

Induction of labour

NICE guideline

Draft for consultation, December 2007

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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This guidance is an update of NICE inherited guideline D (published June 2001) and will replace it.

The original NICE guideline and supporting documents are available from www.nice.org.uk/CGD

Introduction

This is a review of an inherited guideline that was published in 2001 (NICE inherited guideline D) and was in need of updating because some of its content has been superseded by changes in both the evidence base and clinical practice.

Induced labour has an impact on the birth experience of women. It may be less efficient and is generally more painful than spontaneous labour. It is also more likely to require epidural analgesia and assisted delivery. Induction of labour is a relatively common procedure. In 2004-5, 19.8% (one in five pregnancies carried to viability) of all deliveries in the UK were induced. This includes induction for all medical reasons. Where birth was induced by drugs, whether or not surgical induction was also attempted, less than two thirds of women gave birth spontaneously, with about 15% having instrumental births and 22% emergency caesarean sections.

Induction of labour can place more strain on labour wards than spontaneous labour. Traditionally induction is undertaken during daytime when labour wards are often already busy. Therefore the policy of induction, including indications, methods and care to be offered, needs to be reviewed.

Woman-centred care

This guideline offers best practice advice on the provision of information and care for women who are considering to undergo induction of labour or undergoing induction of labour.

Treatment and care should take into account women's individual needs and preferences. Women who are considering to undergo induction of labour or undergoing induction of labour should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If a woman does 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). Since April 2007 healthcare professionals need to follow a code of practice accompanying the Mental Capacity Act (summary available from www.dca.gov.uk/menincap/bill-summary.htm).

Good communication between healthcare professionals and women is essential. It should be supported by evidence-based written information tailored to the needs of the individual woman. Treatment and care, and the information patients 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

Information and decision making

Women undergoing induction of labour should receive the following information:

- The reasons for induction being offered
- The risks and benefits of induction and of alternative management
- The methods of induction (when, where and how)
- The arrangements for support and pain relief (recognising that women are likely to find induced labour more painful than spontaneous labour)
- The possibility that induction may not be successful and what will happen in that event
- The alternative management options should induction be declined. [1.1.1]

Induction of labour to prevent prolonged pregnancy

When a woman has agreed to induction of labour to avoid prolonged pregnancy, this should be initiated between 41⁺⁰ and 42⁺⁰ weeks gestation. The exact timing should take into account the woman's preferences and local circumstances. [1.2.3]

Preterm prelabour rupture of membranes (PPROM)

In women with preterm prelabour rupture of membranes after 34 weeks gestation, induction of labour should be considered on a case by case basis, taking into account individual circumstances such as risks to the mother (sepsis, possible need for caesarean) and risks to the baby (sepsis, problems of prematurity), the possible need to complete antenatal corticosteroid treatment and local availability of neonatal intensive care facilities. A perinatal team approach is essential. [1.3.2]

Membrane sweeping

Women should be informed of the effectiveness of membrane sweeping in reducing the need for formal induction of labour to prevent prolonged pregnancy. Membrane sweeping should be discussed with women at their

38 week antenatal visit. They should be informed about the possibility of pain and vaginal bleeding from the procedure. [1.6.1]

Vaginal prostaglandins

Prostaglandins, administered vaginally as gel, tablet or slow-release pessaries, are the induction method of choice, irrespective of cervical status and parity. Costs may vary over time and trusts/units should take these factors into consideration when prescribing. The recommended dosage regimens are:

- for vaginal prostaglandin tablets, 3 mg 6 hourly for two doses
- for vaginal prostaglandin gel, 2 mg 6 hourly for two doses
- for slow-release vaginal prostaglandin pessary, 10 mg over 24 hours.

