



# **Prevention of Postpartum Hemorrhage: Implementing Active Management of the Third Stage of Labor (AMTSL)**

A Reference Manual for  
Health Care Providers



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A Reference Manual for Health Care Providers

2007

## **Prevention of Postpartum Hemorrhage Initiative (POPPHI)**

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## About POPPHI

The Prevention of Postpartum Hemorrhage Initiative (POPPHI) is a USAID-funded, five-year project focusing on the reduction of postpartum hemorrhage, the single most important cause of maternal deaths worldwide. The POPPHI project is led by PATH and includes four partners: RTI International, EngenderHealth, the International Federation of Gynaecology and Obstetrics (FIGO), and the International Confederation of Midwives (ICM).

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## Acronyms

AMTSL	active management of the third stage of labor
CCT	controlled cord traction
DIC	disseminated intravascular coagulopathy
FIGO	International Federation of Gynaecology and Obstetrics
HLD	high-level disinfected
ICM	International Confederation of Midwives
IM	intramuscular
IU	international units
MTCT	mother to child transmission of HIV/AIDS
PMTCT	prevention of mother to child transmission of HIV/AIDS
POPPHI	Prevention of Postpartum Hemorrhage Initiative
PPH	postpartum hemorrhage
PPPH	prevention of postpartum hemorrhage
TTI	time-temperature indicator
USAID	United States Agency for International Development
VVM	vaccine vial monitor
WHO	World Health Organization





## Introduction

Efforts such as the Safe Motherhood Initiative and the World Health Organization (WHO) Making Pregnancy Safer Division and strategies to meet the United Nations Millennium Development Goals are supporting worldwide activities to reduce maternal and newborn mortality. Despite these efforts, hundreds of thousands of women and babies die or become disabled due to complications of pregnancy and childbirth every year; half of these maternal deaths occur within 24 hours of childbirth.<sup>4</sup>

Postpartum hemorrhage (PPH) is the leading direct cause of maternal death in developing countries and results from problems during and immediately after the third stage of labor.<sup>5</sup> PPH is an **unpredictable** and **rapid** cause of maternal death worldwide, with two-thirds of women with PPH having no identifiable risk factors. Seventy to ninety percent of immediate PPH is attributed to uterine atony (failure of the uterus to properly contract after birth).<sup>6, 7</sup>

Fortunately, research shows that using simple, low-cost interventions can help avoid most of these tragic outcomes. Current evidence indicates active management of the third stage of labor (administration of uterotonic drugs, controlled cord traction, and fundal massage after delivery of the placenta) can reduce the incidence of postpartum hemorrhage by up to 60 percent in situations where:

- National guidelines support the use of active management of the third stage of labor (AMTSL).
- Health workers receive training in using AMTSL and administering uterotonic drugs.
- Injection safety is ensured.
- Necessary resources (uterotonic drugs and cold chain for storage of uterotonic drugs; equipment, supplies, and consumables for infection prevention and injection safety) are available.<sup>8</sup>

Ongoing research in various settings continues to identify the best approaches for preventing and managing postpartum bleeding and its complications. By developing national guidelines, training skilled birth attendants, improving work environments of skilled providers, and supporting the development of improved access to care, more women will have access to this life-saving intervention.

### About the learning materials

POPPHI developed a learning package on the prevention of postpartum hemorrhage consisting of a reference manual, participant's notebook, and facilitator's guide. This learning package was developed for use by nurses, midwives, and doctors providing childbirth and immediate postpartum care.

Information about implementing AMTSL is featured in this reference manual as well as the corresponding participant's notebook and facilitator's guide. These documents comprise a set and should be used together. These resources are distinguished within the series by a corresponding icon located at the top of the right hand page:

*Reference manual*



*Facilitator's guide*



*Participant's notebook*



This course is designed to be utilized for in-service training, with the overall objective of providing updates about AMTSL use to equip nurses, midwives, and clinical and health workers to carry out the following:

- Provide safe, respectful, and friendly care to women, newborns, and their families. Women and families will then be more likely to utilize the health care system with confidence because they know they will receive competent, compassionate care.
- Follow an evidence-based protocol for safe care during active management of the third stage of labor and during the immediate postpartum period, including clear guidelines on when to refer mothers with complications, ensuring timely action is taken.
- Provide greater protection from infection for their clients and themselves.
- Store uterotonics correctly to maintain their potency.

