



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

**A Reference Manual for
Health Care Providers**

**Core Topic 3: Managing
complications during
the third stage of labor**



Table of contents

Additional Topic 3: Managing complications during the third stage of labor.....	3
General management for an obstetric emergency.....	3
General management for shock.....	4
General management for vaginal bleeding after childbirth	5
Management of uterine atony	7
Management of tears in the birth canal	9
Management of retained placenta.....	11
Management of retained placental fragments.....	12
Management of uterine inversion	13
Management if the cord tears off during CCT	14
References	15

List of tables

Table 8. Diagnosis of vaginal bleeding after childbirth.....	6
Table 9. Uterotonic drugs for PPH management	7

List of figures

Figure 25. Bimanual compression of the uterus.....	8
Figure 26. Compression of abdominal aorta and palpation of femoral pulse	9
Figure 27. Common positions for cervical tears	10
Figure 28. Repairing a cervical tear	10
Figure 29. Manual reduction of an inverted uterus.....	13

Acknowledgements

The writing team especially acknowledges and thanks:

- American College of Nurse-Midwives for permission to use illustrations (Figure 27) from *Life-Saving Skills Manual for Midwives, 3rd Edition*, and *Life-Saving Skills Manual for Midwives, Draft, 4th Edition*.^{2, 3}



Additional Topic 3: Managing complications during the third stage of labor

Research shows that AMTSL does not increase the risk for obstetrical complications; however, problems may happen regardless of how the third stage is managed. The WHO publication “Managing Complications in Pregnancy and Childbirth: A Guide for Midwives and Doctors” provides the following guidelines for immediate management of complications during the third stage of labor.³⁷ Follow local guidelines for managing any complications and referring a woman for further treatment during or after the third stage of labor. For detailed information on clinical management, consult technical resources (www.pphprevention.org) or a supervisor.

General management for an obstetric emergency

Emergencies can happen suddenly, as with a convulsion, or they can develop as a result of a complication that is not properly managed or monitored.

Preventing emergencies

Most emergencies can be prevented by:

- careful planning;
- following clinical guidelines;
- close monitoring of the woman.

Responding to an emergency

Responding to an emergency promptly and effectively requires that members of the clinical team know their roles and how the team should function to respond most effectively to emergencies. Team members should also know:

- clinical situations and their diagnoses and treatments;
- drugs and their use, administration and side effects;
- emergency equipment and how it functions.

Note: The ability of a facility to deal with emergencies should be assessed and reinforced by frequent practice emergency drills.

Initial management

In managing an emergency:

- Stay calm. Think logically and focus on the needs of the woman.
- Do not leave the woman unattended.
- Take charge. Avoid confusion by having one person in charge.
- **SHOUT FOR HELP.** Have one person go for help and have another person gather emergency equipment and supplies (e.g. oxygen cylinder, emergency kit).
- If the woman **is unconscious**, assess the airway, breathing and circulation.

- If **shock is suspected**, immediately begin treatment. Even if signs of shock are not present, keep shock in mind as you evaluate the woman further because her status may worsen rapidly. If **shock develops**, it is important to begin treatment immediately.
- Position the woman lying down on her left side with her feet elevated. Loosen tight clothing.
- Talk to the woman and help her to stay calm. Ask what happened and what symptoms she is experiencing.
- Perform a quick examination including vital signs (blood pressure, pulse, respiration, temperature) and skin colour.
- Estimate the amount of blood lost and assess symptoms and signs.

General management for shock

Signs and symptoms usually seen in shock:

- Fast, weak pulse (110 per minute or more).
- Low blood pressure (systolic less than 90 mm Hg).

Other signs and symptoms of shock include:

- Pallor (especially of inner eyelid, palms, or around the mouth).
- Sweaty or cold, clammy skin.
- Rapid breathing (rate of 30 breaths per minute or more).
- Anxiousness, confusion, or unconsciousness.
- Low urine output (less than 30 mL per hour).

Immediate management of shock

- **Shout for help.** Urgently mobilize all available personnel.
- Evaluate vital signs (pulse, blood pressure, respiration, temperature).
- Turn the woman onto her side to reduce the risk of aspiration from vomiting and to ensure an open airway.
- Keep the woman warm; however, avoid overheating which increases peripheral circulation and reduces blood supply to the vital organs.
- Elevate the legs to increase return of blood to the heart (if possible, raise the foot end of the bed).

Specific management

- Start an IV infusion (or two if possible) using a large-bore cannula or needle (16 gauge or largest available).
Collect blood to test hemoglobin; do an immediate cross-match and bedside clotting (see below) before infusion of fluids:
 - Rapidly infuse IV fluids (normal saline or Ringer's lactate) initially at the rate of 1 L in 15 to 20 minutes.

