NHS

National Institute for Clinical Excellence

Antenatal care

Routine care for the healthy pregnant woman

Clinical Guideline 6

October 2003

Developed by the National Collaborating Centre for Women's and Children's Health

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This document has been circulated to the following:

- Primary care trust (PCT) chief executives
- Local health board (LHB) chief executives
- NHS trust chief executives in England and Wales
- Strategic health authority chief executives in England and Wales
- Medical and nursing directors in England and Wales
- Clinical governance leads in England and Wales
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- Community health councils in England and Wales
- Commission for Health Improvement
- NHS Clinical Governance Support Team
- Patient advocacy groups
- Representative bodies for health services, professional organisations and statutory bodies, and the Royal Colleges

This guidance is written in the following context:
This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Health professionals are expected to take it fully into account when exercising their clinical judgment. The guidance does not, however, override the individual responsibility of health professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

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Contents

Key recommendations

1 Pregnant women should be offered evidence-based information and support to enable them to make informed decisions regarding their care. Information should include details of where they will be seen and who will undertake their care. Addressing women's choices should be recognised as being integral to the decision-making process.

2 A schedule of antenatal appointments should be determined by the function of the appointments. For a woman who is nulliparous with an uncomplicated pregnancy, a schedule of ten appointments should be adequate. For a woman who is parous with an uncomplicated pregnancy, a schedule of seven appointments should be adequate.

3 Pregnant women should be offered an early ultrasound scan to determine gestational age (in lieu of last menstrual period [LMP] for all cases) and to detect multiple pregnancies. This will ensure consistency of gestational age assessments, improve the performance of mid-trimester serum screening for Down's syndrome and reduce the need for induction of labour after 41 weeks.

4 Pregnant women should be offered screening for Down's syndrome with a test which provides the current standard of a detection rate above 60% and a false-positive rate of less than 5%. The following tests meet this standard:

- from 11 to 14 weeks
  - nuchal translucency (NT)
  - the combined test (NT, hCG and PAPP-A)
- from 14 to 20 weeks
  - the triple test (hCG, AFP and uE3)
  - the quadruple test (hCG, AFP, uE3, inhibin A)
- from 11 to 14 weeks **and** 14 to 20 weeks
  - the integrated test (NT, PAPP-A + hCG, AFP, uE3, inhibin A)
  - the serum integrated test (PAPP-A + hCG, AFP, uE3, inhibin A).

5 The evidence does not support routine screening for gestational diabetes mellitus and therefore it should not be offered.

The following guidance is evidence based. The grading scheme used for the recommendations (A, B, C, D, good practice point [GPP] or NICE 2002) is described in Appendix A; a summary of the evidence on which the guidance is based is provided in the full guideline (see Section 5). Reference to NICE 2002 indicates the recommendation derived from the NICE technology appraisal of routine antenatal anti-D prophylaxis for RhD-negative women (see Section 6).

The guidance covers baseline care for all pregnant women. Some women will require care additional to that described – see Appendix E.

1 Guidance

1.1 Woman-centred care and informed decision making

The principles outlined in this section apply to all aspects of the antenatal care guideline.

1.1.1 Pregnant women should be offered opportunities to attend antenatal classes and have written information about antenatal care. **A**

1.1.2 Pregnant women should be offered evidence-based information and support to enable them to make informed decisions regarding their care. Information should include details of where they will be seen and who will undertake their care. Addressing women's choices should be recognised as being integral to the decision-making process. **C**

1.1.3 At the first contact, pregnant women should be offered information about: the pregnancy-care services and options available; lifestyle considerations, including dietary information; and screening tests. **C**

1.1.4 Pregnant women should be informed about the purpose of any screening test before it is performed. The right of a woman to accept or decline a test should be made clear. **D**

1.1.5 At each antenatal appointment, midwives and doctors should offer consistent information and clear explanations, and should provide pregnant women with an opportunity to discuss issues and ask questions. **D**

1.1.6 Communication and information should be provided in a form that is accessible to pregnant women who have additional needs, such as those with physical, cognitive, or sensory disabilities and those who do not speak or read English. **GPP**

Please note that all first-time pregnant women in England and Wales should be offered *The Pregnancy Book* (published by health departments in England and Wales) by their carer. This book provides information on many aspects of pregnancy including: how the fetus develops; deciding where to have a baby; feelings and relationships during pregnancy; antenatal care and classes; problems in pregnancy; when pregnancy goes wrong; rights and benefits information; and a list of useful organisations. It also has a section for expectant fathers.

1.2 Provision and organisation of care

1.2.1 Who provides care?

1.2.1.1 Midwife- and GP-led models of care should be offered for women with an uncomplicated pregnancy. Routine involvement of obstetricians in the care of women with an uncomplicated pregnancy at scheduled times does not appear to improve perinatal outcomes compared with involving obstetricians when complications arise. **A**

1.2.2 Continuity of care

1.2.2.1 Antenatal care should be provided by a small group of carers with whom the woman feels comfortable. There should be continuity of care throughout the antenatal period. **A**

1.2.2.2 A system of clear referral paths should be established so that pregnant women who require additional care are managed and treated by the appropriate specialist teams when problems are identified. **D**

1.2.3 Where should antenatal appointments take place?

1.2.3.1 Antenatal care should be readily and easily accessible to all women and should be sensitive to the needs of individual women and the local community. **C**

1.2.3.2 The environment in which antenatal appointments take place should enable women to discuss sensitive issues such as domestic violence, sexual abuse, psychiatric illness and illicit drug use. **GPP**

1.2.4 Documentation of care

1.2.4.1 Structured maternity records should be used for antenatal care. **A**

1.2.4.2 Maternity services should have a system in place whereby women carry their own case notes. **A**

1.2.4.3 A standardised, national maternity record with an agreed minimum data set should be developed and used. This will help carers to provide the recommended evidence-based care to pregnant women. **GPP**

