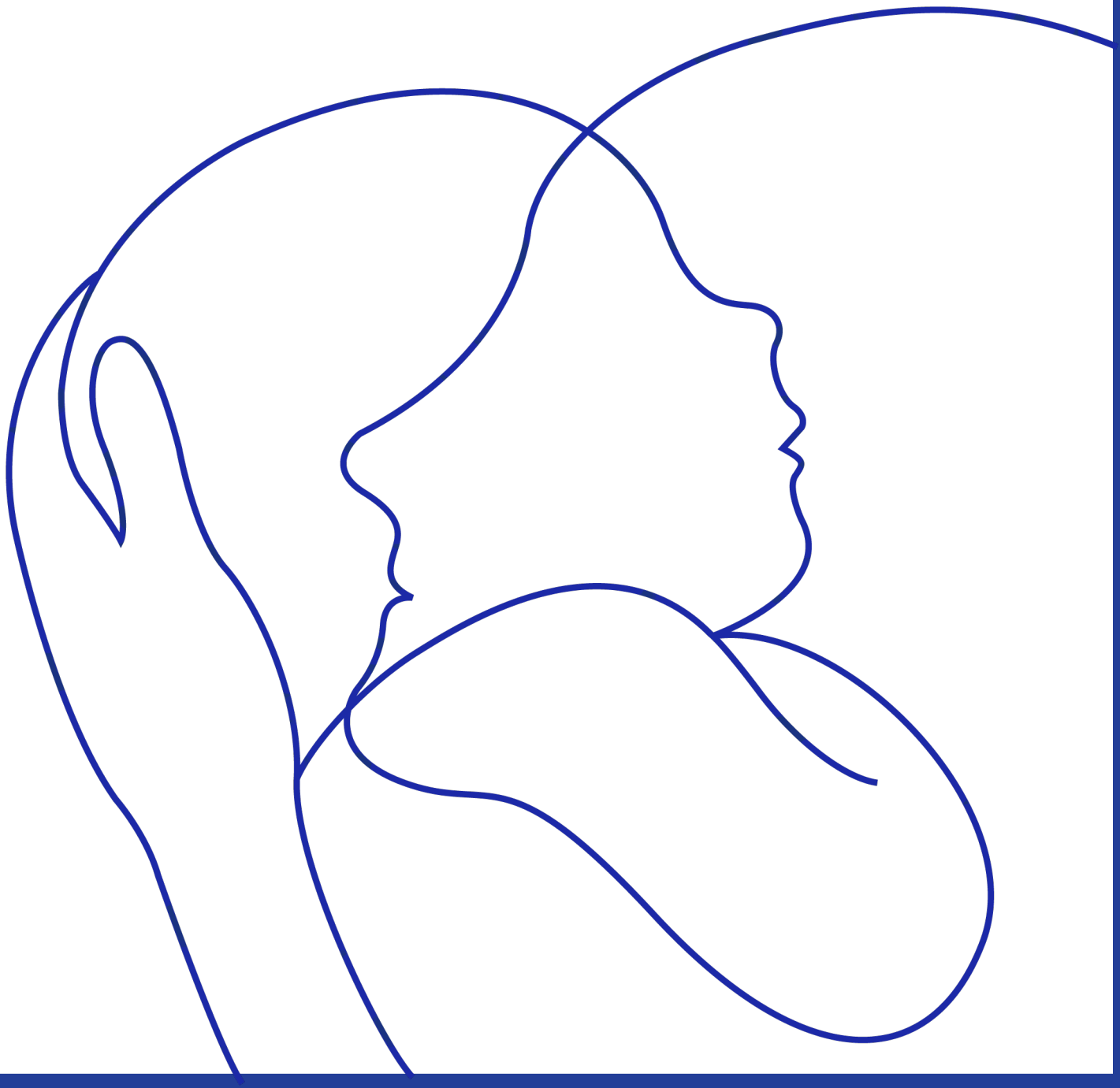
Life-Saving Skills

Manual for Midwives

4th Edition

"Used since 1990 by doctors, nurses, midwives, and other skilled birth attendants..."



Module 5. Hemorrhage **Module 6. Resuscitation**

About the Life Saving Skills Manual Fourth Edition Materials

The Life-Saving Skills Manual for Midwives,* *and its training program process, builds on years of experience of midwives practicing in rural and urban areas. The critical issues of family and community support and education are woven throughout the manual. The* ***LSS Manual*** *is focused on strengthening the capacity of midwives and others with midwifery skills to save the lives of women and babies. The management, medications, equipment and procedures suggested in the manual assume that only the most basic provisions are usually available (LSS 3rd Edition, 1998).*

What is the *LSS Manual*?

- Continuing education of **critical knowledge** for practicing midwives, nurses, doctors, other skilled birth attendants
- A Problem Solving Method to identify and manage woman and baby complications and care
- A review of skills and information
- New or updated skills and information
- Resource to supplement pre-service training
- Clinical reference

The *LSS Manual* has 5 books – 2 modules in each book:

Book 1	Module 1: Introduction,	Module 2: Antenatal
Book 2	Module 3: Labor,	Module 4: Episiotomy
Book 3	Module 5: Hemorrhage,	Module 6: Resuscitation
Book 4	Module 7: Infections,	Module 8: Stabilize & Refer
Book 5	Module 9: VE & Others,	Module 10: Postpartum

In each module:

- ***LSS Manual*** table of contents lists major module topics.
- Module table of contents with module page numbers.
- Statement of the goal and objectives.
- An introduction to give an idea of what is in the module.
- An experience of a midwife or doctor linked to the topic.
- Common medical terms are defined.
- Skill procedures with a skill description, illustrations, review questions and case studies.
- Learning Aids for additional information, used as needed, were developed in response to requests from practicing LSS midwives.
- *Index* for the entire manual is found inside the back cover of each book. The index lists the subjects in alphabetical order. Some subjects may be listed under more than one name. For example, information on hemorrhage, may be found under hemorrhage or bleeding.
- *Page numbers* are numbered with both the **module number** and the **page number**. For example, the number 5.3 is found in Module 5 on page 3. To find laceration of the cervix – look in the index, it is listed with number 4 indicating Module 4. Module 4 table of contents Cervical Laceration is listed on page 4.23. The information is on page 23.

What is the Guide for Caregivers?

It is a **separate and smaller book that comes with the LSS Manual** for use when learning and giving care. It includes:

- Skill checklist for each skill procedure, a step by step outline of procedures for Modules 2 through 10. The learner and trainer fill out the appropriate skill checklist and discuss how the steps were performed. It may be used after training, to review and practice skills or as reference.
- Formulary is a reference of suggested drugs with space to add according to local situations.
- Protocols give woman and baby care guidelines for LSS topics. This section may be reviewed in-country and adapted for local situations.

What is the Manual for Policy Makers and Trainers: A Life-Saving Skills Training Program Process?

It is a **separate book, sold separately,** used to develop and manage LSS training programs:

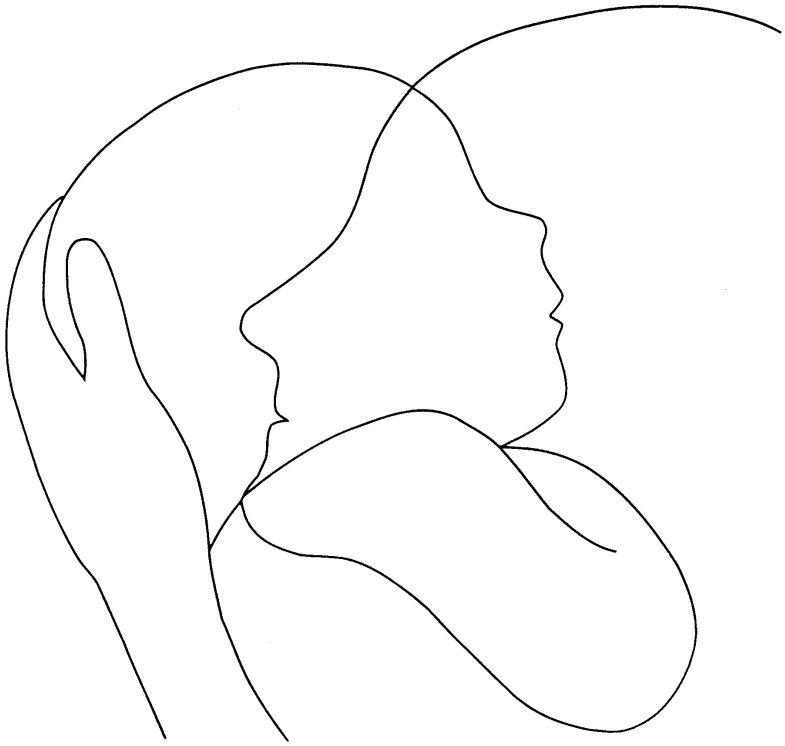
- A Ten Step Program Process includes experience and ideas from LSS programs in many countries.
- Trainers Section provides clinically active LSS learners opportunities to develop confidence and competence. The LSS trainer is not concerned as much about the **quantity** of times a particular skill is performed, but more about the **quality** with which it is performed.
- Sample Lesson Plans, Program Tools, Training Aids, and Forms for use, adaptation, and revision for local needs.

*** Note:** Much thought went into the naming of the manual, ***Life-Saving Skills Manual for Midwives.*** It was decided to highlight the **midwife,** as in many situations, the midwife is the first person called to help with a pregnancy related problem. Women and men using this manual to prevent and care for problems that cause women and babies to die during pregnancy, childbirth and postpartum might be called a doctor, nurse, midwife, or other skilled birth attendant. This manual **acknowledges and respects all who help. The manual uses the term midwife, and the pronouns 'she or her'** rather than alternating titles, pronouns (she/he) or using a generic description.

Life-Saving Skills
Manual for Midwives

Fourth Edition

Module 5: Hemorrhage – Prevent and Manage



By Margaret Ann Marshall, Sandra Tebben Buffington, Diana R. Beck, P. Annie Clark

Deborah Armbruster, technical editor
Kathleen Merritt, copy editor
Angeline Hale, Andri Burhans, Elli Maas, illustrators

American College of Nurse-Midwives

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All those using this manual have a responsibility to review with their supervisors and medical authorities about medicines and medical procedures. This manual should be taught using hands-on clinical training. Procedures should only be done when they are mastered, when you are competent and confident. Always look, read, listen, learn, and ask to make sure you are offering safe and effective care to women and their babies.

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The American College of Nurse-Midwives
Department of Global Outreach
8403 Colesville Road, Suite1550
Silver Spring, MD 20910, U.S.A.
lss@acnm.org
www.midwife.org

Life-Saving Skills Manual for Midwives

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HEMORRHAGE – PREVENT AND MANAGE

MODULE 5

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HEMORRHAGE

OVERVIEW

Hemorrhage in labor and early postpartum is a major cause of maternal mortality in every country. Sixty percent of all pregnancy-related deaths occur during the postpartum period. Of that 60%, nearly half (45%) of the women die in the **first 24 hours after delivery** (Li, 1996). Hemorrhage in the **first four hours after delivery** causes the largest number of maternal deaths. The major causes of hemorrhage in those first hours after birth are uterine atony and retained products of conception. This is an area where improved maternal care can save many lives.

- Hemorrhage causes one in four maternal deaths world wide.
- Prevent anema (22 % of all maternal deaths are directly related to anemia).
- Identify and treat hemorrhage complications early.
- Postpartum hemorrhage is the most common cause of maternal death.
- Prevent postpartum hemorrhage with active management of third stage of labor.

In this module you will use the Problem Solving Method to find the cause of bleeding. Review questions and case studies will help you learn and use the information. There are learning aids to review your knowledge or to learn new ideas. In the *Guide for Caregivers – Skill Checklists* help you practice, master, and use the skills.

A Midwife's Experience. . .

A 36 year old gravida 5 who was unbooked (not attending antenatal clinic) came to me. She was bleeding. She said that she had bled a lot at home, with clots. Her BP was 110/70 and pulse 96. On abdominal palpation, she was 36 weeks and the fetal heart was 144.

I had to refer. There was no vehicle. We had no boat to go to the hospital on the river. I set up a drip (infusion) of Normal Saline. I called the Lord to help and save the poor woman's life, and save my clinic as well. I really had a "midwife's fever"! The relatives of the woman could not afford to hire a boat to hospital and she couldn't sit on a bicycle to the other hospital. I left everything to the Lord. The IV drip in situ got finished. I set up a second one.

While checking the fetal heart and BP every ¼ hour, to my surprise, I noticed the placenta at her vulva. "OH LORD" I shouted while the woman was still bleeding. Then the placenta followed by the head of the infant delivered with the contraction. I started singing, "The Lord is my shepherd I shall not want." This lady had a live female premature active infant. Is this not wonderful?

LSS Midwife, Ghana

Common Medical Terms

Abruptio Placenta (placenta abruption) – placenta is partially or completely torn from the placental site with viable pregnancy.

Abortion – pregnancy loss (spontaneous or induced), the fetus is not viable (not able to live outside of the uterus), usually less than 24 weeks gestation (definition varies from 16 to 28 weeks in various parts of the world – use accepted local definition), less than 0.5 kg weight, products of conception come out of the uterus**.**

Active Management of the Third Stage of Labor (AMTSL) – a procedure to decrease postpartum blood loss and prevent postpartum hemorrhage by (a) giving oxytocic just after delivery of the baby, (b) assisting delivery of the placenta and membranes, and (c) massaging the uterus immediately after delivery of placenta and membranes.

Bimanual Compression – a procedure to control postpartum hemorrhage by stimulating the uterus to contract or to slow the bleeding.

- External bimanual compression is pressure to the uterus with both hands on the abdomen (two-hand hold).
- Internal bimanual compression is pressure to the uterus with one hand on the abdomen and one hand in the vagina.

Brandt - Andrews Maneuver – a method of delivering the placenta and membranes after their descent into the vagina. One hand pushes the contracted uterus away from the placenta, while the other hand holds and keeps tension on the cord.

Chorioamnionitis – infection in the uterus with inflammation (swelling and redness) of the chorion and amnion. It is inflammation of all of the amniotic sac (bag of waters).

Complete Abortion – all nonviable products of conception come out of the uterus.

Crede Maneuver – a harmful procedure of forcefully pushing the placenta out of the uterus by squeezing and pressing on the fundus of the uterus. It can cause tearing or rupture of the uterus. It may also cause a partially separated placenta to tear and be pushed out of the uterus. *Crede maneuver is NOT recommended.*

Digital – with fingers.

Ectopic Pregnancy – the fertilized ovum is implanted outside of the uterus.

Estimated Blood Loss – deciding how much blood the woman has lost. This can prevent delay in recognizing hemorrhage, starting resuscitation and reducing the severity of shock. REMEMBER that even a small amount of blood loss may be very serious for the woman with any anemia.

Small (less than 250 cc)
Moderate (250-499 cc)
Large (more than 500 cc)

Evacuation – to remove or take out.

Hemorrhage – abnormal bleeding (bleeding too much). **Abnormal bleeding may be seen** such as abnormal bleeding from the vagina or bleeding from a poorly tied umbilical cord.

Abnormal bleeding may not be seen, such as bleeding into the abdominal cavity with a ruptured ectopic pregnancy or bleeding inside the baby's head with a cephalhematoma or intracranial hemorrhage.

Incomplete Abortion – pregnancy loss; fetus is not viable; some or all products of conception (placenta or chorion) remain in the uterus; may be spontaneous or result of an attempt to terminate the pregnancy.

Induced Abortion – termination of pregnancy before fetal viability; can be either safe or unsafe.

Inevitable Abortion – pregnancy will not continue and will soon terminate. Pregnancy loss is going to happen and can not be prevented.

Inversion of the Uterus – a condition in which the uterus is partly or completely turned inside out.

Manual Removal of Placenta – taking the placenta out of the uterus using your hand.

Miscarriage (spontaneous abortion) – pregnancy loss; the fetus is not viable; all products of conception come out of the uterus without any assistance.

Oxytocic – substances which stimulate uterine contractions and increase uterine tone. Oxytocin is secreted naturally by the posterior pituitary when the baby breast feeds. They are natural substances (ergot) or can be synthetic (man made). Sometimes called uterotonic, see **Learning Aid 6.**

Placenta Previa – abnormally situated placenta in the lower segment of the uterus usually with a viable fetus; may completely or partially cover cervix (internal os).

Polyhydramnios (hydramnios) – Large amount of amniotic fluid; may be found with maternal diabetes, fetal abnormalities; twins; rare placenta tumor.

Post Abortion Hemorrhage – bleeding is more than normal menses after a pregnancy loss (planned or unplanned); may be signs of shock.

