Guidelines on 8 key evidence based practices during labour
Preface

Maternal mortality and morbidity and perinatal mortality are major public health problems in India. It has long been recognized that majority of perinatal deaths have intrapartum origin and result as a consequence of interventions carried out around the time of delivery.

Over the last few decades a lot of research has been carried out to assess the effectiveness of interventions in labour and delivery. It has been found that many interventions

Recent decades have seen a rapid expansion in the development and use of a range of practices designed to start, augment, accelerate, regulate or monitor the physiological process of labour, with the aim of improving outcomes for mothers and babies, and sometimes of rationalising work patterns in institutional birth. In the last few decades, questions are increasingly raised to the value or desirability of such high levels of intervention. In 1996, a technical working group of the World Health Organization (WHO) made a number of recommendations based on a similar range of practices (Care in normal birth: a practical guide, WHO 1996). Cochrane Collaboration uses scientific methods to determine which practices, drugs or procedures are best for treating diseases. It also examines practices during labor and delivery and examines which practices are best for women and newborns. Reproductive health library has compiled evidence on most of these practices. As a result of this research on evidence based care, modern labor and delivery care has undergone some dramatic changes over the last couple of decades.

In 2005, Government of India developed guidelines for doctors and ANMs/ LHVs on care during antenatal period, labour and delivery and postpartum period. These guidelines are in accordance with evidence based practices. Despite this, and despite the rapidly increased emphasis on the use of evidence-based medicine, many of these practices remain common, without due consideration of their value to women or their newborns. Many providers continue to use a range of unhelpful, untimely, inappropriate and/or unnecessary interventions, all too frequently poorly evaluated.

This guideline aims to examine the evidence for or against some of the commonest practices and to establish recommendations, based on the best available evidence. This guideline gives recommendations on those interventions which are or should be used to support the processes of normal birth. There are many variations across institutions in the quality of care, the sophistication of services available and the status of the provider for normal birth.

This guideline examines the evidence for 8 key practices in labour-delivery care:

1. Augmentation of labour
2. Routine episiotomy
3. 24 hour discharge
4. Active management of third stage of labor (AMTSL)
5. Monitoring of labour and partograph
6. Position for delivery
7. Breastfeeding < 1 hour
8. Drying & wrapping of newborn
1. Augmentation of labour

Q 1. What is augmentation of labour?
A 1. Stimulation of uterus during labour to increase the frequency, duration and strength of contractions when spontaneous contractions are considered inadequate.

Q 2. What are the indications for augmentation of labour?
A 2. Augmentation of labour using oxytocin or misoprostol is a major obstetric intervention and should be performed only for a valid indication such as crossing the action line on a WHO approved partogram and failure to progress in cervical dilatation or fetal descent.

Q 3. At what level of facility can augmentation of labour be carried out?
A 3. As a rule, oxytocin or misoprostol should only be used to augment labour in facilities where Caesarean section can be performed should the need arise.

Q 4. What should be done if there is a need to augment labour at a lower level facility where caesarean section is not available?
A 4. The need for augmentation in a lower level facility is considered an indication for referral to the higher level where surgical facilities are available.

Q 5. How often is labour augmented?
A 5. Studies from Rajasthan show that augmentation of labour is very common and is used in about 90% of institutional deliveries. There is evidence that IM oxytocin is used in deliveries in PHCs, subcentres and homes.

- In recent years, many providers have started using misoprostol to augment labor.
- Currently, augmentation of labor is being performed at all levels of health system – medical colleges, district hospitals, CHCs, PHCs, subcentres and even homes. Although medical colleges and district hospitals have more equipment, funding, staffing and specialist, they are often overcrowded and staff may not have time to monitor fetal heart sounds frequently. Conversely, at lower levels of health system, it is common.

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Q 6. Why do doctors augment labour?

A 6. Many doctors augment labour routinely, even when the progress of labour is satisfactory. In fact, one study has found that very often oxytocin drip is started as soon as the patient arrives i.e. without giving any chance for normal progression of labour. Discussions with some such doctors revealed that they believe that:

- It is better to augment labor, families also want it
- You can wait in ideal situations, but with so much caseloads, it is not practical....
- There is no harm with augmentation
- Shorter duration of labour is better

Q 7. What does research show about side effects of augmentation?

A 7. The research from low resource countries shows that with induction or augmentation, there is higher risk of fetal distress1 and perinatal mortality6. Dujardin and colleagues reported the risk of stillbirth and neonatal resuscitation associated with the use of oxytocin during normal labor from 3 countries. Their results showed an increased relative risk of 1.9 for stillbirth.

- A group of studies reviewing cases of rupture uterus found induction or augmentation associated with 2-44% cases of rupture uterus7,8 91011.

- Side effects of misoprostol include painful labor and uterine hyperstimulation (2% rate). The fetal heart rate should be monitored and IV oxytocin should not be started until at least 6 hours after the last dose of misprostol12,13.

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The labeling information of USFDA\(^\text{14}\) on use of misoprostol says “Cytotec can induce or augment uterine contractions…………..A major adverse effect of the obstetrical use of cytotec is hyperstimulation of the uterus which may progress to uterine tetany with marked impairment of uteroplacental blood flow, uterine rupture (requiring surgical repair, hysterectomy, and/or salpingo-oophorectomy), or amniotic fluid embolism. Pelvic pain, retained placenta, severe genital bleeding, shock, fetal bradycardia, and fetal and maternal death have been reported. There may be an increased risk of uterine tachysystole, uterine rupture, meconium passage, meconium staining of amniotic fluid, and cesarean delivery due to uterine hyperstimulation with the use of higher doses of Cytotec; including the manufactured 100 mcg tablet. The risk of uterine rupture increases with advancing gestational ages and with prior uterine surgery, including Cesarean delivery. Grand multiparity also appears to be a risk factor for uterine rupture………

Q 8. What are the safe methods to shorten the duration of labor?

