Three Centres Consensus Guidelines on Antenatal Care

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MERCY HOSPITAL FOR WOMEN

Southern Health

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COVERING STATEMENT

The objective of these guidelines is to provide Mercy Hospital for Women, Southern Health Service and Women's & Children's Health Service with consensus statements on aspects of antenatal care for low risk women based on the **best available evidence**. The guidelines are not intended to be prescriptive, but to provide information enabling the integration of evidence with experience (clinical judgment) in antenatal care and to assist midwives and doctors in their discussions with women. Though wider uptake of these guidelines is encouraged, the Centres are not responsible for uptake outside their organisations.

The guidelines were written by a steering group comprised of directors of the women's health or maternity services programs from the Mercy Hospital for Women, Royal Women's Hospital (Women's & Children's Health) and Monash Medical Centre (Southern Health). The Anti-Cancer Council of Victoria (ACCV) was a collaborating partner for the guidelines on smoking cessation interventions. Guidelines were peer reviewed by a multidisciplinary reference group from each Centre, comprising obstetricians, Nurse Unit Managers, GP liaison and allied health staff. At the time of writing the Southern Health reference group had representation from the Clayton and Moorabbin campuses of Monash Medical Centre, and Dandenong Hospital. The Women's & Children's reference group had representation from the Royal Women's Hospital and Sunshine Hospital. Project funding came from organisations participating and the Maternity Service Enhancement Strategy of the Victorian Department of Human Services. Copyright belongs to the Department.

As with all guidelines, these require regular review in light of the emerging evidence. The Centres will meet during 2002 and 2003 to discuss implementation and will review the evidence and future collaboration in December 2003.

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Copies may be downloaded free of charge from
www.dhs.vic.gov.au/ahs/quality/effect.htm

LEVELS OF EVIDENCE

The evidence for intervention questions presented in these guidelines was systematically assessed and classified according to the NHMRC's *A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines (1998)*. Evidence for other questions was generally given the equivalent of Level IV status by consensus of the steering group and clinical epidemiologist.

Level I Evidence is obtained from systematic review of all relevant randomised controlled trials

Level II Evidence is obtained from at least one properly designed randomised controlled trial

Level III-1 Evidence is obtained from well-designed pseudo-randomised controlled trials (with alternate allocation or some other method)

Level III-2 Evidence is obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case control studies or interrupted time series with a control group

Level III-3 Evidence is obtained from comparative studies with historical controls, two or more single arm studies or interrupted time series without a parallel control group

Level IV Evidence is obtained from case series, opinions of respected authorities, descriptive studies, reports of expert committees and case studies

RISK CRITERIA

The guidelines were developed for a 'normal healthy woman in her first singleton pregnancy'. Such a woman may be easily imagined but is more difficult to define. The following are complications that usually require care additional to that detailed in the guidelines.

Medical and Social History

Cardiac disease, including hypertension
Renal disease
Endocrine disorder or diabetes requiring insulin
Psychiatric disorder (on medication)
Haematological disorder, including thromboembolic disease
Epilepsy requiring anticonvulsant drugs
Malignant disease
Severe asthma
Chemical dependency
HIV or HBV positive
Auto-immune disorders
Gross obesity or grossly underweight
Lack of social support and other environmental factors as appropriate.

Previous Obstetric History

Recurrent miscarriage or mid trimester loss
Grand multiparity
Severe pre-eclampsia
Rhesus isoimmunisation or other significant blood group antibodies
Uterine surgery including LUSCS or cone biopsy
Antenatal or postpartum haemorrhage on two occasions
Retained placenta on 2+ occasions
IUGR
Still birth or neonatal death
Birth weight < 2500 g or > 4500 g
Congenital abnormality
Puerperal psychosis or postnatal depression.

The Number and Timing of Routine Antenatal Visits

Guidelines	Level of Evidence	References
Early in pregnancy all women should receive appropriate written information about the likely number, timing and content of antenatal visits associated with different options of care and be given an opportunity to discuss this schedule with their midwife or doctor.	IV	8-10
For low risk women, the traditional schedule of 14 visits may be safely reduced to between seven and ten visits without adversely affecting perinatal outcomes, irrespective of model of care.	I	4,5
The number and timing of visits should be flexible to suit the needs of individual women.	II	3
Women, whether first time or experienced mothers, should be invited to choose additional visits as they or their midwife or doctor perceive a need, or as complications arise.	II	3
Each visit should be structured as a milestone, with focused content, and with a longer first visit for the purpose of comprehensive assessment and discussion. Wherever possible visits should incorporate routine tests and investigations to minimise inconvenience to women.	Consensus Opinion	

Good Practice Notes

Information on the content of visits should include information on the rationale and timing of routine tests and investigations.

Wherever possible, any reduction in the total number of visits should be accompanied by an increase in time allocated.