This course offers participants knowledge and skills to provide the crucial care needed to prevent PPH, improve clinical services, and train other providers.



## Core Topic 1: Third stage of labor and evidence for using AMTSL

### Key definitions

**Active management of the third stage of labor (AMTSL):** A combination of actions performed during the third stage of labor to prevent PPH. AMTSL speeds delivery of the placenta by increasing uterine contractions and prevents PPH by minimizing uterine atony. The components of AMTSL are:

- Administration of a uterotonic drug within one minute after the baby is born (oxytocin is the uterotonic of choice).
- Controlled cord traction (CCT).
- Uterine massage immediately after delivery of the placenta.

**Controlled cord traction (CCT):** Traction on the cord during a contraction combined with countertraction upward on the uterus with the provider's hand placed immediately above the symphysis pubis. CCT facilitates expulsion of the placenta once it has separated from the uterine wall.

**Physiologic (expectant) management of the third stage of labor (PMTSL):**

Management of the third stage of labor that involves waiting for signs of placental separation and allowing for spontaneous delivery of the placenta aided by gravity and/or nipple stimulation. The components of PMTSL are:

- Waiting for signs of separation of the placenta (cord lengthening, small blood loss, uterus firm and globular on palpation at the umbilicus).
- Encouraging maternal effort to bear down with contractions and, if necessary, to encourage an upright position.
- Uterine massage after the delivery of the placenta as appropriate.

**Retraction:** The act of the uterine muscle pulling back. Retraction is the ability of the uterine muscle to keep its shortened length after each contraction. Together with contractions, retraction helps the uterus become smaller after the delivery of the baby.

### Stages of labor

- **First stage of labor** - The first stage of labor begins with the onset of contractions and ends when the cervix is fully dilated (10 cm). This stage is divided into two phases, known as latent and active phases of labor. During latent phase, the uterine cervix gradually effaces (thins out) and dilates (opens). This is followed by active labor, when the uterine cervix begins to dilate more rapidly and contractions are longer, stronger, and closer together.
- **Second stage of labor** - The second stage of labor begins when the uterine cervix is fully dilated and ends with the birth of the baby. This is sometimes referred to as the pushing stage.
- **Third stage of labor** - The third stage of labor begins with birth of the newborn and ends with the delivery of the placenta and its attached membranes.

- **Fourth stage of labor (also known as the “immediate postpartum” period ) -**  
The fourth stage of labor begins with delivery of the placenta and goes from one to six hours after delivery of the placenta, or until the uterus remains firm on its own. In this stabilization phase, the uterus makes its initial readjustment to the nonpregnant state. The primary goal is to prevent hemorrhage from uterine atony and the cervical or vaginal lacerations.

**Uterine atony:** Loss of tone in the uterine muscle. Normally, contraction of the uterine muscles compresses the uterine blood vessels and reduces blood flow, increasing the chance of coagulation and helping to prevent bleeding. The lack of uterine muscle contraction or tone can cause an acute hemorrhage. Clinically, 75 to 80 percent of PPH cases are due to uterine atony.<sup>9</sup>

**Uterine massage:** An action used after the delivery of the placenta in which the provider places one hand on top of the uterus to rub or knead the uterus until it is firm. Sometimes blood and clots are expelled during uterine massage.

**Uterotonics:** Substances that stimulate uterine contractions or increase uterine tone.



## Significance of the third stage of labor

The third stage of labor is usually uneventful, with delivery of the placenta taking place without complications. During this stage of labor, however, the woman may encounter complications that could lead to maternal morbidity and mortality. The most common complication is PPH—vaginal bleeding in excess of 500 mL that occurs ***less than*** 24 hours after childbirth.