A 8. Safe methods depend on the level of facility and availability to staff to monitor labor frequently. In a facility where sufficient staff to monitor labor is available and caesarean section can be performed, following methods are considered safe:

- Low dose oxytocin given in an IV drip
- Misoprostol

Use of intramuscular oxytocin before the birth of infant is considered dangerous because the dosage is too high and cannot be adapted to the level of uterine activity\(^\text{15}\). Hyper-stimulation of uterus may result and can lead to uterus rupture, fetal asphyxia or fetal demise\(^\text{16}\).

- Non pharmacological methods are effective in some cases. They include:
  - Ambulation during first stage of labor\(^\text{18}\) which reduces the need for oxytocin without increasing duration of labor
  - Presence of a supportive companion, which is associated with striking reduction in duration of labor\(^\text{19}\)
  - Sweeping of membranes\(^\text{20}\)

\(^\text{14}\) American college of obstetricians and gynecologists (2003). New US Food and Drug administration labeling on Cytotec (misoprostol) use and pregnancy (committee opinion No 283). Washington DC.


Q 9. What is the recommendation about augmentation of labour?
A 9. Safe methods depend on the level of facility and availability to staff to monitor labor frequently. In a facility where sufficient staff to monitor labor is available and caesarean section can be performed, following methods are considered safe:
   - Low dose oxytocin given in an IV drip
   - Misoprostol
Hence, in facilities such as PHC or subcentre, labor should not be augmented. In CHCs or district hospitals or medical colleges labor can be augmented only if the facility can conduct caesareans in the same facility and there is sufficient staff to monitor labor.
2. Routine episiotomy

Q 1. How often is episiotomy given for primigravidas in institutional deliveries?

A 1. One quantitative survey from Rajasthan\(^{21}\) shows that episiotomy for primigravidas was used in nearly 75\% of district level government hospitals, 52\% in district level private hospitals, 32\% of CHCs & PHCs and 9\% of subcentres and other village level facilities (See figure *).

![Episiotomies by institutions](image)

2. Beliefs and research evidence about routine episiotomy

a. Belief: “A clean cut is better than a ragged tear”. “It has long term benefits for preserving perineal integrity.

Reality: In a large study undertaken in Canada, women were followed up 3 months postpartum to investigate pelvic floor functioning and compare those who had an episiotomy and those who had a tear and those with intact perineum\(^{22}\). Results sowed that women regardless of parity, with the intact perineum ad the best pelvic floor functioning at 3 months postpartum.

b. Episiotomies will reduce the incidence of 3° tears”

Reality: If a woman does not have an episiotomy, she is likely to have no tear or a small tear. Women who have no episiotomies hardly ever suffer deep tears\(^{23, 24, 25, 26}\). The above study in

\(^{21}\)Iyengar S.D, Iyengar K., Suhalka V. and Agarwal K: Comaprison of Domiciliary and Institutional Delivery-care Practices in Rural Rajasthan, India; *J HEALTH POPUL NUTR* 2009 April 27(2);303-312

\(^{22}\)Klein Gauther (somp p 36)

\(^{23}\)Thorb JM and Bowes WA. Episiotomy: can its routine use be defended? Am J Obset Gynecol 1989;160 (5 Pt 1): 1027-1030


Canada also found that primigravida women who had a normal vaginal delivery with episiotomy were more at risk of having third or fourth degree tears\(^{27}\). Deep tears are usually extensions of episiotomies. It has been suggested that women who give birth in units where there is strict policy for routine episiotomy are more at risk of third and fourth degree tears, in comparison to women who give birth in units where episiotomy use is restricted\(^{28, 29}\).

b. Belief: “A clean incision easier to repair”. “Episiotomy heals better than a tear in perineum”
Reality: Episiotomies are not easier to repair than tears.

c. Belief: “By preventing overstretching of pelvic floor muscles, episiotomies prevent pelvic floor relaxation. Pelvic floor relaxation causes sexual dissatisfaction after childbirth, urinary incontinence and uterine prolapse”.

Reality: Episiotomies do not prevent relaxation of pelvic floor musculature. Therefore, they do not prevent urinary incontinence or improve sexual satisfaction.\(^{30}\)

- Nobody has ever explained how cutting a muscle and stitching it back preserves its strength
- Episiotomy is generally done until head is almost ready to be born. By then, pelvic floor muscles are already fully distended.

d. Belief: It averts brain damage by lessening the pounding of the head on the perineum\(^{31}\) (Human labour and birth, 1986, Oxorne, Foote)

Reality: Episiotomies do not prevent birth injuries or fetal brain damage.
A woman’s perineum is soft, elastic tissue, not concrete. There is no evidence that an episiotomy protects fetal neurological wellbeing\(^{32, 33, 34}\).

e. Belief: “Episiotomy should be routinely used especially for primigravidas.”

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\(^{31}\) Williams obstetrics, 10th edition, 1950
Reality: There are many complications associated with episiotomy\textsuperscript{35}. These are:
\begin{itemize}
  \item More posterior perineal trauma & more risk of 3rd and 4th degree tears
  \item More suturing needed
  \item More severe vaginal trauma,
  \item Blood loss,
  \item Perineal pain,
  \item Perineal infection,
  \item Dyspareunia,
  \item Psychological trauma
  \item Similar fecal and urinary incontinence
\end{itemize}

There is no evidence to support the practice of routine episiotomy for primigravidas.

