten. A healthy mother who has had an uneventful pregnancy may still deliver at term a baby who needs resuscitation and care in a neonatal unit. Any labour occurring before 37 weeks gestation should be managed in a specialist unit where paediatric facilities are available for the care of the preterm newborn.

10 The estimated efficiency savings projected in the Policy Review Document must be viewed with caution. These are associated with long run costs of the service with no indication of the costs of changing the service, redeployment of staff and retraining. A large proportion of the savings are expected to result from a reduction in postnatal care which is already an area of low resource use. Thus, big costs savings are unlikely to result.

11 In monitoring change, outcome measures of morbidity, mortality and patient satisfaction must be used as well as process measures.

12 In order to purchase a maternity service that is acceptable to women and attainable for providers, a number of Health Boards have set up maternity liaison committees with representation from purchasers, providers and users of the service.

Recommendations

1 Providers of maternity care should consider ways within the existing service provision of offering choice, continuity of care and carer for all pregnant women.

2 It may be inappropriate to make major changes in the delivery of maternity care until the results of a number of Scottish research studies are available in 1995.

3 If change is recommended, detailed protocols of management must be drawn up and agreed by the professional groups providing care.

4 If stand-alone midwifery units are to be developed, multigravidae with previously uncomplicated pregnancies would be the group of choice to deliver there.

5 The needs of the baby must always be considered separately from those of the mother.

6 As most pregnant women are highly motivated to provide optimal conditions for fetal growth and development, innovative ways of facilitating lifestyle changes during the antenatal period should be developed.

7 If a move to more general practitioner and midwifery care is to take place, staff education and retraining programmes will have to be set up.

8 Because of the perceived difficulty of offering the full DOMINO service to a large number of women, options which increase continuity of care should be considered.

9 Caution must be exercised in assuming that cost savings can be achieved by increasing home and DOMINO deliveries in any single Health Board.

10 In order to measure long term morbidity in surviving babies, the linking of antenatal and birth records with the information from the routine surveillance of pre-school children should be considered.

11 In order to ensure that there is effective dialogue between purchasers, providers and users of maternity services, all Health Boards should consider setting up a Maternity Liaison Committee.

1 Introduction

There have been many changes in the last 25 years in relation to pregnancy and childbirth. The number of births in Scotland has fallen by 25%, resulting in smaller families and fewer births to women in social classes IV and V. Changes have occurred in obstetric practice including greater use of ultrasound, increased use of induction of labour and greater use of caesarean section as a method of delivery. The development of modern neonatal intensive care has resulted in the increased survival of very low birthweight (<1500g) and extremely low birthweight (<1000g) babies. During the same period the perinatal mortality rate (stillbirths and first week deaths) has fallen from 24 per 1000 to 8 per 1000 total births.

The problem of lack of specificity of a number of obstetric tests has meant that in order to intervene appropriately in the truly high risk group of women, many other women have received, in retrospect, what they have felt to have been unnecessary treatment. As a result, organisations concerned with maternity care, such as the Association for the Improvement of Maternity Services (AIMS) and the National Childbirth Trust (NCT), have campaigned for many years against increasing medical intervention, lack of continuity of care and the perceived failure to offer choice of type of care to women.

In recent years there have been changes with the introduction of antenatal clinics run by midwives, a decrease in the rate of induction, and a more relaxed atmosphere in many maternity units. In 1993 both the Scottish Office Home and Health Department and the Department of Health in England issued reports[1,2] expressing concern about the way maternity care was being provided and asked Health Boards and Health Authorities to review their practice.

The aim of this report is to consider the Policy Review recommendations in relation to current practice, review options available to purchasers and constraints in implementing change, and explore ways of overcoming these constraints and possible measures for monitoring change.

2 SOHHD Policy Review of Maternity Services

The Patients' Charter[3], published in 1991, made clear the Government's commitment that the National Health Service in Scotland should deliver services which are responsive to the needs of the user. In setting contracts for maternity services, purchasers must take account of the views of women and their families about where and how they wish to be treated. The Management Executive of the National Health Service in Scotland, therefore, set up a Departmental Policy Review Group to produce a policy framework for maternity services with a checklist of issues to be considered at both local and national level in deciding how to strike a balance between dispersed or centralised maternity services and between obstetrician-led and midwife-led services.