1.2.5 Frequency of antenatal appointments

1.2.5.1 A schedule of antenatal appointments should be determined by the function of the appointments. For a woman who is nulliparous with an uncomplicated pregnancy, a schedule of ten appointments should be adequate. For a woman who is parous with an uncomplicated pregnancy, a schedule of seven appointments should be adequate. **B**

1.2.5.2 Early in pregnancy all women should receive appropriate written information about the likely number, timing and content of antenatal appointments associated with different options of care and be given an opportunity to discuss this schedule with their midwife or doctor. **D**

1.2.5.3 Each antenatal appointment should be structured and have focused content. Longer appointments are needed early in pregnancy to allow comprehensive assessment and discussion. Wherever possible, appointments should incorporate routine tests and investigations to minimise inconvenience to women. **D**

1.2.6 Gestational age assessment: LMP and ultrasound

1.2.6.1 Pregnant women should be offered an early ultrasound scan to determine gestational age (in lieu of last menstrual period [LMP] for all cases) and to detect multiple pregnancies. This will ensure consistency of gestational age assessments, improve the performance of mid-trimester serum screening for Down's syndrome and reduce the need for induction of labour after 41 weeks. **A**

1.2.6.2 Ideally, scans should be performed between 10 and 13 weeks and crown–rump length measurement used to determine gestational age. Pregnant women who present at or beyond 14 weeks' gestation should be offered an ultrasound scan to estimate gestational age using head circumference or bi-parietal diameter. GPP

1.2.7 What should happen at antenatal appointments?

The content of the first appointment, and of appointments at 16, 18–20, 25, 28, 31, 34, 36, 38, 40 and 41 weeks is listed in Appendix F.

1.3 Lifestyle considerations

1.3.1 Working during pregnancy

1.3.1.1 Pregnant women should be informed of their maternity rights and benefits. C

1.3.1.2 The majority of women can be reassured that it is safe to continue working during pregnancy. Further information about possible occupational hazards during pregnancy is available from the Health and Safety Executive (www.hse.gov.uk/mothers/index.htm). D

1.3.1.3 A woman's occupation during pregnancy should be ascertained to identify those at increased risk through occupational exposure. GPP

Information on maternity rights and benefits often changes with time. Further information may be obtained from the Department of Trade and Industry (DTI) website (www.dti.gov.uk/er/workingparents.htm or call 0870 1502 500 for information leaflets) or the Government's interactive guidance site (www.tiger.gov.uk). Up-to-date information on maternity benefits can also be accessed at the Department for Work and Pensions (www.dwp.gov.uk).

1.3.2 Nutritional supplements

1.3.2.1 Pregnant women (and those intending to become pregnant) should be informed that dietary supplementation with folic acid, before conception and up to 12 weeks' gestation, reduces the risk of having a baby with neural tube defects (anencephaly, spina bifida). The recommended dose is 400 micrograms per day. A

1.3.2.2 Iron supplementation should not be offered routinely to all pregnant women. It does not benefit the mother's or fetus's health and may have unpleasant maternal side effects. **A**

1.3.2.3 Pregnant women should be informed that vitamin A supplementation (intake greater than 700 micrograms) might be teratogenic and therefore it should be avoided. Pregnant women should be informed that as liver and liver products may also contain high levels of vitamin A, consumption of these products should also be avoided. **C**

1.3.2.4 There is insufficient evidence to evaluate the effectiveness of vitamin D in pregnancy. In the absence of evidence of benefit, vitamin D supplementation should not be offered routinely to pregnant women. **A**

1.3.3 Food-acquired infections

1.3.3.1 Pregnant women should be offered information on how to reduce the risk of listeriosis by: **D**

- drinking only pasteurised or UHT milk
- not eating mould-ripened soft cheese such as Camembert, Brie, and blue-veined cheese (there is no risk with hard cheeses such as Cheddar, or cottage cheese and processed cheese)
- not eating pâté (of any sort, including vegetable)
- not eating uncooked or undercooked ready-prepared meals.

1.3.3.2 Pregnant women should be offered information on how to reduce the risk of salmonella infection by: **D**

- avoiding raw or partially cooked eggs or food that may contain them (such as mayonnaise)
- avoiding raw or partially cooked meat, especially poultry.

1.3.4 Prescribed medicines

1.3.4.1 Few medicines have been established as safe to use in pregnancy. Prescription medicines should be used as little as possible during pregnancy and should be limited to circumstances where the benefit outweighs the risk. **D**

1.3.5 Over-the-counter medicines

1.3.5.1 Pregnant women should be informed that few over-the-counter (OTC) medicines have been established as being safe to take in pregnancy. OTC medicines should be used as little as possible during pregnancy. **D**

1.3.6 Complementary therapies

1.3.6.1 Pregnant women should be informed that few complementary therapies have been established as being safe and effective during pregnancy. Women should not assume that such therapies are safe and they should be used as little as possible during pregnancy. **D**

1.3.7 Exercise in pregnancy

1.3.7.1 Pregnant women should be informed that beginning or continuing a moderate course of exercise during pregnancy is not associated with adverse outcomes. **A**

1.3.7.2 Pregnant women should be informed of the potential dangers of certain activities during pregnancy, for example, contact sports, high-impact sports and vigorous racquet sports that may involve the risk of abdominal trauma, falls or excessive joint stress, and scuba diving, which may result in fetal birth defects and fetal decompression disease. **D**

1.3.8 Sexual intercourse in pregnancy

1.3.8.1 Pregnant woman should be informed that sexual intercourse in pregnancy is not known to be associated with any adverse outcomes. **B**

1.3.9 Alcohol and smoking in pregnancy

1.3.9.1 Excess alcohol has an adverse effect on the fetus. Therefore it is suggested that women limit alcohol consumption to no more than one standard unit per day. Each of the following constitutes one 'unit' of alcohol: a single measure of spirits, one small glass of wine, and a half pint of ordinary strength beer, lager or cider. **C**

1.3.9.2 Pregnant women should be informed about the specific risks of smoking during pregnancy (such as the risk of having a baby with low birth weight and preterm). The benefits of quitting at any stage should be emphasised. **A**

1.3.9.3 Women who smoke or who have recently stopped should be offered smoking cessation interventions. Interventions that appear to be effective in reducing smoking include advice by physician, group sessions, and behavioural therapy (based on self-help manuals). **A**

1.3.9.4 Women who are unable to quit smoking during pregnancy should be encouraged to reduce smoking. **B**

The NHS pregnancy smoking helpline is available at 0800 169 0 169.