\textbf{f. Belief: Episiotomy is a harmless procedure:}

Reality: Like any surgical procedure, episiotomy carries a number of risks: excessive blood loss, haematoma formation and infection.

\begin{itemize}
  \item Episiotomies increase blood loss.
  \item Wound infections and abscess rates vary between 0.5-3\textsuperscript{36}. Extremely rarely, gangrenous infections can occur known as ‘necrotising fascitis, clostridial myonecrosis’; these infections are fatal unless surgically treated (Ewing, Smale and Eliot 1979).
  \item There is no evidence that: routine episiotomy reduces the risk of severe perineal trauma, improves perineal healing, prevents fetal trauma or reduces the risks of stress urinary incontinence\textsuperscript{37}.
  \item Episiotomies may cause prolonged pain, especially pain during intercourse.
\end{itemize}

\textbf{g. Belief: The 2nd stage is prolonged if you don’t give episiotomy.}

Reality: Research shows that delivery in the squatting or other upright positions can reduce the amount of damage to the perineum. In upright positions, there is better positioning of the fetal head on the perineum and shorter second stage of labor. The lithotomy position increases the need for episiotomy probably because the perineum is tightly stretched.\textsuperscript{38}

3. \textbf{What are the factors associated with less perineal trauma?}

\textsuperscript{37} Sleep, Robert and Chalmers, Challenging Obstetric Orthodoxy in the UK : 1989, 109
\textsuperscript{38} Nodine PM and Roberts J. Factors associated with perineal outcome during childbirth. \textit{J Nurse Midwifery} 1987 May-June; 32 (3): 123-130.
Answer: Review of the literature to learn which factors influenced perineal outcomes has found that most important factors associated with less perineal trauma are \(^{39,40}\):

1. Restricted use of episiotomy: (Systematic Review of 6 RCTs). Restrictive use results in: less posterior trauma, less suturing, fewer healing complications but more anterior trauma.
2. Delivery in squatting or upright positions
3. Operative vaginal delivery: Use of vacuum extraction v/s forceps
4. Method of pushing
5. Epidural anaesthesia

4. What is the current recommendation about episiotomy?

“Routine” episiotomy should be abandoned\(^{41}\). Limiting the use of episiotomy is strongly recommended to help protect the integrity of the perineum\(^{42}\).

There is insufficient evidence to evaluate if there are any indications for the use of episiotomy. Till more research is generated, it should be considered only for certain conditions e.g.

- Assisted delivery (forceps or vacuum)
- Preterm delivery
- Breech delivery
- Predicted macrosomia
- Presumed imminent tears (threatened 3rd degree tear or history of 3rd degree tear with previous delivery degree tear or history of 3rd degree tear

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\(^{40}\) Preventing and Treating Perineal Damage in Childbirth: Best Evidence Approaches. Valerie J. King, MD, MPH, OHSU Department of Family Medicine ...October 2005: (presentation downloaded; July 13,2009) www.ohsu.edu/son/news/MidwiferyGrndRnds-Perineum-10-05.ppt


3. Upright position for delivery

Q 1. How often is delivery carried out in lithotomy/dorsal position in institutional deliveries?

Answer: Majority of providers conduct delivery in dorsal or lithotomy position. One study in which 87 providers from various levels of institutions in 29 districts of Rajasthan were interviewed, 93% said that they prefer to conduct delivery in lithotomy or dorsal position.\(^{43}\)

Q 2. What are the traditional beliefs and research evidence about dorsal/lithotomy position?

Belief: Supine position (dorsal/ lithotomy position) is better for mother and baby. Provider can conduct pelvic examinations and episiotomy in this position.

Reality:
1. Use of upright position compared with supine or lithotomy position is associated with:\(^{44,45}\)
   - Shorter second stage of labor
   - Fewer assisted deliveries
   - Fewer episiotomies
   - Fewer reports of severe pain
   - Less abnormal fetal heart rate patterns

2. In a review of 17 randomised control trials evaluating the effect of woman’s position in labor and delivery, it was concluded that woman who adopt an upright position are less likely to report less discomfort and intolerable pain, to report that bearing down was less difficult, to experience a shorter second stage of labor (in the absence of oxytocin augmentation) and to have more chances of spontaneous birth with fewer perineal and vaginal tears and better apgar scores at 1 and 5 minutes.\(^{46,47}\)

3. Supine position has many disadvantages for both mother and baby. Due to aortocaval compression, it can cause fetal distress, and progressive acidosis of baby. In the mother,

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the supine position is associated with slower progress of labor, more painful contractions and greater perineal trauma.484950

4. There is less pain, less vaginal trauma & improved fetal outcome with other positions
5. Women who adopt an upright position for delivery have better birth outcomes

Belief: Provider cannot give and stitch episiotomy unless the woman is in dorsal position.
Reality: Episiotomy should not be routinely used for all women. Delivery in upright positions is associated with less perineal damage.

Belief: Providers can’t guard the perineum in upright positions
Reality: A multicentric randomized trial on guarding the perineum (protecting the perineum wit the hand), as opposed to hands off the perineum has not demonstrated a need to guard the perineum51.

Belief: Women can push baby better in dorsal position.
Reality: Women can push the baby better in upright positions.

Q 3. What is the recommendation about position in 2nd stage of labour?
A 3. Lithotomy position should not be used routinely for delivery and should be abandoned.52

Q 4. What are the alternate positions?
A 4. There are many upright positions like shown in picture below. Squatting in particular has been found to be a very useful position. There is radiological evidence that in the squatting position, there is some separation of the lower end of the symphysis pubis and results in 28% increase in the area of the pelvic outlet54.

51 HOOP collaborative study trial
Alternative positions for delivery
Q 5. How is it practical to deliver in upright positions?