The Policy Review[1] had, as its prime objective, "to inform purchasers and providers about the full range and cost of maternity care services available and, in meeting the clinical needs of mothers through this process, encourage:

- informed choice
- meeting the needs of mothers
- efficiency gains"

The Policy Review also contains guidelines for the action required by purchasers, providers and the Management Executive in order to implement the recommended changes.

The main objectives of the Policy Review are laudable but may take some time to achieve. Eight intermediate objectives were, therefore, listed. These are to:

- ensure that mothers have informed views of what choices they have in maternity care and that they have the opportunity where possible to exercise that choice
- increase awareness among providers of demand for a wide range of models of maternity care to be offered to women
- persuade providers of the benefits of making available the full range of options for maternity care
- encourage greater provision and uptake of DOMINO (see Annex 1) and community based models of maternity care
- increase the use of midwife-led units subject to satisfactory evaluation
- bring about a shift in maternity care from specialised to less specialised maternity care
- ensure specialist skills are used appropriately for the delivery of women with, or at risk of, obstetric complications and to support the professionals caring for other mothers
- reduce the number of hospital beds for maternity care

3 Views of Users of Maternity Services

The National Childbirth Trust (NCT) offers information and support in pregnancy, childbirth and early parenthood and aims to enable every parent to make informed choice. The NCT has played an important role for the last 35 years in putting forward the views of the users of the maternity service. Members of the Scottish branch recommend the following which summarises the recurring wants and needs experienced by women:

- low risk and high risk women would like to receive continuity of care and carers
- for the women falling into low risk category, this would mean being cared for by a small team of midwives throughout their pregnancy, labour and postnatal care
- women would like to be encouraged to discuss all aspects of their care with the health professionals and to be involved in any decision made about themselves at any stage during their care
- be seeing the same carers throughout their care, women feel that it will be easier to establish a trusting relationship with them, that they will get the information relevant to their own needs and will avoid conflicting advice. Women also feel that they will be able to discuss more freely their experience of labour with the midwives who delivered their babies
- women wish to be well supported throughout their care and feel that the midwife plays a key role in the process
- there should be as far as possible a homely non-clinical atmosphere in the maternity unit. Most of the women using these facilities are not ill and require a low tech, reassuring, rather than clinical, approach
- women who have previous children would like to have facilities provided to care for their children while they attend the antenatal clinic and day-care unit. Women would like their families welcomed in the maternity unit rather then made to feel a nuisance as can be the case

Members of the NCT have expressed clearly the type of maternity services their members would like. These views are supported by the results of a number of other recent studies. A literature review of consumer studies in maternity care undertaken for the CRAG/SCOTMEG group on maternity services, for example, found that there were a number of studies carried out in Scotland and the rest of the United Kingdom highlighting women's desire to receive good information and to have the opportunity of informed choice and continuity of care. There were, however, certain areas where information was lacking including women's knowledge of early pregnancy, the choice over place of birth and attendant, women's views of small technological procedures used during labour and delivery as well as their views and experiences of the immediate postpartum period.[4]

Following publication of the research review, a study was set up in Scotland with the aim of determining what women want from maternity services and to address the areas where information had been found to be lacking. Information was obtained from a representative sample of women by means of a series of group discussions held in a number of locations in Scotland over a four month period (October 1992-January 1993). Details of the research fundings are available from the CRAG Secretariat.[5] A fundamental point which emerged from all the discussions was "that women are all different in their needs and do not all want the same kind of care ... throughout all the discussions the point was made that **women want health professionals to acknowledge them as individuals with specific and different needs**".

4 Current Maternity Service in Scotland

Users and Potential Users

There are 1 090 400 women in Scotland of reproductive age (16-44 years). During 1992 there were 66 145 births giving a fertility rate of 60.3 per 1000 women of reproductive age. The number of births by Health Board of residence of the mother can be seen in Table 1.

TABLE 1
Numbers of births (live and still) by Health Board of residence 1992

Argyll and Clyde	5670
Ayrshire and Arran	4748
Borders	1202
Dumfries and Galloway	1757
Fife	4320
Forth Valley	3477
Grampian	6888
Greater Glasgow	12 339
Highland	2709
Lanarkshire	7394
Lothian	9843
Orkney	241
Shetland	325
Tayside	4899
Western Isles	333

Providers of Care

Care is provided by midwives, general practitioners and obstetricians.