Postpartum Hemorrhage – blood loss of 500 cc (half a liter) or more from the reproductive tract after the delivery of the baby. Women who start labor with anemia may become very sick or go into shock from a blood loss of even 100 cc.

Primary Postpartum Hemorrhage (immediate PPH) – too much bleeding from the reproductive tract within 24 hours of the delivery of the baby.

Retained Placenta – the placenta has not been delivered within one hour of the birth of the baby.

Risk Factor – something in an individual, in that person's health habits or in the environment that makes the individual more likely than normal to develop a sickness or complication such as PPH.

Secondary Postpartum Hemorrhage (delayed PPH) – too much bleeding from the reproductive tract starting 24 hours after delivery of the baby until 6 weeks postpartum.

Shock – an emergency that requires immediate care. The blood circulation of the person does not work normally. Important organs like the heart, lungs and brain do not get enough oxygen.

Spontaneous Abortion – See miscarriage.

Threatened Abortion – there are signs or symptoms of abortion such as spotting or cramping, but they may be few and the pregnancy may continue to term.

Unsafe Abortion – pregnancy loss caused by dangerous medicine, instruments, or unskilled persons used to end a pregnancy in unclean conditions.

Uterine Atony – tired uterus, soft and spongy uterus; uterine muscles do not contract (squeeze) and retract (shorten); failure of the uterus to contract correctly following delivery.

Uterotonic – substances which give muscular tone to the uterus. They are synthetic / man made such as misoprostol, see **Learning Aid 6**.

REMEMBER

Any anemia makes postpartum hemorrhage more dangerous.
Anemia should be treated during pregnancy with iron and folate tablets.
An anemic woman may also need antimalarial and hookworm treatment.

PROBLEM SOLVING METHOD TO FIND THE CAUSE OF BLEEDING

Goal

The midwife will review and update her knowledge and skills to prevent and manage hemorrhage using the problem solving method.

Objectives

The midwife caring for a woman during pregnancy and postpartum will be able to:

1. **ASK and LISTEN.** Take a history to identify any hemorrhage problem, including early pregnancy bleeding, uterine atony, retained placenta, and lacerations.
2. **LOOK and FEEL**. Do abdominal and vaginal examinations in a way that allows her to identify any hemorrhage problems.
3. **IDENTIFY PROBLEMS and NEEDS.** Describe normal findings, abnormal findings that are dangerous, and causes of hemorrhage.
4. **TAKE APPROPRIATE ACTION.** Use the information from the history and physical examination to give treatment.
5. **EVALUATE / REPEAT THE PROCESS.** Decide with the woman / family the results of the care. Repeat the problem solving steps to find out whether there is a change in the condition.

Introduction

During pregnancy there is no monthly bleeding (menses), so any vaginal bleeding in pregnancy is abnormal and is usually serious. The common place for bleeding is where a baby's placenta and membranes are attached to the woman's uterus (the placenta site). When the placenta and uterus separate, blood usually comes out of the vagina. When the woman is bleeding with a nonviable pregnancy (baby is not big enough to live), a common cause is abortion. When the woman is bleeding with a viable pregnancy (baby is big enough to live), the cause may be placenta previa or abruptio placenta, and they are not common.

After the baby is born, the woman usually delivers the placenta; the uterus contracts to stop the bleeding from the place where the placenta was attached. When the woman has **given birth and the placenta is delivered and she continues bleeding**, the bleeding is usually from the placenta site. Common reasons for postpartum hemorrhage are: (1) the whole placenta may not be delivered, (2) the uterus is not contracting, or (3) the woman has tears of the perineum, vagina or cervix. Sometimes postpartum hemorrhage is caused by a ruptured uterus, blood clotting disorder or inversion of the uterus.

Risk Factors

Trying to decide who will bleed too much is difficult because 70% of women who experienced postpartum hemorrhage had NO risk factor. There are some risk factors for hemorrhage that you should look for during the **pregnancy, labor, and postpartum**. See Module 2: **Antenatal**, Module 3: **Labor**, and Module 10: **Postpartum** for questions to **ASK** which may help you know when a woman is at risk for hemorrhage. Any problem with a past pregnancy is more likely to happen again with this one. Use the correct questions for the woman's condition, (antepartum, intrapartum, or postpartum) to find out if she has any of the following risk factors:

PAST ILLNESS OR SURGERY

- anemia
- blood clotting problems
- hepatitis
- uterine surgery: fibroid, cesarean section, or dilatation & curettage

PAST PREGNANCY PROBLEMS

- five or more pregnancies
- history of retained placenta
- history of inverted uterus
- postpartum hemorrhage
- rupture of the uterus

THIS PREGNANCY

- bleeding
- chorioamnionitis
- fetal death in utero
- induced labor (medicine or herbs)
- multiple pregnancy
- placenta abruption or previa
- polyhydramnios
- pre-eclampsia / eclampsia
- precipitous labor (3 hours or less)
- prolonged labor

THIS POSTPARTUM PERIOD

- abdominal pain
- any amount of continuous bleeding
- excessive bleeding
- fever
- foul smelling vaginal discharge
- passing large (fist-size) blood clots
- retained placenta
- uterus does not remain contracted

REMEMBER

Any pregnant or postpartum woman can bleed – usually when you least expect it.
Hemorrhage can happen in women with no risk factors.

Life-Saving Steps.

Talk to the woman and family as you find out what is wrong. Help them feel that you are trying to make the situation better. Try to look calm and show that you know what you are doing. This will help the woman be less afraid. If possible, have one member of the family stand beside the woman. When you first see a woman with too much bleeding, quickly decide how sick she is.

You must take Life-Saving Steps right away so that the woman does not die.

Call for help – ask for assistance to provide care and to do interventions.

When a woman comes to you and says that she is **pregnant and bleeding** or **in labor and is bleeding** or **has delivered and is bleeding**, take action right away. This may be a life threatening emergency. You must make sure to keep the woman alive, see Module 8 for Life-Saving Steps.

ASK and LISTEN:

- When did the bleeding start?
- How much bleeding do you have?
- How long have you been pregnant?
- When did you deliver?

A – Is the airway open? Can the woman talk?
If the woman can not talk, make sure the mouth and nose are clear and open. Lay the woman on one side with head tilted back to keep the airway open.

B – Is breathing present?
If the woman is not breathing, help her to breathe, see Module 6: **Resuscitation**.

C – Is the heart beating (circulation)?
If not, do full CPR.

S – Is the woman in shock? LOOK and FEEL for signs of shock.

Shock Signs or Symptoms	
Eyes	Dull
Breathing	Fast, shallow
Pulse	Weak, fast
Skin	Cold, clammy
BP	Low
GI	Nausea, vomiting, thirst
CNS	Anxious, restless, weak
Late signs	Confused, low urine output

If signs or symptoms of shock:

1. **Keep the woman warm.** Cover. Shock can cause the body temperature to drop very low and make the shock worse.

2. **Put in shock position.** Raise a woman's feet and legs higher than her heart. Handle gently as body movement can increase shock signs (faster pulse, lower blood pressure). Reassure the woman and her family as you are giving care.

3. **Give fluids** – Do not wait. Severe shock usually ends in death. Start IV fluids if the woman can not swallow. If you do not have IV fluids or if you can not start the IV, give the woman fluids in the rectum or intraperitoneal, see Module 8: **Stabilize and Refer**.

REMEMBER

Hemorrhage is an emergency.
The midwife must decide the problem and take appropriate action.

Find the Cause of Bleeding.

What is causing the shock or too much sickness? The problem solving method can help you find out what is causing the shock and her problem in an organized way. Shock can have many different causes. The cause must be identified and managed to prevent it from becoming worse. Some of the common causes of shock are discussed below; also where management for the problem can be found.

Learn about a pregnant woman and her problems. When a woman comes with a problem like bleeding she may feel afraid and not know what to do. Welcome her and her family. If possible, have one member of the family stay with the woman. The woman may feel shy to undress in front of you or for you to see parts of her body. Protect her privacy by covering her with a cloth and only exposing the part of her body you need to see. Be gentle and friendly, explaining what you are going to do and why before you do it. Ask the woman to empty her bladder so she feels more comfortable for the exam.

EARLY PREGNANCY BLEEDING – the woman is pregnant and bleeding with a nonviable pregnancy (baby is not big enough to live).

ASK and LISTEN – Take a History for Bleeding in Early Pregnancy

ASK the following questions and **LISTEN** carefully to the woman's answers to help you find the cause of bleeding. .

1. **Past Pregnancy or Illness History.** *How many children do you have? When was the last one born? Have you had any problems with bleeding in pregnancy? Have you had any health problems? Have you had any problems with high blood pressure or convulsions (pre-eclampsia). Have you been weak and tired (anemia)?*

2. **Bleeding History.** *When did you first see blood? How much? Have you passed any clots or tissue? What color is the blood? Did you bring any blood, clots, or tissue to see? Do you bleed when resting, standing, or walking?*

3. **Pain History.** *Are you having pain? If yes, where is the pain? Do you feel tightening or contractions in your belly (uterus)? How long have you had contractions or pain?*

4. **Infection History.** *Do you have any fever, chills, foul smelling discharge?*

5. **Medicines History.** *Have you taken any medicines – traditional or other?*

LOOK and FEEL – Do a Physical Examination

1. **Abdominal Examination.** FEEL for contractions (what are the uterine contractions like?). Is there pain? If severe, think of abortion or ectopic pregnancy. FEEL the size of the uterus. How many weeks pregnant? Is the bladder full? Is there tenderness?

2. **Perineal Examination.** LOOK at the perineum. How much bleeding do you see? Are there any clots or tissue? If there is a foul smelling discharge, think of septic abortion. If the woman is transferred or comes to you, are the clothes and cloths or pads soaked with blood? Save all blood clots and blood stained cloths so that you can look for products of conception and estimate the amount of bleeding.

IDENTIFY PROBLEMS AND TAKE THE APPROPRIATE ACTION

FINDING:	Abdomen is hard and tender; severe pain; may have signs of shock, think of injury to internal organs from unsafe abortion or ectopic pregnancy.
ACTION:	Manage as in **Learning Aid 1** – Bleeding in the Abdomen.
FINDING:	Severe abdominal pain with tender uterus OR fever OR foul smelling vaginal discharge, think of septic abortion.
ACTION:	REFER, see Module 7: **Infections**.
FINDING:	No monthly bleeding for 6 weeks, has light vaginal bleeding and abdominal pain, think of ectopic pregnancy.
ACTION:	Manage as in **Learning Aid 1** – Bleeding in the Abdomen.
FINDING:	Vaginal bleeding or vaginal bleeding has stopped; cramping, think of threatened abortion.
ACTION:	Reassure, rest, analgesic for pain; REFER if too much bleeding OR fever OR bad smelling vaginal discharge OR severe abdominal pain.
FINDING:	Heavy vaginal bleeding OR clots with painful contractions, think of incomplete abortion.
ACTION:	Manage as outlined in Digital Evacuation of Clots and Products of Conception page 5.40; see Module 9: Post Abortion Care section.

ANTEPARTUM OR INTRAPARTUM BLEEDING – the woman is pregnant or in labor and bleeding with a viable pregnancy (baby is big enough to live):

ASK and LISTEN – Take a History for Bleeding in Late Pregnancy

ASK the following questions and **LISTEN** carefully to the woman's answers to help you find the cause of bleeding. .

1. **Pregnancy History.** *How many weeks or months pregnant are you? When is the baby due? Where did you go for care during your pregnancy?*

2. **Bleeding History.** *When did you first see blood? How much? Have you passed any clots or tissue? What color is the blood? Have you seen any clots or tissue? Did you bring any blood, clots, or tissue to see? Do you bleed when resting, standing, or walking?*

3. **Pain History.** *Are you having pain? If yes, where is the pain? Do you feel tightening or contractions in your belly (uterus)? Is your belly (uterus) sore or tender to touch? How long have you had contractions or pain?*

4. **Infection History.** *Do you have any fever, chills, foul smelling discharge?*

5. **About medicines.** *Have you taken any medicines – traditional or other?*

LOOK and FEEL – Do a Physical Examination

1. **Abdominal Examination.** See Module 3: **Labor** for the procedure.
   a. **Contractions.** FEEL for the contractions. What are the contractions like? Are the contractions of normal rhythm and strength? Are the contractions continuous? Is the uterus irritable; does it contract when you touch it or when the baby moves inside?
   b. **Uterus shape.** LOOK at the shape of the uterus. Is there a constriction ring? Is the presenting part high? See **Learning Aid 2.** Is the presenting part high?
   c. **Uterus size.** FEEL the size of the uterus. How many weeks pregnant? Are fetal parts easier to feel than usual? Is the uterus larger than expected for weeks of pregnancy?
   d. **Tender uterus.** Is there low abdominal or rebound tenderness? FEEL for rebound tenderness, press the abdomen with your hand. Then quickly remove your hand, releasing the pressure. If removing your hand causes or increases pain, there is rebound tenderness.

2. **Perineal Examination.** See Module 4: **Episiotomy** for a description of how to do this.
   a. **Genitals.** LOOK at the woman's clothes and pads. LOOK at the genitals. How much bleeding do you see? Are there any clots or tissue? Do you see any mucus or amniotic fluid? Do you see any trauma (swelling, bruising, lacerations)?
   b. **Bleeding.** LOOK to see where the bleeding is coming from. LOOK for clots. Any foul smelling discharge? Is it from the uterus, vaginal laceration, or cervical laceration?

IDENTIFY PROBLEMS AND TAKE THE APPROPRIATE ACTION

FINDING:	Blood is dark brown or bright red and mixed with mucus; not more than 5 to 15 cc (bloody show), think about labor.
ACTION:	Do vaginal examination. Monitor labor using the partograph.
FINDING:	Continuous bright red vaginal bleeding may be light to very heavy in amount; no abdominal contractions or tenderness when you feel the uterus, presenting part high or transverse, think about placenta previa.
ACTION:	Do NOT do vaginal examination. REFER. Start intravenous fluids; quickly arrange to take woman to a hospital where cesarean section and blood transfusion are possible. Have family members find blood donors to travel with you.
FINDING:	Abdominal pain; abdominal tenderness; sometimes sharp back pains, and dark red vaginal bleeding OR no bleeding seen, think about abruptio placenta or uterine rupture OR rebound tenderness, think of peritoneal infection.
ACTION:	Do a very gentle vaginal examination to see if delivery is very close. REFER with analgesia. Start intravenous fluids and quickly arrange to take woman to a hospital where cesarean section and blood transfusion are possible. Have family members find blood donors to travel with you.
FINDING:	Very strong abdominal pain; labor contractions stop; may or may not have dark red vaginal bleeding; may or may not have signs of shock, parts of the baby are easier than usual to feel, think about ruptured uterus or abruptio placenta.
ACTION:	Take action immediately. You may do gentle vaginal examination to see if delivery is very close. REFER with antibiotics, intravenous fluids and analgesia. Have family members find blood donors to travel with you.

POSTPARTUM BLEEDING – the woman has delivered and is bleeding:

ASK and LISTEN – Take a History for Postpartum Bleeding

ASK the following questions and **LISTEN** carefully to the woman's answers to help you find the cause of bleeding. .

1. **Delivery History.** If you were not present for the birth, **ASK:** *When did you deliver? Where did you deliver? Who helped you with the labor and birth? How long was your labor? How is your baby?*

2. **Bleeding History.** *When did you first see blood? How much? Have you passed any clots or tissue? What color is the blood? Did you bring any blood, clots, or tissue to see? Has the afterbirth (placenta) come out? Did anyone try to deliver the placenta?*

3. **About pain.** Are you having pain? If yes, where is the pain? Do you feel tightening or contractions in your belly (uterus)? Is your belly (uterus) sore or tender to touch?

4. **About infection.** Do you have any fever, chills, foul smelling discharge?

5. **About medicines.** Have you taken any medicines – traditional or other?

LOOK and FEEL – Do a Physical Examination.

1. **Abdominal Examination.** See Module 3: **Labor** for a complete description of how to do the abdominal exam for contractions, size, and tender uterus.
   a. **Contractions.** FEEL for the contracted uterus. Is the postpartum uterus firm and contracted? Is there any tenderness?
   b. **Uterus size.** FEEL the size of the uterus. Is the bladder full? Is the postpartum uterus hard or soft? Is the uterus larger than expected for weeks of postpartum? If the uterus is tender and soft, think about postpartum infection.