1.3.10 Cannabis use in pregnancy

1.3.10.1 The direct effects of cannabis on the fetus are uncertain but may be harmful. Cannabis use is associated with smoking, which is known to be harmful; therefore, women should be discouraged from using cannabis during pregnancy. **C**

1.3.11 Air travel during pregnancy

1.3.11.1 Pregnant women should be informed that long-haul air travel is associated with an increased risk of venous thrombosis, although whether or not there is additional risk during pregnancy is unclear. In the general population, wearing correctly fitted compression stockings is effective at reducing the risk. **B**

1.3.12 Car travel during pregnancy

1.3.12.1 Pregnant women should be informed about the correct use of seat belts (that is, three-point seatbelts 'above and below the bump, not over it'). **B**

1.3.13 Travelling abroad during pregnancy

1.3.13.1 Pregnant women should be informed that, if they are planning to travel abroad, they should discuss considerations such as flying, vaccinations and travel insurance with their midwife or doctor. **GPP**

1.4 Management of common symptoms of pregnancy

1.4.1 Nausea and vomiting in early pregnancy

1.4.1.1 Women should be informed that most cases of nausea and vomiting in pregnancy will resolve spontaneously within 16 to 20 weeks of gestation and that nausea and vomiting are not usually associated with a poor pregnancy outcome. If a woman requests or would like to consider treatment, the following interventions appear to be effective in reducing symptoms:

- non-pharmacological
  - ginger
  - P6 acupressure
- pharmacological
  - antihistamines.

A

1.4.1.2 Information about all forms of self-help and non-pharmacological treatments should be made available for pregnant women who have nausea and vomiting.

GPP

1.4.2 Heartburn

1.4.2.1 Women who present with symptoms of heartburn in pregnancy should be offered information regarding lifestyle and diet modification.

GPP

1.4.2.2 Antacids may be offered to women whose heartburn remains troublesome despite lifestyle and diet modification.

A

1.4.3 Constipation

1.4.3.1 Women who present with constipation in pregnancy should be offered information regarding diet modification, such as bran or wheat fibre supplementation.

A

1.4.4 Haemorrhoids

1.4.4.1 In the absence of evidence of the effectiveness of treatments for haemorrhoids in pregnancy, women should be offered information concerning diet modification. If clinical symptoms remain troublesome, standard haemorrhoid creams should be considered.

GPP

1.4.5 Varicose veins

1.4.5.1 Women should be informed that varicose veins are a common symptom of pregnancy that will not cause harm and that compression stockings can improve the symptoms but will not prevent varicose veins from emerging. **A**

1.4.6 Vaginal discharge

1.4.6.1 Women should be informed that an increase in vaginal discharge is a common physiological change that occurs during pregnancy. If this is associated with itch, soreness, offensive smell or pain on passing urine there may be an infective cause and investigation should be considered. **GPP**

1.4.6.2 A 1-week course of a topical imidazole is an effective treatment and should be considered for vaginal candidiasis infections in pregnant women. **A**

1.4.6.3 The effectiveness and safety of oral treatments for vaginal candidiasis in pregnancy is uncertain and these should not be offered. **GPP**

1.4.7 Backache

1.4.7.1 Women should be informed that exercising in water, massage therapy and group or individual back care classes might help to ease backache during pregnancy. **A**

1.5 Clinical examination of pregnant women

1.5.1 Measurement of weight and body mass index (BMI)

1.5.1.1 Maternal weight and height should be measured at the first antenatal appointment, and the woman's BMI calculated (weight [kg]/height[m]^2). **B**

1.5.1.2 Repeated weighing during pregnancy should be confined to circumstances where clinical management is likely to be influenced. **C**

1.5.2 Breast examination

1.5.2.1 Routine breast examination during antenatal care is not recommended for the promotion of postnatal breastfeeding. **A**

1.5.3 Pelvic examination

1.5.3.1 Routine antenatal pelvic examination does not accurately assess gestational age, nor does it accurately predict preterm birth or cephalopelvic disproportion. It is not recommended. **B**

1.5.4 Female genital mutilation

1.5.4.1 Pregnant women who have had female genital mutilation should be identified early in antenatal care through sensitive enquiry. Antenatal examination will then allow planning of intrapartum care. **C**

1.5.5 Domestic violence

1.5.5.1 Healthcare professionals need to be alert to the symptoms or signs of domestic violence and women should be given the opportunity to disclose domestic violence in an environment in which they feel secure. **D**

Further information on domestic violence is offered in the Department of Health Publication *Domestic Violence: A Resource Manual for Health Care Professionals (March 2000)*.