Place of Care

Care is provided in the home, in the general practitioners surgery, in the community clinic or in the hospital or general practitioner unit. There are 24 specialist maternity units in Scotland and 28 general practitioner units.

Period of Care

There are three distinct periods of maternity care (antenatal, labour and delivery, and postnatal) and the type of care required for each period may vary depending on the needs of the woman.

Options for Care

The current options for care are:

- **Obstetrician-led care**

  For a vast majority of women antenatal care is shared between the clinical staff (obstetricians and midwives) and the general practitioner and delivery takes place in hospital.

- **General practitioner care**

  In this type of care general practitioners provide antenatal care usually in their surgery and the delivery takes place in the general practitioner unit.

- **Midwife care with DOMINO delivery**

  The woman is booked for delivery under the care of a consultant but care is provided by midwives. Antenatal care is provided by a community midwife in the woman's own home, the midwife then accompanies her to hospital and returns home with her six to 12 hours after delivery. The midwife then provides postnatal care in the woman's home.

- **Home delivery**

  A community midwife provides antenatal care for the woman in her own home. The midwife will then come when the labour starts and delivery takes place at home. Postnatal care is provided by the same midwife.

The types of care in Scotland in 1992 are shown in Table 2.

TABLE 2
Type of Care Provided in Scotland 1992

Option	No	%
obstetrician-led care	61 941	93.0
GP/GP unit care	3 827	5.7
DOMINO/planned early discharge	492	0.7
home delivery	370	0.6
Total	**66 630**	**100.0**

Role of Midwives

The midwives' role during the antenatal period varies according to the unit in which they work. Midwives clinics have been introduced in a number of hospitals and a recent survey of 15 hospitals in Scotland found the amount of antenatal care provided by midwives varied from 4% to 33% of all antenatal visits.[6]

Almost all normal deliveries (70% of births) in Scotland are conducted by midwives and midwives also provide most of the postnatal care in hospital and at home.

Estimating Risk

At the beginning of pregnancy when they enter the formal process of care by "booking" and during the antenatal period, women are assessed and reassessed at each antenatal visit for the development of risk factors or problems.

This group of young women is essentially healthy. A small number, however, have a pre-existing condition - for example, diabetes or heart disease - which will put them into a high risk category. Others will have experienced problems in a previous pregnancy which are liable to recur and so they too require consultant supervision, either during the antenatal period or during labour or both.

An attempt has been made to estimate the size of the population who will be expected to have a completely normal pregnancy, go into labour spontaneously at term (between 37 and 41 weeks gestation) and deliver spontaneously. Previous work in Scotland has found that 81% of the Scottish obstetric population could be classified as low risk at "booking", and a further 17% will develop complications during the antenatal period. Information about the risk factors in that study[6] were taken from case records but most of the criteria used to define high risk in the study can be replicated using SMR2 data (Table 3). Exceptions to this were "other pre-existing disease" which was too open ended. A selection of disease codes was, therefore, chosen from the International Classification of Diseases (ICD). Proxies had to be used for the severity of certain pregnancy related conditions - these were two or more antenatal admissions and a length of predelivery stay in hospital of at least three days.

TABLE 3
Risk factors: data used in a specific study[6] compared with routinely available data (SMR2)

ANTENATAL TRIAL	SMR2
Past obstetric history	
previous stillbirth or neonatal loss	previous perinatal death
previous 3 or more consecutive spontaneous abortions	previous spontaneous abortion (3+)
last baby preterm delivery (before 34 weeks)	last baby preterm (<37)
any previous baby b.w.<2500g	last baby b.w. <2500g
last pregnancy severe proteinuric preclampsia	
previous surgery on reproductive tract	previous caesarean section
General medical	
insulin dependant diabetes mellitus	*diabetes (1)
essential hypertension (including diastolic BP>90 mm Hg at booking)	*essential or other pre-existing hypertension (2)
renal disease	*renal hypertension (3)
cardiac disease	*heart disease (congenital or acquired) (4)
known substance abuse	*drug dependence (5)
on medication/or other severe medical disease	
weight <45kg or >100kg	
other severe illness	*epilepsy (6)
Current pregnancy	
age <16 or >35 years	age <16 or >35
Iso - immunisation	
diagnosed multiple pregnancy	multiple pregnancy
Hb <10g/l	
	Other risk factors acquired during pregnancy
	2 or more antenatal admissions
	predelivery stay >3 days
	breech presentation at start of labour