2. **Perineal Examination.** See Module 4: **Episiotomy and Repair** for a complete description of how to do this.
   a. **Genitals.** LOOK at the genitals. How much bleeding do you see? Are there any clots or tissue? When the woman comes to you, are her clothes and cloths or pads soaked with blood?
   b. **Bleeding.** LOOK to see where bleeding is coming from. LOOK for clots. Any foul smelling discharge? Is it from the uterus, vaginal laceration, or cervical laceration? If postpartum, are the placenta and membranes complete?
   c. **Periurethral area.**. Tears are hard to see clearly. There may be tears around the urethra (periurethreal).

d. **Vaginal and cervical inspection.** Do a careful vaginal and cervical inspection if bright red blood is coming from the vagina. LOOK in the vagina for any tear, tissue, blood clot or hematoma. LOOK at all sides of the cervix while pressing firmly on the back wall of the vagina for oozing or spurts of blood. There may be more than one tear.

:

IDENTIFY PROBLEMS AND TAKE THE APPROPRIATE ACTION

FINDING:	Uterus is soft after delivery, placenta and membranes complete, no lacerations, think uterine atony.
ACTION:	Try to rub up contraction; ask woman to pass urine; manage as outlined in Bimanual Compression of the Uterus, page 5.22.
FINDING:	Uterus sometimes soft, sometimes hard, placenta and membranes incomplete or retained, no lacerations, think retained placenta or membranes.
ACTION:	Try to rub up contraction; ask woman to pass urine; manage as outlined in Manual Removal of a Placenta, page 5.32.
FINDING:	Uterus firm and contracted; placenta and membranes complete; vaginal or cervical tear, think laceration.
ACTION:	Put pressure on laceration to slow bleeding; manage as outlined in Module 4: **Episiotomy** – Laceration Repair.
FINDING:	Uterus tender and soft; placenta and membranes complete; no lacerations; may be bad smelling discharge; may be fever, think postpartum infection.
ACTION:	Manage as outlined in Module 7: **Infections** – Postpartum Infection.
FINDING:	Uterus increasing in size, retained placenta and NO BLEEDING; no laceration; woman has shock signs, think about hidden bleeding.
ACTION:	REFER. Manage as outlined in Module 8: **Stabilize and Refer.**
FINDING:	Uterus contracting; retained placenta and NO BLEEDING; no laceration; no shock signs, think about placenta accreta.
ACTION:	Do not attempt to remove the placenta, see **Learning Aid 2.**

REMEMBER

There may be more than one cause of the postpartum hemorrhage.

EVALUATION AND REPEAT PROCESS

This is the fifth step of the Problem Solving Method. Follow-up visits are important to see if a previous problem is solved, staying the same, or getting worse. Decide if the actions taken were effective at resolving the problem. The evaluation will be immediate if the problem was an emergency such as hemorrhage. The evaluation will be done at the next visit for a problem such as anemia. You will need to repeat the problem solving method. You may have to develop a new plan for treating her. She may need to have information or advice repeated to be sure she understands. She may need a different medication or treatment. She may need to be referred to a hospital or doctor.

ACTIVE MANAGEMENT OF THE THIRD STAGE OF LABOR

Goal

The midwife will review and update her knowledge and skills to decrease the blood loss by using active management of the third stage of labor (AMSTL).

Objectives

The midwife caring for women during labor and delivery will be able to:

1. Describe active management of the third stage.
2. Deliver the placenta, using active management of the third stage.
3. Explain the procedure(s) to the woman and others so that they understand what is being done, and why.

Introduction

When the baby is born, the contractions continue and the uterus becomes smaller. This usually causes the placenta to separate from the uterine wall. Some of the small uterine blood vessels tear as the placenta pulls away, so there is bleeding until the uterus is completely empty and can contract tightly.

In the past, midwives waited for the placenta to separate and encouraged the woman to deliver the placenta by pushing down during the next uterine contraction. Today, to limit blood loss, it is recommended that you deliver the placenta quickly by actively managing the third stage.

In clinical studies, it has been found that active management of the third stage can prevent postpartum hemorrhage. There is more bleeding and postpartum hemorrhage if the placenta remains in the uterus for longer than 30 minutes. This is very important for women who deliver where there are no hospitals or blood transfusion services.

SKILL: Active Management of the Third Stage of Labor

Active management of third stage of labor can do much to lessen the amount of bleeding during the third stage of labor. It prevents up to 60% of uterine atony. Active management of third stage should be used for all vaginal births to deliver the placenta. **Active management of third stage** is a life-saving skill.

Equipment

Regular delivery pack including gloves, see Module 3: **Labor.**
Syringe and needle.
Oxytocin, see **Learning Aid 6**.

Preparation before or during second stage:

- Prepare the oxytocin in a syringe, so that it is immediately ready when you want to give it.
- Explain to the woman and her family what will be happening.
- Ask the woman to empty her bladder when the second stage is near (catheterize only if the woman can not urinate and her bladder is full).
- Assist the woman into her position of choice: semi-sitting or squatting.

An Obstetrician's Quote...

> Estimated blood loss is almost nil [none] when using oxytocin for the active management of third stage procedure.
>
> LSS Obstetrician, Uganda

PROCEDURE

Once the baby is born, lay the baby on a cloth on the mother's belly or on the delivery table or bed between the mother's legs. Give newborn care: dry, warm, and see that the baby is breathing.

Step 1. Give Oxytocin: give mother oxytocin for placental separation.
Give immediate newborn care.

1. Feel the uterus to make sure there is no other baby.

2. Give 10 units oxytocin IM, within 1 minute of the birth for placental separation.

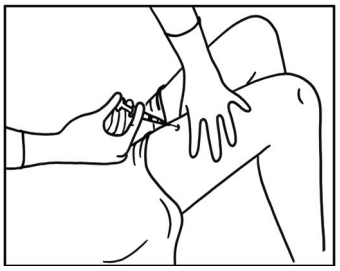

Figure 1. Give oxytocin.

Clamp and cut the cord about 2-3 minutes after birth (blood volume is increased when cord clamping is delayed). Keep mother and baby together and cover to keep them warm. Give the baby an Apgar score. It is an important indicator of the baby's condition.

Step 2. Deliver the Placenta and Membranes: guide the placenta and membranes out with steady tension on the cord.

3. Guard the uterus. Place the side of one hand just above the pubic bone and against the lower half of the contracted uterus (counter traction to prevent uterine inversion).

4. With the other hand, hold the cord close to the perineum. You may hold the cord with your gloved hand, Figure 2 or with a clamp, Figure 3.

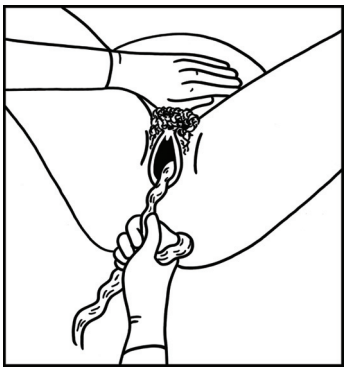

Figure 2. Hand positions.

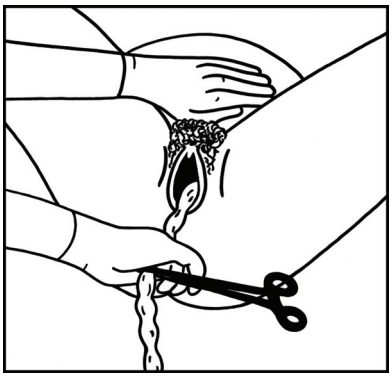

Figure 3. Hand and clamp positions.

5. Wait for a uterine contraction.

6. With the hand above the pubic bone, guard and support the uterus, preventing uterine inversion or prolapse, see Figure 4.

7. When a contraction begins, pull (follow the curve of the birth canal) with a firm, steady tension on the cord to guide the placenta out (controlled cord traction).

   Be patient. Sometimes the vaginal muscles contract and hold the placenta. It takes steady pressure for the vaginal muscles to relax and release the placenta. **Do not pull too hard** so you pull the cord off. The pressure should not be so weak that it does not work. Practice will make you comfortable with what is the best amount of pressure.

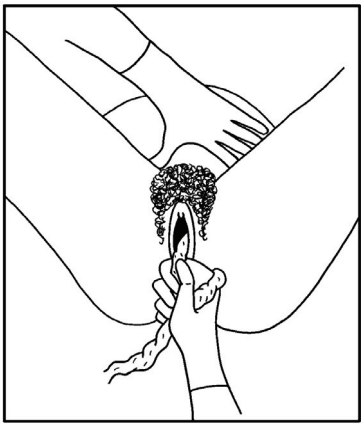

Figure 4. Guard the uterus and use tension on the cord to guide the placenta out.

   If the placenta does not come down, stop pulling on the cord but continue holding the cord and keep your hand on the uterus.

8. As you see the placenta come out, release the cord and uterine support. Hold the placenta with both hands.

9. Deliver the membranes by gently turning the whole placenta. Move membranes up and down until they are completely delivered.

   Remember that a very small amount of retained membranes can prevent the uterus from contracting as it should. You do not want the placenta to come out quickly, since this could cause part of the membranes to tear off and be retained. **Any retained membranes will decrease the uterine contractions AND cause postpartum hemorrhage.**

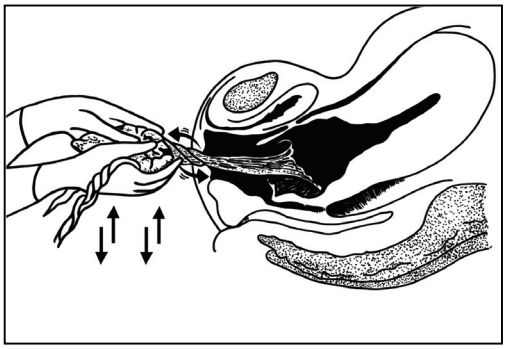

Figure 5. Deliver membranes.

   If membranes tear:
   a) look for membranes at upper vagina, cervix,
   b) use forceps to clamp on membranes, and
   c) gently twist membranes and remove slowly.

Step 3: Rub the uterus immediately after delivery of the placenta and membranes.

10. Rub (massage) the uterus immediately after delivery of the placenta and membranes until the uterus gets hard, see Figure 6. Sometimes blood and clots will come out when you are massaging the uterus. Teach the woman how the contracted uterus should feel and how to rub the uterus.

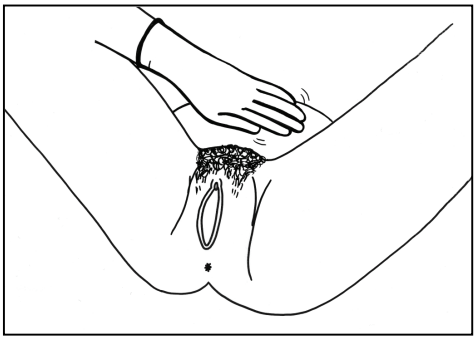

Figure 6. Rub empty uterus immediately until well contracted.

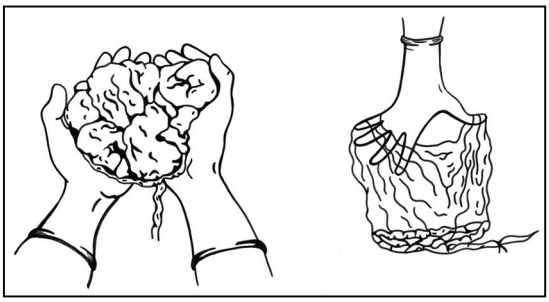

Figure 7. Check that placenta and membranes are complete.

11. Look at the placenta and membranes to see that it is complete, see Figure 7. Save all blood clots and blood stained cloths. Estimate the amount of blood loss.

12. Record information, including the estimated amount of blood loss.

Review Questions

What Did I Learn? Find what you know and understand of this section of the module by answering the following questions. When you are finished, look for the answer in the module on the pages listed in parentheses ( ).

1. What is the purpose of active management of the third stage (page 5.16)?

2. List at least 7 risk factors you can find from a woman's past medical history which would indicate that she is at risk for hemorrhage (page 5.6).

3. Explain why all women are at risk of postpartum hemorrhage, even those without risk factors (page 5.6).

4. List the steps in active management of the third stage that could be used in your work situation (pages 5.16 - 5.19).

BIMANUAL COMPRESSION OF THE UTERUS

Goal

The midwife will review and update her knowledge and skills to prevent and manage uterine atony (tired uterus).

Objectives

The midwife caring for women during delivery will be able to:

1. Explain uterine atony.
2. Describe the signs and symptoms of uterine atony.
3. Describe the signs and symptoms of postpartum hemorrhage.
4. Record observations and actions.
5. Identify the need for referral and refer.
6. Do external and internal bimanual compression.
7. Explain to the woman and others the need for bimanual compression and the dangers of postpartum hemorrhage.

Introduction

Uterine atony is the most common cause of postpartum hemorrhage. The uterus is tired. The uterine muscles can not contract (squeeze) and retract (shorten), so the bleeding continues. If the woman loses too much blood, she will go into shock and die.

Usually in the case of uterine atony, there is not enough time to refer the woman to the hospital. If the delivery is in the hospital, there is not enough time to wait for the doctor to come. The midwife should take action quickly. This is an emergency procedure used to help the uterus contract and slow the blood loss. This can prevent the death of the woman.

REMEMBER

The major cause of hemorrhage in the first hours after birth is uterine atony.

A Midwife's Experience...

The woman was a 28 year old gravida 7. Labor and delivery were normal. Vital signs normal. The placenta was delivered.

Suddenly while examining the cervix and the vagina, there was a gush of blood. I felt the fundus and the uterus was not well contracted. I rubbed for a contraction. Quickly washed my hands, put on a new glove and inserted my hand into the vagina, and a fist was formed. I held my hand in the vagina firmly against the portion of the uterus (lower uterine segment), and I placed my other hand on the fundus.

Soon the bleeding stopped. The uterus was well contracted. The pulse and blood pressure of the mother were checked every 5 minutes for half an hour. Blood loss 800 cc. As the vital signs were normal, I checked them every half an hour for 2 more hours. Beverage 600 cc given by mouth.

I was confident and competent because I know what to do and by reading the modules (Life-Saving Skills Manual for Midwives) regularly.

LSS Midwife, Ghana

IDENTIFY THE PROBLEM: Uterine Atony

Uterine atony may cause postpartum hemorrhage. When the uterine muscles do not contract and retract (shorten), the blood vessels that had been attached to the placenta do not close. See **Learning Aid 4** – Anatomy and Physiology. The uterine muscle may be tired or may get tired trying to push the placenta out. A full bladder may take up room and not allow the placenta to come out. While the placenta remains in the uterus, the uterus can not contract and stop the bleeding. Even after the placenta delivers, the uterine muscles may not contract, so the uterus continues to bleed. Sometimes the uterus is stretched too much from polyhydramnios, twins, or a large baby. When a woman has a very long labor or has had many deliveries, she is at high risk of developing uterine atony. Her uterine muscle has worked too long or too often and may be slow to contract and retract.

As soon as you see the blood coming from the vagina, feel the uterus to make sure it is firm. Remember, she may be bleeding also from lacerations of the uterus (ruptured uterus), vagina, cervix, or perineum. Find the cause of the bleeding, see pages 5.12 – 5.13.

REMEMBER

Hemorrhage is an emergency, the midwife must take action.

TAKE APPROPRIATE ACTION

Uterine atony may cause postpartum hemorrhage and must be taken care of right away. You must try to stop the bleeding right way. You must take **ACTION as soon as you see too much bleeding**:

- Bleeding is a life threatening emergency. TAKE ACTION IMMEDIATELY!
- If the woman has signs of shock, she is in danger. Help the woman and family go to the doctor or hospital.
- On the way to referral, treat the woman for shock, see Module 8: **Stabilize and Refer.**
- If the bleeding is too much, manage uterine atony. Ask the family to prepare for referral.

SKILL: Bimanual Compression of the Uterus

Bimanual compression of the uterus is an emergency procedure the midwife can do to stop postpartum hemorrhage caused by uterine atony. Time is important.

External bimanual compression is started as soon as you FEEL the uterus is not contracting or you see too much bleeding. External bimanual compression is quick and easy to do. External bimanual compression is pressure to the uterus with both hands on the abdomen (two-hand hold). The abdominal wall is usually thin and loose after delivery so it is easy to find the uterus. This is painful to the woman. Community and family members can help you do this if you need to give other care to the woman.

Internal bimanual compression is used if the bleeding does not slow or stop with external bimanual compression. Internal bimanual compression is pressure to the uterus with one hand on the abdomen and one hand in the vagina. This is painful to the woman. This may cause infection. Cleanliness is important. Protect your skin from blood splashes. If at all possible, wear a long sleeved surgical gown, use protective gloves, goggles and foot protection. Scrub hands and change from delivery gloves before starting the procedure.

