Multiple pregnancy
The management of twin and triplet pregnancies in the antenatal period

NICE guideline
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If you wish to comment on this version of the guideline, please be aware that all the supporting information and evidence is contained in the full version.
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Introduction

The incidence of multiple births has risen in the last 30 years. In 2008, 15.5 women per 1000 giving birth in England and Wales had multiple births compared with 9.8 per 1000 in 1980. This rising multiple birth rate is mainly because of increasing use of assisted reproduction techniques, including in vitro fertilisation (IVF). Up to 24% of successful IVF procedures result in multiple pregnancies. Multiple births currently account for 3% of live births.

Multiple pregnancy is associated with higher risks for the mother and babies. Women with multiple pregnancies have an increased risk of miscarriage, anaemia, hypertensive disorders, haemorrhage, operative delivery and postnatal illness. Overall maternal mortality associated with multiple births is 2.5 times that for single births.

Some risks to babies of multiple pregnancies are associated particularly with shared placentas and amniotic fluid (pregnancy chorionicity and amnionicity). Feto-fetal transfusion syndrome, most commonly occurring in twin pregnancies where it is termed twin-to-twin transfusion syndrome, is a condition associated with a shared placenta and accounts for about 20% of stillbirths in multiple pregnancies.

The overall stillbirth rate in multiple pregnancies is higher than in single pregnancies: in 2008 the stillbirth rate was 11.2 per 1,000 twin births and 27.9 per 1,000 triplet and higher-order multiple births, compared with 4.8 per 1,000 single births. The risk of preterm birth is also considerably higher in multiple pregnancies than in single pregnancies, complicating 50% of twin pregnancies (10% of twin births take place before 32 weeks’ gestation). The significantly increased preterm delivery rates in twins and triplets results in increased demand for neonatal intensive care resources.

Additional risks to the babies include intrauterine growth restriction and congenital abnormalities. In multiple pregnancies, 66% of unexplained stillbirths have a birthweight of less than the tenth centile, compared with 39% for single births. Major congenital abnormalities are 4.9% more common in multiple than in single pregnancies.
Because of the increased risk of complications, women with multiple pregnancies need more monitoring and increased contact with healthcare professionals during their pregnancy than women with single pregnancies, and this will impact on NHS resources. An awareness of the increased risks may also have a significant psychosocial and economic impact on women and their families because this might increase anxiety in the woman, resulting in a greater need for psychological support.

The guideline will assume that prescribers will use a drug’s summary of product characteristics to inform decisions made with individual patients.

This guideline recommends some drugs for indications for which they do not have a UK marketing authorisation at the date of publication, if there is good evidence to support that use. Many drugs do not have a licence for use specifically in pregnant women, reflecting the fact that this group is often excluded from studies. Unlicensed drugs are marked with an asterisk.
Woman-centred care

This guideline offers best practice advice on the care of women with twin and triplet pregnancies.

Treatment and care should take into account women’s needs and preferences. Women with twin and triplet pregnancies should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If women do not have the capacity to make decisions, healthcare professionals should follow the Department of Health guidelines – ‘Reference guide to consent for examination or treatment’ (2001) (available from www.dh.gov.uk). Healthcare professionals should also follow the code of practice that accompanies the Mental Capacity Act (summary available from www.publicguardian.gov.uk).

Good communication between healthcare professionals and women is essential. It should be supported by evidence-based written information tailored to women’s needs. Treatment and care, and the information women are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.
Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

Determining gestational age and chorionicity

- Determine chorionicity at the time of detecting twin and triplet pregnancies by ultrasound using the number of placental masses, the lambda or T-sign and membrane thickness. [1.1.2.1]

- Offer an early transabdominal ultrasound scan to women with twin and triplet pregnancies between 11 weeks 0 days and 13 weeks 6 days to determine:
  - gestational age
  - chorionicity
  - the risk of fetal trisomies in each fetus.