ICD 9 codes (1) 250, 648.0 (4) 648.5-6, 745-747, 390-398, 410-429
(2) 642.0-642.2 (5) 648.3, 304
(3) 642.1 (6) 345

Using aggregated SMR2 data for the five year period 1986-1990, information was available for 322 543 pregnancies; 16.1% of these were high risk "at booking", a further 4.7% delivered prematurely, 14.5% acquired other risk factors during pregnancy and 12.3% were induced at term. Of the remaining women who had no pregnancy complications and who went into labour spontaneously, 8.7% required an instrumental delivery. Thus only 43.7% of Scottish births between 1986-1990 had completely normal pregnancies, labour and delivery. This figure is lower for women having their first baby - 39.1% - and slightly higher for women having a second or subsequent child - 47.5% (Table 4). A reduction in intervention during labour - for example, less induction and fewer epidurals - would increase the percentage of absolutely normal deliveries.

TABLE 4
Estimating risk - Scottish births 1986-1990

	all births no.	**%**	**prims* no.**	**multips* no.**
	322 543		144 435	178 108
problems			**%**	**%**
at "booking"	52 012	16.1	4.0	25.9
premature delivery	15 110	4.7	6.4	3.3
antenatal risk factors	46 613	14.5	19.1	10.7
induction (term/post term)	39 581	12.3	14.6	10.3
instrumental delivery	28 186	8.7	16.7	2.3
total	*181 502*	*56.3*	*60.9*	*52.5*
no intervention	**141 041**	**43.7**	**39.1**	**47.5**

* see Annex 1

From the pattern of events seen in Table 4, it is evident that it is impossible to predict with certainty which women will need obstetric care during pregnancy. In many instances the onset of symptoms will be gradual, allowing time for appropriate referral, whereas during labour the need for rapid attention may be crucial. Over 16% of women in their first labour in a hitherto uncomplicated pregnancy require assisted delivery compared to 2.3% of women in a second or third pregnancy. These proportions are somewhat similar to those seen in a population study in Holland[7] where 17.7% of low risk women required referral to hospital during pregnancy and a further 7.9% required transfer during labour. In another study of a rural areas in Northwest England[8], 73% of the pregnant population were said to be low risk, of whom 1.1% went into labour prematurely, 18.9% acquired other high risk factors during pregnancy and 7.2% were transferred to an obstetric hospital during labour or immediately thereafter.

5 Considerations for Purchasers

Purchasers must first consider what options are available and then decide what they wish to purchase. As mentioned earlier, the following types of maternity care are currently provided - consultant-led shared care, GP care, midwife care in the form of DOMINO or home delivery, along with the new option of midwifery-led care. When deciding what type of service to purchase, the health needs of the population, their views about the type of care they would like, the services that can realistically be provided, the clinical outcomes of the various options, and relative costs of these options must all be taken into account.

Ongoing Research

The main thrust of the Policy Review Document was a recommendation of a move from consultant-led care to a greater provision of midwife-led care, DOMINO and community based models of care.

Community Antenatal Care

Community antenatal care can be defined as care in the community provided by general practitioners and midwives. This care will usually take place in the surgery or in a community clinic but may occasionally take place in the woman's home. In recent years there has been a tendency for duplication with antenatal care being provided by hospital and community staff in parallel. The report of a large multicentre randomised controlled trial in Scotland of general practitioner and/or midwife care versus the current model of care for low risk women by nine consultant units and 250 general practitioners will be available in 1995. The trial is being co-ordinated by the Departments of Obstetrics and Gynaecology and Epidemiology and Public Health at the University of Dundee. Women only attend the consultant service if problems develop. Detailed protocols have been developed in conjunction with the obstetricians, the midwives and the general practitioners for the management of problems. The outcome measures of this study will include clinical and economic considerations as well as client satisfaction.

