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SUPPLEMENT ARTICLE

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FIGO good practice recommendations for induced or spontaneous labor at term: Prep-for-Labor Triage to minimize risks and maximize favorable outcomes

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Abstract

The goal of induced or spontaneous labor is childbirth by vaginal delivery. Delivery after 37 weeks is desirable and associated with favorable maternal and newborn outcomes. Delivery facilities should have suitable staff and resources on site for antenatal services and delivery care. FIGO's Prep-for-Labor triage method provides rapid diagnostic tools that help define patients as high or low risk to determine whether transfer to a higher-level center is needed. There is often a disconnect between a facility's designation and its ability to achieve safe deliveries. For preplanned labor induction, the designated clinical facility must have the right set-up and prenatal records available to achieve a successful outcome. However, this is often not the case if a patient arrives in labor or needs an induction and the facility has limited patient information and resources, thus requiring rapid management decisions. The practical guidance checklist in this article defines maternal and/or fetal risk factors and delineates approaches and safe practices for labor induction and management, including when antenatal information is limited to maximize safe delivery practices. Guidelines on using the Bishop score (>6 or <6) to manage labor are presented. Evidence supporting successful safe labor induction at 41–42 weeks of gestation in low-risk cases is described. This practice will increase the rate of spontaneous labor and delivery, minimizing intervention and thereby diverting limited clinical resources to those patients in need. In the right setting, this could lead to around 80% of women delivering spontaneously, which remains a desired goal.

KEYWORDS
indications, induced labor, site suitability, spontaneous labor, triage

1 | INTRODUCTION

Induction of labor consists of initiating uterine contractions to stimulate delivery prior to onset of spontaneous labor. In general, obstetric indications to induce labor are based on conditions whereby allowing the pregnancy to advance could pose maternal or fetal/neonatal complications. In this case, unless spontaneous labor starts, the two available options are to induce labor or perform a cesarean delivery.

*Complete list of members presented in Appendix A.

Induction of labor must be prioritized over cesarean delivery if there are no contraindications to vaginal delivery. When induction is contemplated, the clinical facility should already be well equipped to induce and monitor the patient depending on whether the pregnancy is at term, post term, or induction is medically indicated. In addition, antenatal records should be available on site to address the indication that led to the decision to induce the patient.

In contrast to preplanned induction of labor, for a patient arriving in labor where information on the antenatal course may be limited or absent, the decision must be made whether the facility can manage the patient effectively or transfer to a higher-level center is required. FIGO's Prep-for Labor triage method, described in Barnea et al.,[1] aims to aid rapid diagnosis of whether a patient is in labor and is low or high risk. This rapid diagnosis helps determine whether the patient should remain on site and allow labor to progress with minimal intervention or if transfer is required. The ability of each clinical facility (defined as level I) to coordinate with an advanced care center (levels II–IV) is critical for ensuring optimum maternal and newborn outcomes.

2 | EPIDEMIOLOGY OF LABOR INDUCTION

Data from the USA reported that the induction of labor rate in 2020 was high at 31.4%.[2] In contrast, World Health Organization data, including data from 24 countries, showed a lower induction rate of only 10%.[3] However, these data were obtained from a 2010 analysis. Recent data on the global rate are not available. Overall, unless it is required, minimizing labor induction enables a patient to progress in spontaneous labor, which allows minimal intervention thereby freeing-up staff capacity. The following sections discuss indications, risks, contraindications, and induction methods.