[1.6.8]

Failed induction

The decisions regarding the management of a 'failed induction' must be made in accordance with women's wishes and with regard to the clinical circumstances. A full assessment of the pregnancy in general, the woman's condition and fetal wellbeing using electronic fetal monitoring (EFM), should be made. If all is well and the woman is in agreement she could be allowed home, to await spontaneous onset. If on review the justification for induction seems unclear a careful reappraisal of the condition of the pregnancy should be made in order to plan subsequent management, which could include:

- the woman could go home, to await spontaneous onset
- induction could be postponed
- a further cycle of vaginal prostaglandin
- caesarean section. [1.7.2]

1 Guidance

The following guidance is based on the best available evidence. The full guideline ([\[add hyperlink\]](#)) gives details of the methods and the evidence used to develop the guidance.

1.1 Information and decision making

1.1.1 Women undergoing induction of labour should receive the following information:

- The reasons for induction being offered
- The risks and benefits of induction and of alternative management
- The methods of induction (when, where and how)
- The arrangements for support and pain relief (recognising that women are likely to find induced labour more painful than spontaneous labour)
- The possibility that induction may not be successful and what will happen in that event
- The alternative management options should induction be declined.

1.1.2 Information should be presented in a clear and unbiased manner in her own language. She should also be provided with this information in a written form, in her own language, as well as encouraged to look at other sources of information such as the internet.

1.1.3 Communication and information should be provided in the following ways:

- She should be allowed ample time to discuss the information with her birth supporter(s) before coming to a decision.
- She should be invited to ask questions, and to think about her options.
- She should be offered a membrane sweep, if not contraindicated, and additional sweeps if desired.
- She should be supported in her decision, whatever that may be.

1.1.4 The possibility of induction of labour to avoid prolonged pregnancy should be discussed with a woman at her 38 week antenatal visit in order that she may be aware of the above information, understand the risks and benefits of induction, and have the time to think about these issues and the options and alternatives being offered such as membrane sweeps, prior to her next antenatal visit.

1.1.5 At any stage of the pregnancy, guidance on communication between women and healthcare professionals from the NICE guidelines on Antenatal Care and Intrapartum Care should be followed.

1.2 *Induction of labour to prevent prolonged pregnancy*

1.2.1 Women with uncomplicated pregnancies should be given every opportunity to proceed to spontaneous labour.

1.2.2 Induction of labour should not routinely be offered to women before 41 weeks gestation (41⁺⁰).

1.2.3 When a woman has agreed to induction of labour to avoid prolonged pregnancy, this should be initiated between 41⁺⁰ and 42⁺⁰ weeks gestation. The exact timing should take into account the woman's preferences and local circumstances.

- 1.2.4 For women who decline induction of labour from 42 weeks, guidance on monitoring protocol recommended by the NICE Antenatal Guideline should be followed.

1.3 *Induction of labour for other specific circumstances*

Preterm prelabour rupture of membranes (PPROM)

- 1.3.1 In women with preterm prelabour rupture of membranes, induction of labour is not recommended at less than 34 weeks gestation, unless there are additional obstetric indications.
- 1.3.2 In women with preterm prelabour rupture of membranes after 34 weeks gestation, induction of labour should be considered on a case by case basis, taking into account individual circumstances such as risks to the mother (sepsis, possible need for caesarean) and risks to the baby (sepsis, problems of prematurity), the possible need to complete antenatal corticosteroid treatment and local availability of neonatal intensive care facilities. A perinatal team approach is essential.
- 1.3.3 For women with PPRM, the induction method of choice is vaginal prostaglandins.

Prelabour rupture of membranes at term

- 1.3.4 For women with prelabour rupture of membranes at term who choose to proceed with induction of labour, standard induction protocol with vaginal prostaglandins should be used within dosage guidelines.

Presence of fetal growth restriction

- 1.3.5 In the presence of severe intrauterine fetal growth restriction with suspected fetal compromise, induction of labour should not be undertaken and caesarean section should be performed to avoid the stress of labour, both for the woman and her baby.