PPH may cause or worsen anemia or deplete iron stores in women, causing weakness and fatigue in severe cases. If severe, PPH may result in shock or maternal death. A blood transfusion may help improve anemia in women and shorten hospital stays, but transfusion carries risks of reaction and infection and is not universally available. Because many health facilities lack an adequate supply of safe blood, PPH can often strain the resources of the best blood banks.

PPH may increase the likelihood of other issues:

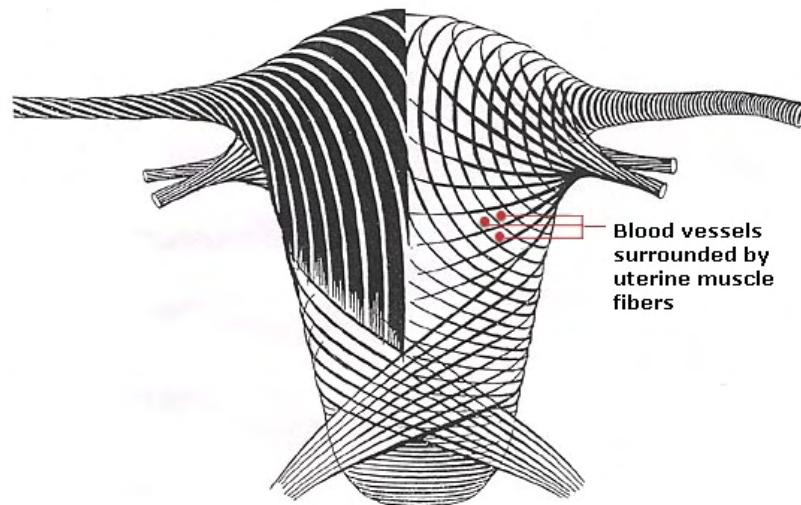
- The need for emergency anesthetic services.
- Manual exploration or use of instruments inside the uterus (increasing the risk of sepsis).
- Prolonged hospitalization. New studies show that extended hospitalizations can cause significant and long-term financial hardships for the woman and her family.
- Delayed breastfeeding.

Additionally, women who have severe PPH and survive (“near misses”) are significantly more likely to die in the year following the PPH.<sup>10</sup>

## Anatomy and physiology of the third stage of labor

After the baby is born, the muscles of the uterus contract, helping the placenta to separate from the uterine wall. The amount of blood lost depends on how quickly this happens, since the uterus can contract more effectively after the placenta is expelled. If the uterus does not contract normally (such as in uterine atony), the blood vessels at the placental site stay open and hemorrhage results. Because the estimated blood flow to the uterus is 500 to 800 mL/minute at term, most of which passes through the placenta, severe postpartum hemorrhage can happen within just a few minutes.

The muscle fibers of the uterus are in a crosshatch (criss-cross) pattern surrounding maternal blood vessels (Figure 1). After the birth of the baby, these muscle fibers begin to contract and retract. Oxytocin, a hormone secreted by the posterior pituitary gland, stimulates uterine contractions. Oxytocin levels increase greatly in late pregnancy and even more during labor and lactation.

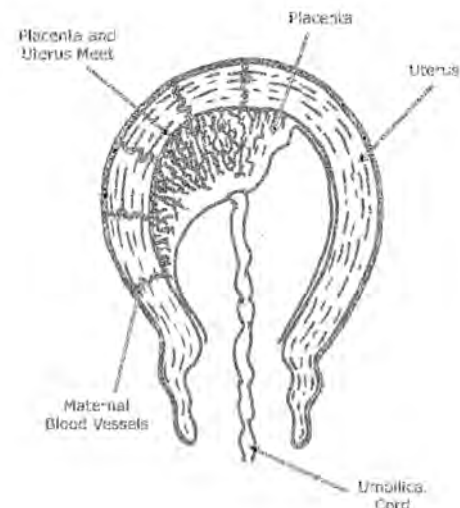


**Figure 1. Muscle fibers of the uterus<sup>11</sup>**

During the third stage, uterine contractions continue causing the placenta to separate from the uterine wall. Placental separation happens by contraction and retraction of the uterine muscles, reducing the size of the placental area. This reduction in size of the uterus is caused by retraction of the uterine muscle, a unique characteristic that helps maintain its shortened length after each contraction.