A 4. Persuading staff to abandon the use of lithotomy and dorsal position may be difficult, because:

- it is the common practice in most institutions and those providers who try alternate positions may be ridiculed by their colleagues and supervisors.
- Most doctors and nurses have become accustomed to conduct delivery in certain positions and find it difficult to consider other positions.
- Many women have started believing that hospital delivery means delivering in supine positions, hence they do not request other positions. They might feel afraid about asking to deliver in other positions. Therefore it is important that doctors and nurses explain to the women the benefits of using different positions in labor and for childbirth and support them in using these positions.
- Most labour rooms have been equipped with delivery tables designed for lithotomy position. Some labour rooms will have to invest in new delivery tables. However, everyone need not wait for a new labour table to arrive.
  - Many tables allow women to sit with back support, or squat at least for some time during the 2nd stage.
  - Reducing the height of labor table will allow women to feel more confident about assuming alternate positions.
  - Special beds are not essential and local ordinary beds can be used effectively.
  - To begin with, providers can allow women to adopt upright positions in early second stage of labor and only at the time of delivery, have women in semisupine positions with back support.

If doctors and nurses are willing to change their old habits, it is certainly possible to conduct delivery in non supine positions.

Just like a bedridden person finds it difficult to pass stools in a supine position, and find it easier if they can sit or squat, a woman also finds it easier to push the baby when she is in an upright position. Providers should try to allow women to sit/squat or assume other positions in which they feel comfortable.
4. Active Management of 3rd stage of labour

Q 1. To what extent does postpartum haemorrhage contribute to maternal mortality?
A 1. Postpartum hemorrhage is the excess blood loss after the birth of the baby. In India, PPH is responsible for 38% of maternal deaths\textsuperscript{55}. However, many women who survive of postpartum haemorrhage, develop longterm morbidity, especially severe postpartum anemia\textsuperscript{56} (hemoglobin less than 7 g%). It is estimated by WHO that the incidence of severe postpartum haemorrhage is 10.5 per 100 live births (46).

Q 2. Why does PPH occur?
In order to understand why the PP occurs, it is important to understand the characteristics of third stage.
- After childbirth the muscles of the uterus contract and placenta begins to separate from the uterine wall.
- The amount of blood lost depends on how quickly this occurs.
- If the uterus does not contract normally the blood vessels at the placenta site do not adequately contract and severe bleeding results.
- Uterine atony accounts for 70-90% of cases of PPH.

Risk factors of uterine atony: There are many risk factors for uterine atony such as multiple pregnancy, multiparity, prolonged labor, augmented labor, episiotomy, general anesthesia, placenta previa, abruption etc. However it is important to remember that up to 90% of women who experience PPH have no identifiable risk factors.

Q 3. How can PPH be prevented?
A 3. Most important ways to prevent PPH are:
- Active management of third stage of labor
- Restricting Episiotomy
- Infection prevention practices

Q 4. What is active management of 3rd stage of labour?
A 4. Active management of 3rd stage of labour (AMTS) involves 3 steps after delivery of baby:
1. Uterotonic drug given immediately after birth of baby
2. Placenta delivered by controlled cord traction with counter-traction on the fundus during contraction

3. Fundal massage after delivery of the placenta

Q 5. What is the common practice about management of 3rd stage of labor?
A 5. Research from Rajasthan shows that only after 43% of institutional deliveries, women were given injections. Even when used, the drug more commonly used is methylergometrine. All components of AMTSL are not followed.

Research from other parts shows that although 94% obstetricians use oxytocics after delivery, only 14.8% use it before delivery of placenta.

Q 6. What does research show about management of 3rd stage of labor?
A 6. Many trials have been conducted which have compared active and physiological management of labor. Two well known trials (Bristol trial and Hinchingbrooke Trial) have found that the risk of PPH is 1/3rd when active management is used (table *).

<table>
<thead>
<tr>
<th></th>
<th>Active Management</th>
<th>Physiologic Management</th>
<th>OR and 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristol Trial59</td>
<td>50/846 (5.9%)</td>
<td>152/849 (17.9%)</td>
<td>3.13 (2.3-4.2)</td>
</tr>
<tr>
<td>Hinchingbrooke Trial60</td>
<td>51/748 (6.8%)</td>
<td>126/764 (16.5%)</td>
<td>2.42 (1.78-3.3)</td>
</tr>
</tbody>
</table>

These and other studies have concluded that active management of the third stage of labor has following advantages:
- reduces the risk of PPH
- reduces the need of blood transfusion
- reduces the incidence of prolonged third stage
- reduces the incidence of maternal anaemia

There are no apparent adverse effects on the baby.

The use of oxytocin halves the risk of PPH of >500 ml of blood loss and decreases the risk of severe PPH (blood loss >1000 ml) compared with placebo/no uterotonics. These results are

consistent even if oxytocin is used as part of the active management approach or on its own without other components of active management.62

A WHO multicentre trial in 9 hospitals across 9 countries63 (MISO trial) found that the incidence of PPH (defined as blood loss > 1000 ml) within 1 hour postpartum was as follows:
- 2.85% in those who were actively managed using oxytocin
- 5.7% in those with expectant management by skilled birth attendant

A Cochrane review demonstrated that the blood loss within 24 hours with active management is 33% of results in blood loss.

Maternal Outcomes of AMTSL trials
McMormick, Sanghvi, Kinzie, McIntosh, IJGO200364

![Graph showing maternal outcomes](chart.png)

- Oxytocin was drug of choice for active management
- No increase in entrapment of placenta with active management

Q 7. What is the recommendation about management of 3rd stage of labor?
A 7. In all deliveries conducted by a skilled birth attendant, active management of 3rd stage of labor (AMTSL) should be practiced. Most important step of this is the use of a uterotonic drug.