Equipment

Always be ready for a hemorrhage emergency. Be sure you have the following equipment:

Gloves: sterile, HLD, or other (plastic bags).	Arm board to keep arm from moving.
Injectable oxytocin or other oxytocic.	A straight urinary catheter.
5 X 1000 ml bottles or bags IV fluids.	Blood pressure cuff and stethoscope.
5 giving sets or tubing	Pulsometer, watch or clock.
Syringes, injection needles, butterfly needles, or intracatheters.	Midwife & assistant both trained to start IV.
Adhesive tape or strips of cloth.	Others to help: food, water.
	Emergency transport system.

External Bimanual Compression Procedure

As soon as you see too much bleeding:

1. Call to your assistant or anyone for help.

2. Quickly prepare the woman and explain to her that she is bleeding too much so you must rub her uterus to stop the bleeding. Explain that this hurts a little, but you will finish quickly with as little pain as possible.

3. Ask the woman to lie on her back.

4. Place one hand on the abdominal wall and rub the uterus to make it contract.

5. Check to see if the bladder is full. If the bladder is full, rub the uterus to make it contract, express clots, and then catheterize the woman if she can not pass urine on her own.

6. Massage the uterus until it is contracted. Rub the whole area of the uterus as firmly as you can, without causing too much pain for the woman, until the uterus is contracted.

7. If the bleeding does not stop, ask your assistant to give oxytocin; or ask the family member to massage the uterus so you can give the oxytocic. Give the woman 10 units of oxytocin IM or by IV infusion. Or give ergometrine 0.2 mg (Methergine) IM unless the woman had hypertension in labor. Or give misoprostol 600 mcg orally if oxytocin is not available. See **Learning Aid 6** and *Guide for Caregivers - Formulary***.**

8. Do external bimanual compression.
   a. Place one hand on the abdomen, pressing (pushing) down behind the uterus.
   b. Put your other hand low on the abdominal wall just above the symphysis.
   c. Then press your hands together. This compresses the blood vessels at the placental site as the uterus contracts, see Figure 8.

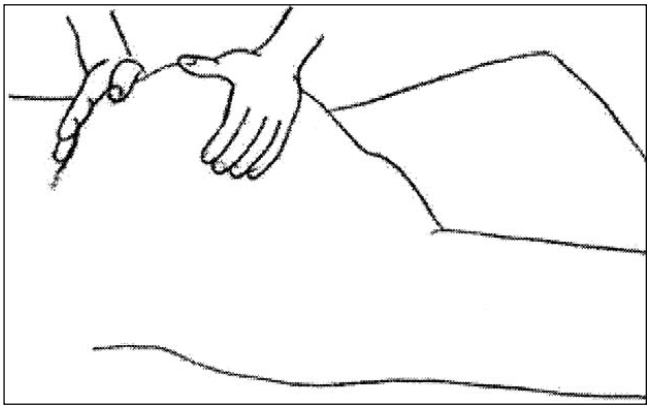

Figure 8. Hand positions for external bimanual compression.

   d. Hold this pressure for 5 – 10 minutes.
   e. Check for bleeding. If bleeding has not stopped or slowed, continue the pressure.

9. Give oxytocic. Ask your assistant to give the woman 10 units of oxytocin IM or by IV infusion if she is able. Or give ergometrine 0.2 mg (Methergine) IM unless the woman had severe hypertension in labor. If you have no assistant, show a family member how to hold the uterus while you give the oxytocic.

10. Put the baby to breast.

11. **If bleeding stops,** take vital signs and record; estimate the blood loss and record.
    - Check for bleeding and contracted uterus every 15 minutes for two hours; then check bleeding and contracted uterus every 30 minutes for 2 more hours (Hofmyer, 2007).
    - Refer if necessary. If referring is not possible or necessary, continue with care. Give broad spectrum antibiotics. Continue checking for vaginal bleeding, contracted uterus, full bladder, and vital signs.
    - Show the woman how to keep her uterus hard.
    - Encourage breast feeding, and watch for complications.
    - Keep woman at clinic and continue to watch for 48 hours.
    - Send a follow up (referral) note to the nurse or midwife at the nearest clinic and to theTBA if there is one in her village, to visit the woman and baby at home weekly for at least 6 weeks.

12. If **bleeding has not stopped,** continue to hold the contracted uterus and prepare for internal bimanual compression.

Internal Bimanual Compression Procedure

If external bimanual compression did not stop the bleeding and the uterus does not remain firm and contracted when you rub it, do internal bimanual compression.

1. Ask your assistant to start an intravenous infusion with oxytocin 20 IU in 1000 ml IV fluid running fast. If your assistant can not start the IV infusion, ask her to do external bimanual compression while you start the infusion. If you have no assistant, ask a family member to hold the uterus while you start the IV infusion or repeat the IM oxytocic if you are not able to start the infusion. Then begin the internal bimanual compression.

2. Ask your assistant to take the pulse and blood pressure of the woman every 5 minutes or as often as possible until the hemorrhage stops. If you have no assistant, you will have to **LOOK** for signs of shock while you are performing internal bimanual compression.

3. Rub the uterus to make it contract.

4. If there is no contraction and if the bleeding has not slowed or stopped, insert your freshly gloved examining hand into the vagina. Gently slide your index and middle fingers into the uterus through the cervix.

5. Carefully move your fingers around the inside of the lower uterus and cervix to loosen and gather all clots or tissue. Remove the clots as you slowly remove your hand.

6. If there are no clots and if the bleeding has not slowed or stopped, form your hand into a fist, Figure 9.

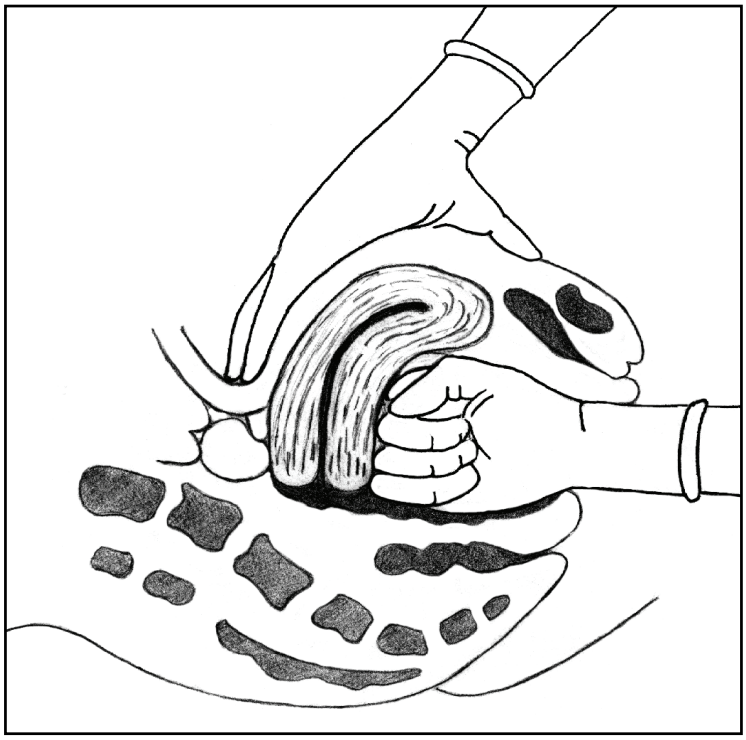

Figure 9. Hand positions for internal compression

7. Press the hand that is in the vagina firmly against the lower portion of the uterus. In grand multiparas, there is often a large, floppy cervix in the way. Pressing on the floppy cervix does not stimulate the uterus to contract.

8. Use care to move a loose cervix away before pressing. Occasionally the cervix is difficult to move away. If this happens, open your fist and use your fingers to massage the lower anterior part of the uterus. This direct massage will frequently stimulate a contraction.

9. Put constant downward and forward pressure with the abdominal hand.

10. Continue pressure with both hands for **5 - 10 minutes** to let the oxytocic take effect and to allow for clotting time to take place at the placental site (normal clotting time is usually less than 10 minutes).

11. **LOOK** for bleeding.

Bleeding stops or slows.

- Remove your hand when the uterus contracts and continue monitoring the uterus during referral.

- Take pulse and blood pressure every 15 minutes for two hours. Record your findings and actions.

- Continue to monitor the uterus and take the woman's vital signs every half hour until you reach the referral place. Encourage breast feeding.

Bleeding still does not stop or slow after 10 minutes of internal bimanual compression.

- Apply external bimanual compression to slow the bleeding during transport to the hospital. Continue IV with oxytocin. Transport the woman with her family and blood donors, see Module 8.

- If referral is delayed, show someone how to do external bimanual compression to slow the bleeding. Look again for laceration of the cervix or vagina and for clots or membranes in the cervix. Treat according to your findings.

- If bleeding is too heavy, try manual compression of the abdominal aorta to slow the blood loss as described in **Learning Aid 3** – Compression of Aorta.

- **Do not stop** external bimanual compression until you get to the doctor. **Do not give up. Encourage** the woman and her family until you get to the doctor / hospital.

A Midwife's Experience...

The woman is a 32 year old gravida 3, one live baby, who had been followed in antenatal clinic since 12 weeks of pregnancy. She was my friend and came from my very village.

The woman came in with labor pains at 9 PM, onset 4 PM. PV (vaginal examination) done. Os was 2 cm dilated. Membranes intact. Labor progressed well. She delivered spontaneously a live female infant at 4:15 AM. The placenta appeared to be complete but the membranes were ragged. She started bleeding.

IV (infusion) 500 cc was set up with Pitocin. External bimanual compression done without effect. Manual removal of clots (uterine exploration) done. Only blood clots expelled. Internal bimanual compression done without effect. Another IV 1000 cc set up, and the woman was transferred.

There were transportation difficulties and the road is very bad. It took us 4 hours and 10 minutes to travel a 35 km journey. The woman received 2500 cc of IV fluids but very unfortunately the IV got infiltrated on the way; and due to the bad road, I could not get the vein. All attempts to start the IV again failed.

The woman expired at the hospital before the doctor arrived. Estimated blood loss 2500 cc.

I collapsed at the hospital. They gave me Valium 20 mg and put me in a bed. I was not aware for some time. I cried and felt very bad. They talked to me and explained that sometimes such women die at their hospital where everything is available. I did not feel confident or competent. Sometimes when I think about it now I cry.

LSS Midwife, Ghana

Sadly not all endings have been good. Midwives are working under great difficulty to give safe maternity care to women. Our best effort will not save every woman.

Review Questions

What Did I Learn? Find what you know and understand of this section of the module by answering the following questions. When you are finished, look for the answers in the module on the pages listed in parentheses ( ).

1. What is the definition of postpartum hemorrhage (pages 5.3, 5.4)?

2. What is uterine atony, and when is it likely to happen (page 5.23)?

3. What are the signs and symptoms of uterine atony (page 5.23)?

4. What are the steps of external bimanual compression (pages 5.25, 5.26)?

5. What are the steps of internal bimanual compression (pages 5.27, 5.28)?

Do Case Study 2, on page 5.63.

MANUAL REMOVAL OF A PLACENTA

Goal

The midwife will review and update her knowledge and skills to identify a retained placenta and to manually remove a placenta.

Objectives

The midwife caring for women during labor and delivery will be able to:

1. Explain postpartum hemorrhage.
2. Recognize signs and symptoms of retained placenta.
3. Know when action or referral is needed and the correct action for the different causes.
4. Manually remove a placenta.
5. Explain to the woman and her family the need for removal of a placenta and dangers of postpartum hemorrhage.
6. Record observations.

Introduction

A retained placenta may cause postpartum hemorrhage, shock, and death. Manual removal of a retained placenta is an emergency procedure to prevent the death of a woman.

It is best to refer women who have retained placenta and postpartum hemorrhage to the hospital. In cases where referral is difficult or impossible, the midwife must be prepared to manually remove the placenta.

Retained placenta without bleeding does happen. **There is no immediate danger as long as the woman is not bleeding.** Make sure that the uterus is not slowly filling with blood. LOOK for a rise in the height of the fundus and/or the whole uterus getting bigger (increasing in size). This would mean the uterus is filling with blood.

Any amount of blood loss may be dangerous for the woman. The blood may be staying inside or coming outside. Remember that if a woman has an hemoglobin of 6 grams (gm) and loses 150 cc of blood after delivery, the blood loss may be enough to cause shock.

A Midwife's Experience...

Following a normal delivery, the placenta failed to deliver and the mother was bleeding. I rubbed the uterus, had the mother push, sent for transport, started an infusion, and went to the health center with the mother, holding her uterus tightly. The doctor was not there, but a senior midwife manually removed the placenta (I studied retained placenta during midwifery but had never done a manual removal, so I was afraid to try). The bleeding decreased after the placenta was removed, but the mother died. I feel so badly that this happened. However, I just successfully completed LSS and am confident that I can competently manually remove a placenta and that I will be able to take the appropriate action.

LSS Midwife, Indonesia

IDENTIFY THE PROBLEM: Retained Placenta

A retained placenta may cause postpartum hemorrhage. The placenta may be partially or completely separated from the uterus but has not come out. When this happens, the uterus can not have good contractions, and it continues to bleed. There may be no bleeding with retained placenta or you may not see the bleeding inside the uterus because it is blocked by the placenta. The dangers of retained placenta are losing too much blood, shock, and death.

TAKE APPROPRIATE ACTION

You must stop the bleeding. **Do not waste time.** You may not know how much blood the woman lost before she came to you. Find the cause of bleeding. Severe, continuous blood loss leads to shock, coma, and death, see Module 8: **Stabilize and Refer**.

Bleeding is a life threatening emergency. **Take action immediately!** If the placenta is not out and the woman is bleeding, or if she has signs of shock, she is in danger. Treat the shock and remove the placenta. Help the woman and family go to the doctor or hospital. If the placenta is not out and the woman is not bleeding, do not attempt to remove the placenta, see **Learning Aid 2.** If the bleeding continues and the placenta is not out, manually remove the placenta. See *Guide for Caregivers – Skill Checklist Manual Removal of Placenta* and page 5.34.

SKILL: Manual Removal of the Placenta

Manual removal of the placenta is an emergency action taken by the midwife to manage postpartum hemorrhage and prevent the death of the woman. Time is important. Cleanliness is critical. Protect the woman from infection. If at all possible, change gloves before starting the procedure. If gloves are not available, see Module 7: **Infections** for universal infection prevention.

When doing the manual removal of the placenta, it is likely that you will get blood on your arm. This contaminates your skin. When doing the manual removal, protect your skin from blood splashes. Wear a long sleeved surgical gown, use protective gloves, goggles and foot protection if possible. If you do not have protective gloves, use something clean and waterproof (fingerless gloves or plastic bags such as those often used for fruit or to cover a loaf of bread can be used).

Important for the midwife: the woman may have infection that you may not know about, such as hepatitis or HIV. It is possible for you to get the disease from her blood. This may happen if you get blood in your mouth or eyes. The danger is greater if you have a cut or sore on your body. Protect your body from splashes of blood. Cover all cuts or sores. Use soap and water to wash off blood splashes AS SOON AS POSSIBLE. See Module 7: **Infections**. Always be ready for an emergency such as a retained placenta. Be sure you have the following:

Equipment

Intravenous supplies.	Analgesia or anesthesia.
Soap and water.	Gloves: sterile or HLD.
Antiseptic lubricant.	Delivery pack.

Procedure

Before you manually remove a placenta:

1. **LOOK** for signs of shock and retained placenta, see Module 8: **Stabilize and Refer.**

2. While preparing, ask an assistant to do external bimanual compression to slow the bleeding.

3. If the woman has a full bladder and is not able to void, catheterize and empty the bladder. A full bladder can prevent the delivery of the placenta.

4. Collect equipment.

5. Explain to the woman and family what you are going to do. Tell the woman that you may have to put your hand into her vagina. Tell her that you must take out the afterbirth (placenta) so that the bleeding will stop. Encourage her to relax.

6. Help the woman to lie on her back with her knees bent. Clean the genital area with soap and water.

7. If you can see the placenta, ask the woman to push a little.

8. Rub the uterus to make it contract. Support the uterus by placing one hand above the symphysis pubis. Press your hand against the lower part of the uterus. Try to remove the placenta with a firm, steady pull on the cord while supporting the contracting uterus. Do not pull too hard. If this fails, continue with the next step.

9. Give analgesia IM and a sedative IM, to relax the woman. If you do not have analgesia and sedative continue with the manual removal of the placenta. The woman may not be able to relax and may be uncomfortable, but you may save her life.

10. Start intravenous fluids, see Module 8: **Stabilize and Refer.** The IV will replace some of the fluid lost by the bleeding. It will help prevent shock. If oxytocin has not been given for AMSTL, give oxytocin now.