Note: Avoid using plasma substitutes (e.g., dextran) because there is no evidence that plasma substitutes are superior to



normal saline in resuscitating a shocked woman. Also, dextran can be harmful in large doses.

- Give at least 2 L of these fluids in the first hour. (This amount is in addition to fluids given for lost blood.)

Note: Do not give fluids by mouth to a woman in shock. A quicker rate of infusion is needed in the management of shock from bleeding. Aim to replace 2 to 3 times the estimated fluid loss.

- When finding a **peripheral vein is not possible**, do a venous cut-down.
- Continue to monitor vital signs and blood loss (every 15 minutes).
- Catheterize the bladder and monitor fluid intake and urine output.
- If available, give oxygen at 6 to 8 L per minute by mask or nasal cannula.

Bedside clotting test

Assess blood clotting status using this **bedside clotting test**:

1. Take 2 mL of venous blood into a small, dry, clean, plain glass test-tube (approximately 10 mm x 75 mm).
2. Hold the tube in your closed fist to keep it warm (+37°C).
3. After four minutes, tip the tube slowly to see if a clot is forming. Then tip it again every minute until the blood clots and the tube can be turned upside down.
4. If a clot does not form after seven minutes or a soft clot forms that breaks down easily, the woman may have a blood clotting disorder.

Decide and manage the cause of shock

After the woman is stabilized, determine the cause of shock and manage the condition accordingly.

General management for vaginal bleeding after childbirth

Excessive vaginal bleeding is life-threatening and requires immediate action. Follow these steps to manage excessive bleeding:

Note: The steps listed here are only a summary and do not include extensive details about PPH management. Refer to local protocols or a technical reference for detailed management.

- **Shout for help.** Urgently mobilize all available personnel.
- Conduct a rapid evaluation of the woman's general condition including vital signs (pulse, blood pressure, respiration, temperature).
- If **shock is suspected**, immediately begin treatment. If signs of shock are not present, continue evaluating the woman because her status can change or worsen rapidly.

- Massage the uterus to expel blood and blood clots. Blood clots trapped in the uterus will prevent effective uterine contractions.
- Give oxytocin 10 IU IM.
- Start an IV infusion.
Just before infusion of fluids, collect blood to test hemoglobin, and do an immediate cross-match and bedside clotting (see below).
If blood is available for transfusion, prepare blood (type and cross) before beginning infusion.
- Have the woman empty her bladder or ensure that the bladder is empty (catheterize the bladder only if necessary).
- Check to see if the placenta is expelled, and examine it for completeness.
- Examine the vagina and perineum for tears (examination of the cervix is only warranted if the uterus is firm, the placenta and membranes are complete, no perineal or vaginal lacerations are present, but the woman continues to bleed).
- Provide specific treatment for the cause of PPH (see Table 8).

Table 8. Diagnosis of vaginal bleeding after childbirth

Presenting Symptom and Other Symptoms and Signs Typically Present	Symptoms and Signs Sometimes Present	Probable Diagnosis
<ul style="list-style-type: none"> • Immediate PPH^a • Uterus soft and not contracted 	<ul style="list-style-type: none"> • Shock 	Atonic uterus
<ul style="list-style-type: none"> • Immediate PPH^a 	<ul style="list-style-type: none"> • Complete placenta • Uterus contracted 	Tears of cervix, vagina or perineum
<ul style="list-style-type: none"> • Placenta not delivered within 30 minutes after delivery 	<ul style="list-style-type: none"> • Immediate PPH^a • Uterus contracted 	Retained placenta
<ul style="list-style-type: none"> • Portion of maternal surface of placenta missing or torn membranes with vessels 	<ul style="list-style-type: none"> • Immediate PPH^a • Uterus contracted 	Retained placental fragments
<ul style="list-style-type: none"> • Uterine fundus not felt on abdominal palpation • Slight or intense pain 	<ul style="list-style-type: none"> • Inverted uterus apparent at vulva • Immediate PPH^b 	Inverted uterus

^a Bleeding may be light if a clot blocks the cervix or if the woman is lying on her back.

^b There may be no bleeding with complete inversion.

- Twenty-four hours after bleeding stops, check hemoglobin or hematocrit levels to evaluate the woman for anemia.
 - If hemoglobin is below 7 g/dL or hematocrit is below 20 percent (severe anemia), give ferrous sulfate or ferrous fumarate 120 mg by mouth plus folic acid 400 mcg by mouth once daily for three months.
 - If hemoglobin is between 7 to 11 g/dL, give ferrous sulfate or ferrous fumarate 60 mg by mouth plus folic acid 400 mcg by mouth once daily for six months.