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Q 8. What is the traditional belief about choice of uterotonics drug?
A 8. Many providers in Rajasthan believe Ergometrine is a better drug than Oxytocin to use after delivery. If used before placental delivery, it leads to entrapment of the placenta.
   • There is not much difference in blood loss even if oxytocic is given after delivery of placenta

Q 9. What are the oxytocic drugs used in AMTSL?
A 9. There are 4 kinds of drugs used in third stage of labor
   • Oxytocin- posterior pituitary extract
   • Ergometrine- preparation of ergot
   • Syntometrine- combination of oxytocin and ergometrine
   • Misoprostol- prostaglandin E1 analogue

Q 10. What does the research show about choice of drug?
A 10. Comparison of various drugs has been given in table below. Research shows that oxytocin is more effective than Ergometrine and misoprostol\textsuperscript{65}. It assists with separation and expulsion of placenta & with control of bleeding \textsuperscript{66}. There is no increase in incidence of entrapment of the placenta. The rate of severe PPH and the use of additional uterotonics were statistically significantly higher with 600 µg of oral misoprostol compared with conventional injectable uterotonics\textsuperscript{67}.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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<tbody>
<tr>
<td>Oxytocin</td>
<td>• Causes uterus to contract</td>
<td>• IM or IV preparations only</td>
</tr>
<tr>
<td></td>
<td>• Acts within 2.5 minutes when given IM</td>
<td>• Not heat stable</td>
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<tr>
<td></td>
<td>• Generally does not cause side effects</td>
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<tr>
<td></td>
<td>• Safe in hypertension</td>
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<tr>
<td>Ergometrine</td>
<td>• Low price</td>
<td>• Takes 6–7 minutes to become effective when given IM; oral form insufficiently effective</td>
</tr>
<tr>
<td></td>
<td>• Effect lasts 2–4 hours</td>
<td>• Causes tonic uterine contraction</td>
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<table>
<thead>
<tr>
<th>Drug</th>
<th>Effect and Administration</th>
<th>Side Effects</th>
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</thead>
</table>
| Syntometrine   | Combined effect of rapid action of oxytocin and sustained action of ergometrine | • Increased risk of hypertension, vomiting, headache  
• Contraindicated in women with hypertension or heart disease  
• Not heat stable |
| Misoprostol    | • Effective orally, buccally, vaginally and rectally  
• Rapid absorption after oral intake.  
  • Tmax = 12 + 3 minutes  
  • T1/2 life = 20-40 minutes | • Predictable side effects: shivering, pyrexia, nausea, vomiting and diarrhea  
• Rate of PPH is higher with misoprostol compared to oxytocin. |

<table>
<thead>
<tr>
<th>Management of third stage of labor</th>
<th>Blood Loss (&gt; 1000 ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiologic</td>
<td>13-18%</td>
</tr>
<tr>
<td>Active (oxytocin)</td>
<td>2.9%</td>
</tr>
<tr>
<td>Misoprostol</td>
<td>4.0%</td>
</tr>
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</table>


**Q 11. Does oxytocin need to be refrigerated?**

A 11. Stability of oxytocin is better than ergometrine/ methylergometrine, especially regarding light. If possible, it should be store refrigerated, in dark. However, short periods without refrigeration are fine (1 month at 30°C, 2 weeks at 40°C).

**Q 12. What is the relevance of results?**

A 11. Severe bleeding in the postpartum is the single most significant cause of maternal death worldwide. More than half of all maternal deaths occur within 24 hours of delivery, most commonly from excessive bleeding. It is estimated that 140,000 women die of postpartum haemorrhage each year (4).

- The primary cause of PPH is uterine atony and this can be addressed with active management of the third stage of labor.
- We cannot predict who will experience PPH on the basis of risk factors.
- A uterotonic drug should always be used after delivery of baby.
5. Monitoring of labour and partograph

Q 1. What is meant by monitoring of labour?
A 1. The wellbeing of both the mother and the fetus must be carefully monitored during labour. Monitoring of labour should not be restricted to assessment of uterine contractions and cervical dilatation.

Most common parameters that need to be assessed are:
1. Condition of the mother (every 2 hours, more often if abnormal):
   - Pulse,
   - BP,
   - temperature
2. Condition of the fetus (every ½ hour, more often if abnormal):
   - Fetal heart rate,
   - color of liquor
3. Progress of labour:
   - Uterine contractions (every ½ hour, more often if abnormal),
   - cervical dilatation (every 4 hours in active phase, more often if required),
   - descent of presenting part (  

Q 2. What is a partograph?
A 2. Several methods of recording the progress are in use:

A time based diary of events permits a detailed documentation of important maternal and fetal assessments, but a inspection of such a record is difficult to follow.

A partograph is a graphic representation of the progress of labour. The progress of labour can be seen at a glance on one sheet of paper. It is simple to use

Q 3. What is the traditional belief about monitoring of labour and partograph?
A 4.  
  - No benefit to use partograph
  - Labor can be managed as well without partograph
  - Time consuming
  - Difficult to learn
**Q 4. What does research show about partograph?**

A 4. When used effectively, the partograph:

- provides a graphic representation of labor progress and the condition of the mother and fetus
- Reminds providers to monitor the labour timely
- guides early detection of prolonged labor
- Avoids unnecessary and early interventions e.g. augmentation of labour, caesarean sections

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>No partograph</th>
<th>Partograph used</th>
<th>p</th>
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<tbody>
<tr>
<td>Total deliveries</td>
<td>18254</td>
<td>17230</td>
<td></td>
</tr>
<tr>
<td>Labor &gt; 18 hours</td>
<td>6.4%</td>
<td>3.4%</td>
<td>0.002</td>
</tr>
<tr>
<td>Labor augmented</td>
<td>20.7%</td>
<td>9.1%</td>
<td>0.023</td>
</tr>
<tr>
<td>Postpartum sepsis</td>
<td>0.70%</td>
<td>0.21%</td>
<td>0.028</td>
</tr>
<tr>
<td>Spontaneous cephalic</td>
<td>83.9%</td>
<td>86.3%</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Forceps</td>
<td>3.4%</td>
<td>2.5%</td>
<td>0.005</td>
</tr>
</tbody>
</table>

In a large multicentre trial in SE asia, the use of partogram with an agreed labour management protocol reduced the incidence of:

- prolonged labour
- the proportion of labours requiring augmentation,
- intrapartum stillbirth rate
- emergency caesarean section rate

- The partograph is a *tool*, not an end in itself.