As the placental area becomes smaller, the placenta begins to separate from the uterine wall because, unlike the uterus, it is not elastic and cannot contract and retract (Figure 2). At the area where the placenta separates from the uterus a clot forms. This clot—known as a retroplacental clot—collects between the uterine wall and the placenta and further promotes separation.

Additional uterine contractions complete the separation of the placenta from the uterine wall. After this occurs, the placenta descends into the lower uterine segment and into the vagina where it is expelled.



**Figure 2. Placenta attachment to uterus showing maternal blood vessels**



After separation:

- The placental site is rapidly covered by a fibrin net and clots form.
- The muscle fibers of the uterus compress the blood vessels where the placenta was attached, helping to control bleeding at the placental site.
- The uterus continues to contract, forcing the placenta and membranes to fall into the lower uterine segment (Figure 3). With the delivery of the placenta, the uterus is able to contract completely (Figure 4).



**Figure 3. Placenta falling into lower uterine segment**



**Figure 4. Empty uterus**

## Length of third stage of labor

Considerable research has examined how active management affects the third stage of labor. Investigations found that 50 percent of placental deliveries occur within 5 minutes, and 90 percent are delivered within 15 minutes.<sup>12</sup> Other large studies confirm the rapid delivery of the placenta; a WHO study found a mean delivery time of 8.3 minutes.<sup>13</sup> A third stage of labor lasting longer than 18 minutes is associated with a significant risk of PPH.<sup>14</sup> When the third stage of labor lasts longer than 30 minutes, PPH occurs six times more often than it does among women whose third stage lasted less than 30 minutes.<sup>14</sup>

## Approaches for managing the third stage of labor

There are two main approaches for managing the third stage of labor: the physiologic (or expectant) approach and the active approach. Table 1 compares how the third stage is managed using each of these approaches.

**Table 1. Comparison of physiologic and active management of the third stage of labor (AMTSL)**

	<b>Physiologic (expectant) management</b>	<b>Active management*</b>
<b>Uterotonic</b>	<b>Uterotonic is not given</b> before the placenta delivered.	<b>Uterotonic is given</b> within one minute of the baby's birth (after ruling out the presence of a second baby).
<b>Signs of placental separation</b>	<b>Wait for signs of separation:</b> <ul style="list-style-type: none"> <li>▪ Gush of blood.</li> <li>▪ Lengthening of cord.</li> <li>▪ Uterus becomes rounder and smaller as the placenta descends.</li> </ul>	<b>Do not wait for signs of placental separation. Instead:</b> <ul style="list-style-type: none"> <li>▪ Palpate the uterus for a contraction.</li> <li>▪ Wait for the uterus to contract.</li> <li>▪ Apply CCT with countertraction.</li> </ul>
<b>Delivery of the placenta</b>	<b>Placenta delivered by gravity</b> assisted by maternal effort.	<b>Placenta delivered by</b> CCT while supporting and stabilizing the uterus by applying countertraction.
<b>Uterine massage</b>	<b>Massage the uterus</b> after the placenta is delivered.	<b>Massage the uterus <u>after</u></b> the placenta is delivered.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>▪ Does not interfere with normal labor process.</li> <li>▪ Does not require special drugs/supplies.</li> <li>▪ May be appropriate when immediate care is needed for the baby (such as resuscitation) and no trained assistant is available.</li> <li>▪ May not require a birth attendant with injection skills.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Decreases length of third stage.</li> <li>▪ Decrease likelihood of prolonged third stage.</li> <li>▪ Decreases average blood loss.</li> <li>▪ Decreases the number of PPH cases.</li> <li>▪ Decreases need for blood transfusion.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>▪ Length of third stage is longer compared to AMTSL.</li> <li>▪ Blood loss is greater compared to AMTSL.</li> <li>▪ Increased risk of PPH.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Requires uterotonic and items needed for injection/injection safety.</li> <li>▪ Requires a birth attendant with experience and skills giving injections and using CCT.</li> </ul>