1.5.6 Psychiatric screening

1.5.7 Women should be asked early in pregnancy if they have had any previous psychiatric illnesses. Women who have had a past history of serious psychiatric disorder should be referred for a psychiatric assessment during the antenatal period. **B**

1.5.8 Pregnant women should not be offered routine screening, such as with the Edinburgh postnatal depression scale (EPDS), in the antenatal period to predict the development of postnatal depression. **A**

1.5.9 Pregnant women should not be offered antenatal education interventions to reduce perinatal or postnatal depression, as these interventions have not been shown to be effective. **A**

1.6 Screening for haematological conditions

1.6.1 Anaemia

1.6.1.1 Pregnant women should be offered screening for anaemia. Screening should take place early in pregnancy (at the first appointment) and at 28 weeks when other blood screening tests are being performed. This allows enough time for treatment if anaemia is detected. **B**

1.6.1.2 Haemoglobin levels outside the normal UK range for pregnancy (that is, 11 g/dl at first contact and 10.5 g/dl at 28 weeks) should be investigated and iron supplementation considered if indicated. **A**

1.6.2 Blood grouping and red cell alloantibodies

1.6.2.1 Women should be offered testing for blood group and RhD status in early pregnancy. **B**

1.6.2.2 It is recommended that routine antenatal anti-D prophylaxis is offered to all non-sensitised pregnant women who are RhD negative. **NICE 2002**

1.6.2.3 Women should be screened for atypical red cell alloantibodies in early pregnancy and again at 28 weeks regardless of their RhD status. **B**

1.6.2.4 Pregnant women with clinically significant atypical red cell alloantibodies should be offered referral to a specialist centre for further investigation and advice on subsequent antenatal management. **D**

1.6.2.5 If a pregnant woman is RhD-negative, consideration should be given to offering partner testing to determine whether the administration of anti-D prophylaxis is necessary. **GPP**

1.7 Screening for fetal anomalies

1.7.1 Screening for structural anomalies

1.7.1.1 Pregnant women should be offered an ultrasound scan to screen for structural anomalies, ideally between 18 and 20 weeks' gestation, by an appropriately trained sonographer and with equipment of an appropriate standard as outlined by the National Screening Committee. **A**

1.7.2 Screening for Down's syndrome

1.7.2.1 Pregnant women should be offered screening for Down's syndrome with a test which provides the current standard of a detection rate above 60% and a false-positive rate of less than 5%. The following tests meet this standard: **B**

- from 11 to 14 weeks
  - nuchal translucency (NT)
  - the combined test (NT, hCG and PAPP-A)
- from 14 to 20 weeks
  - the triple test (hCG, AFP and uE3)
  - the quadruple test (hCG, AFP, uE3, inhibin A)
- from 11 to 14 weeks **and** 14 to 20 weeks
  - the integrated test (NT, PAPP-A + hCG, AFP, uE3, inhibin A)
  - the serum integrated test (PAPP-A + hCG, AFP, uE3, inhibin A).

1.7.2.2 By April 2007, pregnant women should be offered screening for Down's syndrome with a test which provides a detection rate above 75% and a false-positive rate of less than 3%. These performance measures should be age-standardised and based on a cutoff of 1 in 250 at term. The following tests currently meet this standard: **B**

- from 11 to 14 weeks
  - the combined test (NT, hCG and PAPP-A)
- from 14 to 20 weeks
  - the quadruple test (hCG, AFP, uE3, inhibin A)
- from 11 to 14 weeks **and** 14 to 20 weeks
  - the integrated test (NT, PAPP-A + hCG, AFP, uE3, inhibin A)
  - the serum integrated test (PAPP-A + hCG, AFP, uE3, inhibin A).

1.7.2.3 Pregnant women should be given information about the detection rates and false-positive rates of any Down's syndrome screening test being offered and about further diagnostic tests that may be offered. The woman's right to accept or decline the test should be made clear. **D**

1.8 Screening for infections

1.8.1 Asymptomatic bacteriuria

1.8.1.1 Pregnant women should be offered routine screening for asymptomatic bacteriuria by midstream urine culture early in pregnancy. Identification and treatment of asymptomatic bacteriuria reduces the risk of preterm birth. **A**

1.8.2 Asymptomatic bacterial vaginosis

1.8.2.1 Pregnant women should not be offered routine screening for bacterial vaginosis because the evidence suggests that the identification and treatment of asymptomatic bacterial vaginosis does not lower the risk for preterm birth and other adverse reproductive outcomes. **A**

1.8.3 Chlamydia trachomatis

1.8.3.1 Pregnant women should not be offered routine screening for asymptomatic chlamydia because there is insufficient evidence on its effectiveness and cost effectiveness. However, this policy is likely to change with the implementation of the national opportunistic chlamydia screening programme. **C**

1.8.4 Cytomegalovirus

1.8.4.1 The available evidence does not support routine cytomegalovirus screening in pregnant women and it should not be offered. **B**

1.8.5 Hepatitis B virus

1.8.5.1 Serological screening for hepatitis B virus should be offered to pregnant women so that effective postnatal intervention can be offered to infected women to decrease the risk of mother-to-child-transmission. **A**

1.8.6 Hepatitis C virus

1.8.6.1 Pregnant women should not be offered routine screening for hepatitis C virus because there is insufficient evidence on its effectiveness and cost effectiveness. **C**

1.8.7 HIV

1.8.7.1 Pregnant women should be offered screening for HIV infection early in antenatal care because appropriate antenatal interventions can reduce mother-to-child-transmission of HIV infection. **A**

1.8.7.2 A system of clear referral paths should be established in each unit or department so that pregnant women who are diagnosed with an HIV infection are managed and treated by the appropriate specialist teams. **D**

1.8.8 Rubella

1.8.8.1 Rubella-susceptibility screening should be offered early in antenatal care to identify women at risk of contracting rubella infection and to enable vaccination in the postnatal period for the protection of future pregnancies. **B**

1.8.9 Streptococcus group B

1.8.9.1 Pregnant women should not be offered routine antenatal screening for group B streptococcus (GBS) because evidence of its clinical effectiveness and cost effectiveness remains uncertain. **C**

1.8.10 Syphilis

1.8.10.1 Screening for syphilis should be offered to all pregnant women at an early stage in antenatal care because treatment of syphilis is beneficial to the mother and fetus. **B**

1.8.10.2 Because syphilis is a rare condition in the UK and a positive result does not necessarily mean that a woman has syphilis, clear paths of referral for the management of women testing positive for syphilis should be established. **GPP**

1.8.11 Toxoplasmosis

1.8.11.1 Routine antenatal serological screening for toxoplasmosis should not be offered because the harms of screening may outweigh the potential benefits. **B**

1.8.11.2 Pregnant women should be informed of primary prevention measures to avoid toxoplasmosis infection, such as: C

- washing hands before handling food
- thoroughly washing all fruit and vegetables, including ready-prepared salads, before eating
- thoroughly cooking raw meats and ready-prepared chilled meals
- wearing gloves and thoroughly washing hands after handling soil and gardening
- avoiding cat faeces in cat litter or in soil.