Management of uterine atony

An atonic uterus fails to contract after delivery.

Signs and symptoms usually seen in cases of uterine atony:

- Immediate PPH.
- Bleeding may be light if a clot blocks the cervix or if the woman is lying on her back.
- Uterus is soft and does not contract.

Signs and symptoms sometimes present:

- Shock.

Immediate management of atonic uterus

If the woman is bleeding and her uterus is soft/not contracted:

- Continue to massage the uterus.
- Have the woman empty her bladder or ensure that the bladder is empty (catheterize the bladder only if necessary).
- Administer uterotonic drugs, given together or sequentially (Table 9).
- Anticipate the need for blood as soon as possible, and transfuse as necessary.

Table 9. Uterotonic drugs for PPH management

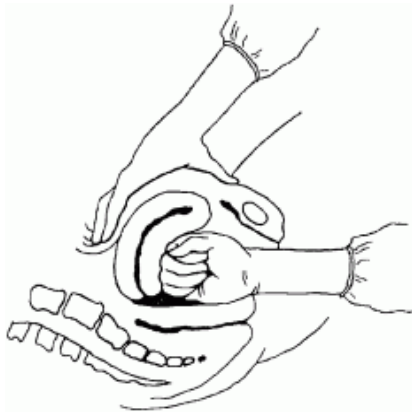
	Oxytocin	Ergometrine	Misoprostol
Dose and route	IV: Infuse 20 units in 1 L IV fluids at 60 drops per minute. IM: 10 IU.	IM: give 0.2 mg.	1,000 mcg rectally.
Continuing dose	IV: Infuse 20 units in 1 L IV fluids at 40 drops per minute.	Repeat 0.2 mg IM after 15 minutes. If required, give 0.2 mg IM every 4 hours.	Unknown.
Maximum dose	Not more than 3 L of IV fluids containing oxytocin.	5 doses (total 1.0 mg).	Oral dose should not exceed 600 mcg because of side effects of increased temperature and chills.
Precautions and comments	After 2–3 doses with no result, use alternate treatment.	Contraindicated in cases of pre-eclampsia, hypertension, heart disease.	Contraindicated in cases of asthma.

If bleeding continues:

- Check placenta again for completeness.
- If there are **signs of retained placental fragments** (absence of a portion of maternal surface or torn membranes with vessels), remove remaining placental tissue.
- Assess clotting status using a bedside clotting test. If a clot does not form after seven minutes or a soft clot forms that breaks down easily, the woman may have a blood clotting disorder.

If **bleeding continues in spite of management**, perform bimanual compression of the uterus (Figure 25):

1. Wearing sterile or HLD gloves, insert a hand into the vagina and form a fist.



1. Place the fist into the anterior fornix and apply pressure against the anterior wall of the uterus.
2. With the other hand, press deeply into the abdomen behind the uterus, applying pressure against the posterior wall of the uterus.
3. Maintain compression until bleeding is controlled and the uterus contracts.

Figure 25. Bimanual compression of the uterus³⁴

Alternatively, compress the aorta and prepare for potential surgical management (Figure 26):

1. Apply downward pressure with a closed fist over the abdominal aorta directly through the abdominal wall (the point of compression is just above the umbilicus and slightly to the left):
 - Aortic pulsations are felt easily through the anterior abdominal wall in the immediate postpartum period.
2. With the other hand, feel the femoral pulse to check the adequacy of compression:
 - If the femoral pulse is felt during compression, the pressure exerted by the fist is inadequate.
 - If the femoral pulse is not felt, the pressure exerted is adequate.
3. Maintain compression until bleeding is controlled.



Figure 26. Compression of abdominal aorta and feeling the femoral pulse³⁴

Note: Packing the uterus is ineffective and wastes precious time.

When **bleeding continues in spite of compression**, the woman may require surgical intervention.

Management of tears in the birth canal

Tears of the birth canal are the second most common cause of PPH. Tears may be present at the same time as uterine atony.

Signs and symptoms usually seen with genital tears:

- Immediate PPH (bleeding may be light if a clot blocks the cervix or if the woman is lying on her back).
- Complete placenta.
- Uterus contracted.

Signs and symptoms sometimes seen:

- Shock.

Postpartum bleeding with a contracted uterus is usually due to a cervical or vaginal tear.