If antenatal care is to be provided solely by primary care staff (general practitioners and midwives) before the results of the above study are available, detailed protocols of management will have to be in place so that transfer to a different level of care can be effected easily and simply as at times emergency transfer will be required.

The decision about the type of women who should be booked for a midwifery unit will vary depending on whether the unit is attached to a consultant unit or is sited a number of miles away. Recent research studies provide information about the benefits and disadvantages of such care.

Midwife-led labour unit

At Aberdeen Maternity Hospital a midwife-led unit was established in the labour ward. A randomised controlled trial was set up to compare the two types of care. Intrapartum transfer from the midwifery unit occurred in 19% of cases - 50% of primigravidae and 11% of multigravidae. Operative delivery was required for 44% of the primigravidae and 20% of the parous women who were transferred.

Home from home unit

In Leicester, a midwife-led home from home unit was set up and the service was offered to 3510 women who were randomly allocated to this new unit or to the routine consultant-led service. Forty six per cent of those allocated to the home from home unit ultimately delivered there. The antepartum transfer rate was 23% and intrapartum transfer rate was also 23% (8% of those randomly allocated refused to take part in the study). The rate of spontaneous labour was higher in the home from home unit (73% versus 64%), there was no difference in the mode of delivery, there were fewer episiotomies but more perineal tears. More women (73%) said they were "very satisfied" with the care in the home from home unit than with the care in the routine service (60%).[9]

Both the Leicester and Aberdeen midwife-led units were attached to consultant units, so that the high transfer rates in labour did not constitute a problem. The situation would have been very different if the midwife unit was on a different site. If such a unit was to be considered it appears from the Aberdeen experience that low risk multiparous women would be the group to consider for delivery there.

Midwife-led programme of care

A randomised controlled trial of midwifery-led antepartum, intrapartum and postpartum care compared with consultant-led care is currently being undertaken by the staff at Glasgow Royal Maternity Hospital. Outcomes being considered are clinical, continuity of care, satisfaction and cost effectiveness. The results of this study will be available in 1995.

Needs of the baby

The needs of the baby must always be considered separately from those of the mother. Although the likelihood of complications developing in a baby is much greater if the mother herself has problems during pregnancy, women who have completed uneventful pregnancies, go into labour spontaneously and have a straightforward delivery can sometimes deliver a baby requiring skilled resuscitation. Some babies will require care in consultant neonatal units.

Intervention Rates

Purchasers may wish to consider the intervention rates in various hospitals. These must be viewed with caution, however, as variation will occur depending on the population delivering in the hospital. Although there is a general feeling that the caesarean section rate is too high, the "ideal" caesarean section rate is not known. An audit of all sections in Scotland is currently being undertaken therefore to determine the reason for section. Details of this audit will be available in 1995. While women's groups and clinicians have expressed concern about the rising caesarean section rate, some women prefer this method of delivery and if choice is genuinely on offer, should induction of labour, epidural anaesthesia and caesarean section be included in that choice?

Health Promotion

The health promoting role of all staff was made explicit in Framework for Action[10] and health promotion should be an integral part of maternity service provision. The World Health Organisation[11] has clearly stated that "the focus of health education is on people and action. In general its aims are to persuade people to adopt and

sustain healthy life practices, to use judiciously and wisely health services available to them and to make their own decisions both individually and collectively to improve health status and environment". Most pregnant women are highly motivated to provide optimal conditions for fetal growth and development. Lifestyle changes could also be facilitated during the antenatal period when the woman comes in contact with health care providers.

Purchasers, therefore, need to consider

- the inclusion of health promotion in contract agreements
- that staff in the provider units are appropriately trained to provide health promotion
- that resources such as the Health Education Book - *The New Pregnancy Book*[12] - are made available to all pregnant women
- that methods of monitoring the health promotion/education input are developed

6 Constraints in Providing Wider Choice for Women

Willingness of staff to change practice

Many of the three main categories of staff involved in the delivery of maternity care - general practitioners, midwives and obstetricians - have got entrenched views as to their roles in the delivery of care. The way the present service is provided means that women see many different carers as well as different types of carer. Continuity of care, or the lack of it, is one of the main issues raised by women about the inadequacies of the current service and discussions must take place in each Health Board area as to how continuity of care can be provided, whoever the provider.