1.9 Screening for clinical conditions

1.9.1 Gestational diabetes mellitus

1.9.1.1 The evidence does not support routine screening for gestational diabetes mellitus and therefore it should not be offered. B

1.9.2 Pre-eclampsia

1.9.2.1 At first contact a woman's level of risk for pre-eclampsia should be evaluated so that a plan for her subsequent schedule of antenatal appointments can be formulated. The likelihood of developing pre-eclampsia during a pregnancy is increased in women who: C

- are nulliparous
- are aged 40 or older
- have a family history of pre-eclampsia (for example, pre-eclampsia in a mother or sister)
- have a prior history of pre-eclampsia
- have a body mass index (BMI) at or above 35 at first contact
- have a multiple pregnancy or pre-existing vascular disease (for example, hypertension or diabetes).

1.9.2.2 Whenever blood pressure is measured in pregnancy a urine sample should be tested at the same time for proteinuria. **C**

1.9.2.3 Standardised equipment, techniques and conditions for blood-pressure measurement should be used by all personnel whenever blood pressure is measured in the antenatal period so that valid comparisons can be made. **C**

1.9.2.4 Pregnant women should be informed of the symptoms of advanced pre-eclampsia because these may be associated with poorer pregnancy outcomes for the mother or baby. Symptoms include headache; problems with vision, such as blurring or flashing before the eyes; bad pain just below the ribs; vomiting and sudden swelling of face, hands or feet. **D**

1.9.3 Preterm birth

1.9.3.1 Routine vaginal examination to assess the cervix is not an effective method of predicting preterm birth and should not be offered. **A**

1.9.3.2 Although cervical shortening identified by transvaginal ultrasound examination and increased levels of fetal fibronectin are associated with an increased risk for preterm birth, the evidence does not indicate that this information improves outcomes; therefore, neither routine antenatal cervical assessment by transvaginal ultrasound nor the measurement of fetal fibronectin should be used to predict preterm birth in healthy pregnant women. **B**

1.9.4 Placenta praevia

1.9.4.1 Because most low-lying placentas detected at a 20-week anomaly scan will resolve by the time the baby is born, only a woman whose placenta extends over the internal cervical os should be offered another transabdominal scan at 36 weeks. If the transabdominal scan is unclear, a transvaginal scan should be offered. **C**

1.10 Fetal growth and well-being

1.10.1 Abdominal palpation for fetal presentation

1.10.1.1 Fetal presentation should be assessed by abdominal palpation at 36 weeks or later, when presentation is likely to influence the plans for the birth. Routine assessment of presentation by abdominal palpation should not be offered before 36 weeks because it is not always accurate and may be uncomfortable. **C**

1.10.1.2 Suspected fetal malpresentation should be confirmed by an ultrasound assessment. **GPP**

1.10.2 Measurement of symphysis–fundal distance

1.10.2.1 Pregnant women should be offered estimation of fetal size at each antenatal appointment to detect small- or large-for-gestational-age infants. **A**

1.10.2.2 Symphysis–fundal height should be measured and plotted at each antenatal appointment. **GPP**

1.10.3 Routine monitoring of fetal movements

1.10.3.1 Routine formal fetal-movement counting should not be offered. **A**

1.10.4 Auscultation of fetal heart

1.10.4.1 Auscultation of the fetal heart may confirm that the fetus is alive but is unlikely to have any predictive value and routine listening is therefore not recommended. However, when requested by the mother, auscultation of the fetal heart may provide reassurance. **D**

1.10.5 Cardiotocography

1.10.5.1 The evidence does not support the routine use of antenatal electronic fetal heart rate monitoring (cardiotocography) for fetal assessment in women with an uncomplicated pregnancy and therefore it should not be offered. **A**

1.10.6 Ultrasound assessment in the third trimester

1.10.6.1 The evidence does not support the routine use of ultrasound scanning after 24 weeks' gestation and therefore it should not be offered. **A**

1.10.7 Umbilical and uterine artery Doppler ultrasound

1.10.7.1 The use of umbilical artery Doppler ultrasound for the prediction of fetal growth restriction should not be offered routinely. **A**

1.10.7.2 The use of uterine artery Doppler ultrasound for the prediction of pre-eclampsia should not be offered routinely. **B**

1.11 Management of specific clinical conditions

1.11.1 Pregnancy after 41 weeks

(See also Section 1.2.6 on gestational age assessment.)

1.11.1.1 Prior to formal induction of labour, women should be offered a vaginal examination for membrane sweeping. **A**

1.11.1.2 Women with uncomplicated pregnancies should be offered induction of labour beyond 41 weeks. **A**

1.11.1.3 From 42 weeks, women who decline induction of labour should be offered increased antenatal monitoring consisting of at least twice-weekly cardiotocography and ultrasound estimation of maximum amniotic pool depth. **GPP**

1.11.2 Breech presentation at term

1.11.2.1 All women who have an uncomplicated singleton breech pregnancy at 36 weeks' gestation should be offered external cephalic version (ECV). Exceptions include women in labour, and women with: a uterine scar or abnormality; fetal compromise; ruptured membranes; vaginal bleeding and medical conditions. **A**

1.11.2.2 Where it is not possible to schedule an appointment for ECV at 37 weeks' gestation, it should be scheduled at 36 weeks. **GPP**

2 Notes on the scope of the guidance

All NICE guidelines are developed in accordance with a scope document that defines what the guideline will and will not cover. The scope of this guideline was established at the start of the development of this guideline, following a period of consultation; it is available from www.nice.org.uk/article.asp?a=30837

This guideline has been developed with the following aims. This guideline covers the clinical antenatal care that all healthy women with an uncomplicated singleton pregnancy should receive and baseline care for all pregnancies. It does not cover the additional care that women thought to be at increased risk of complications should be offered (see Appendix E).