3 | COMMON INDICATIONS FOR LABOR INDUCTION AND THEIR MANAGEMENT

- Post term pregnancy: It is considered appropriate to offer induction of labor to all women at low risk between 41^{+0} and 42^{+0} weeks.
- Prelabor rupture of membranes (PROM) at term (after 37 weeks of gestational age). If there is no spontaneous onset of labor and a negative vaginal–rectal swab for group B streptococcus (GBS), after adequate counseling and with antibiotic prophylaxis, both waiting and immediate induction are acceptable options. If, after adequate counseling on the risks of prolonged PROM, the choice is expectant management, waiting 12–24 hours is reasonable when the maternal and fetal clinical conditions are reassuring. This is with the expectation that spontaneous labor will follow.
- GBS-positive and no spontaneous labor: Antibiotics and immediate induction of labor is recommended.
- Risk for chorioamnionitis—careful evaluation. Without spontaneous onset of labor and unknown rectal–vaginal swab, evaluate any risk factors for chorioamnionitis that support positive diagnosis. In the absence of risk factors and clear signs of infection or fetal compromise, consider the woman as negative and proceed as previously recommended.
- Preterm prelabor rupture of membranes (PPROM) at 37^{+0} weeks. Assess chorioamnionitis. Once PPROM has been diagnosed, there are two options: expectant management or induction of labor. In the case of clinical chorioamnionitis or nonreassuring fetal conditions, induction of labor should be considered if there are no contraindications to vaginal delivery. The balance is always between a longer or a shorter latency: a longer labor latency is associated with higher risk of chorioamnionitis (if not already confirmed by clinical signs), while a shorter latency faces the risks connected with prematurity.
- PPROM at 34^{+0} to $36^{+6/7}$ weeks. Patients should undergo either expectant management or induction of labor.
- PPROM before 34^{+0} weeks. Patients should undergo expectant management if no maternal or fetal contraindications exist, possibly until 37^{+0} weeks.
- Oligohydramnios: Induction of labor should be planned when the single deepest vertical pocket (DVP) is less than 2 cm.[4]
- Fetal growth restriction: Cesarean delivery should be the first choice in cases of fetal growth restriction associated with abnormal umbilical artery flow with absent or reversed end-diastolic velocity (AREDV). In the other scenarios of fetal growth restriction, decision on the timing of induction of labor should be based on the fetal growth and Doppler results.
- Diabetes (well managed): For patients with diabetes type 1 or type 2, it is recommended to offer induction of labor between 39^{+0} and 39^{+6} weeks.
- Gestational diabetes mellitus (well managed): For patients with good glycemic control using diet, it is recommended to offer induction of labor at around 40 weeks (between 39 and 41 weeks). For patients with good glycemic control using insulin treatment, it is recommended to offer induction of labor at between 39 and 40 weeks.
- Gestational diabetes mellitus (poor control): For patients with poor control using diet or insulin treatment, multidisciplinary discussion is needed before planning induction of labor.
- Diabetes and complications: Prepregnancy diabetes associated with pre-eclampsia/hypertension, renal disease, or previous history of late abortion or intrauterine fetal death or poor glycemic control or macrosomia/polyhydramnios, it is recommended to offer induction of labor between 37 and 38 weeks or earlier after a multidisciplinary discussion of the specific case.
- Hypertensive disorders (well managed): Timing of induction of labor should consider both gestational age and fetal/maternal well-being. In case of gestational or chronic hypertension under control and normal cardiotocography, induction should be performed at 39 weeks.
- Pre-eclampsia after 37 weeks. Induction should be performed.

- Stable pre-eclampsia before 37 weeks in both mother and fetus. Induction should proceed after 37 weeks.
- Pregnancy from in vitro fertilization. The Society for Maternal–Fetal Medicine (SMFM) guidelines on pregnancy from in vitro fertilization published in 2022 recommend, in the absence of studies focused specifically on timing of delivery for pregnancies achieved with assisted reproductive technologies, shared decision-making between patients and healthcare providers when considering induction of labor at 39 weeks of gestation.[5]
- Intrahepatic cholestasis of pregnancy. Timing of induction of labor should be based on concentrations of serum bile acids. The level of bile acids and associated symptoms (i.e. pruritus) reflect the severity of the disease and support progressively earlier induction.
  - <40 μmol/L: induction of labor at 39 weeks
  - >40 μmol/L ≤ 99 μmol/L: induction of labor at 37–38 weeks
  - ≥100 μmol/L: induction of labor at 35–36 weeks
- Previous stillbirth: Expert consensus guidelines suggested avoiding induction of labor before 39^{+0} weeks if the previous stillbirth was unexplained and the actual pregnancy is uncomplicated (e.g. reassuring fetal testing, absence of pre-eclampsia or fetal growth restriction, absence of advanced maternal age or obesity). On the contrary, if risk factors for stillbirth are reported, the decision regarding the timing of induction should be individualized.[6] There is evidence that placental aging may play a significant role in stillbirth, and this is accentuated after 39 weeks.