11. Tell the woman that you are going to put your hand into her vagina. Put on sterile gloves. Time is very important. Put on sterile, high-level disinfected, or use clean gloves if that is all you have. Lubricate the examining gloved hand with clean, cooled, boiled water. If you do not have gloves, use a plastic bag: rub your examining protected hand with antiseptic lubricant (such as Hibitane or Dettol cream) or use soap and water.

When you manually remove a placenta. . .

12. Place the examining hand (with the thumb folded into the palm) into the vagina. If you can feel the placenta, gently remove it with a contraction.

13. If the placenta is not removed hold tension on the cord with one hand while placing the other hand into the vagina. Follow the cord up to the placental edge. **Once you have put your hand into the uterus, do not bring your hand out until you have separated the placenta and are bringing out the placenta.** Do not take your hand in and out of the uterus, because this increases the risk of infection, see Figure 10.

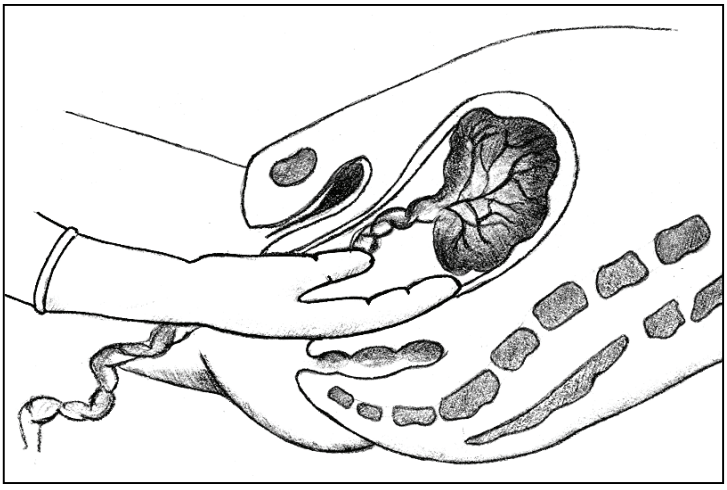

Figure 10. Put your hand in the uterus.

14. Use your other hand to hold the uterus firmly through the abdomen. This will stop the uterus from moving up and helps to keep it contracted, see Figure 11.

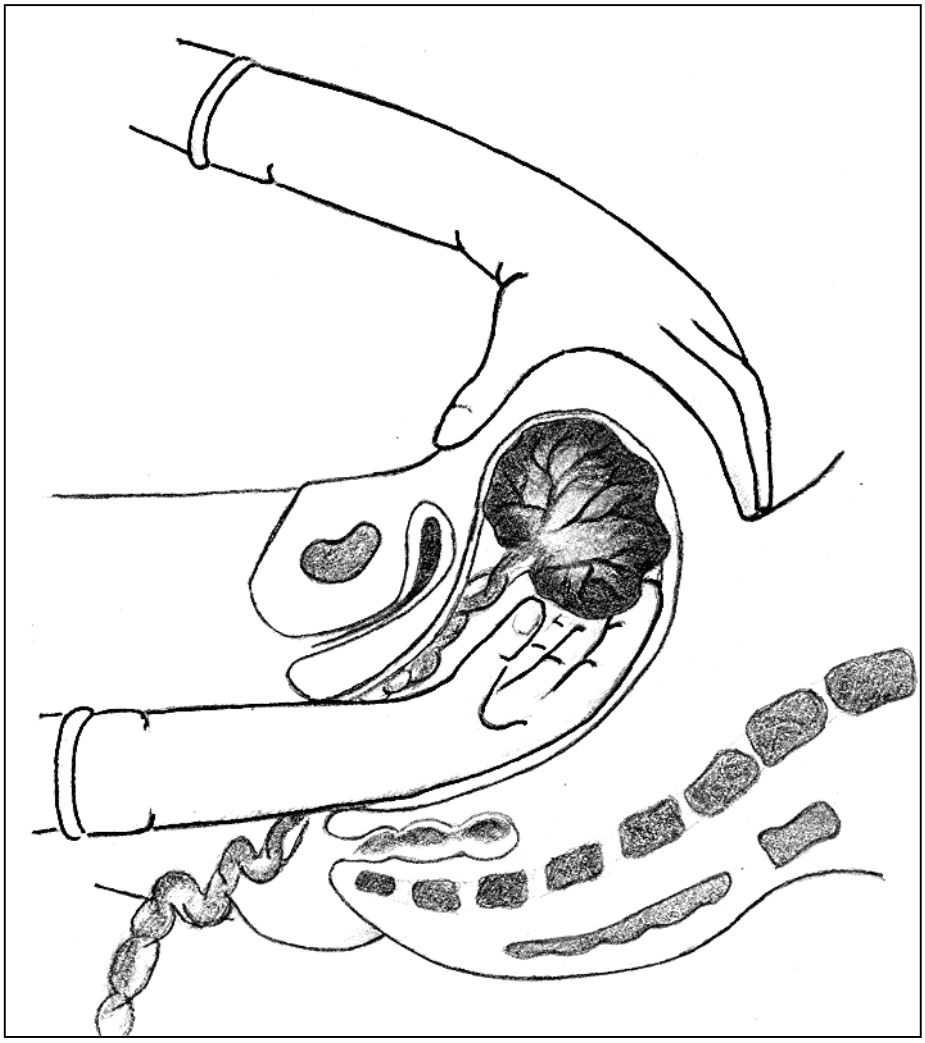

Figure 11. Hold the uterus and find the placenta.

15. Feel the placenta to find where it is (exact location) in the uterus. Find the edge of the placenta, see Figure 11.

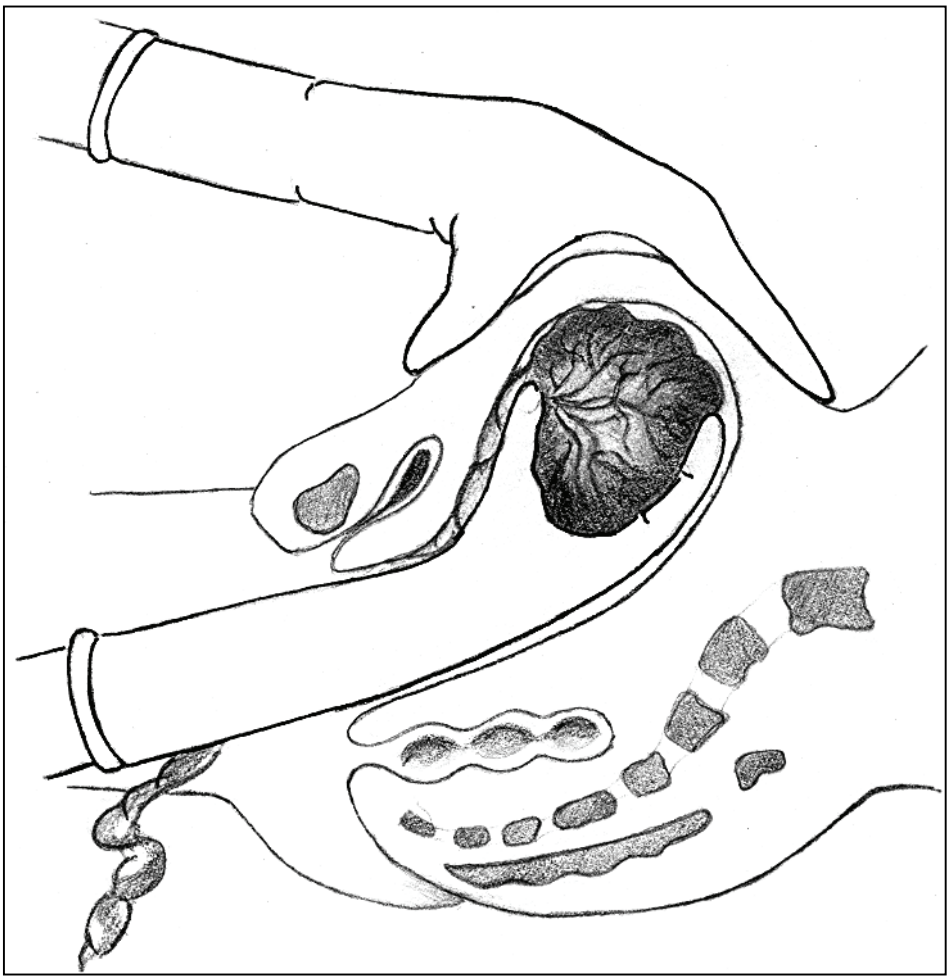

Figure 12. Placenta in palm of hand.

16. Move the extended fingers of your hand between the edge of the placenta and the uterine wall. With your palm facing the placenta, use a slicing movement to the side to gently detach the placenta with the edge of your hand. **NEVER** claw with the tips of your fingers because the placenta may tear. You will feel a spongy tissue which will come away from the uterine wall as the placenta separates from the uterus, see Figures 11 and 12. If the placenta does not separate from the uterus, there may be another problem such as placenta accreta, see **Learning Aid 2.**

17. When all of the placenta is separated and in the palm of your hand, rub the uterus to make the uterus contract.

18. Hold the placenta in the palm of your hand and gently remove during a contraction. Do not pull on just a piece of the placenta for it may tear away from the placenta. Deliver the membranes slowly and carefully.

19. Rub the uterus to make sure it is contracted. Ask a helper or the woman to keep the uterus hard.

20. Give the woman an oxytocic or prostaglandin to help the uterus contract, see **Learning Aid 6**. Put the baby to the breast.

21. Examine the placenta to be sure it is complete. If the placenta is incomplete, the woman may need digital evacuation to remove the remaining pieces, see *Guide for Caregivers – Skills Checklist Digital Evacuation* and page 5.40.

22. Examine the woman carefully and repair any tears or episiotomy.

Immediate care after manual removal of the placenta. . .

23. Give the woman a broad spectrum antibiotic, *see Guide for Caregivers - Formulary*.

24. Check for vaginal bleeding, contracted uterus, full bladder, and vital signs every 15 minutes for two hours. Then every 30 minutes for two hours, then every hour for at least two hours or until bleeding is normal, then three times a day for three days. Teach the woman how to keep her uterus hard.

25. Continue intravenous fluids for 24 hours to replace fluids lost from bleeding and to prevent shock. Stop the IV infusion after 24 hours, if the woman is eating, drinking, and passing urine. See Module 8: **Stabilize and Refer.**

26. Encourage the baby to breast feed to help the uterus remain contracted.

27. Give analgesia (such as paracetamol) to lessen abdominal or perineal pain.

28. If the woman does not feel well enough to go home after 5 days after the delivery, refer her to the doctor or hospital to make sure she does not have another problem.

29. Watch for complications. If you **LOOK and FEEL** fever, tender uterus, or bad smelling vaginal bleeding, give an antipyretic, broad spectrum antibiotic, plenty of fluids and a sponge bath to reduce the fever. Refer to a hospital or doctor as soon as possible.

30. Send a message to the nurse or midwife at the nearest clinic and to the village, to visit the woman and baby at home each week for at least 6 weeks. Record information, including the amount of blood loss, in the woman's records, birth registers or other documents.

REMEMBER

Even a small amount of membranes left in the uterus may cause postpartum hemorrhage and /or infection.

Review Questions

What did I learn? Find what you know and understand of this section of the module by answering the following questions. When you are finished, look for the answers in the module on the pages listed in parentheses ( ).

1. List the signs of retained placenta (pages 5.33).

2. List dangers of a retained placenta (page 5.33).

3. Describe the procedure for manually removing a placenta (pages 5.34 - 5.38).

Do Case Study 1 on page 5.56.

DIGITAL EVACUATION OF CLOTS AND PRODUCTS OF CONCEPTION

Goal

The midwife will review and update her knowledge and skills to manage the clots and/or fetal tissue trapped in a woman's cervix after the placenta is delivered or during an incomplete abortion.

Objectives

The midwife will be able to:

1. Explain and recognize postpartum and post abortion hemorrhage.
2. Identify signs and symptoms of retained membranes or products of conception.
3. Identify the need for referral and refer.
4. Explain to the woman and others the need for digital evacuation and the dangers of postpartum or post abortion hemorrhage.
5. Perform digital evacuation of the cervix.
6. Record observations and actions.

Introduction

Severe bleeding may happen when a large clot or fetal tissue is trapped in the cervix, preventing complete contraction of the uterus and cervix. This can happen after the placenta is delivered or during an incomplete abortion. The situation is dangerous and the clot or fetal tissue must be removed from the cervix as soon as possible.

During pregnancy there should be no menses, so any bleeding during pregnancy is not normal and is usually serious. The common place for bleeding to occur is where the baby's placenta and membranes join the woman's uterus (the placental site). When the placenta separates, the fetus usually delivers. If it is early in the pregnancy, the fetus can not live (is not viable). When this happens, the medical term is 'abortion.'

Spontaneous abortion may be because of abnormalities with the fetus (these cause 50% of all spontaneous abortions); HIV (spontaneous abortions are three times more common in women with HIV); syphilis, measles, malaria, too much smoking and drinking alcohol during pregnancy; and unknown causes. Recent estimates are that at least 15% of all pregnancies end in spontaneous abortion.

A planned abortion is when the woman, for her own reasons, chooses to end her pregnancy. Safe assisted abortions are allowed in some countries. Unsafe abortions are very dangerous for the woman and happen in every country. An estimated 1 in 8 of all pregnancy-related deaths are because of unsafe abortion.

Every midwife and health worker must give quality and compassionate emergency care to every woman who needs it whether during, or after an unplanned or planned abortion has occurred.

This critical emergency care is life saving. Care will be different for each condition. As a midwife, it is important to give life-saving care and meet the woman's needs in a respectful, non-judgmental way.

Many women come to you for care. Some midwives have refused to care for some women or treated them badly. Some women are made to feel ashamed or unclean. We may not agree with what a woman may do, but our job is not to judge women who have lost a pregnancy, whatever are our own beliefs. Our job is to give care with kindness. Many of us could have an unwanted pregnancy or lose a much wanted pregnancy at some time in our lives. Give care to all women as you want care to be given to you or your daughter.

In this section, you will use the Problem Solving Method to decide what the problem is. You will learn how to perform a digital evacuation. You will learn how to care for the woman with early pregnancy bleeding with abdominal cramping.

A Midwife's Experience...

The 22 year old woman was carried to me having delivered her first baby, at 5 months gestation, at home about 2 hours ago. The placenta followed the baby. All of her cloths were covered with blood and she looked very weak.

I felt her uterus right away; it was soft and I began to massage it. I asked the family to keep rubbing the uterus while I quickly started an infusion with Pitocin, scrubbed my hands, and put on gloves. I did not take BP or pulse because the blood was coming too much. I looked and found large blood clots in the cervix. I carefully removed the clots, rubbed the uterus, and cleaned the woman.

I felt confident and competent and was so happy that the bleeding stopped.

LSS Midwife, Uganda

IDENTIFY THE PROBLEMS: Retained Clots or Products of Conception

Retained Clots following Delivery (Postpartum)

When a woman comes to you with clots in her uterus after her baby is born, you may see a thin line (trickle) of fresh, bright red blood, and the uterus feels soft and then hard. The woman may complain of abdominal cramping. The uterus may get bigger. The pulse increases. The woman may become pale or faint.

As soon as you see blood coming from the vagina, feel the uterus to make sure it is firm. If the uterus is hard, look for lacerations as described in Module 4: **Episiotomy**. Examine the placenta and membranes to see if they are complete. If there are no lacerations and the placenta is complete, check to see that the bladder is empty. Use a vaginal speculum to see if there are clots in the cervix.

Retained Products of Conception Caused by an Abortion (Post Abortion)

Losing a pregnancy is a difficult emotional and physical experience. Often, a woman will say the lost pregnancy was caused by her actions, a death in the family, or other happenings. The midwife should reassure the woman.

Help her understand that sometimes a baby does not grow normally in the uterus. The woman's body reacts to this condition. The body causes the vaginal bleeding which removes the pregnancy. This is called a spontaneous abortion (miscarriage). Explain to her that she will be able to have another pregnancy. She will usually have a normal pregnancy next time. Sometimes there is vaginal bleeding which does not remove all the pregnancy. Tissue remains in the uterus. This is an incomplete abortion, see *Guide for Caregivers – Protocols.*

Sometimes a woman may plan to lose a pregnancy. This decision is always hard. A woman may want to lose her pregnancy because she has too many children, she has no partner, she was forced to have sex, someone is forcing her to lose her pregnancy or other reasons. She may put something inside herself or allow an untrained person to do so with the purpose of stopping the pregnancy. This can kill the woman. This is an unsafe abortion. When you see her, she may be in shock (physical and emotional). She may have injuries. The midwife should not judge the woman but help her get well. Be sure to provide education on family planning before the woman goes home so she does not have another unwanted pregnancy.