This guideline is of relevance to those who work in or use the NHS in England and Wales:

- professional groups who share in caring for pregnant women, such as obstetricians, midwives, general practitioners and paediatricians
- those with responsibilities for commissioning and planning maternity services such PCT commissioners, and public health and trust managers
- pregnant women and their families.

The guideline does not include advice on the investigation and appropriate ongoing management of complications arising in pregnancy (for example, the management of pre-eclampsia, fetal anomalies, multiple pregnancies). The guideline does not address any aspect of intrapartum and postpartum care and therefore excludes information on risk factor assessment for birth, or postnatal care, breastfeeding, or parenthood.

3 Implementation in the NHS

3.1 In general

Local health communities should review their existing practice for routine antenatal care against this guideline as they develop their Local Delivery Plans. The review should consider the resources required to implement the recommendations set out in Section 1, the people and processes involved and the timeline over which full implementation is envisaged. It is in the interests of pregnant women that the implementation timeline is as rapid as possible.

Relevant local clinical guidelines, care pathways and protocols should be reviewed in the light of this guidance and revised accordingly.

This guideline should be used in conjunction with the Children's National Service Frameworks (England and Wales); for more information, see www.doh.gov.uk/nsf/children.htm (England) and www.wales.nhs.uk/sites/page.cfm?orgid=334&pid=934 (Wales).

More information on standards in screening for infectious diseases in pregnancy will be available in *Screening for Infectious Diseases in Pregnancy: Standards to Support the UK Antenatal Screening Programme* (Department of Health, in preparation).

Further information on screening for thalassaemia and abnormal haemoglobins is available from the NHS sickle cell and thalassaemia website www.kcl-phs.org.uk/haemscreening/

Information on screening for Down's syndrome is given at www.nelh.nhs.uk/screening/antenatal_pps/down.html

A complete list of the National Screening Committee's criteria for screening can be found in its online library (www.nsc.nhs.uk/library/lib_ind.htm) under the title *The UK National Screening Committee's criteria for appraising the viability, effectiveness and appropriateness of a screening programme*.

3.2 Audit

3.2.1 To enable healthcare professionals to audit their own compliance with this guideline, it is recommended that, if not already in place, pregnancy management plans are recorded for each woman. This information should be incorporated into local clinical-audit-data-recording systems, and consideration given (if not already in place) to the establishment of appropriate categories in electronic record systems.

3.2.2 Prospective clinical audit programmes should record the proportion of patients whose treatment and care adheres to the guideline. Such programmes are likely to be more effective in improving patient care when they form part of the organisation's clinical governance arrangements and when they are linked to specific postgraduate activities.

3.2.3 Suggested audit criteria are listed in Appendix D. These can be used as the basis for local clinical audit, at the discretion of those in practice.

4 Research recommendations

The following research recommendations have been identified for this NICE guideline, not as the most important research recommendations, but as those that are most representative of the full range of recommendations. The Guideline Development Group's full set of research recommendations is detailed in the full guideline produced by the National Collaborating Centre for Women's and Children's Health (see Section 5).

Antenatal care is fortunate to have some areas where research evidence can clearly underpin clinical practice. However, it is noticeable that there are key areas within care where the research evidence is limited. For some of these areas, such as screening for gestational diabetes and first-trimester screening for anomalies, research is under way and results are awaited. For others, such as those that follow, there is an urgent need to address the gaps in the evidence.

- In the area of service delivery, it is recommended that research is conducted on the following:
  - effective ways of helping health professionals support pregnant women in making informed decisions
  - women's views regarding who provides care during pregnancy
  - alternative methods of providing antenatal information and support, such as drop-in services
  - how to ensure women's satisfaction and low morbidity and mortality with a reduced schedule of appointments.

- It is recommended that research is conducted on the safety and effectiveness of treatments for backache, on establishing effective treatments for symphysis pubis dysfunction and on evaluating effective interventions for carpal tunnel syndrome.

- Although there are effective screening tools, and screening for domestic violence has been shown to be acceptable to women, there is insufficient evidence for the effectiveness of interventions in improving health outcomes for women who have been identified. Therefore, it is recommended that research is urgently conducted on the evaluation of interventions for domestic violence.

- It is recommended that research is conducted on the effectiveness and costs of an ethnic question and the effectiveness and costs of laboratory methods for antenatal screening for sickle cell and thalassaemia.

- For infections, it is recommended that research is conducted in the following areas:
  - confirming the beneficial effect of screening for asymptomatic bacteriuria with up-to-date randomised controlled trials
  - the benefits of screening for chlamydia in pregnancy
  - the clinical effectiveness and cost effectiveness of antenatal screening for GBS.

- Research is needed to determine the optimal frequency and timing of blood pressure measurement and on the role of screening for proteinuria.

- Further research on more effective ways to detect and manage small- and large-for-gestational-age fetuses is needed.

5 Full guideline

The National Institute for Clinical Excellence commissioned the development of this guidance from the National Collaborating Centre for Women's and Children's Health. The Centre established a Guideline Development Group, which reviewed the evidence and developed the recommendations. The full guideline, *Antenatal Care: Routine Care for the Healthy Pregnant Woman*, will be published by the National Collaborating Centre for Women's and Children's Health; it will be available on its website (www.rcog.org.uk), the NICE website (www.nice.org.uk) and on the website of the National Electronic Library for Health (www.nelh.nhs.uk).