Previous caesarean birth

- 1.3.6 Women with a previous caesarean section can be offered induction of labour. Particular care should be given to women with no previous vaginal birth who should be informed of an increased risk of uterine rupture, particularly in the absence of a previous vaginal birth. The evidence is not strong enough to recommend the preferred method for labour induction. Prostaglandins, oxytocin and/or mechanical methods should be used within dosage guidelines.

History of precipitate labour

- 1.3.7 Induction of labour should not be routinely undertaken in women with a history of precipitate labour. However, if these women request induction of labour, this should be considered on a case-by-case basis.

Maternal request for induction of labour

- 1.3.8 Induction of labour should not generally be used on maternal request. However, under very compelling circumstances, induction may be considered at or after 40 weeks gestation.

Breech presentation

- 1.3.9 When indications for delivery arise in the presence of a breech presentation but elective caesarean section is declined, the normal protocol for methods of induction for cephalic presentation applies.

Intrauterine fetal death

1.3.10 For women with intrauterine fetal death:

- If the woman appears to be physically well, her membranes are intact and there is no evidence of infection or bleeding, then they can be offered a choice of immediate induction of labour or expectant management.
- Where there is evidence of ruptured membranes, infection or bleeding, immediate induction of labour is the preferred management option.
- When induction is needed a combination of mifepristone with either gemeprost, misoprostol or dinoprostone should be offered. The choice and dose of prostaglandins will depend on the clinical circumstances, availability of preparations and local experience.

1.3.11 For women with an intrauterine fetal death and a previous caesarean section, the risk of uterine rupture is increased with scarred uterus and prostaglandin doses should be adjusted accordingly, particularly in the third trimester.

Suspected macrosomia

1.3.12 Induction of labour should not be undertaken when there is suspected fetal macrosomia alone.

1.4 Timing and setting, analgesia, facilities and monitoring for induction of labour

Timing and setting for induction of labour

1.4.1 In the outpatient setting, induction of labour should only be recommended if appropriate safety and support procedures are in place and the process/practice should be continuously audited.

1.4.2 In the inpatient setting, induction of labour using vaginal prostaglandins should be initiated in the morning (because of higher maternal satisfaction).

Monitoring of induction of labour

- 1.4.3 Wherever induction of labour occurs, facilities should be available for continuous uterine and fetal heart rate monitoring.
- 1.4.4 Fetal wellbeing by electronic fetal monitoring (EFM) should be assessed and established prior to induction of labour.
- 1.4.5 For women who are healthy and have had an otherwise uncomplicated pregnancy, the assessment of fetal wellbeing following administration of vaginal prostaglandins should comprise an initial assessment with continuous electronic fetal monitoring (EFM) (with tocograph) when contractions begin and, once the cardiogram is confirmed as normal, intermittent auscultation can be used.
- 1.4.6 Where oxytocin is being used for induction of labour, continuous EFM should be used.
- 1.4.7 If the woman returns home after insertion of vaginal prostaglandin, she should be asked to report to obstetricians/midwives when contractions commence.
- 1.4.8 Once active labour starts, maternal and fetal monitoring protocol recommended by the NICE guideline on Intrapartum Care should be followed.

Analgesia consideration during induction of labour

- 1.4.9 Women should be informed that induced labours may be more painful than spontaneous labour.
- 1.4.10 Women need the pain relief appropriate to them and their pain. This can range from simple analgesics, to epidural analgesia.

- 1.4.11 Birth attendants (carers, healthcare professionals) should be aware that: once induction of labour commenced, women should be offered support, coping strategy for pain, and analgesia as required. Once active labour starts, maternal and fetal monitoring protocol recommended by the NICE Intrapartum Care guideline should be followed.
- 1.4.12 Induction of labour does not preclude the use of a birth pool for pain relief, as recommended by the NICE Intrapartum Care guideline.
- 1.4.13 The place of induction/birth relating to availability of pain relief during induction should be discussed at the 38 week antenatal visit.