A gentle speculum examination will help you find the cause of the bleeding, see Module 2: **Antenatal** - **Learning Aid 5.** In addition to bleeding and clots, signs of an unsafe abortion may include trauma of the perineum, tears in the cervix, swelling of the genital area, and foul smelling vaginal discharge. Use a calming manner and always explain to the woman what you are going to do.

TAKE APPROPRIATE ACTION

Bleeding is a life threatening emergency. *TAKE ACTION IMMEDIATELY!* If the woman has signs of shock, she is in danger. Help the woman and family go to the doctor or hospital. On the way to referral, treat the woman for shock, see Module 8: **Stabilize and Refer.**

- If the woman is 12 weeks or less gestation, remove clots and fetal tissue trapped in the cervix. If you are trained to use a manual vacuum aspirator (MVA) and the woman meets the criteria for MVA, use MVA to remove products of conception, see Module 9 **Post Abortion Care Section.** If you are not trained in the use of MVA, use digital evacuation to remove products of conception.

- If the woman is more than 12 weeks pregnant, stabilize and refer to doctor / hospital.

- If the woman has delivered the placenta, and is bleeding is too much, manage vaginal bleeding with digital evacuation, see page 5.44 and *Guide for Caregivers – Protocols*.

SKILL: Digital Evacuation of Clots or Products of Conception

Digital evacuation is a life-saving skill. It will help a woman who is bleeding too much from retained products of conception or clots that may be felt or seen in the cervix and vagina. She may feel a lot of pain. Give her an injectable analgesic such as Pethidine 50 -100 mg IM and fluids for hydration, refer to *Guide for Caregivers - Formulary.*

Equipment

Delivery equipment and supplies, see Module 3: **Labor**.
Gloves: sterile or high-level disinfected (HLD).

Procedure

1. Explain to the woman and family what you are going to do. Explain that you must remove whatever is in the cervix so that the bleeding will stop.

2. Scrub hands and put on sterile or HLD gloves. Clean the genital area. Gently separate the labia and insert your examining hand. Hold the uterus with your other hand so that it does not move. Press the uterus down over the internal fingers.

3. Gently slide your index and middle fingers past the clots you feel. Gently push your two fingers into the uterus through the cervix. Carefully move your fingers around the inside of the lower uterus and cervix to loosen and gather all clots or tissue. Remove the clots as you slowly remove your hand.

4. If some of the clots are stuck, use sterile gauze. Wrap the gauze around your finger and gently put your finger past the clots in the vagina and cervix. Wipe under and around them with your gauzed finger until they become loose. Remove them with your finger.

5. Rub or massage the uterus to help it contract.

6. Give oxytocic or prostaglandin to help the uterus contract and stop the bleeding, see **Learning Aid 6.**

7. Give broad spectrum antibiotic as described in *Guide for Caregivers – Formulary.*

8. **LOOK** at the gauze, clots, and blood that you removed, to see if there is tissue or membranes. **The uterus will contract and the bleeding will stop when the uterus and cervix are empty.**

If the woman has fever and foul smelling vaginal discharge, treat for infection. If bleeding is heavy, refer to the hospital. If bleeding (like normal menses) continues for more than 3 days, refer to the hospital. See *Guide for Caregivers - Protocols* for additional information for infection and hemorrhage.

Review Questions

What Did I Learn? Find what you know and understand of this section of the module by answering the following questions. When you are finished, look for the answers in the module on the pages listed in parentheses ( ).

1. What are the signs and symptoms of postpartum hemorrhage caused by clots in the cervix or uterus (page 5.42)?

2. How will you decide whether the hemorrhage is postpartum or post abortion (page 5.42)?

3. Why is a vaginal speculum used when a woman is bleeding after a delivery or after an abortion (page 5.42)?

4. What are the steps of digital evacuation (page 5.44)?

5. When all of the clots or products of conception are removed with digital evacuation, the uterus and cervix are empty. The uterus will contract and the bleeding usually stops. What findings would cause you to refer (page 5.44)?

Learning Aid 1 – Bleeding in the Abdomen (Intra-abdominal Bleeding)

Hemorrhage, from an injury to the internal organs usually during *an unsafe abortion*, is a life-threatening problem. Death can be prevented **only** by stopping the hemorrhage which can only be done by surgery. Treat for shock and REFER, see Module 8: **Stabilize and Refer.**

The most common injury is uterine perforation (hole in the uterus). Damage can also happen to the ovaries, fallopian tubes, peritoneal tissue around the stomach and intestine, bowel, bladder, and rectum. The risk of infection and death is very high. A ruptured ectopic pregnancy, ruptured ovarian cyst, or ruptured uterus can also cause intra-abdominal hemorrhage. The symptoms will be the same.

FINDINGS: The woman has fever, abdominal pain, cramping pain, shoulder pain, and nausea or vomiting. Her abdomen is swollen, hard, and tender from internal bleeding. She may have signs of shock.

ACTIONS:

1. Ask someone to find transport **immediately** and go with her to the hospital.

While you are waiting or if transport is delayed,

2. Make sure her airway is open. Do **not** give anything by mouth, as surgery may be necessary.

3. Put her in shock position by raising her feet and legs. Cover her to keep her warm.

4. If there is fever, lower the fever by giving sponge bath and fluids. Start IV fluids, if you have them. If you do not have IV fluids or if you can not start the IV fluids, give fluids in the rectum. See *Guide for Caregivers – Skill Checklists Rectal Infusion Procedure*.

5. Give Pethidine 50 - 100 mg (or other locally available analgesic) IM for pain.

6. Take and record blood pressure and pulse every 10 minutes. This will help you follow the progress of shock or the woman's recovery from shock.

7. Go with the woman and her family to the doctor as soon as you can. Keep her in the position for shock. Take her record with you so the doctor will know as much as possible about the woman. Take time to explain to the woman and family what has happened. Reassure them and keep the woman as comfortable as possible.

Learning Aid 2 – Placenta Accreta

After the delivery of the baby, the placenta usually begins to separate a little more with each contraction. In rare cases, the placenta does not detach. No bleeding is seen. The placenta is attached to the muscle of the uterus in placenta accreta. Attempting to remove this placenta, may cause serious hemorrhage and rupture of the uterus. The only treatment when there is bleeding which can save the woman is hysterectomy.

Retained placenta *with no bleeding*, may be placenta accreta. Always refer to doctor or hospital. Do not attempt manual removal.

FINDINGS: Placenta retained for more than one hour, **with no** external or internal **bleeding.**

ACTION: While waiting the one hour for the placenta to separate, complete the delivery by examining the genitalia and repairing any laceration or episiotomy. To prevent shock, watch carefully for bleeding and for signs of shock or placental separation. Stay with the woman.

REFER to doctor or hospital with family, blood donors, and a written report of the delivery. The midwife should go with the woman, in case of bleeding or other problems. Give an IV infusion and nothing to eat or drink to prevent choking during the surgery. Take time to explain to the woman and family what has happened. Reassure them and keep the woman as comfortable as possible.

Learning Aid 3 – Compression of the Aorta

Postpartum hemorrhage is usually controlled with bimanual compression of the uterus and oxytocic medication. In very few cases, you must close off (compress) the aorta to reduce the blood supply to the uterus and slow a severe postpartum hemorrhage. *If the bleeding is heavy, a woman may bleed to death in less than 2 hours. If she has any **anemia,** she may die in less than one hour*. By taking the actions described below, the midwife can help save a woman's life in this unusual situation.

Compression of the aorta is *only used* when all other procedures are not successful. If bimanual compression of the uterus and oxytocic medications do not slow the postpartum hemorrhage, and the woman is close to or in shock, take these actions:

1. Ask assistants to continue bimanual compression of the uterus; put the woman in shock position; cover her with warm blankets or cloths; keep IV infusion running; give oxygen and blood if available. REFER.

2. While waiting for the transport, push down with a closed fist on the woman's abdomen, just above the umbilicus and slightly to her left. Press the aorta against the spine to slow the blood flow. This is usually easier to do on thin women, see Figure 13.

3. With the other hand, check the femoral pulse to see if the aortic compression has slowed or stopped the femoral pulse. If so the flow of blood is also slowed or stopped.

4. Continue the pressure until the bleeding stops or when reaching the doctor or hospital. **Do not give up or stop. Reassure the woman and her family.**

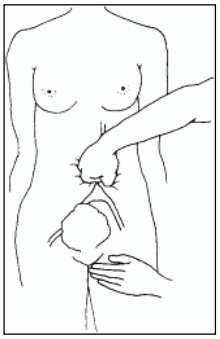

Figure 13. Hand positions.
Source: WHO 2000, S-30.

Learning Aid 4 – Anatomy and Physiology of the Uterus

The muscle fibers of the uterus go around maternal blood vessels, see Figure 14. After the birth of the baby, these muscle fibers contract and retract. Uterine contractions are caused by oxytocin, a hormone secreted by the posterior pituitary gland. Oxytocin increases in late pregnancy and even more during labor.

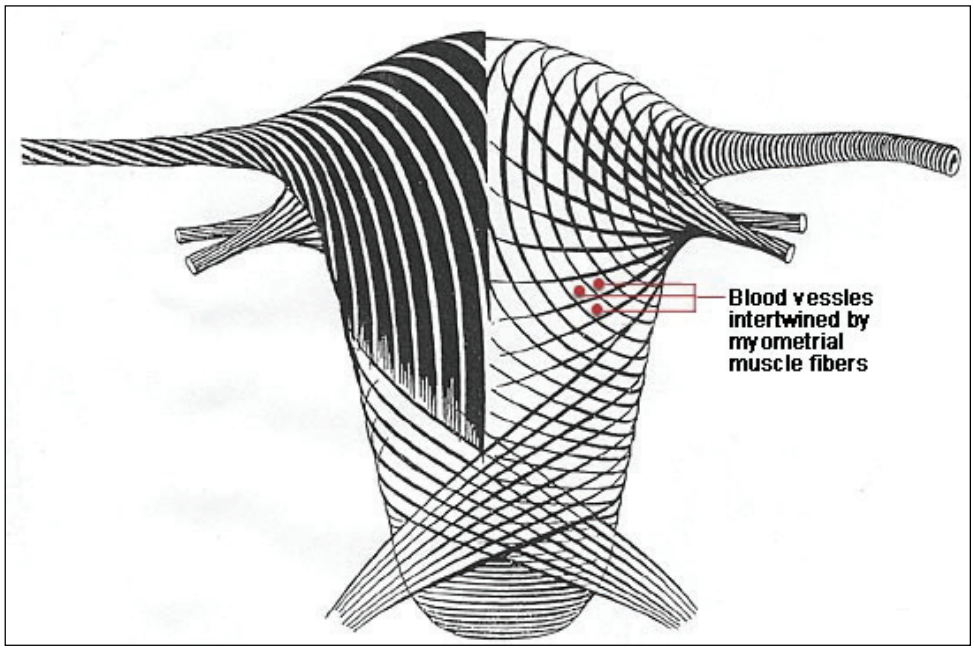

Figure 14. Muscle fibers of the uterus.
Source: http://library.med.utah.edu/nmw/mod2

Contractions of the uterus in the immediate postpartum cause this to happen:

- The surface inside the uterus becomes smaller and the site where the placenta was attached also gets smaller. This causes the placenta to separate from the uterus.

- As the placenta separates, the maternal blood vessels are torn and begin to bleed at the place where the placenta was attached.

The muscle fibers of the uterus close the blood vessels where the placenta was attached. This helps control bleeding at the placental site.

After separation, the placental site is quickly covered by blood cells, and clot formation begins in the torn vessels.

The uterus continues to contract and retract after separation, pushing the placenta and membranes into the lower uterine segment, Figure 16.

With the delivery of the placenta, the uterus is able to contract completely, Figure 17.

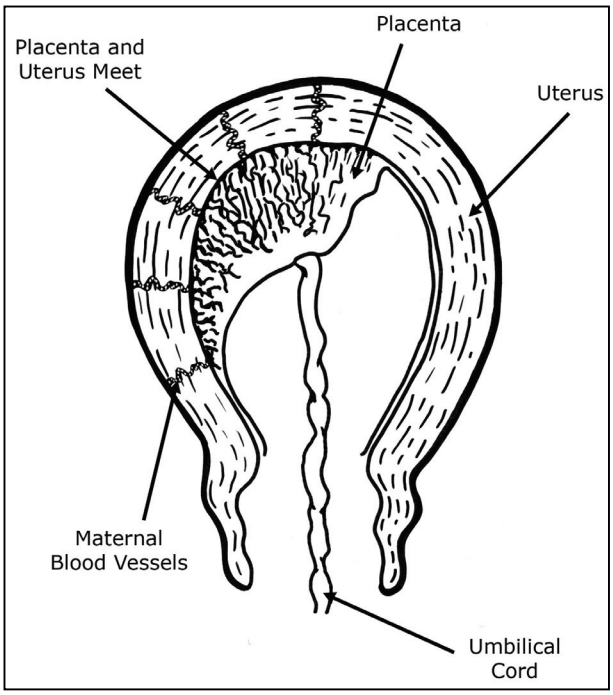

Figure 15. Placenta attached to uterus showing maternal blood vessels.

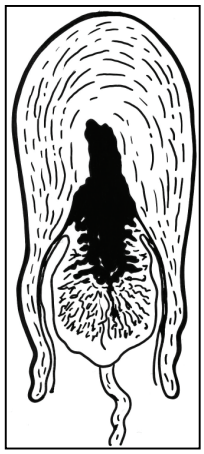

Figure 16. Placenta falling into lower uterine segment.

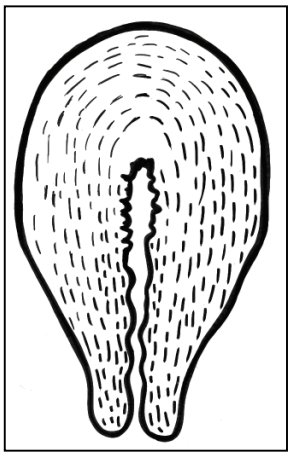

Figure 17. Empty uterus.

Learning Aid 5 – Emergency Procedures

These procedures are included only for emergency situations when **staff is trained and skilled** in doing the procedure. They are life-saving procedures.

Anti-shock Garment, Nonpneumatic Anti-Shock Garment (NASG).

The anti-shock garment is the first aid equipment that stops shock and decreases bleeding in the lower body. It is one way to help a woman while she is going to the hospital for postpartum hemorrhage. Pilot studies indicate that the NASG decreased blood loss in women with hemorrhage related to pregnancy. It is not yet known if using the NASG early in the hemorrhaging will reduce mortality and severe morbidity. The garment is low-cost, reusable, and midwives can be trained in a short time to use it. It can be used where births are mostly assisted by Traditional Birth Attendants (TBA) or Community Health Workers (CHW). In rural Mexico, the NASG has been successfully used by trained CHWs at the primary health care level allowing time for safe transport to emergency obstetric care facilities (Miller, 2004).

The NASG is a compression suit that is not heavy. It is like a pair of long pants. It has five neoprene sections that close tightly with Velcro around the legs, pelvis and abdomen. A small foam pressure ball is in the abdominal section to give uterine pressure. When put on tightly, the garment gives 20 - 40 mm HG pressure around the body. This pressure pushes blood from the lower extremities (legs) and abdominal area to the essential core organs: the heart, lungs and brain. According to early studies, women in shock from any form of hemorrhage from pregnancy or childbirth, including postpartum hemorrhage will get back to consciousness within minutes. Their vital signs return to normal. Once a woman's bleeding has stopped, she can be safely transported from a home birth or primary health care center to a hospital for emergency care. If she is already at a hospital, a woman can safely wait for blood transfusions and additional medical or surgical care.

Vaginal Packing.

In severe cases of hemorrhage the midwife must slow the bleeding until reaching a doctor or hospital or the woman will die. If the woman is not going far from the clinic, internal bimanual compression of the uterus can be just as effective as packing the vagina and will save time. If it is not possible to do bimanual compression during referral (woman in back of lorry, carried on a litter, etc), vaginal packing can slow and sometimes stop uterine bleeding. If the bleeding is caused by vaginal or cervical lacerations, and you can not repair the laceration, packing of the vagina may be life-saving (Hughey 2006).

Packing works for several reasons. The tight packing of the vagina may put pressure on some branches of the uterine arteries, decreasing blood flow to the uterus. By stopping the flow of blood from the uterus, intrauterine pressure increases, slowing any continuing bleeding inside the uterus. Packing puts direct pressure on bleeding from the cervix or vagina, slowing or stopping the bleeding.

When packing the vagina:

1. Insert a Foley catheter to monitor kidney function and to keep the bladder empty as the woman will not be able to urinate with the packing in place.