Assign nomenclature to fetuses (for example, upper and lower, or left and right) and document this clearly in the woman’s notes to ensure consistency throughout pregnancy. [1.1.2.2]

- Regional networks should agree care pathways for investigating and managing all twin and triplet pregnancies to ensure that each woman has a care plan in place that is appropriate for the chorionicity of her pregnancy. [1.1.2.11]

Specialist clinics

- Clinical care for women with twin and triplet pregnancies should be provided by a nominated multidisciplinary team consisting of:
  - A core team of named specialist obstetricians, midwives and ultrasonographers with experience and knowledge of managing twin and triplet pregnancies.
  - An enhanced team for referrals, which should include:
    - a perinatal mental health professional
    - a women’s health physiotherapist
Members of the enhanced team should preferably have experience and knowledge relevant to twin and triplet pregnancies. [1.2.3.1]

- Coordinate clinical care for women with twin and triplet pregnancies to allow the minimum number of hospital visits and care as close to the woman’s home as possible. Provide continuity of care within and between hospitals and the community. [1.2.3.2]

- The core team should offer information and support specific to twin and triplet pregnancies at the first contact with the woman, and should provide ongoing opportunities for further discussion and advice covering:
  - antenatal and postnatal mental health
  - antenatal nutrition
  - the risks, symptoms and signs of preterm labour and the potential need for corticosteroids for fetal lung maturation
  - likely timing and mode of delivery
  - breastfeeding
  - parenting. [1.2.3.3]

Screening for intrauterine growth restriction

- Estimate fetal weight discordance based on two or more biometric parameters at each ultrasound scan from 20 weeks. Do not undertake scans more than 28 days apart. Consider a 25% or greater difference in size between twins or triplets as a clinically significant indicator of intrauterine growth restriction. [1.3.3.2]

Indications for referral to subspecialist services

- Seek a consultant opinion from a tertiary level fetal medicine centre for:
  - monochorionic monoamniotic twin pregnancies
  - monochorionic monoamniotic triplet pregnancies
  - monochorionic diamniotic triplet pregnancies
  - dichorionic diamniotic triplet pregnancies
- pregnancies complicated by any of the following:
  - discordant fetal growth
  - fetal anomaly
  - discordant fetal death
  - feto-fetal transfusion syndrome. [1.6.1.1]

**Timing of birth**

- Offer women with uncomplicated twin pregnancies elective birth (by induction of labour or caesarean section) from 37 weeks 0 days. [1.7.1.2]

- Offer women with uncomplicated triplet pregnancies elective birth (by induction of labour or caesarean section) from 35 weeks 0 days after a course of corticosteroids has been offered. [1.7.1.5]
1 **Guidance**

The following guidance is based on the best available evidence. The full guideline ([hyperlink to be added for final publication](#)) gives details of the methods and the evidence used to develop the guidance.

1.1 *Determining gestational age and chorionicity*

1.1.1 **Gestational age**

1.1.1.1 Estimate gestational age in twin and triplet pregnancies by ultrasound using crown–rump length (between 10 weeks 0 days and 14 weeks 1 day) or head circumference (from 14 weeks 0 days) as in routine antenatal care¹ ². Ideally, estimation of gestational age, determination of chorionicity and fetal trisomy screening should be performed at the same first-trimester ultrasound scan (between 11 weeks 0 days and 13 weeks 6 days) (see 1.1.2.2).

1.1.1.2 Use the largest fetus in twin and triplet pregnancies to estimate gestational age to avoid the risk of estimating it from a baby with early growth pathology.

1.1.2 **Chorionicity**

1.1.2.1 Determine chorionicity at the time of detecting twin and triplet pregnancies by ultrasound using the number of placental masses, the lambda or T-sign and membrane thickness.

1.1.2.2 Offer an early transabdominal ultrasound scan to women with twin and triplet pregnancies between 11 weeks 0 days and 13 weeks 6 days to determine:

- gestational age (see 1.1.1.1)

¹ See 'Antenatal care' (NICE clinical guideline 62).
² See [http://fetalanomaly.screening.nhs.uk/standardsandpolicies](http://fetalanomaly.screening.nhs.uk/standardsandpolicies)
• chorionicity (see 1.1.2.1)
• the risk of fetal trisomies in each fetus (see 1.3.1).

Assign nomenclature to fetuses (for example, upper and lower, or left and right) and document this clearly in the woman’s notes to ensure consistency throughout pregnancy.

1.1.2.3 If a woman with twin or triplet pregnancy presents after 14 weeks 0 days, determine chorionicity at the earliest opportunity by ultrasound using all of the following:

• the number of placental masses
• the lambda or T-sign
• membrane thickness
• discordant fetal sex.

1.1.2.4 If it is not possible to determine chorionicity by ultrasound at the time of detecting the twin or triplet pregnancy, seek a second opinion from a senior ultrasonographer or offer the woman referral to an appropriate specialist as soon as possible.

1.1.2.5 If it is difficult to determine chorionicity, even after referral (for example, because the woman has booked late in pregnancy), manage the pregnancy as monochorionic until proved otherwise.