1.5 *Methods of induction of labour of uncertain efficacy*

Non-pharmacological methods

Herbal supplements

- 1.5.1 Herbal supplements as a method of cervical priming and labour induction should not be used because of a lack of evidence.

Acupuncture

- 1.5.2 Acupuncture as a method of cervical priming and labour induction should not be used because evidence shows it to be ineffective.

Homeopathy

- 1.5.3 Homeopathy as a method of cervical priming and labour induction should not be used because there is insufficient evidence.

Castor oil, hot baths and enemas

- 1.5.4 Castor oil, hot baths and enemas as methods of cervical priming and induction should not be used because of limited and conflicting evidence.

Sexual intercourse

- 1.5.5 Sexual intercourse as a method of cervical priming and labour induction should not be used because there is insufficient evidence.

Breast stimulation

- 1.5.6 Breast stimulation as a method of cervical priming and labour induction should not be used because of limited and conflicting evidence, and safety concerns for the baby.

Pharmacological methods

Relaxin

- 1.5.7 Relaxin as a method of cervical priming and labour induction should not be used because evidence shows it to be ineffective.

Hyaluronidase

- 1.5.8 Hyaluronidase as a method of cervical priming and labour induction should not be used because of the availability of effective and less invasive methods.

Corticosteroids

- 1.5.9 Corticosteroids for cervical priming and labour induction should not be used because there is insufficient evidence.

Oestrogens

- 1.5.10 Oestrogen as a method of cervical priming and labour induction should not be used because there is insufficient evidence.

Nitric oxide donors

- 1.5.11 Vaginal nitric oxide donors for cervical priming should not be used because evidence suggests it is less effective than vaginal prostaglandins.

1.6 *Effective methods of cervical priming/labour induction*

Non-pharmacological methods

Membrane sweeping

- 1.6.1 Women should be informed of the effectiveness of membrane sweeping in reducing the need for formal induction of labour to prevent prolonged pregnancy. Membrane sweeping should be discussed with women at their 38 week antenatal visit. They should be informed about the possibility of pain and vaginal bleeding from the procedure.
- 1.6.2 Membrane sweeping should be considered whenever induction of labour is offered.
- 1.6.3 In primigravidae membrane sweeping should be offered at their 40 week antenatal visit and again at 41 weeks if they have not gone into spontaneous labour. For multiparous women the offer should be made at their scheduled antenatal visit.

Pharmacological methods

Oral prostaglandins

- 1.6.4 Oral prostaglandin as a method of cervical priming and labour induction should not be used because of gastrointestinal side effects.

Intravenous prostaglandins

- 1.6.5 Intravenous prostaglandins should not be used as a method of labour induction because of gastrointestinal side effects and hyperstimulation.

Extra-amniotic prostaglandins

- 1.6.6 Extra-amniotic PGE₂ should not be used for labour induction regardless of the state of the cervix as there was insufficient evidence to establish its effectiveness.

Intracervical prostaglandins

1.6.7 Intracervical prostaglandins as a method of cervical priming and labour induction should not be used.

Vaginal prostaglandins

1.6.8 Prostaglandins, administered vaginally as gel, tablet or slow-release pessaries, are the induction method of choice, irrespective of cervical status and parity. Costs may vary over time and trusts/units should take these factors into consideration when prescribing. The recommended dosage regimens are:

- for vaginal prostaglandin tablets, 3 mg 6 hourly for two doses
- for vaginal prostaglandin gel, 2 mg 6 hourly for two doses
- for slow-release vaginal prostaglandin pessary, 10 mg over 24 hours.

Intravenous oxytocin

1.6.9 IV oxytocin as the sole intervention should not be used in women undergoing induction of labour.

Misoprostol

1.6.10 Oral, vaginal or buccal/sublingual misoprostol should not be used as a method of induction of labour, other than in the context of a clinical trial, and with the exception of intrauterine fetal death.