Training and Retention of Skills

If the move to more general practitioner and midwifery care is to take place, many existing staff will require to be retrained. A number of staff have expressed concern about the desirability of such a move because of perceived dangers to mother and child and they do not wish to be involved in what they regard as a retrograde step. Considerable education and retraining programmes will have to be set up to overcome these difficulties.

Consideration will also have to be given to the training of medical undergraduate and postgraduate students. This has traditionally taken place in hospital but will now have to be shared by hospital and community. This will require careful organisation and staging.

Manpower

The number of community midwives that will be required to provide an expanded service for home confinements and DOMINO deliveries has not been quantified. It is not simply a matter of moving hospital staff out into the community as a certain number of staff must be retained in the hospital irrespective of the number of patients. Increased midwifery staffing may also be required to provide a named midwife and continuity of care for women. While continuity of care is desired by the consumer, many midwives have stated that it would be difficult for them to provide 24 hour cover because of domestic commitments. Providing total continuity of care may also be difficult for midwifery teams - small teams of three to five midwives would provide good continuity of care but staff may not be prepared to make the required on call commitment to make this possible while continuity of care is diminished or lost with larger teams.

Fundholding

While maternity care is not included in the coverage of GP fundholders at present, it is important now that there is close cooperation between GPs (whether fundholders or not), obstetricians and midwives in the planning of maternity care so that choice for the woman is maintained and possible duplication of care is minimised.

Other costs

There may be implications for indemnity cover for general practitioners. Changing practice, including the introduction of shift systems for junior medical staff and rota systems for all medical staff, also have resource implications.

Research

A research project currently being undertaken on behalf of the Royal College of Midwives Scottish Board entitled "Staffing requirements for maternity services to meet changing demands: models to aid decision-making" will be of value in this regard. The study aims to develop a structured staffing model for maternity services in Scotland which is relevant to the changing health service. As a first stage, workable methods of maternity care will be defined and the feasibility for implementation established, taking account of geographical, clinical and social needs. The staffing implications and result in costs will then be calculated for each method. A model will be devised under which the effect of varying demand for each method can be clearly seen. This model will be of use to purchasers, including GP fundholders and providers. For the purchasers, the model can be used to see the implications of moving from purchasing one type of care to another and from purchasing a model of care at different levels. For the providers, the staffing requirements of changing the type of care provided can be seen. Evaluation will then include costing models which take into account the geographical, social and clinical needs of the population.

Because of staffing constraints it may not be appropriate to offer full DOMINO service. A survey was undertaken in 1993 to determine the availability of the DOMINO service in Scotland. Meldrum (personal communications) found that a DOMINO scheme was available to some extent in the 21 units that had replied to her questionnaire. The working definition of DOMINO deliveries varies, however, between units, particularly in relation to the length of time before discharge. Only three units offered women the service and 14 said it was available on request. In three units it was available but only in very rare cases and in one it was only available to local city residents.

Because of the difficulty of offering the full DOMINO service to a large number of women, it might be more appropriate to provide improved continuity of care by midwives having their own caseload. This would mean that the midwife would provide antenatal care, the woman would be delivered in hospital but would be followed up in hospital and at home after six - 12 hours by her designated midwife. This is a service which could be offered immediately and units would have sufficient staff to provide it. At the moment some units are unable to advertise the DOMINO scheme because of insufficient staff.

Economic Implications

To date there have been no published economic evaluations to provide insight into the relative cost effectiveness of different models of providing maternity care. The Policy Review included estimates of the long run efficiency savings that may be obtained nationally by changes in the way that maternity services are provided. However, caution must be exercised in assuming that cost savings can be achieved by increasing home and DOMINO deliveries (because of staffing implications raised in the previous section), increasing the efficiency of general practitioner units and reducing postnatal lengths of stay, in any single Health Board. The potential savings presented are those associated with a long run steady state, which give no indication of the costs of changing the service, redeployment of staff and retraining. Additionally, the feasibility of providing some types of care in some Health Boards is not explicitly addressed.

The Policy Review suggests for example that the largest potential source of savings can result from a reduction in postnatal stay. However, this relies on the assumption that there are large costs associated with hospital postnatal care because this constitutes the largest volume of inpatient days. However, intensity of use of resources in postnatal care is very low, compared with that of intrapartum

care. Although a differential cost was used for intrapartum inpatient days and other days (£293 and £215 respectively), the choice appeared arbitrary.