- Examine the woman carefully and repair tears to the vagina and perineum.
- If vaginal and perineal tears are absent or repaired and bleeding continues, examine the placenta again for completeness.
- If the placenta is complete, inspect the cervix.
 - Ask your assistant to press firmly down on the uterus. This moves the cervix lower in the vagina for careful examination. Good lighting may help facilitate the exam.

- Look carefully at all sides of the cervix for oozing or spurts of blood. Lacerations occur most frequently on the sides (9 and 3 o'clock positions) of the cervix (Figure 26).
- If you are unable to see the entire cervix due to bleeding, use two sponge forceps to “walk” around the cervix to inspect it completely. Put the first forceps at the 12 o'clock position and the second forceps at 2 o'clock position on the cervix. Hold the handles from both forceps in one hand.

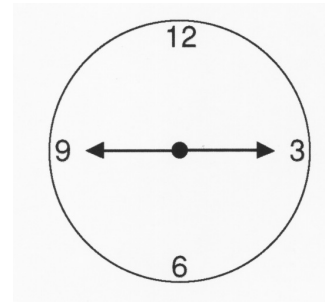


Figure 27. Common positions for cervical tears

- To see the laceration better, pull the forceps handles toward you. Look for tears. Release the first forceps and place it on the cervix at 4 o'clock. Pull the forceps handles toward you and look for tears. Follow counter-clockwise in this manner until the entire cervix has been inspected.

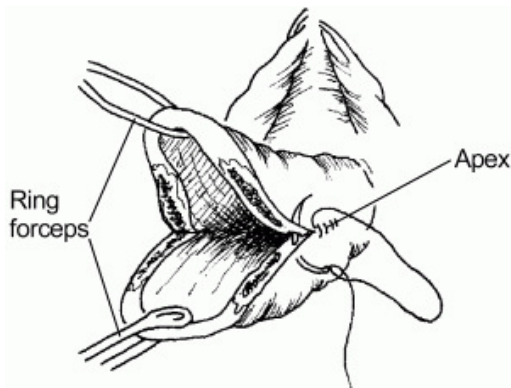


Figure 28. Repairing a cervical tear³⁴

- Repair lacerations by placing interrupted or continuous sutures the length of the tear, spaced about 1 cm apart using 0-chromic or polyglycolic sutures (Figure 27).

- If **bleeding continues**, assess clotting status using a bedside clotting test. If a clot does not form after seven minutes or a soft clot forms that breaks down easily, the woman may have a blood clotting disorder.



Management of retained placenta

A retained placenta means that all or part of the placenta or membranes are left behind in the uterus during the third stage of labor. Normally after the placenta is delivered, the empty uterus contracts down to close off all the blood vessels inside the uterus. If the placenta only partially separates, the uterus cannot contract properly, so the blood vessels inside will continue to bleed.

Signs and symptoms usually present with a retained placenta:

- Placenta not delivered within 30 minutes of delivery.

Signs and symptoms sometimes seen:

- Immediate PPH (Bleeding may be light if a clot blocks the cervix or if the woman is lying on her back).
- Shock.

Note: There may be no bleeding with a retained placenta.

- If you can see the placenta, ask the woman to squat and push.
- If you can feel the placenta in the vagina, remove it.
- Sometimes a full bladder will hinder delivery of the placenta. Help the woman empty her bladder to ensure that the bladder is empty (catheterize the bladder only if necessary).
- If the placenta is not expelled, give oxytocin 10 IU IM (if not already administered for AMTSL).

Note: Do not give ergometrine for a retained placenta because it causes tonic uterine contraction, which may delay expulsion.

- If the **placenta is undelivered after 30 minutes of oxytocin stimulation and the uterus is contracted**, attempt CCT with countertraction to the uterus.

Note: Avoid forceful cord traction and fundal pressure because these interventions may cause uterine inversion.

- If **CCT is unsuccessful** and the attendant is adequately trained to perform manual removal, attempt manual removal of the placenta and administer a single dose of prophylactic antibiotics: ampicillin 2 g IV PLUS metronidazole 500 mg IV or cefazolin 1 g IV PLUS metronidazole 500 mg IV.

Caution: Very adherent tissue may be placenta accreta. Efforts to extract a placenta that does not separate easily may result in heavy bleeding or uterine perforation which usually requires a hysterectomy.

- If **bleeding continues**, assess clotting status using a bedside clotting test. If a clot does not form after seven minutes or a soft clot forms that breaks down easily, the woman may have a blood clotting disorder.
- If **there are signs of infection** (fever, foul-smelling vaginal discharge), administer antibiotics as for metritis.