\*This definition differs from the original research protocol in the Bristol and Hinchingsbrooke trials because the original protocols included immediate cord clamping and did not include massage of the uterus.<sup>8,15</sup> In the Hinchingsbrooke trial, midwives used either CCT or maternal effort to deliver the placenta.

CCT controlled cord traction  
PPH postpartum hemorrhage





## Scientific evidence supporting use of AMTSL

Giving a uterotonic drug to prevent PPH promotes strong uterine contractions and leads to faster retraction and placental separation and delivery. Several large, randomized controlled trials have investigated whether physiologic management or active management is more effective in preventing PPH. These trials have consistently shown that active management provides several benefits for the mother compared to physiologic management. Table 2 provides detailed results from two important studies comparing active and physiologic management of the third stage of labor.

These results show that only 12 women need to receive AMTSL to prevent one case of PPH. This means that AMTSL is a very effective and cost-efficient public health intervention. These studies also confirm that **AMTSL decreases**:

- Incidence of PPH.
- Length of third stage of labor.
- Percentage of third stages of labor lasting longer than 30 minutes.
- Need for blood transfusion.
- Need for uterotonic drugs to manage PPH.

**Table 2. Bristol<sup>8</sup> and Hinchingsbrooke<sup>15</sup> study results comparing active and physiologic management of the third stage of labor**

Factors	Study	Management	
		Active	Physiologic
<b>PPH</b>	Bristol	5.9%	17.9 %
	Hinchingsbrooke	6.8 %	16.5%
<b>Average length of the third stage of labor</b>	Bristol	5 minutes	15 minutes
	Hinchingsbrooke	8 minutes	15 minutes
<b>Third stage of labor longer than 30 minutes</b>	Bristol	2.9%	26%
	Hinchingsbrooke	3.3%	16.4%
<b>Blood transfusion needed</b>	Bristol	2.1%	5.6%
	Hinchingsbrooke	0.5%	2.6%
<b>Additional uterotonic drugs needed to manage PPH</b>	Bristol	6.4%	29.7%
	Hinchingsbrooke	3.2%	21.1%





## Core Topic 2: PPH causes and prevention

### Key definitions

**Immediate PPH:** Vaginal bleeding in excess of 500 mL, occurring **less than** 24 hours after childbirth.

**Delayed PPH:** Excessive vaginal bleeding (vaginal bleeding increases rather than decreases after delivery), occurring **more than** 24 hours after childbirth.

**Uterine rupture:** A tear in the wall of the uterus. In a complete rupture, the tear goes through all layers of the uterine wall and the consequences can be dire for mother and baby. In an incomplete rupture the peritoneum is still intact. A uterine rupture is a life-threatening event for mother and baby. A uterine rupture typically occurs during early labor, but may already develop during late pregnancy.

**Uterine inversion:** A turning of the uterus inside out, whereby the uterine fundus is forced through the cervix and protrudes into or outside of the vagina.

**Disseminated intravascular coagulopathy (DIC):** A pathological process in the body where the blood starts to coagulate throughout the whole body. This depletes the body of its platelets and coagulation factors, and there is an increased risk of hemorrhage.

### Introduction

The loss of some blood during childbirth and postpartum is normal and cannot be avoided. However, losing any amount of blood beyond normal limits can cause serious problems even for the woman with normal hemoglobin levels.

**Note:** The importance of a given volume of blood loss varies with the woman's health status.

A woman with a normal haemoglobin level may tolerate blood loss that would be fatal for an anaemic woman.