1.1.2.6 Provide regular training so that ultrasonographers can identify the lambda or T-sign accurately and confidently. Less experienced ultrasonographers should have support from senior colleagues.

1.1.2.7 Training should cover ultrasound scan measurements needed for women who book after 14 weeks 0 days (see 1.1.2.3) and should emphasise that the risks associated with twin and triplet pregnancies are determined by chorionicity and not zygosity.

1.1.2.8 Conduct regular clinical audits to evaluate the accuracy of determining chorionicity.
1.1.2.9 If transabdominal ultrasound scan views are poor because of a retroverted uterus or a high body mass index (BMI), use a transvaginal ultrasound scan to determine chorionicity.

1.1.2.10 Do not use three-dimensional ultrasound scans solely to determine chorionicity.

1.1.2.11 Regional networks should agree care pathways for investigating and managing all twin and triplet pregnancies to ensure that each woman has a care plan in place that is appropriate for the chorionicity of her pregnancy.

1.2 General care

1.2.1 Information and emotional support

1.2.1.1 Explain the aims and possible outcomes of all screening and diagnostic tests to women with twin and triplet pregnancies to minimise their anxiety.

1.2.2 Dietary supplements and nutritional advice

1.2.2.1 Give women with twin and triplet pregnancies the same advice about nutritional supplements as in routine antenatal care.\(^3\)

1.2.2.2 Perform a full blood count at 20–24 weeks to identify women with twin and triplet pregnancies who need early supplementation with iron or folic acid, and repeat at 28 weeks as in routine antenatal care.\(^4\)

1.2.2.3 Be aware of the higher incidence of anaemia in women with twin and triplet pregnancies compared with women with single pregnancies.

\(^3\)–\(^5\) See ‘Antenatal care’ (NICE clinical guideline 62).
1.2.2.4 Give women with twin and triplet pregnancies the same advice about diet and lifestyle as in routine antenatal care⁵.

1.2.3 Specialist clinics

1.2.3.1 Clinical care for women with twin and triplet pregnancies should be provided by a nominated multidisciplinary team consisting of:

- A core team of named specialist obstetricians, midwives and ultrasonographers with experience and knowledge of managing twin and triplet pregnancies.
- An enhanced team for referrals, which should include:
  - a perinatal mental health professional
  - a women’s health physiotherapist
  - an infant feeding coordinator
  - a dietitian.

Members of the enhanced team should preferably have experience and knowledge relevant to twin and triplet pregnancies.

1.2.3.2 Coordinate clinical care for women with twin and triplet pregnancies to allow the minimum number of hospital visits and care as close to the woman’s home as possible. Provide continuity of care within and between hospitals and the community.

1.2.3.3 The core team should offer information and support specific to twin and triplet pregnancies at the first contact with the woman, and should provide ongoing opportunities for further discussion and advice covering:

- antenatal and postnatal mental health
- antenatal nutrition
- the risks, symptoms and signs of preterm labour and the potential need for corticosteroids for fetal lung maturation
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• likely timing and mode of delivery
• breastfeeding parenting.

1.2.3.4 Offer women with monochorionic diamniotic twin pregnancies 11 to 16 antenatal appointments with a healthcare professional from the core team, including:

• An appointment with the specialist midwife at her first presentation to the core team and at her scans at 16, 18, 20, 22, 24, 28, 32 and 36 weeks. Offer additional contacts and scans at 26, 30 and 34 weeks.

• Two to four contacts with a consultant obstetrician, including at her 11 weeks 0 days to 13 weeks 6 days scan to discuss the results, and at 36 weeks. Offer additional contacts at 20 and 28 weeks.

1.2.3.5 Offer women with dichorionic twin pregnancies 8 to 10 antenatal appointments with a healthcare professional from the core team, including:

• An appointment with the specialist midwife at her first presentation to the core team and at her scans at 20, 24, 28, 32 and 36 weeks.

• Two to four contacts with a consultant obstetrician, including at her 11 weeks 0 days to 13 weeks 6 days scan to discuss the results and at 36 weeks. Offer additional contacts at 20 and 28 weeks.

1.2.3.6 Offer women with monochorionic triamniotic and dichorionic triamniotic triplet pregnancies 10 to 15 antenatal appointments with a healthcare professional from the core team, including:

• An appointment with the specialist midwife at her first contact with the core team and at her scans at 16, 18, 20, 22, 24, 28 and

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See appendix D for recommendations 1.2.3.4 to 1.2.3.7 in table form.
32 weeks. Offer additional contacts and scans at 26, 30 and 34 weeks.