Mifepristone

1.6.11 The use of mifepristone to induce labour is not recommended in the presence of a viable fetus.

Surgical methods

Amniotomy

1.6.12 Amniotomy should not be used as method of induction when the cervix is unfavourable.

1.6.13 Amniotomy should only be considered when the cervix is favourable if there are specific contraindications to the use of vaginal prostaglandins.

Surgical and pharmacological methods

Amniotomy with IV oxytocin

- 1.6.14 Amniotomy plus IV oxytocin should not be used unless there are specific contraindications for the use of vaginal prostaglandin.

Mechanical methods

- 1.6.15 Mechanical methods (balloon catheters and laminaria tents) should not be used as a routine method of induction. However, they may be considered in women with a previous caesarean section and an unfavourable cervix as this may reduce the risk of uterine rupture.

1.7 Management of complications of induction of labour

Uterine hyperstimulation

- 1.7.1 For uterine hyperstimulation in the presence of uterine hypercontractility and abnormal FHR patterns, tocolysis should be considered.

Failed induction

- 1.7.2 The decisions regarding the management of a 'failed induction' must be made in accordance with women's wishes and with regard to the clinical circumstances. A full assessment of the pregnancy in general, the woman's condition and fetal wellbeing using electronic fetal monitoring (EFM), should be made. If all is well and the woman is in agreement she could be allowed home, to await spontaneous onset. If on review the justification for induction seems unclear a careful reappraisal of the condition of the pregnancy should be made in order to plan subsequent management, which could include:

- the woman could go home, to await spontaneous onset
- induction could be postponed
- a further cycle of vaginal prostaglandin
- caesarean section.

- 1.7.3 If there is a delay between the decision to perform LSCS and its execution, the woman should be re-examined vaginally in case there has been recognised labour progress in the interim.

Cord prolapse

- 1.7.4 To reduce the likelihood of cord prolapse, associated with artificial rupture of membranes at the time of induction, the following precautionary measures should be taken:

- proper preinduction assessment of presentation and engagement
- obstetricians and midwives should palpate for umbilical cord presentation on the preliminary vaginal exam and avoid dislodging the fetal head
- avoid amniotomy if the head is high.

- 1.7.5 Always check that there is nothing to suggest a low-lying placental site prior to membrane sweeping and prior to induction.

Uterine rupture

- 1.7.6 If uterine rupture is suspected at the time of induction of labour, the baby should be born by emergency caesarean section.

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 www.nice.org.uk/NICEtoadddetails.

This guideline covers induction of labour for women with the following clinical circumstances:

- prolonged pregnancy
- preterm prelabour rupture of membranes
- prelabour rupture of membranes
- presence of fetal growth restriction
- previous caesarean section
- history of precipitate labour
- maternal request
- breech presentation
- intrauterine fetal death
- suspected macrosomia.

Where relevant evidence exists, the guideline addresses induction of labour in primiparous and multiparous women separately.

This guideline does not cover induction of labour for women in the following groups:

- Women with diabetes
- Women with multifetal pregnancy
- Women undergoing augmentation (rather than induction) of labour.

This guideline gives guidance on induction of labour, within hospital-based maternity unit setting, on the following:

- The clinical indications for induction of labour
- The appropriate place and timing of induction of labour

- The care that should be offered to women during the induction process, including monitoring, analgesia, emotional support and information provision for women and their partners/families
- The effectiveness of methods for cervical priming
- The effectiveness of methods used for induction of labour
- The management offered if the cervix is unfavourable
- The management of complications of induction such as failed induction.

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 in the booklet: 'The guideline development process: an overview for stakeholders, the public and the NHS' (third edition, published April 2007), which is available from www.nice.org.uk/guidelinesprocess or by telephoning 0870 1555 455 (quote reference N1233).