—WHO 2007<sup>16</sup>

For many anemic women, even the normal amount of blood loss might be catastrophic. Fortunately, providers can take action to prevent unnecessary blood loss.

PPH is defined as vaginal bleeding in excess of 500 mL; severe PPH is blood loss exceeding 1,000 mL. Because it is difficult to measure blood loss accurately, research shows that blood loss is frequently underestimated. For instance, nearly half of women who deliver vaginally often lose at least 500 mL of blood, and those who give birth by cesarean delivery normally lose 1,000 mL or more. For many women, this amount of blood loss does not lead to problems; however, outcomes are different for each woman.

For severely anemic women, blood loss of as little as 200 to 250 mL can be fatal. This is especially important for women living in developing countries, where significant numbers of women have severe anemia. For these reasons, a more accurate definition of PPH might be *any amount of bleeding that causes a change for the worse in the woman's condition* (e.g., low systolic blood pressure, rapid pulse, signs of shock).

Predicting who will have PPH based on risk factors is difficult because **two-thirds of women who have PPH have no risk factors.**<sup>17</sup> Therefore, all women are considered at risk, and hemorrhage prevention must be incorporated into care provided at every birth.

**Note:** Every woman is at risk for PPH.

## Causes of PPH

There are several possible reasons for severe bleeding during and after the third stage of labor. The most important causes of PPH include:

- **Uterine atony**, or inadequate uterine contraction, is the most common cause of severe PPH in the first 24 hours after childbirth. Contractions of the uterine muscle fibers help to compress maternal blood vessels. Bleeding may continue from the placental site if contractions are not adequate.

Many factors can contribute to the loss of uterine muscle tone, including:

- Retained placenta or placental fragments.
- Overdistention of the uterus due to multiple gestation, excess amniotic fluid, large baby, or multiparity.
- Prolonged labor.
- Induction or augmentation of labor.
- Precipitous labor (labor lasting less than 3 hours).
- Full bladder.
- **Cervical, vaginal, or perineal lacerations and episiotomy.** Undetected or untreated lacerations are the second most common cause of PPH. Episiotomy causes loss of blood and can lead to lacerations. Lacerations can also be caused by deliveries that are poorly controlled, difficult, or managed with instruments (e.g., large baby, twins, or non-cephalic presentation). When the woman has genital lacerations, it is still important to check for and treat uterine atony because these conditions may occur together.
- **Retained placenta or placental fragments.** If the uterus is not empty, it cannot contract adequately. This can occur if even a small part of the placenta or membranes is retained. A partially separated placenta may also cause bleeding.
- **Uterine rupture and uterine inversion.** Although rare, these conditions also cause PPH.
- **DIC.** Although uncommon, this clotting disorder—associated with pre-eclampsia, eclampsia, prolonged labor, abruption placentae, and infections—is a significant and serious cause of PPH.

Preventing PPH and careful monitoring during the first hours after birth are critical for every woman at every birth. Despite the best strategies to prevent blood loss, approximately three percent of women will still lose blood in excess of 1,000 mL. Preparing for early treatment of PPH (e.g., additional uterotonic drugs) is critical to women's health.



## PPH prevention and early detection

It is impossible to predict which women are more likely to have a PPH. Many factors may contribute to uterine atony or lacerations. Addressing these factors may help **prevent** PPH and reduce the amount of bleeding a woman may have. Taking a preventive approach can save women's lives.

Despite the best efforts of health providers, women may still suffer from PPH. If PPH does occur, positive outcomes depend on how healthy the woman is when she has PPH (particularly her hemoglobin level), how soon a diagnosis is made, and how quickly effective treatment is provided after PPH begins.

To prevent PPH and reduce the risk of death, routine preventive actions should be offered to all women from pregnancy through the immediate postpartum period.