The evidence accumulated for the Three Centres project suggests a baseline eight visit antenatal schedule as follows: Visits 1and 2 are in the first trimester. From the carer's perspective first trimester visits are primarily to assess maternal and fetal well-being, particularly the risk of complication, to date the pregnancy, take a comprehensive history, discuss smoking behaviour and establish care options. The visits are scheduled in order to offer screening tests recommended in these guidelines (for asymptomatic bacteriuria, syphilis, HBV, HCV, HIV and Down's Syndrome). Visits 3 and 4 are in the second trimester. Second trimester visits are primarily scheduled to monitor fetal growth, maternal well-being and signs of pre-eclampsia. If ultrasound is routinely offered then it should be included as part of a visit at 18-20 weeks. If women have glucose screening this should be part of a visit at 24-28 weeks. Visits 5-8 are in the third trimester. Third trimester visits are primarily to monitor fetal growth, maternal well-being, signs of pre-eclampsia, and to assess and prepare women for admission, labour and going home. These visits may include bacteriological screening for GBS (at 35-37 weeks), and preparations for admission, labour and 'going home', consistent with other guidelines. It is important to establish each person's expectations and understanding, as women may have a different perspective on the purpose and timing of antenatal visits.

The option and timing of additional visits should be discussed with all women.

Aim

The aim of these guidelines is to provide information to midwives and doctors regarding the number and timing of routine antenatal visits for low risk women.

Evidence

An antenatal visit is defined as an intentional encounter between a pregnant woman and a midwife or doctor to assess and improve maternal and fetal well-being throughout pregnancy and prior to labour.

The rationale for the 'traditional' schedule developed in the UK during the 1920s is based on the theory that regular visits with predefined content enable midwives and doctors to detect conditions in mother and baby that may threaten their health. Conditions are then monitored or treated to ensure a safe delivery and better outcomes. The 'traditional' number of antenatal visits is approximately 14, based on early presentation and a schedule of four weekly visits until 28 weeks gestation, then fortnightly visits until 36 weeks gestation, followed by weekly visits until birth. This schedule does not always include additional visits required for new technologies such as routine fetal anomaly screening tests, antenatal classes, social needs assessment or postnatal planning. Over the last twenty years various studies have questioned the traditional schedule for both frequency and content in relation to perinatal outcome, cost-effectiveness and satisfaction with care [1].

The number, timing and content of antenatal visits should be structured to reflect the preferences of the mother, and to optimise accurate diagnosis and management of maternal and fetal complications. High level evidence suggests that, in women with no apparent risk factors or complications, **a moderate reduction in the number of visits with an increased emphasis on the content of visits** from current practice is possible without adversely affecting important perinatal outcomes [2-5]. A multi-centre randomised WHO trial compared women (from Argentina, Thailand, Cuba and Saudi Arabia) who had a median of five visits (n=12,568) to women who had a median of eight visits (n=11,958) and concluded that a model of five visits did not appear to affect important maternal and perinatal outcomes [6].

In all trials a reduction in the total number may lead to decreased satisfaction with care for some women (or increased anxiety), especially in their first experience of a reduced schedule. In particular, a rigid and imposed reduction in visits is reported to increase dissatisfaction [2-7]. UK trials emphasise that some women may prefer more rather than less visits, and that the ideal antenatal schedule should offer a flexible schedule. These women should be identified through discussion of the options at the outset of pregnancy, as they appear difficult to predefine by demographic characteristics or parity [8,9]. In this context existing trials would suggest that a reduced schedule of visits will give the participating hospitals and their patients greater flexibility, longer and better quality antenatal visits, improved continuity of carer and more rational and efficient resourcing.

Methods of Search and Appraisal

Three strategies were used to search, source and appraise the literature on the number and timing of antenatal visits in terms of perinatal outcome, maternal satisfaction with care, professional attitudes and cost-benefit. Issues regarding waiting times, time investment in antenatal care and compliance with antenatal schedules were not specifically considered.

I. General Literature Search (January 2000)

The Centre for Clinical Effectiveness (CCE) searched databases (the Cochrane Library, Medline, Best Evidence, CINAHL , PsycINFO, Sociofile) and relevant Internet sites (INAHTA, ARIF, Bandolier) for general literature on the number and timing of antenatal visits. MeSH terms used were Appointments and Schedules, *Prenatal Care, *Antenatal Care, *Pregnancy, Attitude to Health, Randomised Controlled Trials, *Pregnancy Outcome, Patient Satisfaction, *Pregnancy Complications. The project coordinator identified and sourced articles of interest from the references provided and searched bibliographies for further references. The coordinator searched grey literature and journals for additional evidence published between January 2000 and August 2001.