- Two to four contacts with a consultant obstetrician, including at her 11 weeks 0 days to 13 weeks 6 days scan to discuss the results and at 34 weeks. Offer additional contacts at 20 and 28 weeks.

1.2.3.7 Offer women with trichorionic triplet pregnancies 8 to 10 antenatal appointments with a healthcare professional from the core team, including:

- An appointment with the specialist midwife at her first presentation to the core team and at her scans at 20, 24, 28, 32 and 34 weeks.
- Two to four contacts with a consultant obstetrician, including at her 11 weeks 0 days to 13 weeks 6 days scan to discuss the results and at 34 weeks. Offer additional contacts at 20 and 28 weeks.

1.2.3.8 Women with twin and triplet pregnancies involving a shared amnion should be offered individualised care from healthcare professionals with expertise in this area (see 1.6.1.1)

1.3 Fetal complications

1.3.1 Screening for chromosomal and structural abnormalities

Chromosomal abnormalities

1.3.1.1 Before screening for chromosomal abnormalities (fetal trisomies) offer women with twin and triplet pregnancies information about:

- the false positive rate of screening tests, which is higher in twin and triplet pregnancies
- the likelihood of being offered invasive testing, which is higher in twin and triplet pregnancies
- the physical and psychological risks related to selective fetal reduction
• the different screening pathways (as in single pregnancies\(^6\))
• the additional risks associated with twin and triplet pregnancies.

1.3.1.2 Healthcare professionals who screen for fetal trisomies in twin and triplet pregnancies should:

• map the fetal positions
• use the combined screening test (nuchal translucency, beta-human chorionic gonadotrophin, pregnancy-associated plasma protein-A) for fetal trisomies between 11 weeks 0 days and 13 weeks 6 days in twin pregnancies (see 1.1.2.2)
• use nuchal translucency and maternal age in triplet pregnancies
• calculate the risk of fetal trisomies in each fetus (see 1.1.2.2).

1.3.1.3 Do not use second trimester serum screening for fetal trisomies in twin or triplet pregnancies.

1.3.1.4 Offer women with twin and triplet pregnancies who have a high risk of trisomy 21 (Down’s syndrome) (use a threshold of 1:150 as defined by FASP\(^7\)) referral to a fetal medicine specialist.

Structural abnormalities

1.3.1.5 Offer screening for structural abnormalities (such as cardiac abnormalities) in twin and triplet pregnancies as in routine antenatal care\(^8\). Consider scheduling ultrasound scans at a slightly later gestational age and be aware that the scans will take longer to perform.

1.3.1.6 Allow 45 minutes for the anomaly scan in twin and triplet pregnancies (as recommended by FASP\(^9\)).

1.3.1.7 Allow 30 minutes for growth scans in twin and triplet pregnancies.

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\(^6\) See ‘Antenatal care’ (NICE clinical guideline 62).
\(^7\) See http://fetalanomaly.screening.nhs.uk/standardsandpolicies
\(^8\) See ‘Antenatal care’ (NICE clinical guideline 62) and also FASP at http://fetalanomaly.screening.nhs.uk/standardsandpolicies
\(^9\) See http://fetalanomaly.screening.nhs.uk/standardsandpolicies
1.3.1.8 An experienced healthcare professional should offer information and counselling to women with twin and triplet pregnancies before and after every screening test.

1.3.1.9 Inform women with twin and triplet pregnancies about the complexity of decisions they may need to make depending on the outcomes of screening, including different options according to the chorionicity of the pregnancy.

1.3.2 Screening for feto-fetal transfusion syndrome

1.3.2.1 Do not screen for feto-fetal transfusion syndrome in the first trimester.

1.3.2.2 Start diagnostic monitoring with ultrasound for feto-fetal transfusion syndrome (including to identify membrane folding) from 16 weeks. Repeat monitoring fortnightly until 24 weeks.

1.3.2.3 Carry out weekly monitoring of twin and triplet pregnancies with membrane folding or other possible early signs of feto-fetal transfusion syndrome (specifically pregnancies with intertwin membrane infolding and amniotic fluid discordance within amniotic sacs), to allow time to intervene if needed.

1.3.3 Screening for intrauterine growth restriction

1.3.3.1 Do not use abdominal palpation or symphysio–fundal height measurements to predict intrauterine growth restriction in twin or triplet pregnancies.