4 | LOW-RISK PREGNANCY ELECTIVE INDUCTION: ARRIVE TRIAL PROMISE AND LIMITATIONS

The ARRIVE Trial evaluated the perinatal and maternal outcomes of planned induction of labor at 39^{+0} to 39^{+4} weeks of gestation versus expectant management in low-risk pregnancies in the USA.[3] The data have several limitations despite significant results presented. The study population had a high average body mass index (≥30 kg/m^2), Hispanic ethnicity, and low socioeconomic status, limiting the reproducibility of the results to countries beyond the USA. Data demonstrated reduced rates of cesarean delivery, hypertension, and respiratory distress syndrome by 20%–30% but there was no reduction in perinatal death/neonatal complications.[3] The narrow gestational age range used may also be useful for patient induction in LMICs and rural areas; however, diagnosing the exact gestational age of the patient is rarely possible, which limits applicability. Regardless, the subsequent NICE guideline[7] delineated maternal and fetal conditions in which planned induction of labor at 39 weeks should be considered, to reduce the risks at term. This article provides the current recommendations defining induction in low-risk patients at 41–42 weeks of gestation, since by that time many patients will enter in spontaneous labor and deliver. It further defines the absolute contraindications based on the Prep-for-Labor triage and pre-existing conditions that preclude induction and require progress to cesarean delivery (Box 1).

BOX 1 Elective labor induction at 39 weeks of gestation: Risk factors and contraindications.

Risk factors that increase the rate of failed labor induction

- Women with limited or no prenatal care during gestation or with poor compliance
- Ethnicity: African American, Hispanic, others according to the country demography
- BMI ≥30 kg/m^2 increases both maternal and fetal complications
- Risk of macrosomia
- Maternal age ≥ 35 years increases rate of maternal complications and genetic disorders
- In vitro fertilization

Acute contraindications for labor induction

- Nonreassuring fetal or maternal conditions
- Fetus is not in the vertex position—may consider external cephalic version
- Umbilical cord prolapse
- Placenta previa/vasa previa
- Active perineal herpes infection

Contraindications for labor induction: Previous risk conditions

- Previous longitudinal cesarean or high-risk-hysterotomy
- Previous uterine rupture
- Cervical cancer

5 | CHECKLIST FOR PLANNED OR INDUCED LABOR

1. Gestational age and verify if your facility can admit the newborn.
2. Maternal diseases and verify if your facility has the prerequisites to take care of the patient in labor and after delivery.
3. ICU/NICU available: If the mother or baby needs specific care, such as ICU admission, blood transfusion, or specific treatment, check if your facility can offer these appropriately.
4. Fetal position: Ultrasound exam or Leopold maneuvers to decide if induction is possible).
5. Discuss induction method: Inform the patient of the steps involved in the induction process, depending on the chosen method. Discuss and obtain informed consent.
6. Assess risks: Check antenatal care card and verify maternal risk for:
   a. Postpartum hemorrhage (PPH): previous PPH, anemia, twin pregnancy, macrosomia, polyhydramnios, coagulopathy, anticoagulant drugs, placenta accreta spectrum, low platelets, BMI >40 kg/m2, fetal death, fibroids with a diameter >5 cm, chorioamnionitis, etc. Consider collecting hemoglobin/hematocrit, platelets, coagulation, blood typing, and crossmatching when high risk for PPH.

b. Pre-eclampsia/eclampsia: History of pre-eclampsia/eclampsia, vital signs during antenatal care and admission, use of antihypertensive drugs, symptoms (headache, epigastric pain, chest pain, etc).
c. Sepsis: Any infection not treated during pregnancy, check vital signs.
d. Group B streptococcus infection: Check if the rectal–vaginal swab for GBS has been performed and if it is still considered viable (5 weeks).
e. HIV status and consider if the patient can be admitted for vaginal delivery (see cesarean delivery section).
f. Diabetes: Glycemia status during antenatal care and check if the facility can treat newborn hypoglycemia.
g. Placental position on the latest available ultrasound. Consider not inducing if placenta previa/vasa previa.
h. Uterine scars, and if previous cesarean was performed in the lower uterine segment, horizontally.