II. Search on Defined Questions (April 2000)

The Centre for Clinical Effectiveness searched databases (the Cochrane Library, Medline, Best Evidence, CINAHL, PsycINFO, Sociofile) and relevant Internet sites (INAHTA, ARIF, Bandolier) to answer specific questions:

1. In low risk pregnant women is a reduced schedule of visits as effective as the traditional schedule of approximately 14 visits in achieving positive perinatal outcomes?

2. In low risk women is a reduced schedule of visits as effective as the traditional schedule in terms of women's satisfaction with care?

3. Is a reduced schedule of visits (<14) as effective in low risk primigravida as in low risk multigravidas in achieving positive perinatal outcomes and satisfaction with care?

4. In low risk women is a reduced schedule of visits (<14) more cost effective than the traditional schedule?

Outcome measures considered: preterm delivery (<37 weeks), low birth weight, small for gestational age, mean birthweight, mean gestational age at birth, perinatal mortality, cost-effectiveness, variables demonstrating the perceptions of care, pre-eclampsia, caesarean section, inductions of labour, antepartum haemorrhage and maternal mortality.

The Centre could not identify any evidence that directly investigated issues of parity or cost effectiveness.

References

1. Villar J, Bergsjo P. Scientific basis for the content of routine antenatal care. *Acta Obstetricia et Gynecologica Scandinavia* 1997;76:1-14. Level IV

2. Sikorski J, Wilson J, Clement S, Das S, Smeeton N. A randomised controlled trial comparing two schedules of antenatal visits: the antenatal care project. *BMJ* 1996;312:546-553. Level II

3. Jewell D, Sharp D, Sanders J and Peters TJ. A randomised controlled trial of flexibility in routine antenatal care. *BJOG* 2000;107:1241-1247. Level II

4. Villar J, Khan-Neelofur D. Patterns of routine antenatal care for low risk pregnancy. (Cochrane Review). *The Cochrane Library*, Issue 2, 2000 Oxford: Update Software. Level I

5. Carolli G, Villar J, Piaggio G, Gulmezoglu M, Mugford M, Lumbiganon P, Farnot U, Bersgjo P for the WHO Antenatal Care Trial Research Group WHO systematic review of randomised controlled trials of routine antenatal care. *Lancet* 2001;357:1565-1570. Level I

6. Villar J, Ba'aqeel H, Piaggio G, Lumbiganon P, Belizan JM, Farnot U, Al-Mazrou Y, Carolli G, Pinol A, Donner A, Langer A, Nigenda G, Mugford M, Fox-Rushby J, Hutton G, Bergsjo P, Bakketeig L, Berendes H, for the WHO Antenatal Care Trial group. WHO antenatal care randomised trial for the valuation of a new model of routine antenatal care. *Lancet* 2001;357:1551-1570. Level II

7. Clement S, Sikorski J, Wilson J, Das S, Smeeton N. Women's satisfaction with traditional and reduced antenatal visit schedules. *Midwifery* 1996;12:120-128. Level II

8. Jewell D, Sanders J, Sharp D. The views and anticipated needs of women in early pregnancy. *BJOG* 2000;107:1237-1240. Level IV

9. Clement S, Sikorski J, Wilson J, Das S. Planning antenatal services to met women's psychological needs. *Brit J of Midwifery* 1997;5(5):298-305. Level IV

10. Lumley J. *What do women really want? Satisfaction with care in pregnancy, birth and the postnatal hospital stay. A summary of the current evidence.* Unpublished report commissioned by the Royal Women's Hospital, Melbourne from the Centre for the Study of Mother's and Children's Health, La Trobe University, Melbourne 2000. Level IV

Models of Antenatal Care

Guidelines	Level of Evidence	References
At, or prior to, their first antenatal visit all women should be provided with appropriate written information about the models of pregnancy care available to them (in terms of cost to women, continuity and transition from hospital to home and other information as women identify it).	IV	18
A description of the roles of the various carers may assist their decisions.	III-2	19
At each antenatal visit midwives and doctors should offer information, consistent advice, clear explanations, and provide women an opportunity to ask questions.	III IV	12,14,16,17,19 18
Women are more likely to be satisfied with antenatal care when they perceive midwives and doctors are kind, supportive, courteous, respectful and recognise their individual needs. Women should not be kept waiting for long periods or feel rushed through visits and investigations.	IV	18-20
Wherever possible, women should be offered continuity of care, including continuity of carer.	I	12
Midwifery and GP- led models of care are safe for low risk women.	I II III	10 3,4,6-11 5
Good Practice Notes		
Routinely involving obstetricians in the care of low risk women at scheduled times does not appear to improve perinatal outcomes compared with involving obstetricians when complications arise. Where possible, women should be sent or given written information on models of care prior to their first visit. This is due to the high volume of information that women are required to process and the decisions required at their first and second visits. Individual preferences regarding models of care should be established and discussed in the first two antenatal visits.	II	3
Women should be offered the option of carrying a copy of their antenatal record.	III	21

Aim

The aim of these guidelines is to assist midwives and doctors to advise women on models of care that are safe and satisfactory.