1.3.3.2 Estimate fetal weight discordance based on two or more biometric parameters at each ultrasound scan from 20 weeks. Do not undertake scans more than 28 days apart. Consider a 25% or greater difference in size between twins or triplets as a clinically significant indicator of intrauterine growth restriction.
1.3.3.3 Do not use umbilical artery Doppler ultrasound to screen for intrauterine growth restriction or birthweight differences in twin or triplet pregnancies.

1.4 Maternal complications

1.4.1 Hypertension

1.4.1.1 Measure blood pressure and conduct urinalysis for protein to screen for hypertensive disorders at each antenatal appointment in twin and triplet pregnancies as in routine antenatal care\textsuperscript{10}.

1.4.1.2 Advise women with twin and triplet pregnancies that they should take 75 mg of aspirin* daily from 12 weeks until the birth of the babies if they have one or more of the following risk factors for hypertension:

- first pregnancy
- age 40 years or older
- pregnancy interval of more than 10 years
- BMI of 35 kg/m\textsuperscript{2} or more at first visit
- family history of pre-eclampsia.

1.5 Preterm birth

1.5.1 Predicting the risk of preterm birth

1.5.1.1 Be aware that women who have had a spontaneous preterm birth in a previous single pregnancy have a higher risk of spontaneous preterm birth in twin pregnancies.

1.5.1.2 Do not use fetal fibronectin testing alone to predict the risk of spontaneous preterm birth in twin or triplet pregnancies.

\textsuperscript{10} See ‘Antenatal care’ (NICE clinical guideline 62).

* This drug does not have UK marketing authorisation for this indication at the time of publication. Informed consent should be obtained and documented. [This recommendation is adapted from recommendation 1.1.2.2 in ‘Hypertension in Pregnancy’ NICE clinical guideline 107]
1.5.1.3 Do not use home uterine activity monitoring to predict the risk of spontaneous preterm birth in twin or triplet pregnancies.

1.5.1.4 Do not use cervical length (with or without fetal fibronectin) routinely to predict the risk of spontaneous preterm birth in twin or triplet pregnancies.

1.5.2 Preventing preterm birth

1.5.2.1 Do not use the following interventions (alone or in combination) routinely to prevent spontaneous preterm birth in twin or triplet pregnancies:

- bed rest at home or in hospital
- intramuscular or vaginal progesterone
- cervical cerclage
- oral tocolytics.

1.5.3 Untargeted corticosteroids

1.5.3.1 Inform women with twin and triplet pregnancies of their increased risk of preterm birth and about the benefits of targeted corticosteroids. Also inform them that there is no benefit in using untargeted corticosteroids.

1.5.3.2 Do not use single or multiple untargeted courses of corticosteroids in twin or triplet pregnancies.

1.6 Indications for referral to subspecialist services

1.6.1.1 Seek a consultant opinion from a tertiary level fetal medicine centre for:

- monochorionic monoamniotic twin pregnancies
- monochorionic monoamniotic triplet pregnancies
- monochorionic diamniotic triplet pregnancies
- dichorionic diamniotic triplet pregnancies
- pregnancies complicated by any of the following:
- discordant fetal growth
- fetal anomaly
- discordant fetal death
- feto-fetal transfusion syndrome.

1.7 Timing of birth

1.7.1.1 Inform women with twin pregnancies that about 60% give birth spontaneously before 37 weeks 0 days.

1.7.1.2 Offer women with uncomplicated twin pregnancies elective birth (by induction of labour or caesarean section) from 37 weeks 0 days.

1.7.1.3 Inform women with twin pregnancies that elective birth at 37 weeks 0 days does not appear to be associated with an increased risk of adverse outcomes, and that continuing uncomplicated twin pregnancies beyond 38 weeks 0 days increases the risk of fetal death.

1.7.1.4 Inform women with triplet pregnancies that about 75% give birth spontaneously before 35 weeks 0 days.

1.7.1.5 Offer women with uncomplicated triplet pregnancies elective birth (by induction of labour or caesarean section) from 35 weeks 0 days after a course of corticosteroids has been offered.

1.7.1.6 Inform women with triplet pregnancies that continuing uncomplicated triplet pregnancies beyond 36 weeks 0 days increases the risk of fetal death.

1.7.1.7 Offer weekly appointments with a consultant obstetrician for women with twin pregnancies who decline elective birth at 37 weeks, and for women with triplet pregnancies who decline elective birth at 35 weeks. Undertake an ultrasound scan at each appointment (perform fortnightly fetal growth scans and weekly biophysical profile assessments).
2 Notes on the scope of the guidance

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover. The scope of this guideline is available from http://www.nice.org.uk/nicemedia/live/11838/45673/45673.pdf.