The members of the Guideline Development Group are listed in Appendix B. Information about the independent Guideline Review Panel is given in Appendix C.

The booklet *The Guideline Development Process – Information for the Public and the NHS* has more information about the Institute's guideline development process. It is available from the Institute's website and copies can also be ordered by telephoning 0870 1555 455 (quote reference N0038).

6 Related NICE guidance

National Institute for Clinical Excellence (2002) Guidance on the use of routine antenatal anti-D prophylaxis for RhD-negative women. *NICE Technology Appraisal Guidance* No. 41. London: National Institute for Clinical Excellence. Available from: www.nice.org.uk/Docref.asp?d=31686

7 Review date

The process of reviewing the evidence is expected to begin 4 years after the date of issue of this guideline. Reviewing may begin earlier than 4 years if significant evidence that affects the guideline recommendations is identified sooner. The updated guideline will be available within 2 years of the start of the review process.

A version of this guideline for pregnant women, their partners and the public is available from the NICE website (www.nice.org.uk) or from the NHS Response Line (0870 1555 455; quote reference number N0310 for an English version and N0311 for an English and Welsh version).

Appendix A: Grading scheme

The grading scheme and hierarchy of evidence used in this guideline (see Table) is adapted from Eccles and Mason (2001).

Recommendation grade	Evidence
A	Directly based on category I evidence
B	Directly based on: • category II evidence, **or** • extrapolated recommendation from category I evidence
C	Directly based on: • category III evidence, **or** • extrapolated recommendation from category I or II evidence
D	Directly based on: • category IV evidence, **or** • extrapolated recommendation from category I, II or III evidence
Good practice point	The view of the Guideline Development Group
NICE 2002	Recommendation taken from the NICE technology appraisal
Evidence category	**Source**
Ia	Systematic review and meta-analysis of randomised controlled trials
Ib	At least one randomised controlled trial
IIa	At least one well-designed controlled study without randomisation
IIb	At least one other type of well-designed quasi-experimental study
III	Well-designed non-experimental descriptive studies, such as comparative studies, correlation studies or case studies
IV	Expert committee reports or opinions and/or clinical experience of respected authorities

Adapted from Eccles M, Mason J (2001) How to develop cost-conscious guidelines. Health Technology Assessment 5 (16).

Appendix B: The Guideline Development Group

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Appendix C: The Guideline Review Panel

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring its quality. The Panel includes experts on guideline methodology, health professionals and people with experience of the issues affecting patients and carers. The members of the Guideline Review Panel were as follows.

Miss Helen Spiby (Chair)
Senior Lecturer (evidence-based practice in midwifery), Mother and Infant Research Unit, University of Leeds

Mrs Carol Youngs
Policy Director, British Dyslexia Association

Dr Monica Lakhanpaul
Senior Lecturer in Child Health, University of Leicester, and Consultant Paediatrician, Leicester City West Primary Care Trust and Leicester Royal Infirmary

Mr Vincent Argent
Consultant Obstetrician and Gynaecologist, Eastbourne District General Hospital

Dr Jenny Tyrrell
Paediatrician, Royal United Hospital, Bath

Mrs Christine Oppenheimer
Consultant in Obstetrics and Gynaecology, Leicester Royal Infirmary, and Honorary Senior Lecturer in Medical Education, University of Leicester

Appendix D: Technical detail on the criteria for audit

Possible objectives for an audit

One or more audits can be carried out on the routine antenatal care received by pregnant women.

Measures that could be used as a basis for an audit

See table overleaf.

Criterion	Exception	Definition of terms
A pregnant woman has the offer of an HIV test documented in her notes.	A woman known to have HIV infection	
A pregnant woman has the offer of a hepatitis B virus test documented in her notes.	A woman known to have hepatitis B viral infection	
A pregnant woman has the offer of a syphilis serology test documented in her notes.		
A pregnant woman has the offer of a rubella susceptibility test documented in her notes.		
A pregnant woman has the offer of a Down's syndrome screening test documented in her notes.		An acceptable test is currently one with a minimum detection rate of 60% and a false-positive rate no greater than 5% (see guideline recommendation 1.7.2.1).

Appendix E: Women requiring additional care

The guideline offers recommendations on baseline clinical care for all pregnant women but it does not offer information on the additional care that some women will require. Pregnant women with the following conditions usually require care additional to that detailed in this guideline:

- cardiac disease, including hypertension
- renal disease
- endocrine disorder or diabetes requiring insulin
- psychiatric disorder (on medication)
- haematological disorder, including thromboembolic disease, autoimmune diseases such as antiphospholipid syndrome
- epilepsy requiring anticonvulsant drugs
- malignant disease
- severe asthma
- drug use such as heroin, cocaine (including crack cocaine) and ecstasy
- HIV or HBV infected
- autoimmune disorders
- obesity (BMI 35 or more at first contact) or underweight (BMI less than 18 at first contact)
- women who may be at higher risk of developing complications e.g. women 40 years and older and women who smoke
- women who are particularly vulnerable (e.g. teenagers) or who lack social support.

Women who have experienced any of the following in previous pregnancies:

- recurrent miscarriage (three or more consecutive pregnancy losses) or a mid-trimester loss
- Preterm birth
- severe pre-eclampsia, HELLP syndrome or eclampsia
- rhesus isoimmunisation or other significant blood group antibodies
- uterine surgery including caesarean section, myomectomy or cone biopsy
- antenatal or postpartum haemorrhage on two occasions
- retained placenta on two occasions
- puerperal psychosis
- grand multiparity (more than six pregnancies)
- a stillbirth or neonatal death
- a small-for-gestational-age infant (less than fifth centile)
- a large-for-gestational-age infant (greater than 95th centile)
- a baby weighing less than 2500 g or more than 4500 g
- a baby with a congenital anomaly (structural or chromosomal).