Evidence

Following the Victorian Birthing Services Review in 1990 the federal government recommended the development of antenatal care models that allowed greater:

- Continuity of care.
- Choice of GP or midwife carer.
- Ease of access to care.
- Involvement of women in decisions about care.
- Socially and culturally appropriate care.
- Shorter waiting times for antenatal appointments.
- An expanded role for midwives [1].

Since 1990 the Three Centres in Victoria have introduced new models of midwifery care, satellite clinics and expanded GP shared care. Women enrolled in midwifery or shared care models are required to see a hospital doctor between one and four times during pregnancy (with these visits usually scheduled at the first or second antenatal visit, and at 26, 36 and 41 weeks). The frequency of obstetric visits varies between hospitals and between models of care within hospitals.

In 1999 the Review of Shared Obstetric Care in Victoria identified women in this State:

- Have difficulty accessing information about the range of options and models of care available.
- Do not have information about models of care routinely distributed.
- Find one of the barriers to women accessing information about the range of options may be professional rivalries and sensitivities.
- Have difficulty obtaining accurate information about the costs they are likely to incur for investigations and appointments in various models of care [2].

Concerns expressed about women's safety with 'new' models of care has meant that innovations involving midwifery-led care are generally introduced as a trial or pilot study and regularly reviewed. The net result is a growing body of high level Australian evidence addressing[+] midwifery-led antenatal care in terms of safety, continuity, and satisfaction with care compared to standard care[++]. Unfortunately, there is not the same body of Australian evidence addressing GP-led care or combined care compared to standard care, though UK and Scottish trials establish the safety of GP shared care[3]. Evidence supports the conclusion that team midwifery, community-based collaborative care, shared care and birth centre care for low risk women integrated within existing services are clinically effective [4-10]. Team midwifery and collaborative care are likely to be safe and very satisfactory for women with moderate to high risk factors, though pooled data is required to properly assess effects on perinatal outcome[10].

In a randomised trial involving 1,000 women at Monash Medical Centre, Biro et al (Level II) compared team midwifery with heterogeneous 'standard' care for both high and low risk women. Standard care involved many different staff, whereas team midwifery emphasised continuity of carer. Data showed that 80 per cent of team midwifery patients were attended during labour by a midwife known to them compared with 0.3 per cent of standard care patients. Augmentation of labour, use of pethidine and epidurals, fetal monitoring and episiotomy rates were significantly reduced in the team midwifery group. Perineal tears were greater in number but more were unsutured. While there were fewer pre-term babies (2.4 per cent or 11 babies versus six per cent or 26 babies, OR 0.39) admitted to SCN, eight babies from the midwifery group were admitted for growth restriction. Other neonatal measures showed no differences. Five perinatal deaths occurred in the team care group and four in standard care[4].

A randomised trial of team midwifery involving 1,000 women at the Royal Women's Hospital found similar results. Team midwife care was associated with increased satisfaction and differences between groups were most notable for antenatal care. There were no differences between team midwife care and standard care in medical interventions or in women's emotional well-being as measured two months after the birth [9].

Homer, Davis and Brodie, et al. (Level II) randomised 1,089 women into 'standard' hospital based care at St George Hospital in Sydney and community-based collaborative care involving a small team of midwives and hospital obstetricians. The study emphasis was on continuity. They found a significant reduction in Caesarean rates, their primary outcome of interest (OR 0.6 CI 0.4-0.9). There were no other significant differences in labour or birth events or neonatal problems. The study was too small to detect differences in perinatal mortality. The authors

[+] Randomised controlled trials comparing models of care in the UK and Scandinavia are readily available. Despite the congruity of conclusions regarding the safety of midwifery and GP-led models, there are difficulties comparing trials internationally due to the heterogeneity of models and the variance in outcome measures/definitions used. Consequently the evidence used here is largely confined to Australian data.

[++] Standard care included the following models: shared GP and obstetrician care; shared care between community based midwives and hospital obstetric staff; hospital obstetric staff only; or hospital midwifery and obstetrician care.

conclude that team midwifery can reduce Caesarean rates for both low and high risk women and that their rate of perinatal mortality is comparable with other Australian data [7].