2. Use a speculum or retractors to hold the vaginal wall apart.

3. Use a long forceps (ring forceps, sponge forceps) to push gauze roll material into the upper vagina. If you do not have roller gauze, open a package of 4 x 4's and tie them end to end. Any other sterile gauze-like material may be used.

4. The upper vagina is packed first, with moderate pressure to make a tight fit.

5. This packing is continued until the lower vagina is full, distending the walls with a tight packing of gauze (a mass about the size of an adult fist).

6. Control pain with injectable pain killers such as Pethedine, see *Guide for Caregivers – Formulary.*

7. Leave the packing for the doctor to remove. Vaginal packing can be left for 1-3 days, and then carefully removed after the bleeding has stopped or stabilized. Sometimes, only half the packing is removed, followed by the other half the following day.

8. The referral should be discussed in detail with the doctor or hospital staff. Go with the woman for the referral, see Module 8: **Stabilize and Refer** for fluid and shock management.

Learning Aid 6 – Oxytocic and Uterotonic Drugs for AMTSL, PPH

OXYTOCICS

Oxytocin is the best oxytocic for active management of third stage based on the World Health Organization recommendations. Oxytocin is secreted naturally by the posterior pituitary when the baby breast feeds. Man made forms of the hormone oxytocin can be found in **Pitocin®** and **Syntocinon®**. In moderate doses, oxytocin causes slow, widespread contractions of the muscles of the uterus with full relaxation in between. High doses cause long tonic contractions.

If oxytocin is not available, use the available oxytocic.

Ergometrine -- (ergometrine maleate) is usually given by IM injection, if necessary to control hemorrhage after delivery. It may be given slowly (2 to 3 minutes) by IV injection. Give it slowly as it may cause a very painful uterine contraction.

Methergine® -- 0.5 mg (methylergonovine maleate) is given by IM injection. Methergine given for a long time may slow lactation (breast milk supply).

Syntometrine -- 1 cc (5 IU synthetic oxytocin plus 0.5 milligram [mg] ergometrine maleate) has fast and long action due to the combination. It has both the fast action of oxytocin and the continuous contraction action of ergometrine.

Ergot-based drugs are used to control postpartum hemorrhage and to help the uterus return to the normal size after childbirth. Ergometrine and Methergine quickly lose potency (strength) in the sunlight and in hot climates. Store them in the dark and cool places. Keep them in the refrigerator if you have one. **Ergometrine and Methergine should not be given to women with hypertension.** Do not use any oxytocic if it is cloudy or has color.

UTEROTONICS

Misoprostol a synthetic prostaglandin used orally or under the tongue for cervical ripening, induction of labor, prevention and treatment of postpartum hemorrhage, and post abortion care. It has been proven to decrease postpartum hemorrhage by 46% (without active management of third stage of labor) when compared to placebo.

It can be used effectively and safely in active management of the third stage of labor and for postpartum hemorrhage prevention when oxytocin (the drug of choice) is not available. If misoprostol is used for active management of third stage of labor it should not be used for treatment of postpartum hemorrhage. Because research is continuing on prostaglandin drug dose, carefully follow local guidelines when using misoprostol or other prostaglandin drugs.

DRUGS FOR ACTIVE MANAGEMENT OF THE THIRD STAGE OF LABOR (AMTSL) [1]

Name of Drug / Preparation	Dosage & Route	Drug Action & Effectiveness	Side Effects & Cautions
Oxytocin Posterior pituitary extract: other names Pitocin or Syntocinon.	Give 10 units IM injection.[2]	• Acts within 2 to 3 minutes. • Effect lasts about 15 to 30 minutes.	• First choice. • No known contraindications for postpartum use.[3] • Minimal or no side effects.
Ergometrine Preparation of ergot. Usually comes in dark brown ampoule.	Give 0.2 mg IM injection.	• Acts within 6 to 7 minutes IM. • Effect lasts 2 to 4 hours.	• Causes tonic contractions (may increase risk of retained placenta). • Contraindicated in women with or history of hypertension, heart disease, retained placenta, pre-eclampsia, eclampsia. [4] • Side effects: nausea, vomiting, headaches, and hypertension. • Greater incidence of retained placenta. DO NOT USE if drug is cloudy. This means it has been exposed to excess heat or light and is no longer effective.
Syntometrine Combination of 5 IU oxytocin plus 0.5 mg ergometrine.	Give 1 ml IM injection.	• Combined rapid action of oxytocin and sustained action of ergometrine.	• Same cautions and contraindications as ergometrine. • Side effects: nausea, vomiting, headaches and hypertension.
Misoprostol E1 analog prostaglandin	Give 600 mcg (three 200 mcg tablets) orally or sublingually (under the tongue).	Orally: • Acts within 6 minutes. • Peak serum concentration between 18 to 34 minutes. • Effect lasts 75 minutes.	• Side effects: shivering and elevated temperature. NEVER GIVE oxytocin until at least 6 hours after last misoprostol dose. **Because you may not have used this before for this indication, be sure to carefully follow local guidelines when using.**

Source: POPPHI 2007.

[1] **Active management of the third stage should be practiced on all women in labor since it reduces the incidence of postpartum hemorrhage due to uterine atony**. All postpartum women must be closely monitored for hemorrhage.

[2] If a woman has an IV running, an option may be to give her 5 IU bolus IV SLOWLY

[3] This is intended as a guide for using these drugs during the third stage of labor. Different guidelines apply when using these drugs at other times or for other reasons.

[4] Lists of contraindications are not meant to be complete; evaluate each client for sensitivities/appropriateness before use of any drug. Only some of the major postpartum contraindications are listed for above drugs.

DRUGS FOR MANAGEMENT OF POSTPARTUM HEMORRHAGE (PPH)

	Oxytocin	Ergometrine	Misoprostol
Dose and route	IV: Infuse 20 units in 1 L IV fluids at 60 drops per minute. IM: 10 units.	IM: give 0.2 mg. IV bolus 0.2 mg slowly over 2-3 minutes.	200 mcg oral AND 200 to 400 mcg sublingually or rectally (Hofmeyr, 2005).
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.	Not known
Maximum dose	Not more than 3 L of IV fluids each liter containing 20 units oxytocin (total 60 units).	5 doses (total 1.0 mg)	Oral dose should not exceed 600 mcg because of side of effects of increased temperature and chills
Precautions and comments	After 2 X 20 units in IV with no result, may give 5 IU as IV bolus slowly.	Contraindicated in cases of pre-eclampsia, hypertension, heart disease	Contraindicated in cases of asthma

Sources: WHO 2000, Davies 2005, Hofmeyr 2005, WHO 2006.

Case Study 1 - Problem Solving Method

The Problem Solving Method is an organized way of giving care to women. It is a way of thinking about the care you give women. This case study helps you review the Problem Solving Method. You may use Modules 1, 5, 8, and *Guide for Caregivers* for reference.

We solve problems every day of our lives. We usually do not think about the mental steps involved in problem solving though we all follow steps to solve problems. The Problem Solving Method is a way to help us follow steps in giving care to women. Read, and write your answers to questions in this case.

What are the five steps of the Problem Solving Method?

1.

2.

3.

4.

5.

(Refer to Module 1)

The Problem Solving Method is used by midwives to identify problems and take appropriate action.

ASK and LISTEN

This is the first step in caring for a woman, using the Problem Solving Method. Ask questions about the reason she came to see you, the midwife.

Mrs. R. P. is brought to you by the TBA, her husband, and her father-in-law. The TBA tells you Mrs. R. P. delivered a baby girl 8 hours ago. The TBA is holding the baby. The TBA also tells you that Mrs. R. P. is bleeding and has pain in her belly. Mrs. R. P. did register with you in her fourth month of pregnancy. You know that she has a boy 6 years old and a girl 4 years old. You know that this pregnancy developed normally to term as she came for regular antenatal clinic visits.

After you help the TBA and the family get the woman into the maternity, ask the following questions. Listen very carefully to the answers. What questions will you ask? Write your answers (page 5.12).

1.

2.

3.

4.

You find that Mrs. R. P. began bleeding as soon as the baby was born. The TBA brought two large cloths soaked with blood and fluid from the delivery. The TBA tells you the placenta will not come out. She says she did not pull on the cord, but did rub the womb to make it stay hard. Mrs. R. P. has taken some weak tea with sugar for strength. She has not taken any medicines.

Do not waste time writing down the above information at this time. You know that 8 hours is a long time to be bleeding and you must continue with the Problem Solving Method to find what is causing the bleeding and take appropriate action to stop the bleeding.

LOOK and FEEL

This is the second step when seeing a woman, using the Problem Solving Method. Do an examination as a result of the information you got in step one, **ASK and LISTEN**. What examination will you do on Mrs. R. P.? Write your answers (pages 5.12-5.13).

1.

2.

3.

You find out that Mrs. R. P.'s skin is warm and dry; her pulse is 100; and her blood pressure is 96/50. The uterus is soft but contracts as soon as you rub it. The bladder is empty. The cervix and vagina are free of tears. The cord is presenting at the vagina; and dark red blood is running from the vagina.

IDENTIFY THE PROBLEMS

This is the third step in the Problem Solving Method. The midwife must find the problems by using the information from the first two steps. It is important that all the problems you identify are treated, not just the problem that caused her to come.

Mrs. R. P. came with an EMERGENCY PROBLEM. You must take appropriate action for this EMERGENCY first. Later you can write in her record all of your other findings and her problems, and take appropriate action for them.

Identify the cause of the emergency problem of bleeding. You know that continuous blood loss leads to shock, coma, and death.

What is the cause of bleeding (page 5.13)?

How did you decide the cause of bleeding (page 5.13)?

Use the information from **ASK and LISTEN** (delivered a normal baby, abdominal pain, placenta has not come out), and the **LOOK and FEEL** (uterus sometimes soft, then hard, cord of placenta presenting in vagina, no genital tears, dark bleeding, blood pressure 96/50, pulse 68). You **IDENTIFY THE PROBLEM;** that Mrs. R. P. has a retained placenta. She is not in shock, but is feeling somewhat weak.

TAKE APPROPRIATE ACTION

This is the fourth step in the Problem Solving Method. The midwife must decide what should be done to take care of each problem. The following areas should be considered for each problem:

Emergency Life Saving Care	Laboratory tests
Medical treatment	Referral
Education	Plans for follow up
Counseling	Recording

Mrs. R. P. may need information on family planning, good nutrition after delivery, how to relieve hemorrhoid pain, and where to go for immunizations for her small children. *Education, counseling, and plans for follow-up and routine medical treatment* are **not emergencies**. They do need attention, but can wait until Mrs. R. P. is feeling better. You may take care of these at the follow up visit.

Mrs. R. P. has a life threatening problem. Take **ACTION IMMEDIATELY**. *Emergency medical treatment, maybe laboratory tests, referral, and recording must be done now.* **The EMERGENCY problem needs action right away.** What EMERGENCY action will you take? Why will you take each action? Write your answers (pages 5.33-5.34, *Guide for Caregivers – Protocol & Formulary*):

ANSWERS: Case Study 1 for EMERGENCY ACTIONS:

1. *Make sure she is not in shock, because Mrs. R. P.'s condition may change from the first pulse and blood pressure reading. Remember, she is losing blood and has a retained placenta.*

2. *Call someone, if available, to help you.*

3. *Collect the equipment (should be ready and available for every delivery or emergency).*

4. *Explain to Mrs. R. P. and her family what you are going to do so that they will help and not be afraid.*

5. *Give analgesia and sedative, if available, to relax the woman. Start an IV infusion to replace some of the fluids lost by the bleeding and to prevent shock. Give 1000 – 1500 ml rapidly in the first hour and then slow to 150 cc per hour with total intake of 5000 ml in 24 hours.*

6. *Explain to Mrs. R. P. what you are going to do. Help her lie on her back with her knees bent. Clean the genital area. If she is unable to void, catheterize and empty the bladder.*

7. *Rub the uterus to make it contract. Try to deliver the placenta. If this fails, prepare to manually remove the placenta.*

8. *Scrub hands; put on gloves.*

9. *Follow umbilical cord and find placenta by gently inserting your gloved hand into the uterus.*

10. *Keep the uterus contracted and prevent it from moving.*

11. *Find the edge of the placenta.*

12. *Detach the placenta with a gentle, sideways slicing movement.*

13. *Remove the placenta while you rub the uterus to make it contract.*

14. *Rub the uterus until you are sure it is contracted.*

15. *Give Mrs. R. P. an oxytocic to help the uterus contract. Put the baby to her breast.*

16. *Examine the placenta well to make sure that all the placenta and membranes have been removed.*

17. *Refer Mrs. R. P. to the hospital if at all possible for examination by doctor to make sure there are no remaining pieces.*

If the placenta and membranes are completely delivered and YOU DO NOT OR CAN NOT TRANSPORT HER TO THE HOSPITAL, what other **ACTIONS** (care) will you take? Write your answers (page 5.38).

ANSWERS - Case Study 1
when transport is not possible, the other ACTIONS (care):

1. *Give broad spectrum antibiotic to prevent serious infection of the uterus.*

2. *Continue the IV infusion, a total of 5 liters in 24 hours, to replace fluids lost from bleeding and to prevent shock. Encourage the woman to eat and drink normally. Nutrition, fluids, and activity are important for healing and strength.*

3. *Check for vaginal bleeding, contracted uterus, full bladder, and vital signs every 15 minutes X 2 hours; every 30 minutes X 2 hours and then hourly until normal. Then, when normal, check 3 times a day for 3 days to make sure the bleeding stops. Show the woman how to check the uterus to make sure it is hard. Remind her how to rub the uterus if it is not hard.*

4. *Continue to put the baby to each breast as soon as the woman is strong enough. Give an oral oxytocic to make sure the uterus stays contracted if you did not give injectable oxytocin or another oxytocic.*

5. *Give analgesia to lessen abdominal or perineal pain.*

6. *Give perineal care at least 3 times a day. Teach the woman why this care is important and why she should continue it when she goes home.*

7. *Treat for fever according to findings. Give iron tablets and check hemoglobin.*

8. *The woman may go home when she has completed the medications. She should feel well enough to go home by 5 days after the delivery. If she does not, refer her to the doctor to check for another problem.*

9. *Make an appointment for the woman and baby to return to the clinic in 2 weeks for a check up.*

10. *Send a message to the nurse or midwife at the nearest clinic and to the TBA if there is one in her village, to visit the woman and baby at home each week for at least 6 weeks.*

EVALUATE AND REPEAT THE PROCESS

This is the fifth step of the Problem Solving Method. Follow-up visits are important to see if the woman is feeling better, staying the same, or getting worse. Decide if the actions taken were effective at resolving the problem.

What do you for the woman and her baby during the follow-up visit (*Guide for Caregivers – Postpartum Counseling* and *Formulary)*?

The follow-up evaluation is done at the next visit to check for healing, any infection, and other postnatal care. You will need to repeat the problem solving method. You check her hemoglobin / hematocrit to see whether the bleeding from the laceration has made a change in her hemoglobin / hematocrit numbers. See *Guide for Caregivers – Postpartum Counseling* and *Formulary* for iron and Vitamin A routines.

You may have to develop a new plan for treating her. She may need to have information or advice repeated to be sure she understands. She may need a different medication or treatment. She may need to be referred to a hospital or doctor.

Repeat Postpartum Visits. Repeat postpartum visits are just as important for the woman and the baby. A woman or baby can develop a problem at any time. The **ASK and LISTEN** questions you discuss with the woman during her follow-up visits can help you find problems early while you are showing her that you are interested in her, see Module 10: **Postpartum.**

Case Study 2 - Problem Solving Method

Read the following case and use the Problem Solving Method.

Mrs. U. A. has just delivered a large baby girl at your maternity. This is her fifth delivery. You did active management of third stage of labor. The placenta and membranes are complete. The labor and delivery had no problems. As you are caring for Mrs. U. A., you see a continuous stream of blood from the vagina.

Using the Problem Solving Method, you decide what is wrong and how to help Mrs. U. A. Continue reading and write in your answers.

ASK and LISTEN

There is not much to **ASK and LISTEN**. You will know before the delivery, or find during antenatal clinic visits, if the woman had a problem with bleeding after another delivery. You may ask the woman how she is feeling. Then, explain to her that she is bleeding too much. Reassure her that you want to find out where the bleeding is coming from and stop the bleeding as quickly as possible. You call to your assistant for help.

LOOK and FEEL

Mrs. U. A. is feeling fine but would like something to drink. She is very excited about her baby girl. You ask your assistant to put the baby to Mrs. U. A.'s breast. The blood pressure is 100/66 and the pulse is 88. As soon as you see the bleeding, you immediately feel the uterus to decide if it is firm and contracted. What else do you do? Write your answers (page 5.25).