The major implication of a shift to either DOMINO or home deliveries will be a move away from hospital to community expenditure on low risk pregnancies. However, the degree to which hospital expenditure will be reduced is uncertain. There will still be a requirement for hospital services for the 50% of women who are high risk at the beginning of their pregnancy or who acquire risk factors during pregnancy.

Hospital expenditure is unlikely to be affected dramatically for a variety of reasons. There is unlikely to be a reduction in the number of admissions or day-care attendances and there may indeed be an increase in the number of referrals by midwives and GPs for reassurance. Inpatient postnatal care beds may be reduced, but since care for these women is already minimal there may be little saving.

The majority of intrapartum care is already provided by midwives. With increased DOMINO and home deliveries the need for midwives in labour wards will be reduced, but not necessarily in direct proportion to the increase in community midwives. This arises because of the need to staff labour ward areas in order to provide high risk care.

Expenditure on community midwives will increase as the number of DOMINO and home births rises. There will be a need to increase the number of midwives working in the community, not only to deliver women who choose these options, but also to ensure that the midwife's other commitments are covered when she is carrying out a delivery. This can be achieved by midwives working in teams, but the size of teams and the case load an individual midwife can hold are still not agreed nationally. There will also be a increase in on-call payments because of the need to ensure 24 hour cover.

Although the cost savings of moving to DOMINO or home births are uncertain, the economic evaluation approach looks at both sides. The benefits of moving to a less medicalised form of maternity services must be weighed against the costs. Costs to women of different types of care are also important and should not be underestimated. The need for economic evaluations of different models of maternity care has never been more apparent. Caution must be exercised in assuming that large-scale cost savings can be achieved by changing the way in which maternity services are provided.

There must be a planned transition from current provision over a period of time sufficient to allow for sensible adjustment. This transition will involve eventual closure of beds, retraining of midwives, opportunities for retraining of GPs and monitoring of safety and of patient satisfaction. Delivery of appropriate care for low risk pregnant women will require varying combinations of three elements:

- midwife-led units in hospital providing a homely setting for normal labours
- increase in the number of community midwives for home and DOMINO deliveries
- adequate arrangements for emergency transfer if necessary

The difficulties and costs of implementing the recommendations of the Policy Review should not be underestimated. Information as to whether or not there will be cost savings will become available when the Scottish research study results are published in 1995.

7 Measuring Outcomes and Monitoring Progress towards Change

The outcomes that should be considered are clinical (mortality and morbidity), patient satisfaction and cost.

Mortality

In terms of survival the outlook for both mother and baby has never been better. There are on average about four maternal deaths in Scotland each year (one in every 16 400 births) and 99.2% of babies survive the perinatal period.

The most easily measured bad outcome for a pregnancy is a death and all such critical events should continue to bear the close scrutiny to which they have long been subjected.[13] From such studies which are already routine[14] we know that in the five years represented in Table 5 (1986-90) the perinatal mortality rate was 9.3/1000 births and that perinatal death is overwhelmingly associated with preterm delivery.

TABLE 5
The proportion of births and perinatal deaths occurring before and at term 1986-90

	proportion of births	proportion of perinatal deaths	perinatal mortality rate/1000 births
preterm (<37)	6%	66%	99.7
term (37+)	94%	34%	3.3
all births	100%	100%	9.3

Any labour occurring before 37 weeks gestation should be managed in a specialist unit where paediatric facilities are available for the care of the preterm newborn.

What cannot be defined so readily is the number of perinatal deaths that were prevented by prompt intervention during labour and which, therefore, are more likely to occur if immediate help is not available. One condition that is extremely dangerous for the baby is a sudden premature separation of the placenta before the birth. The SMR2 data show that, of 66 000 births occurring each year, it is likely that assisted delivery "prevents" 10 such deaths a year at term from placental separation occurring during labour. There may be other conditions with less precise diagnoses in which death is also prevented. Other evidence[15] suggests that in GP hospitals death of the baby during labour is twice the rate in specialist hospitals and that if a quarter of all births were to take place outside obstetric hospitals perhaps a further 10 stillbirths during labour might occur in a year. The latter estimate, though based on an analysis of Scottish data, is similar to the deaths observed in a study of isolated general practitioner units in the Bath area.[16]

Careful monitoring of "preventable" deaths must take place. This should not be a problem as since 1977 all stillbirths and neonatal deaths in Scotland have been audited and a report is published by the Information and Statistics Division of the Common Services Agency each year. It is essential that this audit continues.

