

CLINICAL PRACTICE GUIDELINES

Induction of Labour



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Statement of Intent

These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.

The contents of this publication are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient in the light of the clinical data presented by the patient and the diagnostic and treatment options available.

Foreword

Labour begins naturally for most women. However, for some women, medical help may be necessary to start labour. Induction of labour may be considered when prolongation of pregnancy would be detrimental to either the mother or the foetus.

The rate of induction varies widely in different countries and units and between individual obstetricians. As induction of labour carries with it a small but significant risk of complications, it should be carried out only after careful consideration. Appropriate personnel and facilities should be readily available to manage any complications that may arise from the procedure.

These guidelines on *Induction of Labour* were developed by a workgroup consisting of specialists in the field of obstetrics and gynaecology appointed by the Chapter of Obstetricians and Gynaecologists, Academy of Medicine, Singapore.

We are pleased to present these guidelines as an aid to obstetricians and other health care professionals involved in the care of obstetric patients.

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1 Guideline development and objectives

1.1 Methodology

The workgroup comprised obstetricians from the government restructured and private hospitals. It formulated these guidelines using the best available evidence from literature.

1.2 Objectives

These guidelines serve as an aid to the practising obstetrician. However, they are not intended to dictate management in any particular case.

1.3 Target group

These guidelines are developed for all practising obstetricians and serve also as a reference for other health care professionals involved in the care of obstetric patients.

2 Levels of evidence and grades of recommendation

Levels of evidence

Level	Type of Evidence
Ia	Evidence obtained from meta-analysis of randomised controlled trials.
Ib	Evidence obtained from at least one randomised controlled trial.
IIa	Evidence obtained from at least one well-designed controlled study without randomisation
IIb	Evidence obtained from at least one other type of well-designed quasi-experimental study.
III	Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.
IV	Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

Grades of recommendation

Grade	Recommendation
A (evidence levels Ia, Ib)	Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.
B (evidence levels IIa, IIb, III)	Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.
C (evidence level IV)	Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.
GPP (good practice points)	Recommended best practice based on the clinical experience of the guideline development group.

3 Executive summary of recommendations

C Induction of labour (IOL) is indicated when the benefits of delivery to the mother or foetus outweigh those of continuing with the pregnancy. The risks of induction should be weighed against the benefits of continuing with the pregnancy.

Grade C, Level IV

C The decision to perform a social IOL should be taken on a case-by-case basis, after fully discussing the potential risks and disadvantages with the patient.

Grade C, Level IV

C IOL should be performed in an environment where trained personnel and facilities are available to deal immediately with any complication of IOL.

Grade C, Level IV

C Continuous electronic foetal heart rate monitoring in active labour is recommended.

Grade C, Level IV

A The favourability of the cervix, or otherwise, should be assessed prior to induction. If the cervix is unfavourable and the induction necessary, ripening of the cervix is useful.

Grade A, Level Ia

C Prostaglandins should be administered at a facility where continuous uterine activity and foetal heart rate monitoring can be performed.

Grade C, Level IV

A The oxytocin levels required to produce effective contractions vary widely among individuals and thus the oxytocin titrated must be individualised.

Grade A, Level Ib

C Continuous electronic foetal monitoring is recommended whenever an oxytocin infusion is used.

Grade C, Level IV

B IOL is not contraindicated in women with one previous low segment transverse caesarean section as long as the labour is monitored closely.

Grade B, Level III

4 Definition and indications

4.1 Definition

Induction of labour (IOL) is the initiation of uterine contractions before the spontaneous onset of labour, with the aim of accomplishing vaginal delivery.

4.2 Indications

C IOL is indicated when the benefits of delivery to the mother or foetus outweigh those of continuing with the pregnancy. The risks of induction should be weighed against the benefits of continuing with the pregnancy.