**Q 5. What is the recommendation about position at 2nd stage of labour?**

A 5. WHO recommends using the partograph to monitor all women during labor and use it for decision making.

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6. Discharge at 24 hours

Q 1. What is common practice about timing of discharge after institutional delivery?
A 1. Research shows that the timing of discharge varies with the level of institution. In one study in Rajasthan, it was found that the average time if discharge with various levels of facilities is as follows:

- Subcentre/ village level clinic:
- PHC:
- CHC:
- District government hospital
- District level private hospital

Q 2. What is the belief about timing of discharge among providers and patients?
A 2. Many providers prefer early discharge because they don’t have to monitor and look after woman and her newborn.

- Families and women prefer early discharge because they can go back home early, their household work does not get interrupted, their older children can be looked after and they don’t have to undergo the inconvenience of sleeping and eating in a hospital.
- Jeep drivers also prefer early discharge for a woman whom they brought for delivery because they can make more money by transporting the same woman back, so they prefer to take women to those facilities where discharge is early.

Q 3. What does research show about maternal and neonatal mortality?
A 3. Research shows that first 24 hours is a very crucial time for both mothers and newborns. Nearly half of maternal deaths occur in first 24 hours. 50% of neonatal deaths occur in first 24 hours after birth.

Postpartum period is the most critical period for the mother. Data on timing of maternal deaths shows that:

- More than a half of all maternal deaths occur within 24 hours of delivery. Postpartum hemorrhage is the most important cause of these deaths
- 22% maternal deaths occur days 1-7
- 15% maternal deaths days 8-14
- 3% maternal deaths days 31-42

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Figure 1: Timing of maternal death.

Most deaths cluster around labour or within 24 hours after delivery.

Q 4. What are the main purposes to keep the woman during first 24 hours after delivery?
A 4. The main purposes to keep mother and baby for first 24 hours are (1) to detect and manage complications (2) to prevent problems.

<table>
<thead>
<tr>
<th>Detect and manage these problems</th>
<th>Maternal</th>
<th>Neonatal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemorrhage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retained placenta or membranes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eclampsia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe anemia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preventive measures</th>
<th></th>
<th>Preventive measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutritional support</td>
<td></td>
<td>Early and exclusive breastfeeding and breast care</td>
</tr>
<tr>
<td>Danger signs for mother and baby</td>
<td></td>
<td>maintainance of temperature</td>
</tr>
<tr>
<td>Vitamin A supplement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Q 5. What are the main parameters that providers should monitor in first 24 hours?**

A 5. A detailed examination for both mother and baby should be carried out. However, the main parameters to be monitored are:

<table>
<thead>
<tr>
<th>Parameters for the new mother:</th>
<th>Parameters for the newborn baby:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Pulse</td>
<td>- respiratory rate, cry</td>
</tr>
<tr>
<td>- Vaginal bleeding</td>
<td>- warmth</td>
</tr>
<tr>
<td>- Uterine firmness</td>
<td>- bleeding from cord</td>
</tr>
<tr>
<td>- Blood pressure</td>
<td>- breastfeeding</td>
</tr>
</tbody>
</table>

Up to 50% of neonatal deaths are in the first 24 hours

**Q 6. Relevance of results**

A 6. Given the high risk of maternal and neonatal mortality in first 24 hours after delivery, it is crucial that women and newborns are monitored by a skilled provider at least for 24 hours so that their complications can be detected and managed.

**Q 7. What is the recommendation about timing of discharge after institutional delivery?**

A 7. Government of India recommends that women be discharged at 48 hours after delivery.
**Initiation of breast feeding within 1 hour**

**Q 1. When is breastfeeding started in Rajasthan?**

A 1. It is well known to most doctors that breastfeeding should be started early after birth. However, in reality this is not the practice. Data from NFHS-3 survey\(^7\) shows that even after institutional delivery, only one fifth of babies were breastfed within 1 hour after birth. Only two thirds of babies delivered in institutions of Rajasthan start breastfeeding even by 1 day. Nearly 40% of babies in Rajasthan do not start breastfeeding even till 24 hours after birth.

**Q 2. Why is it so important to initiate breastfeeding within 1 hour?**

A 2. A large recent study\(^7\) has shown that there was a marked dose response of increasing risk of neonatal mortality with increasing delay in initiation of breastfeeding from 1 hour to day 7. Overall, late initiation (after day 1) was associated with a 2.4-fold increase in the risk of neonatal mortality. If breastfeeding was initiated between 1 hour to end of day 1, the risk of neonatal mortality went up by 1.2 times.

The size of this effect was similar when infants at high risk of death or when deaths during the first

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\(^7\) NFHS-3

week (days 2-7) were excluded. Infants who were given prelacteal feeds (any food or fluids before breastfeeding was established) on day 1 also had a high neonatal mortality risk.

**Q 3. What are the potential mechanisms of this beneficial effect of early breastfeeding?**

A 3. Early breastfeeding reduces neonatal mortality by following mechanisms:

- Suckling shortly after birth has a greater chance of successfully establishing and sustaining breastfeeding throughout infancy. The effect of early initiation persisted after controlling for established neonatal breastfeeding patterns.
- Early feeding with non human milk proteins may severely disrupt normal gut function
- By breast feeding, a mother begins the immunization process at birth and protects her child against a variety and bacterial pathogens before the acquisition of active immunity through vaccination.
- Commencing breast feeding as soon as possible after birth, ideally with in 1 hour is also effective in preventing heat loss, as lower blood glucose levels can result in hypothermia.
- Initiating breast-feeding early, by putting the baby to the breast as soon as possible after the delivery has been shown to have a positive effect on the length of time (in weeks) that a woman will continue to breast-feed. The earlier breast-feeding is commenced, the longer the duration in weeks of breast-feeding.
- Healthy baby does not need large volume of fluids any earlier than it is physiologically available from the mother
- Early suckling provides the baby with colostrums that offers protection from infection, gives important nutrients, and has beneficial effect on maternal uterine contraction.
- Colostrum helps to expel meconium and to prevent jaundice. It also contains a very high concentration of nutrients and helps prevent low blood sugar in the first hour of life.
- Immediate skin-to-skin contact helps the baby stay at breast temperature.