### During antenatal care

Health care providers should take the following steps during antenatal care:

- Develop a birth preparedness plan. Women should plan to give birth with a skilled attendant who can **provide interventions to prevent PPH** (including AMTSL), and can **identify and manage PPH, and refer the woman for additional treatment if needed.**
- Develop a complication readiness plan that includes recognition of danger signs and what to do if they occur, where to get help and how to get there, and how to save money for transport and emergency care. For more information, see Additional Topic 2: Birth preparedness and complication readiness.
- Routinely screen to prevent and treat anemia during pre-conceptual, antenatal, and postpartum visits. Counsel women on nutrition, focusing on available iron and folic acid-rich foods, and provide iron/folate supplementation during pregnancy.
- Help prevent anemia by addressing major causes, such as malaria and hookworm:
  - For malaria, encourage use of insecticide-treated bednets, provide intermittent preventive treatment during pregnancy to prevent asymptomatic infections among pregnant women living in areas of moderate or high transmission of *Plasmodium falciparum*, and ensure effective case management for malaria illness and anemia.
  - For hookworm, provide treatment at least once after the first trimester.
- In cases where the woman cannot give birth with a skilled attendant, prevent prolonged/obstructed labor by providing information about the signs of labor, when labor is too long, and when to come to the facility or contact the birth attendant.
- Prevent harmful practices by helping women and their families to recognize harmful customs practiced during labor (e.g., providing herbal remedies to increase contractions, health workers giving oxytocin by intramuscular [IM] injection during labor).

- Take culturally sensitive actions to involve men and encourage understanding about the urgency of labor and need for immediate assistance.

## **During labor and second stage**

Health care providers should take the following steps during the first and second stages of labor:

- Use a partograph to monitor and guide management of labor and quickly detect unsatisfactory progress.
- Ensure early referral when progress of labor is unsatisfactory.
- Encourage the woman to keep her bladder empty.
- Limit induction or augmentation use for medical and obstetric reasons.
- Limit induction or augmentation of labor to facilities equipped to perform a cesarean delivery.
- Do not encourage pushing before the cervix is fully dilated.
- Do not use fundal pressure to assist the birth of the baby.
- Do not perform routine episiotomy. Consider episiotomy only with complicated vaginal delivery (e.g., breech, shoulder dystocia, forceps, vacuum, scarring from female genital cutting or poorly healed third- or fourth-degree tears, and fetal distress).
- Assist the woman in the controlled delivery of the baby's head and shoulders to help prevent tears. Place the fingers of one hand against the baby's head to keep it flexed (bent), support the perineum, and instruct the woman to use breathing techniques to push or stop pushing.

## **During third stage**

Health care providers should take the following steps during the third stage:

- Provide AMTSL—the single most effective way to prevent PPH.
- Do not use fundal pressure (apply pressure on a woman's abdomen to help expel the placenta) to assist the delivery of the placenta.
- Do not perform CCT without administering a uterotonic drug.
- Do not perform CCT without providing countertraction to support the uterus.

## **After delivery of the placenta**

Health care providers should provide the following care during the immediate postpartum period (the first six hours after childbirth):

- Routinely inspect the vulva, vagina, perineum, and anus to identify genital lacerations. Cervical examination is only recommended when the cause of PPH has not been diagnosed and uterine atony, lower genital lacerations, and retained placenta are ruled out.
- Inspect the placenta and membranes.
- Evaluate if the uterus is well contracted and massage the uterus at regular intervals after placental delivery to keep the uterus well-contracted and firm (at least every 15 minutes for the first two hours after birth).
- Teach the woman to massage her own uterus to keep it firm. Instruct her on how to check her uterus and to call for assistance if her uterus is soft or if she experiences increased vaginal bleeding.



- Monitor the woman for vaginal bleeding and uterine hardness every 15 minutes for the first two hours, every 30 minutes during the third hour, and then every 60 minutes for the next three hours.
- Encourage the woman to keep her bladder empty during the immediate postpartum period.
- Plan to do a complete assessment of the woman one and six hours after childbirth.

Teach the woman and her family about postpartum and newborn danger signs. Help the family develop a complication-readiness plan before the woman is discharged from the health care facility.