Appendix F: Antenatal appointments (schedule and content)

The schedule below, which has been determined by the purpose of each appointment, presents the recommended number of antenatal care appointments for women who are healthy and whose pregnancies remain uncomplicated in the antenatal period: ten appointments for nulliparous women and seven for parous women.

First appointment(s)

The first appointment needs to be earlier in pregnancy (prior to 12 weeks) than may have traditionally occurred and, because of the large volume of information needs in early pregnancy, two appointments may be required. At the first (and second) antenatal appointment:

- give information, with an opportunity to discuss issues and ask questions; offer verbal information supported by written information (on topics such as diet and lifestyle considerations, pregnancy care services available, maternity benefits and sufficient information to enable informed decision making about screening tests)
- identify women who may need additional care (see Appendix E) and plan pattern of care for the pregnancy
- check blood group and RhD status
- offer screening for anaemia, red-cell alloantibodies, hepatitis B virus, HIV, rubella susceptibility and syphilis
- offer screening for asymptomatic bacteriuria
- offering screening for Down's syndrome
- offer early ultrasound scan for gestational age assessment
- offer ultrasound screening for structural anomalies (20 weeks)
- measure BMI, blood pressure and test urine for proteinuria.

After the first (and possibly second) appointment, for women who choose to have screening, the following tests should be arranged before 16 weeks of gestation (except serum screening for Down's syndrome, which may occur at up to 20 weeks of gestation):

- blood tests (for checking blood group and RhD status and screening for anaemia, red-cell alloantibodies, hepatitis B virus, HIV, rubella susceptibility and syphilis)

- urine tests (to check for proteinuria and screen for asymptomatic bacteriuria)

- ultrasound scan to determine gestational age using:
  - crown–rump measurement if performed at 10 to 13 weeks
  - bi-parietal diameter or head circumference at or beyond 14 weeks

- Down's syndrome screening using:
  - nuchal translucency at 11 to 14 weeks
  - serum screening at 14 to 20 weeks.

16 weeks

The next appointment should be scheduled at 16 weeks to:

- review, discuss and document the results of all screening tests undertaken; reassess planned pattern of care for the pregnancy and identify women who need additional care (see Appendix E)

- investigate a haemoglobin level of less than 11 g/dL and consider iron supplementation if indicated

- measure blood pressure and test urine for proteinuria

- give information, with an opportunity to discuss issues and ask questions; offer verbal information supported by antenatal classes and written information.

18–20 weeks

At 18–20 weeks, if the woman chooses, an ultrasound scan should be performed for the detection of structural anomalies. For a woman whose placenta is found to extend across the internal cervical os at this time, another scan at 36 weeks should be offered and the results of this scan reviewed at the 36-week appointment.

25 weeks

At 25 weeks of gestation, another appointment should be scheduled for nulliparous women. At this appointment:

- measure and plot symphysis–fundal height
- measure blood pressure and test urine for proteinuria
- give information, with an opportunity to discuss issues and ask questions; offer verbal information supported by antenatal classes and written information.

28 weeks

The next appointment for all pregnant women should occur at 28 weeks. At this appointment:

- offer a second screening for anaemia and atypical red-cell alloantibodies
- investigate a haemoglobin level of less than 10.5 g/dl and consider iron supplementation, if indicated
- offer anti-D to rhesus-negative women
- measure blood pressure and test urine for proteinuria
- measure and plot symphysis–fundal height
- give information, with an opportunity to discuss issues and ask questions; offer verbal information supported by antenatal classes and written information.

31 weeks

Nulliparous women should have an appointment scheduled at 31 weeks to:

- measure blood pressure and test urine for proteinuria
- measure and plot symphysis–fundal height
- give information, with an opportunity to discuss issues and ask questions; offer verbal information supported by antenatal classes and written information

- review, discuss and document the results of screening tests undertaken at 28 weeks; reassess planned pattern of care for the pregnancy and identify women who need additional care (see Appendix E).

34 weeks

At 34 weeks, all pregnant women should be seen in order to:

- offer a second dose of anti-D to rhesus-negative women
- measure blood pressure and test urine for proteinuria
- measure and plot symphysis–fundal height
- give information, with an opportunity to discuss issues and ask questions; offer verbal information supported by antenatal classes and written information
- review, discuss and document the results of screening tests undertaken at 28 weeks; reassess planned pattern of care for the pregnancy and identify women who need additional care (see Appendix E).

36 weeks

At 36 weeks, all pregnant women should be seen again to:

- measure blood pressure and test urine for proteinuria
- measure and plot symphysis–fundal height
- check position of baby
- for women whose babies are in the breech presentation, offer external cephalic version
- review ultrasound scan report if placenta extended over the internal cervical os at previous scan
- give information, with an opportunity to discuss issues and ask questions; offer verbal information supported by antenatal classes and written information.

38 weeks

Another appointment at 38 weeks will allow for:

- measurement of blood pressure and urine testing for proteinuria
- measurement and plotting of symphysis–fundal height
- information giving, with an opportunity to discuss issues and ask questions; verbal information supported by antenatal classes and written information.

40 weeks

For nulliparous women, an appointment at 40 weeks should be scheduled to:

- measure blood pressure and test urine for proteinuria
- measure and plot symphysis–fundal height
- give information, with an opportunity to discuss issues and ask questions; offer verbal information supported by antenatal classes and written information.

41 weeks

For women who have not given birth by 41 weeks:

- a membrane sweep should be offered
- induction of labour should be offered
- blood pressure should be measured and urine tested for proteinuria
- symphysis–fundal height should be measured and plotted
- information should be given, with an opportunity to discuss issues and ask questions; verbal information supported by written information.

General

Throughout the entire antenatal period, healthcare providers should remain alert to signs or symptoms of conditions which affect the health of the mother and fetus, such as domestic violence, pre-eclampsia and diabetes.

An outline of care at each appointment is shown on the algorithm.

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