Grade C, Level IV

Indications of IOL may include, but are not limited to, the following maternal and foetal indications:

- maternal problems (e.g. diabetes mellitus, renal disease)
- anticipated compromise of foetal welfare with continuation of pregnancy (e.g. intrauterine growth retardation, macrosomia, oligohydramnios, previous intrauterine death, history of antepartum haemorrhage)
- logistic factors (e.g. risk of rapid labour, distance from hospital, psychosocial indications)
- foetal demise¹
- prolonged pregnancy more than 41 weeks gestation (an accurate ultrasound dating of gestational age is necessary)²⁻⁴

4.3 Social induction

C IOL is sometimes performed in the absence of a definite medical indication. The decision to perform an IOL in such circumstances (often termed a social induction) should be taken on a case-by-case basis, after fully discussing the potential risks and disadvantages with the patient.³

Grade C, Level IV

5 Requirements for induction

In IOL, the following are advised:

- Labour should be induced only after the patient has been duly informed. The indications for the procedure and the possible need for a caesarean delivery and other risks of induction should be explained to the patient.⁵
- Foetal gestation should be ascertained.
- **C** IOL should be performed in an environment where trained personnel and facilities are available to deal immediately with any complication of IOL (e.g. hyperstimulation and foetal distress).

Grade C, Level IV

5.1 Electronic foetal heart rate monitoring

C Continuous electronic foetal heart rate monitoring in active labour is recommended.^{3, 6, 7}

Grade C, Level IV

6 Cervical ripening

A The favourability of the cervix, or otherwise, should be assessed prior to induction. If the cervix is unfavourable and the induction necessary, ripening of the cervix is useful.

Grade A, Level Ia

The state of the cervix and parity are clearly related to the success of IOL.^{5,8} IOL with an unfavourable cervix, especially in a primiparous patient, has been associated with failure of induction, prolonged labour and a high caesarean section rate.^{8,9}

6.1 Methods of cervical ripening

Cervical ripening is a process that culminates in the softening and distensibility of the cervix. The methods of ripening of the cervix include the use of extraovular catheters, osmotic dilators, prostaglandins and locally applied hormones like relaxin and oestrogens.¹⁰

6.2 Prostaglandins (PGs)

Meta-analyses have shown that PGs are superior to placebo and oxytocin alone in ripening the cervix.^{11,12} Cumulative experience with an intracervical or intravaginal PGE₂ preparation in more than 5000 pregnancies from more than 70 prospective clinical trials supports the belief that PGE₂ is superior to placebo or no therapy in enhancing cervical effacement and dilatation.¹³

Part of the prostaglandin-induced cervical ripening process often includes initiation of labour. PGs may also enhance sensitivity to oxytocin.¹⁴ PGE₂ may be given via the oral, intravaginal, intracervical or intravenous routes, all of which are effective. Intracervical and intravaginal routes have fewer systemic side effects compared with the other routes of administration.

6.2.1 Patient selection

In the selection of patient for the use of PGs, the following need to be considered:

- An unfavourable cervix is an indication for the use of PGs.^{3,6} In women with pre-eclampsia and an unfavourable cervix, cervical ripening with intravaginal or intracervical PGs can be accomplished safely.⁶
- The patient should not have an allergy to PGs.
- There should be a reassuring foetal heart rate trace, preferably by reactive non-stress test.
- The patient should not have regular painful uterine contractions (every 5 minutes or less).
- The use of intravaginal PGE₂ in the presence of premature rupture of membranes at term is safe and may be beneficial in shortening the rupture-delivery interval.¹⁵⁻¹⁷
- PGs should be used with caution in patients with grand multiparity or with a history of caesarean section or major uterine surgery.

6.2.2 Protocol for administration

- **C Prostaglandins should be administered at a facility where continuous uterine activity and foetal heart rate monitoring can be performed.**

Grade C, Level IV

- An observation period of about 2 hours may be prudent,^{14,18} and if the patient is not in active labour and the foetal heart rate trace is reassuring during this time, she may be transferred elsewhere.
- If there is insufficient cervical change with minimal uterine activity after one dose of PGE₂, a second dose may be used, according to the manufacturer's instructions.
- As the effects of PGE₂ may be exaggerated with oxytocin, oxytocin induction should be delayed according to the manufacturer's instructions.¹⁹
- When hyperstimulation occurs, a short-acting beta adrenergic agent can be given and should result in the resolution of hyperstimulation.²⁰

7 Methods of induction

If the cervix is favourable, there is little convincing evidence to support the superiority of any one particular method of induction over the others.