Waldenstrom and Turnbull analysed data from seven trials (n=9,148) not including the three above, comparing continuity of midwifery-led care to standard maternity care on an intention-to-treat basis found less use of obstetric interventions in the midwifery led groups. Caesarean section rates did not differ statistically. There was a significantly higher rate of perineal tears in the pooled midwifery groups, but no significant differences in maternal deaths, maternal complications or proportion of infants with Apgar score <7 at five minutes. Admission rates to NICU or special care baby units were also similar between the standard and intervention groups. However, the difference in perinatal deaths bordering on statistical significance (OR 1.60; 95 per cent CI 0.99 to 2.59) [10]. The authors called for further trials to elucidate whether this finding was true or false. Pooled data that includes the three Australian trials previously mentioned (n=3,089) is awaiting publication.

In Australia concerns over the safety of women in midwifery- or GP-led models of care has also led to the widespread practice of routine visits with an obstetrician at designated times. While there is no question women should see an obstetrician when complications are indicated, the value of routine obstetric visits for low risk women is debated. A Scottish multi-centre randomised trial involving 1,765 women compared routine antenatal care for low risk women by GPs and midwives in community settings (providing a care plan and protocols for managing complications) with obstetrician-led shared care. The authors cite five previous UK studies that found improvements in the community model for access to care, uptake of care, improved continuity of care and pregnancy outcomes at least as good as hospital obstetric care. In this trial women saw a specialist according to their individual needs, and not at a predefined routine visit. This study found similar gains, and that multiparous women in the midwifery and GP group had slightly fewer visits (Mean 10.6 visits versus 11.6 visits, CI=0.95). There was a similar level of satisfaction between intervention and control groups, but the significant difference lay in intervention participants getting on 'very well' with their main carer and preferring to see the same person each time. The results of the study indicate that women initially assessed at low risk of pregnancy complications may have little or no benefit from routine specialist antenatal visits [3].

Waldenstrom and Nilson's randomised controlled study compared birth centre care, where low risk women were referred to see a doctor for a medical indication only, with standard maternity care. Birth centre women made fewer antenatal visits, both to midwives and doctors, and had fewer antenatal tests. Both groups reported antenatal complications to the same level. There was no statistical difference in antenatal hospital admissions. There was less medical intervention used in the intra-partum and postnatal periods. Twenty per cent of women in both groups saw a doctor during the first two months following delivery for similar health problems. There was no statistical difference in hospital re-admissions. The authors concluded that birth centre care is effective in identifying significant maternal complications and as safe as standard maternity care for women [11].

Measuring satisfaction with antenatal care is difficult, not only as models of care are heterogeneous and measurement of satisfaction contentious but because the continuity of care characteristic of midwifery and GP-led models confounds the issue of satisfaction[7-10,12,13]. A Cochrane review of continuity of antenatal caregivers concluded that women who experienced continuity of care were more likely to be more satisfied with their level of care and caregivers,[12] though a Swedish trial suggested that continuity of carer is less important at a birth centre [11].

Surveys conducted with recent mothers (SRM) in Victoria during 1989, 1993 and 1999 provide Level IV evidence concerning satisfaction with care. Results underscore the need for women to be informed of their options regarding pregnancy care and the implications of each option in terms of cost, continuity and the transition from hospital to home. The 1989 SRM indicated that women attending public hospital clinics (standard care) were the least satisfied with antenatal care, and those attending private obstetricians were the most satisfied, with GP care intermediate. The follow-up survey in 1993 indicated women were most likely to be satisfied when antenatal care was provided by a private obstetrician, private GP or birth centre. Women in public GP care, who were largely from rural areas and more likely to have received 'quasi-private' care with their own GP, were an intermediately satisfied group. Fewer than half the women who attended a public clinic viewed their care as very good, and the expansion of shared care did not appear to have reduced waiting times and rushed appointments at public clinics. Women participating in shared care did not appear to find it a better option than public clinic care, though shared care programs vary considerably and some programs are likely to work better than others[14]. Satisfaction with antenatal care is generally low for women born outside Australia (even after taking account of their risk status and model of care), from low socioeconomic backgrounds and/or from a non-English speaking background. Local studies indicate more attention should to be given to reducing barriers to effective communication[15-17]. The 1999 survey results are unpublished at the time of writing, but data indicate that private obstetric care rates as most satisfactory for antenatal care, followed by birth centre care and

midwifery clinics. Public clinics were rated the least satisfactory for antenatal care.

The factors that increase satisfaction with pregnancy care are consistent across different countries and time periods. Continuity of care is strongly associated with satisfaction[12]. Level III and IV evidence indicates women value staff who:

- Exhibit qualities of courtesy, kindness, support, respect women as individuals and recognise individual needs.
- Offer information, provide clear explanations and facilitate questions.