How this guideline was developed

NICE commissioned the National Collaborating Centre for Women's and Children's Health to develop this guideline. The Centre established a Guideline Development Group (see appendix A), which reviewed the evidence and developed the recommendations. An independent Guideline Review Panel oversaw the development of the guideline (see appendix B).

There is more information about how NICE clinical guidelines are developed on the NICE website (www.nice.org.uk/HowWeWork). A booklet, ‘How NICE clinical guidelines are developed: an overview for stakeholders, the public and the NHS’ (fourth edition, published 2009), is available from NICE publications (phone 0845 003 7783 or email publications@nice.org.uk and quote reference N1739).

3 Implementation

NICE has developed tools to help organisations implement this guidance (see www.nice.org.uk/guidance/CG[XX]).

4 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group’s full set of research recommendations is detailed in the full guideline (see section 5).
4.1  Information and emotional support

Does additional information and emotional support improve outcomes in twin and triplet pregnancies?

Why this is important

The guideline review identified insufficient evidence to determine the clinical and cost effectiveness of several specific aspects of information giving and emotional support in twin and triplet pregnancies. The evidence that was identified was generally of low quality. Outstanding research questions include:

- What is the effectiveness of information and emotional support in improving maternal satisfaction and psychological wellbeing, and in the uptake of breastfeeding?
- Should different information and support be offered according to the chorionicity of the pregnancy?

Well designed prospective studies (including randomised controlled trials or observational studies, and qualitative research to elicit views and experiences of women with twin and triplet pregnancies) should be conducted to inform future NICE guidance.

4.2  Specialist clinics

Does specialist antenatal care for twin and triplet pregnancies improve outcomes for women and their babies?

Why this is important

Issues of importance to women with twin and triplet pregnancies in the antenatal period include access to care (including the implications of having to travel to a particular location to receive care) and the possibility of transfer to hospital during pregnancy or labour. Current evidence is limited, of low quality, and originates from a healthcare system that is different to the NHS (in particular, it comes from a system where midwives are not involved in providing care). None of the studies identified in the guideline review made a direct comparison between specialist twin or triplet antenatal clinics and
routine antenatal care (that is, care offered to women with single pregnancies).

Although health economic analysis conducted for the guideline demonstrated cost effectiveness of a range of models of specialist antenatal care, the recommendations reflect the clinical experience of the Guideline Development Group rather than strong evidence to support a particular model of care. Further research is, therefore, needed to evaluate the clinical and cost effectiveness of different models of specialist antenatal care for twin and triplet pregnancies, including the best mix of resources and skills in multidisciplinary antenatal care services, and to identify the most effective components of care.

Research should cover the roles of different healthcare professionals (including midwives, since their role was not addressed in any existing studies). It should also investigate maternal, perinatal and neonatal morbidity and mortality associated with different models of specialist care, and also long-term outcomes. Maternal outcomes to be considered include satisfaction with care and psychological wellbeing, since the increased risks associated with twin and triplet pregnancies may lead to maternal anxiety or even depression. The chorionicity of the pregnancy should also be considered as a factor influencing components of specialist care. The outcomes of such research could identify particular models of care to be implemented in the NHS, which would affect service delivery and organisation (for example, by specifying a need for additional staff or further training for existing staff, both of which have cost implications).

4.3 Screening for intrauterine growth restriction

What is the pattern of fetal growth in healthy twin and triplet pregnancies, and how should intrauterine growth restriction be defined in twin and triplet pregnancies?

Why this is important

Although some studies relating to the identification of intrauterine growth restriction in twin and triplet pregnancies were identified in the guideline review, the larger existing studies are retrospective in design and, therefore,
of low quality. No evidence-based growth charts specific to twin and triplet pregnancies are available for use in the diagnosis of intrauterine growth restriction. The evidence for the effectiveness of tests for diagnosis of intrauterine growth restriction according to chorionicity of the pregnancy is limited.

There is, therefore, a need for large, prospective cohort studies to develop fetal growth charts specific to twin and triplet pregnancies. This would allow definition and diagnosis of clinically significant intrauterine growth restriction using true growth velocity and trajectories, rather than estimated fetal weight and discrepancy. The charts should distinguish between growth patterns in monochorionic, dichorionic and trichorionic pregnancies, and the research should evaluate clinical outcomes associated with particular growth patterns.