Therefore, it is recommended that all the babies should be put to the breast to feed as soon as possible after the delivery.

**Q 4. What proportion of neonatal deaths can be prevented by early initiation of breastfeeding?**

A 4. It is estimated that 1st ONE hour initiation cuts 22% of all neonatal deaths( 0-28 days). If it is assumed that breastfeeding has no impact on deaths during the first day of life.

Currently, only 15.8% of newborns start breastfeeding within 1 hour. If all babies can start breastfeeding within 1 hour, then 2.5 LAC newborn deaths can be prevented. It means that with just ONE action, just ONE hour support and just ONE message, we can save 2.5 LAC newborns babies every year in India and 18000-20000 babies in Rajasthan.

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74 Righart L, Alade MO (1990); Duration of breast-feeding after early initiation and frequent feeding. Lancet 1978;2: 1141-1143
75 Family and Reproductive Health Division of Child Health and Development, *evidence for the ten steps to successful breastfeeding*(Revised); World Health Organization; WHO/CHD/98.9
5. What are the added advantages of early breast feeding?

A5 Early breastfeeding protects against infectious diseases, especially gastrointestinal infections, which largely contribute to child morbidity and mortality in developing countries.\textsuperscript{76}

- Most newborns have a strong suck reflex and are awake the first hour after birth.
- The newborn sucking helps the mother make breast milk
- Early breast feeding prevents maternal breast related complications such as mastitis, breast abscess etc.
- Early breastfeeding helps the uterus return to its normal size.
- It reduces post delivery bleeding and anemia.\textsuperscript{77}

Q6. What is recommended about breast-feeding during the First hour after birth?

A6 The World Health Organization (WHO), United Nations Children’s Fund (UNICEF) and government of India recommend that breast feeding be initiated within 1 hour.\textsuperscript{78, 79}


\textsuperscript{77} Successful Exclusive Breastfeeding For the First Six Months International Baby Food Action Network (IBFAN) Asia Pacific Breastfeeding Promotion Network of India Draft - 31 March 2005

\textsuperscript{78} WHO. Evidence for the ten steps to successful breastfeeding. WHO/CHD/98.9.World Health organization: Geneva

Immediate thermal protection of the newborn

Q 1. What is thermal protection of the newborn?

A 1. Thermal protection includes a series of measures taken at birth and during the first few days of life to ensure that the baby maintains a normal body temperature (36.5-37.5°C), does not become too cold (<36.5°C = hypothermia) and does not become too hot (>37.5°C = hyperthermia).

Q 2. How does the newborn lose body heat?

![Diagram of heat loss mechanisms: Convection, Evaporation, Radiation, Conduction]

Four ways a newborn may lose heat to the environment.

**Most cooling of the newborn occurs during the first minutes after birth.** Hence it is very important that all babies are quickly dried and then wrapped in another piece of cloth.

Q 3. Why do newborns lose heat quickly?

A3. Newborns have immature temperature-regulating systems. Therefore, they often have difficulty maintaining normal body temperature. They loose body heat quickly if they are wet, uncovered, exposed to drafts, or if they are placed on or near a cool surface. Pre-term and low birth weight infants have lesser subcutaneous fats for insulation and thus loose heat more easily. Newborns can maintain their body temperature in a cool environment only by greatly increased energy expenditure. Even vigorous newborns exposed to cold delivery rooms may experience marked drops in body temperature and develop metabolic acidosis during first two hours of life.

Q 4. How can heat loss be prevented at the time of birth?

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81 Murray Enkin, Marc J.N.C Keirse, James Neilson, Caroline Crowther Leila Duley, Ellen Hondnett an Justus Hofmeyr; A guide to effective Care in pregnancy and childbirth: OXFROD Medical Publication.
A 4. Heat loss can be prevented by maintaining a warm chain. Warm chain is a set of ten interlinked procedures carried out at birth and during the following hours and days which will minimize the likelihood of hypothermia in all newborns. The key components of warm chain are:

- **Keeping the delivery room warm**: It is recommended that the most effective way to prevent heat loss at delivery is to keep the temperature of the birth room warm at 25 °C or above. The delivery room should be a clean warm drought free room. Adults should never determine the temperature of the delivery room according to their comfort.

- **Immediate drying** of the newborn baby: It is also important to ensure pre-warmed towels or soft absorbent material is available to first dry the newborn immediately on birth, giving particular attention to drying the head. (WHO, 1997)

- **Wrapping the baby with dry cloth**: After drying, the baby should be covered and a warm cap should be put on the baby’s head to prevent heat loss from the head.

- **Baby and mother together**: They should be held by their mothers, preferably in skin-to-skin contact, and covered with a dry warm blanket. The baby should be given to the mother to hold close to her own body. Studies have also found that putting the newborn to the mother’s breast and wrapping the mother and the baby so that the skin of the mother is in direct contact with the skin of the newborn, is a very effective method for preventing heat loss at birth. Where it is not possible to put the baby to the breast, then the mother can hold the baby close to her body, or the baby could be placed on the woman’s abdomen and covered.

- **Bathing and weighing should be postponed**: Babies should be bathed when temperature is stable (after 24 hours).

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Q 5. What is recommended about drying and wrapping?

A 5. Studies from Rajasthan have shown that in some facilities, the sheets to dry and cover the baby are not available before delivery. After the baby is born, the relatives outside labor room are asked to provide a sheet, which is used to cover the baby.