Women are less satisfied where there is a lack of information about options for antenatal care, long waits for antenatal visits or rushed check-ups. Differences in satisfaction with different models of care are explicable in terms of the extent to which the above needs are satisfied within each model of care. Consistent information, a sense of control, involvement in decision-making, and confidence in clinical care has also been associated with increased satisfaction with pregnancy care in an Australian population as well as in other countries. [18-20]. A descriptive study of 200 Brisbane women enrolled in shared and standard care found that women who carry their own antenatal record felt more in control, had less difficultly talking to their doctor and rated satisfaction with care significantly higher than women in the standard care group [21]. While a reduced schedule of antenatal visits was associated with decreased satisfaction with care (or increased anxiety) in two UK trials [22,23], the researchers were unsure if this would hold over time and could not readily identify the women likely to be dissatisfied with a reduced schedule of visits [22]. The researchers concluded this finding indicated the importance of talking to women individually and, as far as possible, tailoring care to individual preferences [22,23].

*The term '**continuity of care**' may refer to any of the following situations:*

a) Women see the same care providers across different stages of antenatal, intrapartum and postnatal care.

b) Women have one-to-one care from a single practitioner during pregnancy and labour.

c) Women are cared for by a small number of care providers working together as a team with shared philosophy and guidelines for practice.

***Midwifery-led care** refers to models where midwives provide all or most antenatal care. These may or may not emphasise continuity of care. Midwifery led models of care include midwives clinics, team midwifery and birth centre care.*

*'**Standard or conventional care**' refers to the hospital antenatal clinics in which women see the doctor or midwife that is available at the time of their appointment. These doctors and midwives may be in training. Women may see similar care providers each visit if the particular hospital operates in this way. Likewise, women may be allocated to a particular unit or team. In some hospitals accredited community GPs provide some of the care.*

***GP-led care** refers to models where GPs provide all or most antenatal care either in private rooms or as part of hospital clinics. These models may or may not emphasise continuity of care.*

Methods of Search and Appraisal

I. Search on Defined Questions (March 2001)

A research team from the Department of Perinatal Medicine at the Royal Women's Hospital used the OVID interface to search Premedline and Medline, CINAHL, Best Evidence (Jan 1990 to Mar 2001) and the Cochrane Database (2001, Issue 1) to answer:

1. How do options of
   - Midwifery led care
   - GP-led care (shared care)
   - Obstetrician led care
   - Multidisciplinary/team/collaborative care

For women assessed as low risk at their first antenatal visit compare to conventional outpatient care, in terms of:

- Obstetric interventions
- Maternal and neonatal morbidity
- Perinatal mortality
- Satisfaction with care, and
- Cost-effectiveness?

2. Do routine visits to an obstetrician (at 14, 26 and 36 weeks gestation), compared with discretionary visits, for women initially assessed as low risk of obstetric complications, offer clinical benefits or increase satisfaction with care?

The team searched the bibliographies from articles retrieved for additional citations and hand-searched relevant, non-peer reviewed literature. The search retrieved 172 citations, from which 41 key citations were identified. These included three Level I systematic reviews, 16 Level II, 13 Level III 2, one Level III-3 and seven Level IV studies/documents. The coordinator searched grey literature and journals for additional evidence published between April and August 2001.

References

1. Final Report of the Ministerial Review of Birthing Services in Victoria. *Having a Baby in Victoria.* Health Department, Victoria 1990. Level IV

2. Brown S, Dawson W, Gunn J, McNair R. *Review of Shared Obstetric Care: Summary Report.* Centre for the Study of Mother's and Children's Health, La Trobe University, Carlton 1999. Level IV

3. Tucker JS, Hall MH, Howie PW, et al. Should obstetricians see women with normal pregnancies? A multicentre randomised controlled trial of routine antenatal care by general practitioners and midwives compared with shared care led by obstetricians [see comments]. *BMJ* 1996;312(7030):554-9. Level II

4. Biró MA, Waldenström U, Pannifex JH. Team midwifery care in a tertiary level obstetric service: a randomised controlled trial [including commentary by Kaufman K]. *Birth* 2000;27(3):168-76. Level II

5. Cunningham JD. Experiences of Australian mothers who gave birth either at home, at a birth centre, or in hospital labour wards. *Social Science and Medicine* 1993;36(4):475-83. Level III 2

6. Giles W, Collins J, Ong F, MacDonald R. Antenatal care of low risk obstetric patients by midwives. A randomised controlled trial [see comments]. *MJA* 1992;157(3):158-61. Level II

7. Homer CS, Davis GK, Brodie PM, Sheehan A, Barclay LM, Wills J, Chapman MG. Collaboration in maternity care: a randomised controlled trial comparing community-based continuity of care with standard hospital care. *BJOG* 2001;108(1):16-22. Level II

8. Rowley MJ, Hensley MJ, Brinsmead MW, Wlodarczyk JH. Continuity of care by a midwife team versus routine care during pregnancy and birth: a randomised trial. *MJA* 1995;163(6):289-93. Level II