### 4.4 Preventing preterm birth

What interventions are effective in preventing spontaneous preterm birth in women with twin and triplet pregnancies, especially in those at high risk of preterm birth?

**Why this is important**

The guideline review considered several interventions aimed at preventing spontaneous preterm birth in women with twin and triplet pregnancies, including cervical cerclage, administration of tocolytic drugs, and sexual abstinence. The existing evidence for the effectiveness of cervical cerclage is of low quality (mostly originating from observational studies). The existing evidence in relation to tocolytics is also limited: there is evidence for the effectiveness of betamimetics, but no randomised controlled trials were identified for the effectiveness of ritodrine, magnesium sulphate or nifedipine. No evidence was identified for the effectiveness of sexual abstinence alone in preventing preterm birth.

Further research in the form of randomised controlled trials is, therefore, needed to evaluate the effectiveness of cervical cerclage, tocolytics other than betamimetics, and sexual abstinence. Future research should place particular emphasis on women at high risk of preterm birth in twin and triplet
pregnancies. Some evidence suggested that a cervical length of less than 25 mm at 18–24 weeks’ gestation in twin pregnancies or 14–20 weeks’ gestation in triplet pregnancies, or a history of preterm labour in single births, increases the risk of spontaneous preterm birth in twin and triplet pregnancies. The evidence was limited in quality and additional research into the predictive accuracy of these factors would inform future NICE guidance. All research into the prevention of preterm birth should report spontaneous preterm birth separately from other preterm births. Data should also be reported separately for twin and triplet pregnancies, for different chorionicities, and for different gestational ages at birth (that is, less than 28 weeks, 28–32 weeks, and 32–37 weeks).

4.5 **Indications for referral to subspecialist services**

What is the incidence of monochorionic monoamniotic twin and triplet pregnancies, and what clinical management strategies are most effective in such pregnancies?

**Why this is important**

Monochorionic monoamniotic twin pregnancies occur rarely, as do all triplet pregnancies (fewer than 200 women give birth to triplets each year in England and Wales). Across the guideline, the evidence relating to such pregnancies was very limited in quantity and quality, with monochorionic monoamniotic pregnancy often listed as an exclusion criterion in studies reviewed for the guideline. Monochorionic monoamniotic pregnancies and triplet pregnancies are associated with greater complexity and risks to the woman and babies than other pregnancies considered in the guideline. The lack of evidence for effective clinical management of these pregnancies influenced the Guideline Development Group to recommend referral to subspecialist services for monochorionic monoamniotic twin pregnancies and complicated triplet pregnancies (including monochorionic and dichorionic triplet pregnancies).

Further research to determine the incidence of monochorionic monoamniotic pregnancies and triplet pregnancies of different chorionicities would inform future provision of NHS services, as would research into the most effective models for clinical management of such pregnancies. Studies could include...
national audits of clinical care and outcomes in such pregnancies before and after publication of the guideline. They should also include consideration of the impact of referral (or non-referral) to subspecialist services on perinatal psychological and emotional wellbeing of women and their partners.

**4.6 Timing of birth**

What is the incidence of perinatal and neonatal morbidity and mortality in babies born by elective birth in twin and triplet pregnancies?

**Why this is important**

The existing evidence in relation to perinatal and neonatal outcomes associated with elective birth in twin and triplet pregnancies is limited in quantity and quality. Evidence shows a consistently higher fetal death rate (at all gestational ages) in monochorionic twin pregnancies than in dichorionic twin pregnancies. It is uncertain whether elective birth in monochorionic twin pregnancies at 1–2 weeks earlier than recommended in the guideline would reduce fetal death rates significantly without increasing adverse neonatal outcomes significantly (for example, immaturity of the babies’ respiratory systems). The research could be conducted through national audits of perinatal and neonatal morbidities in babies born by elective birth in twin and triplet pregnancies, taking account of chorionicity of the pregnancy and gestational age at birth.

**4.7 Full guideline**

The full guideline, 'Multiple pregnancy: the management of twin and triplet pregnancies in the antenatal period' contains details of the methods and evidence used to develop the guideline. It is published by the National Collaborating Centre for Women's and Children's Health, and is available from our website ([www.nice.org.uk/guidance/CGXX/Guidance](http://www.nice.org.uk/guidance/CGXX/Guidance)). **Note: these details will apply to the published full guideline.**

**4.8 Quick reference guide**

4.9 ‘Understanding NICE guidance’

A summary for patients and carers (‘Understanding NICE guidance’) is available from www.nice.org.uk/guidance/CG[XX]/PublicInfo

We encourage NHS and voluntary sector organisations to use text from this booklet in their own information about twin and triplet pregnancies.