Babies should be dried immediately after the birth. **In the first 1-2 minutes, the newborn may lose enough heat for his body temperature to fall 2°C, which is very dangerous.** Using a clean, warm cloth, the baby’s back and then the whole body should be quickly dried.

After drying, another dry towel or cloth should be used to cover the baby, to prevent the cool/cold air from coming in contact with the newborn’s skin. Baby’s head should be covered with a cap. Then the baby should be warmly dressed with several layers of loose clothing and bedding according to the environment.

Q 6. What steps should be taken to keep a baby warm during resuscitation?

A 6. It is important to keep the babies warm, because Newborns with asphyxia cannot produce heat efficiently and thus get cold easily. During resuscitation, following steps should be taken to keep the babies warm:

- Wrap in a warm cloth
- Lay on a warm surface in a warm room
- Put under an addition source of heat.
- Uncover as little as possible during procedure.

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Q 8. What is early skin to skin contact?
A 8. Early skin-to-skin contact (SSC) means that as soon as the newborn is stable and breathing, he/she may be placed on the mother’s chest, prone, in skin-to-skin contact, with a warm, dry cloth covering the infant’s back and the mother’s chest. Routine delivery room procedures (such as cleaning and weighing) should be delayed for at least the first hour.85

Q 7. When should the babies be given to the mother?
A 7. It is recommended that the babies are given to the mother as soon as possible and they are placed in skin to skin contact with their mothers immediately after birth for the first few hours after a vaginal or caesarean birth.

Q 8. What is early skin to skin contact?
A 8. Early skin-to-skin contact (SSC) begins ideally at birth and involves placing the naked baby, covered across the back with a warm blanket, prone on the mother's bare chest. According to mammalian neuroscience, the intimate contact inherent in this place (habitat) evokes neurobehaviors ensuring fulfillment of basic biological needs. This time may represent a psychophysiological 'sensitive period' for programming future behavior.

Although skin-to-skin contact starting immediately after a vaginal delivery is optimal, there may be up to 5 minutes of separation before continuous skin-to-skin contact starts. As a guide to measuring 5 minutes, the baby should be on the mother’s chest in skin-to-skin contact before the second Apgar.

Continues undisturbed: Skin-to-skin contact should continue “for at least an hour”. If the mother’s condition necessitates a toilet break before the baby has breastfed, then the interruption should be as brief as possible, before resuming skin-to-skin contact.

Q 9. What are the benefits of early skin to skin contact?
A 9. A Cochrane review86 (included 30 studies involving 1925 mothers and their babies) done to see the impact of early skin-to-skin contact between the mother and her newborn baby showed that babies interacted more with their mothers, stayed warmer, and cried less. Babies were more

likely to be breastfed, and to breastfeed for longer, if they had early skin-to-skin contact. Furthermore, on a positive note, no important negative effects were identified. Skin-to-skin contact first few hours after childbirth\textsuperscript{87} is crucial because it:

- Keeps the baby warm
- Promotes bonding
- Enables early breastfeeding:
  - Breathing

**Q 10. Is it feasible to promote skin to skin contact in our settings?**

A 10. On one hand, factors such as room temperature, lack of privacy/space, overcrowding, etc., may interfere with its potential benefits and, on the other hand, the situation is often worsened by inaccurate medical advice from health workers who lack proper skills and training in early breastfeeding support starting with early skin-to-skin contact.

Practices such as how infants are handled after birth are part of institutional functioning, and may not be easy to change. For example, the current practice at Maternidad Martin in Rosario (Argentina), with 4000 deliveries per year, is to place the newborn prone on the mother’s bare abdomen for one minute while it is smoothly dried with a blanket\textsuperscript{88}. This new practice has been recently introduced following the implementation of delayed cord clamping intervention. In this scenario, SSC starts immediately after birth but it lasts only 1-3 minutes.

**Q 11. What is recommended about washing and bathing the newborn?**

A 11. It is recommended to postpone washing and bathing the newborn at least till 24 hours. If the baby is particularly soiled with blood or meconium washing 2-6 hours after birth is permissible so long as the baby’s body temperature is normal.

**Q 12. What are the consequences if the baby is not immediately dried and kept warm?**

A 12. If the above measures to keep the baby warm are not observed, then the baby can develop hypothermia. Hypothermia is defined as body temperature drops below 36.5°C. Newborn infant is most sensitive to hypothermia during the stabilization period in the first 6-12 hours after birth, although hypothermia may occur at any time if the environmental temperature is low and thermal protection is inadequate\textsuperscript{89}. It is one of the major causes of neonatal mortality and morbidity as the physiological adaptation of outside the uterus sometimes makes it difficult for the newborn to maintain their own temperature, even in hot climates. In a study undertaken


\textsuperscript{89} World Health organization (1996); Maternal And Newborn Health safe Motherhood; Essential Newborn care; Report of a Technical Working Group Trieste, 25-29 April 1994: WHO/FRH/MSM/96.13, 9
in Kuala Lumpur it was noted that the body temperature of neonates fell significantly within the first 15 minutes following delivery\textsuperscript{90}. Similar results have been noted in other countries\textsuperscript{91}.

Finally, Thermal protection should be a high priority when planning the care of newborn infants. Thermal protection does not require expensive, sophisticated equipment but rather, a well organized effort to teach to all health care providers and parents of newborn babies, the simple principles of thermal protection.

References

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3) Opportunities for Africa’s Newborns: practical data, policy and programmatic support for newborn care in Africa. Joy Lawn and Kate Kerber, eds. PMNCH, Cape Town, 2006
4) Save the Children: care of the newborn reference manual

\textsuperscript{90} Raman S, Shahla A: Temperature drop in normal term newborn at the University Hospital, Kuala Lumpur: \textit{Aust N Z J Obstet Gynaecol} 1992 May; 32(2): 117-119