9. Waldenström U, Brown S, McLachlan H, Forster D, Brennecke S. Does team midwife care increase satisfaction with antenatal, intrapartum, and postpartum care? A randomised controlled trial. [including commentary by Kaufman K] *Birth* 2000;27(3):156-67,174-6. Level II

10. Waldenstrom U, Turnbull D. A systematic review comparing continuity of midwifery care with standard maternity services. [Review] [32 refs]. *BJOG* 1998;105(11):1160-70. Level I

11. Waldenstrom U, Nilsson C. A randomized controlled study of birth center care versus standard maternity care: effects on women's health. *Birth* 1997;24:17-26. Level II

12. Hodnett ED. Continuity of caregivers for care during pregnancy and childbirth. [Review] [2 refs]. *Cochrane Database of Systematic Reviews* [computer file] (2):CD000062 2000. Level I

13. Waldenstrom U. Continuity of carer and satisfaction. *Midwifery* 1998;14(4):207-13. Level IV

14. Laslett AM, Brown S, Lumley J. (1997) Women's views of different models of antenatal care in Victoria, Australia. *Birth* 24(2):81-9. Level III 2

15. Rice PL, Naksook C. The experience of pregnancy, labour and birth of Thai women in Australia. (45 ref). *Midwifery* 1998;14(2):74-84. Level IV

16. Small R, Lumley J, Yelland J, Rice PL. Shared antenatal care fails to rate well with women of non-English speaking backgrounds. *MJA* 1998;168(1):15-8. Level III 2

17. Small R, Rice PL, Yelland J, Lumley J. Mothers in a new country: the role of culture and communication in Vietnamese, Turkish and Filipino women's experiences of giving birth in Australia. *Women and Health* 1999;28:77-101. Level III 2

18. Lumley J. *What do women really want? Satisfaction with care in pregnancy, birth and the postnatal hospital stay. A summary of the current evidence. Unpublished report commissioned by the Royal Women's Hospital, Melbourne from the* Centre for the Study of Mother's and Children's Health, La Trobe University, Melbourne 2000. Level IV

19. Hundley V, Rennie AM, Fitzmaurice A, Graham W, Teijlingen EV, Penney G. A national survey of women's views of their maternity care in Scotland. *Midwifery* 2000;16(4):303-313. Level III 2

20. Garcia J, Redshaw M, Fitzsimons B, Keene J. *First Class Delivery: A national survey of women's views of maternity care.* Audit Commission, London 1998. Level IV

21. Webster J, Forbes K, Foster S, Thomas I, Griffin A, Timms H. Sharing antenatal care: client satisfaction and use of the 'patient-held record'. *ANZJOG* 1996;36(1):11-4. Level III 2

22. Clement S, Sikorski J, Wilson J, Das S, Smeeton N. Women's satisfaction with traditional and reduced antenatal visit schedules. *Midwifery* 1996;12(3):120-8. Level II

23. Jewell D, Sharp D, Sanders J and Peters TJ. A randomised controlled trial of flexibility in routine antenatal care. *BJOG* 2000;107:1241-1247. Level II

Provision of Smoking Cessation Interventions During Pregnancy

Guidelines	Level of Evidence	References
Smoking cessation interventions should be offered in routine antenatal care to all pregnant women who smoke or who have recently quit.	I	3,5,20
At every antenatal visit midwives and doctors should *ask* women about their smoking behaviour using a multiple-choice question, and document their response on the antenatal record.	II III	8,21 22
At every antenatal visit midwives and doctors should *advise* women about the risks to their own and the baby's health ie the risk of having a baby with low birth weight, prematurity or growth restriction. The benefits of quitting at any stage in pregnancy should be emphasised.	I IV	3,5,20 6
Midwives and doctors should *assess* all women identified as smokers or as 'recently quit' for their willingness to quit or to stay quit and document this information on the antenatal record.	II III	8,21 22
Midwives and doctors should *assist* women to quit or remain quit by means of an approach based on a cognitive-behavioural model of intervention. Written material should be provided on the effects of smoking on both mother and baby, on the role of the partner in helping to reduce the health risks to the baby, on ways to quit and stay quit, and where to find extra support. Midwives and doctors should assist women to develop a commitment to quit, to set a 'quit date' and adopt appropriate strategies to quit or stay quit.	I II	3,7,20 8
Where women experience difficulty in quitting, they should arrange for additional support in-house and/or via a referral to an outside agency. Partners should be provided with information and support to assist women to quit and stay quit.	III	10,11
Every woman assessed as a smoker or recent quitter should be followed up at least once prior to 20 weeks and preferably at each antenatal visit. If she has quit or attempted to quit, she should be given support and encouragement. If she has not attempted to quit, the process of advising, assessing and assisting should be offered again.	II III	8 10

Good Practice Notes
Women should not be asked a dichotomous question such as 'Do you smoke? Yes/No'.
They should be asked a multi-choice question such as 'Which of the following statements best describes your cigarette smoking? I smoke daily now, about the same as before finding out I was pregnant/ I smoke daily now, but I've cut down since I found out I has pregnant/ I smoke every once in a while/ I quit smoking since finding out I was pregnant/ I wasn't smoking around the time Ifound out I was pregnant and I don't currently smoke.'