5 Related NICE guidance

Published


6 Updating the guideline

NICE clinical guidelines are updated so that recommendations take into account important new information. New evidence is checked 3 years after publication, and healthcare professionals and patients are asked for their views; we use this information to decide whether all or part of a guideline needs updating. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations. Please see our website for information about updating the guideline.
Appendix A: The Guideline Development Group, National Collaborating Centre and NICE project team

Guideline Development Group

Jane Anderson
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Director, The Multiple Births Foundation, London (Lay member)

Jane Hawdon
Consultant Neonatologist, University College London Hospitals NHS Foundation Trust

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Professor of Fetal Medicine, University of Birmingham and Birmingham Women’s Foundation Trust (GDG Chair)

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Professor in Fetal Medicine, Director of Fetal Medicine Unit, St George’s Hospital NHS Trust, London

National Collaborating Centre for Women’s and Children’s Health

David James
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Moira Mugglestone
Director of Guideline Development, National Collaborating Centre for Women’s and Children’s Health

Leo Nherera (until January 2011)
Health Economist, National Collaborating Centre for Women's and Children's Health

NICE project team

To be completed by NICE

[Name; style = Unnumbered bold heading]
Associate Director/Programme Director/Centre for Clinical Practice Director

[Delete as appropriate]

[Name; style = Unnumbered bold heading]
Guideline Commissioning Manager
Appendix B: The Guideline Review Panel

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring adherence to NICE guideline development processes. In particular, the panel ensures that stakeholder comments have been adequately considered and responded to. The panel includes members from the following perspectives: primary care, secondary care, lay, public health and industry.

NICE to add

[Name; style = Unnumbered bold heading]
[job title and location; style = NICE normal]
Appendix C: The algorithms

Care pathways for women with twin and triplet pregnancies are available in separate files.
Appendix D: Number of antenatal appointments with a healthcare professional from the core team

<table>
<thead>
<tr>
<th>Type of pregnancy</th>
<th>Contact with a specialist midwife</th>
<th>Contact with an ultrasonographer</th>
<th>Contact with a consultant obstetrician</th>
<th>Total number of antenatal appointments</th>
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<tr>
<td><strong>Monochorionic diamniotic twin</strong> [rec 1.2.3.4]</td>
<td>9–12</td>
<td>9–12</td>
<td>2–4</td>
<td>11–16</td>
</tr>
<tr>
<td></td>
<td>At first presentation</td>
<td>At 11 weeks 0 days to 13 weeks 6 days</td>
<td>At 11 weeks 0 days to 13 weeks 6 days</td>
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</tr>
<tr>
<td></td>
<td>At 16, 18, 20, 22, 24, 28, 32 and 36 weeks</td>
<td>At 16, 18, 20, 22, 24, 28, 32 and 36 weeks</td>
<td>At 36 weeks</td>
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<td>Plus the option of 26, 30 and 34 weeks</td>
<td>Plus the option of 26, 30 and 34 weeks</td>
<td>Plus the option of 20 and 28 weeks</td>
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<tr>
<td><strong>Dichorionic twin</strong> [rec 1.2.3.5]</td>
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<td>6</td>
<td>2–4</td>
<td>8–10</td>
</tr>
<tr>
<td></td>
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<td>At 11 weeks 0 days to 13 weeks 6 days</td>
<td>At 11 weeks 0 days to 13 weeks 6 days</td>
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<td>At 20, 24, 28, 32 and 36 weeks</td>
<td>At 20, 24, 28, 32 and 36 weeks</td>
<td>At 36 weeks</td>
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<td></td>
<td>Plus the option of 20 and 28 weeks</td>
<td>Plus the option of 20 and 28 weeks</td>
<td>Plus the option of 20 and 28 weeks</td>
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<td><strong>Monochorionic triamniotic or dichorionic triamniotic triplet</strong> [rec 1.2.3.6]</td>
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<td>8–11</td>
<td>2–4</td>
<td>10–15</td>
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<td>At 16, 18, 20, 22, 24, 28 and 32 weeks</td>
<td>At 34 weeks</td>
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<td></td>
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<td>Plus the option of 20 and 28 weeks</td>
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<td><strong>Trichorionic triplet</strong> [rec 1.2.3.7]</td>
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<td>At 20, 24, 28, 32 and 34 weeks</td>
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