7.1 Amniotomy

Mechanical induction with artificial rupture of membranes combined with oxytocin (either at time of amniotomy or delayed) is most commonly used.

Care should be taken during artificial rupture of membranes to palpate for the umbilical cord and avoid dislodging the foetal head. The foetal heart should be recorded before and immediately after the procedure.

7.2 Oxytocin

The goal of oxytocin administration is to effect uterine activity that is sufficient to produce cervical dilatation and foetal descent while avoiding uterine hyperstimulation and foetal compromise.

A The oxytocin levels required to produce effective contractions vary widely among individuals^{21,22} and thus the oxytocin titrated must be individualised.

Grade A, Level Ib

7.2.1 Administration

Oxytocin is diluted in an isotonic electrolyte solution and delivered intravenously either continuously or as a pulsatile infusion by a controlled infusion device. The infusion should be titrated according to the rate of progress of labour and care should be taken to avoid hyperstimulation and foetal compromise.

7.2.2 Dosage

A wide range of dosage and frequency have been used successfully and no method has emerged as clearly superior.²³⁻²⁷ Generally, a starting dose of 0.5-3mU/min with regular increments every 30 minutes is reasonable.^{3,6} A shorter interval between dosage increment is associated with a greater risk of hyperstimulation.²³⁻²⁸

8 Foetal surveillance during induction of labour

It would be prudent to ensure foetal health by obtaining a reactive foetal heart rate trace (using a non-stress test) prior to IOL.

C Continuous electronic foetal monitoring is recommended whenever an oxytocin infusion is used.

Grade C, Level IV

8.1 Previous low segment transverse caesarean section

B IOL is not contraindicated in women with one previous low segment transverse caesarean section as long as the labour is monitored closely.

Grade B, Level III

The risks of instrumental vaginal delivery, uterine scar dehiscence, transfusion, birth trauma and poor neonatal outcome have not been shown to be increased with induced, rather than spontaneous, labour as long as the labour is monitored closely.¹

9 Recommendations for evaluation

Audit parameters should look at

- Induction rate
- Indications for induction of labour
- Caesarean section rate following induction of labour
- Instrumental vaginal delivery rate following induction of labour
- Perinatal outcome i.e. mortality and morbidity (APGAR score and admission to neonatal intensive care unit)

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11 Workgroup members

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Induction of Labour



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and Gynaecologists
Academy of Medicine

Indication

Induction of labour (IOL) is indicated when the benefits of delivery to the mother or foetus outweigh those of continuing with the pregnancy. The risks of induction should be weighed against the benefits of continuing with the pregnancy.

Social Induction

The decision to perform a social IOL should be taken on a case-by-case basis, after fully discussing the potential risks and disadvantages with the patient.

Facilities and Personnel

IOL should be performed in an environment where trained personnel and facilities are available to deal immediately with any complication of IOL.

Electronic Foetal Heart Rate Monitoring

Continuous electronic foetal heart rate monitoring in active labour is recommended.

Cervical Ripening

The favourability of the cervix, or otherwise, should be assessed prior to induction. If the cervix is unfavourable and the induction necessary, ripening of the cervix is useful.

Prostaglandins should be administered at a facility where continuous uterine activity and foetal heart rate monitoring can be performed.

Oxytocin

The oxytocin levels required to produce effective contractions vary widely among individuals and thus the oxytocin titrated must be individualised.

Foetal Surveillance

Continuous electronic foetal monitoring is recommended whenever an oxytocin infusion is used.

IOL is not contraindicated in women with one previous low segment transverse caesarean section as long as the labour is monitored closely.