Morbidity

Morbidity is more difficult to monitor. However, the idea that the provision of lower technology care will reduce intervention rates without increasing "preventable"

deaths must be kept under review. Population based induction, caesarean section and instrumental delivery rates should be reported.

In the mothers critical incidents, other than death, include the progression of pregnancy-induced hypertension to eclampsia, and severe perineal (3rd degree) tears.

It is less easy to measure long term damage in surviving babies and physical and psychological morbidity in the mother. It would be advantageous to be able to link information available locally from the routine surveillance of pre-school children to their birth and antenatal records to help identify morbidity.

Patient Satisfaction Surveys

Patient Satisfaction Surveys should be undertaken at regular intervals. The content of the questionnaire will vary depending on the issues under consideration but a useful guide has been provided by OPCS.[17]

Monitoring Progress Towards Change

A series of process measures can be used to monitor that change has occurred. The following were considered in the House of Commons Report "Changing Childbirth[2]" and should be considered for use in Scotland.

Indicators

- all women should be entitled to carry their own case notes
- every woman should know one midwife who ensures continuity of her midwife care - the named midwife
- at least 30% of women should have the midwife as the lead professional
- every woman should know the lead professional who has a key role in the planning and provision of her care
- at least 75% of women should know the person who cares for them during their delivery
- midwives should have access to some beds in all maternity units
- at least 30% of women delivered in a maternity unit should be admitted under the management of a midwife
- the total number of antenatal visits for women with uncomplicated pregnancies should have been reviewed in the light of the available evidence and the Royal College of Obstetricians and Gynaecologists guidelines
- all front line ambulances should have a paramedic able to support the midwife who needs to transfer a woman to hospital in an emergency
- all women should have access to information about the services in their locality

8 Conclusion

In summary, Health Boards must ensure that there is effective dialogue between purchasers, providers (general practitioners, midwives and obstetricians) and users of maternity services to consider local options, constraints and realistic organisation of services. National guidance can provide a useful overall framework but each Health Board has to decide how to proceed at local level. In order to do this a number of Boards are in the process of setting up Maternity Liaison Groups.

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Annex 1

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Glossary

Royal College of Midwives Standard Definitions

DOMINO SCHEME	This term is based on the definition **DOM**iciliary **IN** and **O**ut. It is a plan of care where the community midwife assesses the woman in her own home prior to accompanying her at the appropriate time to the maternity unit for delivery. The mother and baby return home at 6 to 8 hours after the delivery and continue with the domiciliary midwifery care.
EARLY DISCHARGE	A planned transfer home, at 6 to 8 hours, from a maternity unit to the care by the domiciliary midwifery services, of a postnatal mother and her baby. This discharge is planned during the antenatal period.
HOME CONFINEMENT	The delivery of a baby in the client's home, as opposed to a GP unit or a maternity unit (consultant unit).
SYSTEM OF INTEGRATED CARE	A pattern of midwifery care in which the midwife provides client care within the hospital and community setting for the purpose of facilitating continuity of client care and improved job satisfaction for the midwife.
TEAM MIDWIFERY	A designated group of midwives within or without the hospital who practise as a team in order to provide midwifery care to a designated group of women.

MIDWIFE CLINIC	Antenatal care provided by the midwife in a hospital clinic, GP centre or client's own home setting. The midwife assumes responsibility for normal women and plans, implements and evaluates the care in partnership with the client. In the event of complications the woman is referred for medical opinion/care.
MIDWIFE-LED UNIT	A unit, e.g. labour ward, in which the pattern of normal midwifery care is planned, implemented and evaluated by teams of midwives usually led by a midwife who may be called a midwife "consultant". Clients will be referred to obstetric colleagues on the detection of an abnormality.
PRIMIPAROUS WOMAN	A woman with no previous registerable birth.
MULTIPAROUS WOMAN	A woman who has had one or more previous registerable births.