Note: In low-resource settings, do not attempt manual removal of the placenta unless the woman is bleeding. If she is not bleeding, refer her to a higher level of care.

Management of retained placental fragments

If a portion of the placenta—one or more lobes—is retained, it prevents the uterus from contracting effectively and can cause PPH. **If small fragments of placenta or membrane are retained and are not detected immediately, this may cause heavy bleeding and infection later on.**

Signs and symptoms usually present with retained placental fragments:

- A portion of maternal surface of placenta is missing or torn.

Signs and symptoms sometimes present:

- Immediate PPH (bleeding may be light if a clot blocks the cervix or if the woman is lying on her back).

Note: There may be no bleeding with retained placental fragments.

- Wearing sterile or HLD gloves, perform manual exploration of the uterus for placental fragments. Manual exploration of the uterus is similar to the technique described for removal of the retained placenta. Give prophylactic antibiotics according to local protocols.

Caution: Only providers trained to perform manual exploration of the uterus should attempt to do so.

- Remove placental fragments by hand, or with ovum forceps or large curette.

Caution: Very adherent tissue may be placenta accreta. Efforts to extract fragments that do not separate easily may result in heavy bleeding or uterine perforation which usually requires a hysterectomy.

- If **bleeding continues**, assess clotting status using a bedside clotting test. If a clot does not form after seven minutes or a soft clot forms that breaks down easily, the woman may have a blood clotting disorder.



Management of uterine inversion

The uterus is inverted if it turns inside out during delivery of the placenta. This is very rare during a normal third stage of labor, whether managed actively or physiologically.

Signs and symptoms usually seen with an inverted uterus:

- Uterine fundus not felt on abdominal palpation.
- Slight or intense pain.

Signs and symptoms sometimes present:

- Inverted uterus apparent at vulva.
- Immediate PPH (there may be no bleeding with complete inversion).

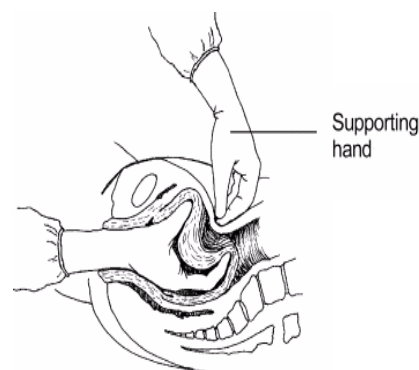
- Reposition the uterus immediately. As time passes, the uterus becomes more engorged with blood and is more difficult to put back into place.
- If the **woman is in severe pain**, give pethidine 1 mg/kg body weight (but not more than 100 mg) IM or IV slowly or give morphine 0.1 mg/kg body weight IM.

Caution: Do not give uterotonic drugs until the inversion is corrected.

- Support the uterus with your non-dominant hand and reposition the uterus with your dominant hand (Figure 29).

Note: If the placenta has not separated from the uterine wall when inversion occurs, do not attempt removal of the placenta until the inversion is corrected.

Figure 29. Manual reduction of an inverted uterus³⁴



- If **bleeding continues**, assess clotting status using a bedside clotting test. If a clot does not form after seven minutes or a soft clot forms that breaks down easily, the woman may have a blood clotting disorder.
- Administer a single dose of prophylactic antibiotics after correcting the inverted uterus: ampicillin 2 g IV plus metronidazole 500 mg IV, **or** cefazolin 1 g IV plus metronidazole 500 mg IV.

- If there are signs of infection (fever, foul-smelling vaginal discharge), give antibiotics as for metritis.

Management if the cord tears off during CCT

In many studies and experience with thousands of women, cord tears were not reported as a significant problem during AMTSL. In the rare event this happens:

- Have the woman empty her bladder to ensure that the bladder is empty (catheterize the bladder only if necessary).
- If the placenta has separated, ask the woman to squat and push with a contraction.
- If the placenta has not separated, the woman is not bleeding, and the provider has appropriate training, consider performing manual removal of the placenta. Otherwise, refer the woman to a higher level of care.

References

² Marshall M, Buffington ST. *Life-Saving Skills Manual for Midwives*. 3rd edition. Washington, DC: American College of Nurse-Midwives; 1998.

³ Marshall M, Buffington ST, Beck D, Clark A. *Life-Saving Skills Manual for Midwives*. Unpublished 4th edition. Washington, DC: American College of Nurse-Midwives; 2007.

³⁷ World Health Organization (WHO). *Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors*. Geneva: WHO; 2003. Available at: www.who.int/reproductive-health/impac/Symptoms/Vaginal_bleeding_after_S25_S34.html. Accessed April 2, 2007.