Aim

The aim of these guidelines is to assist midwives and doctors to reduce the risk of poor health outcomes for babies caused by exposure to maternal smoking. A secondary aim is to reduce the long-term health risks for mothers associated with tobacco use.

Evidence

Approximately 33 per cent of Australian women are smokers when they become pregnant. A quarter of Australian women who smoke quit spontaneously before their first antenatal visit. However, one in four will relapse during pregnancy. An estimated 58,000 of Australian babies born per year are exposed to the effects of smoking in utero [1]. Smoking rates are particularly high among teenagers and indigenous Australians at around 50 per cent to 60 per cent [2-4]. Evidence indicates a serious risk associated with maternal smoking for the fetus, including low birth weight (LBW), perinatal morbidity and mortality. Nicotine, carbon monoxide (CO) and other toxic chemicals readily cross the placenta during pregnancy. CO reduces the oxygen supply to the fetus and nicotine raises fetal blood pressure and affects breathing movements. Fetal growth is thought to be restricted by impaired placentation leading to impaired feto-placental oxygenation and subsequent growth restriction (IUGR) and low birth weight (LBW). Pooled estimates of relative risk show that the risk of LBW is doubled for babies of mothers who smoke (RR=2.04). Prematurity is a third more likely (RR=1.34) and IUGR more than double (RR=2.28). The risk of Sudden Infant Death Syndrome is almost three times higher (RR=2.76), and maternal smoking is associated with around 10 per cent of still births (RR=1.33) and spontaneous abortions (RR=1.36) [3,5].

High level evidence strongly supports the effectiveness of smoking cessation interventions in reducing smoking rates in pregnant women, reducing preterm birth and LBW. Between 1975 and 1998, a total of 44 randomised control trials were conducted on smoking cessation interventions during pregnancy. These trials involved over 17,000 women, and included a cluster-randomised trial of a further 3,000 women. A Cochrane Review concludes that multifaceted interventions based on a cognitive-behavioural model result in a reduction in smoking rates, in LBW and in preterm birth [3]. A cognitive-behavioural approach focuses on restructuring the person's beliefs about their smoking and ability to quit, while emphasising the development and implementation of appropriate coping strategies. In the US review of the evidence has led to recommendations that routine and extended smoking cessation interventions should be implemented during pregnancy [6]. Interventions during pregnancy can double quitting rates and prevent relapse among spontaneous quitters [3]. While abstinence throughout pregnancy will produce the greatest benefits to the fetus, quitting at any point can yield benefits. Even cutting down can be beneficial for heavy smokers [5,6].

Level I II and IV evidence suggest interventions should be based on a model with multiple contacts, multiple formats supporting written materials and follow-up contacts [6-8]. The US Public Health Service recommend a five-step strategy of ASK, ADVISE, ASSESS, ASSIST and ASK AGAIN at each antenatal visit [6]. The cycle should be repeated throughout pregnancy, due to high relapse rates in quitters, inaccurate reporting by women of smoking status and the impact of changed circumstances on women's motivation. Level III and IV evidence suggests women who may not have appeared to need or to want an intervention in early pregnancy may become receptive later in pregnancy [1,6,9]. Level III evidence suggests interventions should include components tailored to women with partners who smoke [10,11].

Despite strong evidence of effectiveness and cost-benefit [12-15], few Australian hospitals adopt a systematic approach to identifying pregnant women who smoke or who have recently quit, nor do they routinely deliver smoking cessation interventions [16]. Barriers to the adoption of routine identification and intervention include lack of recognition of the important clinical and financial benefits; time pressure and competing demands on medical staff; lack of confidence, experience and training in the delivery of interventions; and lack of guidelines or protocols to support staff [17-19]. Data strongly indicate that effective interventions require coordinated interventions involving individual, organisational and systemic change [6].

Insufficient evidence currently exists to assess fully the relative risks and benefits of nicotine replacement therapy (NRT) or other pharmacotherapies for the fetus [6].

Methods of Search and Appraisal

Two strategies were used to search and appraise the literature on screening for smoking status and delivery of smoking cessation interventions among pregnant women.

I. Search on Defined Questions (December 2000)

A project team from the Centre for Behavioural Research in Cancer and Anti Cancer Council of Victoria searched PubMed (1980-2001), and Cochrane Library databases (-2001) to answer the following questions:

1. Do smoking cessation interventions for pregnant women reduce their smoking rates?

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