3 Implementation

The Healthcare Commission assesses the performance of NHS organisations in meeting core and developmental standards set by the Department of Health in 'Standards for better health', issued in July 2004. Implementation of clinical guidelines forms part of the developmental standard D2. Core standard C5 says that national agreed guidance should be taken into account when NHS organisations are planning and delivering care.

NICE has developed tools to help organisations implement this guidance (listed below). These are available on our website (www.nice.org.uk/CGXXX).

- Slides highlighting key messages for local discussion.
- Costing tools:
 - costing report to estimate the national savings and costs associated with implementation
 - costing template to estimate the local costs and savings involved.
- Implementation advice on how to put the guidance into practice and national initiatives that support this locally.
- Audit criteria to monitor local practice.

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 decision making*

Comparative studies are needed to explore the experiences of women who have induced labour and spontaneous labour.

4.2 *Prolonged pregnancy*

Research aimed at reducing the number requiring induction by identifying babies at particularly high risk of morbidity and mortality.

4.3 *Preterm prelabour rupture of membranes (PPROM)*

A large study is needed to compare immediate induction of labour vs expectant management beyond 34 weeks, with stratification for gestational age, and correction for maternal steroid and antibiotic treatment.

4.4 *Timing and setting for induction of labour*

Studies to assess the safety, efficacy and clinical and cost-effectiveness of outpatient and inpatient induction in the UK setting are needed, taking into account women's views.

4.5 *Membrane sweeping*

Research studies to assess effectiveness, maternal satisfaction and acceptability of:

- multiple versus once-only membrane sweeping, at varying gestational ages, stratifying for parity
- membrane sweeping and cervical massage.

4.6 *Vaginal prostaglandins*

Research to assess the effectiveness, safety and maternal satisfaction and acceptability of:

- different regimens of prostaglandins, stratified by clinical indications, cervical and membrane status, parity and previous caesarean birth
- different management policies for failed prostaglandin induction (additional prostaglandins, oxytocin, elective caesarean or delay of induction if appropriate).

5 Other versions of this guideline

5.1 *Full guideline*

The full guideline, Induction of Labour: an Update, 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 www.ncc-wch.org.uk, our website (www.nice.org.uk/CGXXXfullguideline) and the National Library for Health (www.nlh.nhs.uk). **[Note: these details will apply to the published full guideline.]**

5.2 *Quick reference guide*

A quick reference guide for healthcare professionals is available from www.nice.org.uk/CGXXXquickrefguide

For printed copies, phone the NHS Response Line on 0870 1555 455 (quote reference number N1XXX). **[Note: these details will apply when the guideline is published.]**

5.3 *'Understanding NICE guidance'*

Information for patients and carers ('Understanding NICE guidance') is available from www.nice.org.uk/CGXXXpublicinfo

For printed copies, phone the NHS Response Line on 0870 1555 455 (quote reference number N1XXX). **[Note: these details will apply when the guideline is published.]**

6 Related NICE guidance

Published

- Caesarean section. NICE clinical guideline 13 (2004). Available from www.nice.org.uk/CG013
- Antenatal and postnatal mental health: clinical management and service guidance. NICE clinical guideline 45 (2007). Available from www.nice.org.uk/CG045
- Intrapartum care: Care of healthy women and their babies during childbirth. NICE clinical guideline 55 (2007). Available from www.nice.org.uk/CG055

Under development

NICE is developing the following guidance (details available from www.nice.org.uk):

- Antenatal care: Routine care for the healthy pregnant woman. NICE clinical guideline (publication expected 2008).
- Diabetes in pregnancy. NICE clinical guideline (publication expected 2008).

7 Updating the guideline

NICE clinical guidelines are updated as needed so that recommendations take into account important new information. We check for new evidence 2 and 4 years after publication, to decide whether all or part of the guideline should be updated. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations.

Appendix A: The Guideline Development Group

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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]

Appendix C: The algorithm

The algorithm (care pathway) is provided in a separate file for the stakeholder consultation.