6 | CHECKLIST VERIFYING SITE SUITABILITY FOR INDUCTION

Once the admission checklist has been completed, the next step in patient management is whether one or more of the risk conditions identified can be treated at the current facility. The patient arriving in spontaneous labor with or without risk factors is assessed by the Prep-for-Labor rapid triage,[1] which identifies their condition. In contrast, planned induction at the selected facility has already been identified, and information on the patient is available; however, the situation can rapidly change with staffing limited or unavailable and/or tools/laboratory not fully functional at that time point. Table 1 provides a practical checklist for decision-making on whether transfer of the patient to a high-level center is needed. With any Yes answer, transfer the patient unless extraordinary circumstances present or the local care team agrees to continue the induction on site despite the risk. If the patient can remain on site (all responses are No), steps can be made to initiate labor induction.

TABLE 1 Checklist at admission for labor induction. Consider transfer to a higher-level center with any "Yes" answer.

Risk factor	Yes	No
Previous PPH		
Anemia (Hb <10 g/dL)		
Twin pregnancy		
Estimated fetal weight > 4000 g		
Polyhydramnios		
Coagulopathy		
Anticoagulant drugs		
Placenta accreta spectrum		
Platelets <100 000/μL		
BMI >40 kg/m^2		
Fetal death		
Fibroids (maximum diameter >5 cm)		
Chorioamnionitis		
History of pre-eclampsia		
History of eclampsia		
Severe hypertension (>160/110 mmHg)		
Symptoms of severe pre-eclampsia		
Signs of sepsis		
HIV positive		
Diabetes with poor glycemic control		
Placenta previa		
Previous classic cesarean or another uterine scar[a]		

[a]Excluding horizontal lower uterine segment incision.

7 | BISHOP SCORE TO GUIDE LABOR MANAGEMENT

An essential aspect for managing labor is the Bishop score, which determines cervical effacement, dilatation, and fetal position (Table 2). If these parameters are more advanced, then the induction procedure will be simpler. Compared with a closed cervix, a cervix already well dilated will have a higher success rate and the likelihood that the induction will fail is low. If the score is less than 6 in a nulliparous patient, a long induction period is expected since the cervix is not favorable. In this case the staff must be prepared, especially if the induction period is protracted or if it fails since there is an increased risk for cesarean delivery. In contrast, the higher the score, the more progress with labor is expected, requiring less intensive management. This can make a major difference in outcome. Based on recent data, the score for leading to vaginal delivery had a low predictability at 40 weeks compared with 41 weeks in primiparous women.[8] In a study using transvaginal ultrasound and Bishop score to predict successful induction of labor, multiparity and Bishop score were highly significant independent predictors of successful labor induction (OR 2.70 and OR 1.272, respectively).[9]

TABLE 2 Use the Bishop score to assess cervix and fetal station in the pelvis.[a]

Parameters	Score			
	0	1	2	3
Dilatation, cm	0	1 a 2	3 a 4	5 a 6
Effacement, %	0–30	40–50	60–70	>70
Cervical consistency	Firm	Medium	Soft	
Fetal station	−3	−2	−1 or 0	3
Position of cervix	Posterior	Med position	Anterior	

[a]Bishop score ≥6 is considered favorable; ≤6 is considered unfavorable.

8 | METHODS OF INDUCTION IN NULLIPAROUS AND MULTIPAROUS WOMEN

8.1 | Bishop score <6

Prostaglandins

1. Misoprostol ($0.7×4) low cost tablet and widely available: Use first given that it is safe and effective.
2. Monitor fetal heart rate with cardiotocography and wait at least 6 hours after prostaglandin removal before starting oxytocin.
3. Oxytocin after the administration of misoprostol, wait 4 hours before starting the oxytocic perfusion.
4. Cardiotocography for uterine activity based on uterine contractions (not continuous during induction). Monitoring is recommended when the patient is in labor.
5. Dinoprostone (expensive at $80) Controlled release is advantageous because it can easily be removed during labor, tachysystole, or other adverse events. High-resource setting.

8.2 | Mechanical methods (effective)

1. Foley and cervical ripening balloon. These mechanical methods can be used as an alternative to prostaglandins.
2. Trial of labor after cesarean (TOLAC)/intrauterine growth restriction. Mechanical induction methods are useful when prostaglandins are contraindicated in the case of previous cesarean delivery (TOLAC) or fetal growth restriction (IUGR). The Foley and balloon methods exert a slower and nonpharmacological effect on uterine contractility compared with prostaglandins.

8.3 | Bishop score >6

1. Oxytocin: In cases of favorable Bishop score, oxytocin should be administered following regimens with proven efficacy.
2. Low dose minimizes complications (lower tachysystole compared with high dose).
3. Continuous cardiotocography and uterine contractility assessment during oxytocin infusion is recommended.
4. Infusion pumps allow precise control of fluid delivery. Stop if tachysystole.
5. Regular contractions. Stop infusion when labor has started and uterine activity is adequate.
6. TOLAC slow infusion. Administer oxytocin under strict control if previous cesarean delivery (risk of uterine rupture).
7. Amniotomy only if cervix is well effaced (insufficient evidence).
8. Atosiban to reverse hypertonicity and tachysystole: As an inhibitor of oxytocin, atosiban should be available in the delivery room and staff should be trained in preparing and administering it in case of need.

9 | FAILED INDUCTION

It is considered reasonable to define unsuccessful induction when an active phase of labor cannot be reached. Active labor is defined as effective and regular contractility (2–4 contractions lasting 45 seconds/10 minutes) with the cervix effaced at least 80% and progressive dilatation from 5 cm or more. Failed induction is defined after at least 15 hours of oxytocin use with ruptured membranes (spontaneous or by amniotomy).

10 | MATERNAL REFUSAL

If a patient refuses a further cycle of cervical ripening or continuation of the induction with oxytocin, the eventual choice for cesarean delivery is not an unsuccessful induction but patient refusal to continue or complete the induction procedure.

11 | CONCLUSION

Elective labor induction is associated with a high success rate when it is well delineated, and the risk factors are minimized. This is aided if the clinical facility has been previously determined during the third trimester and the necessary clinical data are available upon patient arrival to initiate the induction. The clinical facility should have suitable staff and resources to be ready for any eventuality, including the need to perform a timely cesarean delivery. A rapid triage method is effective to guide management of a patient arriving in spontaneous labor for rapid diagnosis of whether the case is high risk or low risk and whether minimal intervention is required. For both spontaneous or planned labor, the checklist enables rapid and practical decision-making on whether the patient can be managed at the current facility or whether transfer to an advanced site is needed. By describing up-to-date and affordable practice methods, applicable also in LMICs and rural settings, inherent risks associated with any medical conditions can be minimized, thereby achieving the intended goal of optimal maternal and newborn outcomes. Overall, unless medically indicated for mother/fetus, when it is based on accurate gestational age, induction of labor can be safely postponed until 41+ weeks. By adopting such a practice, the rate of unnecessary electively induced labor is expected to decline, improving a clinical facility's ability to handle those cases most at risk.

AUTHOR CONTRIBUTIONS

Eytan R. Barnea conceived the article. Anderson Borovac-Pinheiro, Eytan R. Barnea, Annalisa Inversetti, and Nicoletta Di Simone prepared the draft. Nicoletta Di Simone supervised the manuscript.

CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed.

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Appendix A

FIGO CHILDBIRTH AND POSTPARTUM HEMORRHAGE COMMITTEE

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