You **LOOK** for signs of shock (low blood pressure, cold and wet skin, weak and fast pulse). You check the bladder and catheterize her if it is full. You **LOOK** at the placenta very carefully to make sure all of the placenta and membranes are out. You **LOOK** at the genitalia for tears of the cervix or vagina. The uterus is not firm or contracted.

IDENTIFY THE PROBLEM

What is Mrs. U. A.'s problem? Write your answer (page 5.13, *Guide for Caregivers* – Complaint & Findings).

Use the information from **ASK and LISTEN** (delivered normal baby, thirsty), and from **LOOK and FEEL** (vaginal bleeding, uterus not firm or contracted, placenta and membranes complete, no genital lacerations, bladder now empty, B/P 100/66 and P 88). You **IDENTIFY** the problem that Mrs. U. A. has uterine atony. She is not in shock, but is thirsty. Uterine atony is an emergency, and **APPROPRIATE ACTION** must be taken as soon as you know what the problem is. When the emergency is over, you can take care of any other problems you find.

TAKE APPROPRIATE ACTION

This is the fourth step in the Problem Solving Method. The midwife must decide what should be done to take care of each problem. The following areas should be considered for each problem:

EMERGENCY LIFE SAVING CARE
Medical treatment
Education
Counseling
Laboratory tests
Referral
Plans for follow up
Recording

Mrs. U. A. may need information on family planning, good nutrition after delivery, how to relieve hemorrhoid pain, and where to go for immunizations for her small children. *Education, counseling, and plans for follow-up and routine medical treatment* are **not emergencies**. They do need attention, but can wait until Mrs. U. A. is not at risk of dying. You may take care of these at the follow up visit.

Mrs. U. A. has a life threatening problem. Take ACTION immediately. The EMERGENCY problem will need action right away. What EMERGENCY action will you take? Why will you take each action? Write your answers (pages 5.27- 28).

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ANSWERS: Case Study 2 - The EMERGENCY ACTIONS are:

You have already called to your assistant for help. You or the assistant have rubbed the uterus, checked the bladder, rubbed the uterus again, catheterized the woman, reassured the woman, and explained what is happening to her.

*You review for yourself the facts that uterine atony may cause postpartum hemorrhage and must be taken care of right away. There is not time to refer the woman to a doctor. You must take **ACTION** right away:*

1. *Do external bimanual compression of the uterus. Place one hand on the abdomen behind the uterus; place your other hand flat and low on the abdomen. Press hands together to squeeze blood vessels at the placental site in the uterus and stop the bleeding.*

2. *Ask your assistant to give oxytocin or another oxytocic while you hold the uterus for 10 minutes to help the uterus contract. If you do not have an assistant, show the family how to hold the uterus while you give the injection.*

3. *Start intravenous normal saline with 20 I.U. of oxytocin 1000 ml first hour and then 150 ml/per hour for a total of 5000 ml in 24 hours.*

4. *Look to see if bleeding is slowing or stopping.*

a. **If bleeding stops**, record vital signs and estimate blood loss. Feel the uterus and check for bleeding every 15 minutes for two hours, then every 30 minutes for 2 more hours to make sure the uterus stays firm and contracted. Put the baby to each breast to help the uterus contract, to nourish the baby with the colostrum, and to establish mother and child bonding.

b. **If bleeding continues**, what EMERGENCY action will you take? Why will you take each action? Write your answers (pages 5.28, 5.44, 5.46).

ANSWERS: Case Study 2 – If bleeding does not stop

***If bleeding does not stop**, continue to hold the uterus and ask your assistant to take vital signs and get ready for internal bimanual compression. **If you do not have an assistant, ask the family to help.** You may not have time to take vital signs. You must **LOOK** for signs of shock as you continue helping the woman.*

1. *Ask the assistant or family to hold the uterus while you start a 500 ml IV infusion with 10 IU oxytocin (or 20 IU in 1000 ml) to prevent shock and help the uterus to contract.*

2. *Rub the uterus. If there is no contraction or the bleeding continues, ask the assistant or family to continue to hold the uterus while you put on fresh gloves or quickly scrub your hands.*

3. *Do an internal bimanual compression. Put your freshly gloved examining hand into the vagina. Form your hand into a fist. Press your fist firmly against the lower portion of the uterus moving any cervix out of the way. Press your abdominal hand and your fist together, and hold firmly for 5 – 10 minutes.*

4. *Watch for vaginal bleeding to slow or stop.*

5. ***If BLEEDING STOPS**, take vital signs every 30 minutes for 2 hours once the woman is stable. Estimate blood loss. Put the baby to the breast. Allow the woman's IV infusion to run another 3 to 6 hours until you are sure the hemorrhage is controlled. Check for bleeding every 15 minutes for one hour or until normal; then check for bleeding every 30 minutes for two hours; then check for bleeding 3 times a day for 3 days. She may eat and drink normally as she feels able. Record findings and actions.*

6. ***If BLEEDING CONTINUES**, inspect the placenta again. If membranes or pieces of placenta are retained in the uterus, prepare to remove them manually, page 5.44. Prepare to refer to hospital with an IV infusion running.*

7. ***On the way to the hospital**, continue to hold the uterus to slow the bleeding; hydrate the woman and keep her warm to prevent shock. If much blood continues to flow from the woman, and if you feel confident and have an assistant to hold the uterus, compress the abdominal aorta to slow the bleeding, page 5.48. Do not give up. Encourage and reassure the woman and her family.*

PREPARATION FOR EMERGENCY

The maternity home, maternity unit or ward must always be READY FOR AN EMERGENCY, so a midwife will be prepared for an emergency such as uterine atony. What must be done to be ready for an emergency? Write your answers (page 5.24).

ANSWERS - Case Study 2 - Ready for an emergency.

The following should be available:

- *High level disinfected or sterile gloves*
- *Injectable oxytocin or another oxytocic*
- *5 X 1000 ml (1 liter) bottles or bags IV fluids (see Module 8)*
- *5 giving sets or tubing*
- *Syringes and needles - butterfly needles or intracatheters*
- *Arm board to keep arm from moving*
- *Tape or strips of cloth*
- *BP cuff and stethoscope*
- *Pulsometer or watch with a second hand*
- *Emergency transport such as bus, neighbors, or other source*
- *Other helpers: food, water.*
- *Midwife and assistant, both trained to start IV infusions*

EVALUATE AND REPEAT THE PROCESS

This is the fifth step of the Problem Solving Method. Follow-up visits are important to see if the woman is feeling better, staying the same, or getting worse. Decide if the actions taken were effective at resolving the problem.

What do you for the woman and her baby during the follow-up visit (*Guide for Caregivers – Postpartum Counseling)*?

The follow-up evaluation is done at the next visit to check for healing, any infection, and other postnatal care. You will need to repeat the problem solving method. You check her hemoglobin / hematocrit to see whether the bleeding from the laceration has made a change in her hemoglobin / hematocrit numbers. See *Guide for Caregivers – Postpartum Counseling* and *Formulary* for iron and Vitamin A routines.

You may have to develop a new plan for treating her. She may need to have information or advice repeated to be sure she understands. She may need a different medication or treatment. She may need to be referred to a hospital or doctor.

Repeat Postpartum Visits. Repeat postpartum visits are just as important for the woman and the baby. A woman or baby can develop a problem at any time. The **ASK and LISTEN** questions you discuss with the woman during her follow-up visits can help you find problems early while you are showing her that you are interested in her, see Module 10: **Postpartum.**

Case Study 3 - What Is the Problem?

Read the **ASK and LISTEN**, **LOOK and FEEL information** in the following case study. Then decide what you think the **PROBLEM** is and what **ACTION** should be taken to help the woman. Remember, that action may include treatment, education, counseling, more laboratory tests, referral, and follow up.

It is also important to think about prevention, so you will find a question asking, "How do you think this problem could have been prevented?" Sometimes it is very difficult to decide that a problem might happen before it occurs. Sometimes a problem can not be prevented. In other cases, it is very easy to see that certain things can be done to prevent the problem.

When you finish, look on the next page for suggested answers.

What Is the Problem?

ASK and LISTEN

Mrs. P. T. S. arrived at the maternity at 10 AM. She delivered a baby boy at 10:15 AM. The baby boy's mouth and nose were wiped free of mucus as soon as they were seen. After delivery he was crying and breathing well. He was dried, wrapped in a dry towel to warm him and given to Mrs. P. T. S. She put her third child, but first baby boy to the breast and he started to suck.

LOOK and FEEL

At 11:15 AM, the placenta was not delivered. A little dark red bleeding was seen. The uterus continued to feel somewhat firm but not very hard. The bladder was palpable and seemed to be full.

What is the **PROBLEM**?

What is the **ACTION**?

Was this **PROBLEM** preventable? If it was preventable, how could it be prevented?

ANSWERS: Case Study 3.

What is the PROBLEM?	*Retained placenta with a full bladder.*
What is the ACTION?	*Ask Mrs. P. T. S. to urinate. If she is unable to urinate, catheterize her. Then rub her uterus to stimulate a contraction.* *Examine vaginally to see if the placenta is stuck in the vagina. Help Mrs. P. T. S. into a semi-sitting or squatting position. Use controlled cord traction as in active management of third stage while supporting the uterus to deliver the placenta.*
Was this PROBLEM preventable? If preventable, how?	*Yes, it seems likely that if the bladder had been empty the placenta might have delivered.* *However, we do not know what the midwife did to try to deliver the placenta. Active management of third stage may have prevented the problem.*

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Notes

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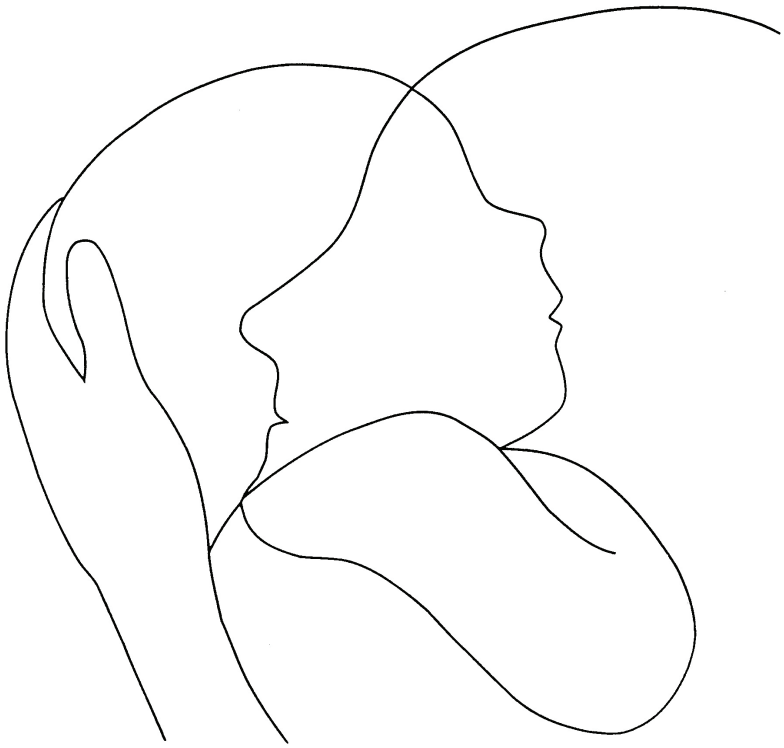
Life-Saving Skills
Manual for Midwives

Fourth Edition

Module 6: Resuscitation



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Chris Hunter and Sandra T. Buffington, technical editors
Kathleen Merritt, copy editor
Angeline Hale, Andri Burhans, Elli Maas illustrators

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The American College of Nurse-Midwives
Department of Global Outreach
8403 Colesville Road, Suite1550
Silver Spring, MD 20910, U.S.A.
lss@acnm.org
www.midwife.org

Life-Saving Skills Manual for Midwives

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RESUSCITATION

MODULE 6

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HIV PROTECTION

Infection prevention. Protecting health care workers from the risk of getting HIV by contact with fluids is an important step. The first thing health care workers should do is follow these common actions: wear gloves and aprons, and get rid of human waste (blood, fluids, feces) safely. This will help to prevent contact with fluids. See Module 7: **Infections** for infection prevention.

Where possible, there should be a special supply of ARVs (antiretrovirals) for treatment of health care workers who may have been contaminated by patients with HIV. Health care workers who are at risk of having contact with HIV should know that ARVs are available to them, if needed. If they do not have these medications, they may not want, or even refuse to do resuscitation for people that are or may be HIV-positive.

Mother to Child Transmission (MTCT). Most women living with HIV have no symptoms and will be untested, or not willing to tell about their serostatus. Health care workers can reduce MTCT by:

- Providing needed labor and delivery care, including infection prevention and the common steps mentioned above.
- Being aware that some of the women are HIV positive and do not know it
- Improving the quality of woman and baby care.

An estimated 10-20% of MTCT occurs in labor and birth,

- when the baby comes in contact with maternal blood or cervical secretions,
- when baby and mother blood mix after the placenta separates from the uterus, and
- when there is a serious infection in the uterus (STI or others).

It is very important for the midwife to help lower the baby's contact with maternal blood and secretions. This means not using invasive procedures, helping women have normal labor, and working to keep infection away. Half of the HIV infections that babies get during labor and delivery could be prevented with antiretroviral medicines. In addition the woman may have other illnesses such as hepatitis, herpes, gonorrhea or other sexually transmitted infections (STIs). There is a chance of the baby getting these diseases from the mother during or after delivery also.

Cord Care. If the woman is HIV positive, HIV status unknown or HIV negative, clamp the umbilical cord after 2-3 minutes. No studies were found to suggest an increase in HIV transmission with delayed cord clamping. There are recent studies to suggest that delayed cord clamping may protect the baby from anemia. Put first clamp or tie on the cord close to the baby. Milk (strip) the cord, pushing the blood towards the placenta. This prevents blood splashes when cutting cord. Put the second clamp or tie on the cord closer to the placenta. Cut the cord between the two clamps or ties with a sterile instrument. After cutting the cord, the cord stump may be cleaned with chlorohexidine solution.

When **the baby does not have trouble breathing**, sucking with a bulb syringe or mucous extractor is not needed. Newborns should be put on the mother's skin and covered for warmth. Mothers and babies should be kept together after birth. In order to promote bonding, keep the baby warm. This is important for a mother with HIV/AIDS. Her worry about the baby's health and her own health may prevent their bonding. If the mother has decided to breast feed, you should help her when the baby is ready (within 30-60 minutes after birth) and show her the correct positions for breast feeding.

When the **baby has trouble breathing**, you may need to gently suction the newborn's mouth if you think there is something to remove. Too much suction may cause cuts or bleeding in the mouth. This may be a place for infection or contact with blood. The baby may also pass disease to you through blood, mucus or liquids from the delivery. There is a *very low risk* of getting HIV from saliva.

Human immunodeficiency virus (HIV) is not often found in the saliva of HIV-positive persons. When found, it is a very small amount. It has not been shown that you can get HIV through contact with saliva.

Protective airway. Wipe off baby's mouth and face. Use protective airway (cloth, gauze or other) or use mouth to mask for mouth to mouth resuscitation. Place a mask, gauze, or cloth over the person's mouth before breathing into her. Then you will have less risk of getting AIDS, hepatitis, tuberculosis, and so forth. The incidence of disease transmission during direct mouth to mouth resuscitation is very low. If you use a protective device, you should have it always available to help the person breathe as soon as possible. You must know how to use the protective device.

Mouth to mouth (and nose for newborns) breathing has been a safe and helpful way of getting oxygen to a person who is not breathing. It has saved many lives. If you choose to use mouth to mouth method to help a baby breathe, remove all blood, mucus, meconium or liquids from the baby's mouth and nose. BEFORE doing mouth to mouth breathing, wipe the baby's face with chlorohexidine solution (or soap and water). Use gauze or cloth over the baby's mouth. If you have a cut or sore in your mouth, ask someone else to help with mouth to mouth breathing. If you get something in your mouth while doing mouth to mouth breathing, wash your mouth with soapy water and rinse with water as soon as possible.

INFANT RESUSCITATION
(HELP A BABY LIVE!)

Goal

The midwife will review and update her knowledge and skills about prevention and management of infant resuscitation using the problem solving process.

Objectives

The midwife caring for the woman and baby will be able to:

1. Describe how to care for the baby at birth.
2. **ASK and LISTEN.** Find out what happened to the baby during labor and delivery including reviewing the partograph (history).
3. **LOOK and FEEL**. Do examination to identify any breathing problems in a baby.
4. **IDENTIFY PROBLEMS AND NEEDS.** Describe the findings (signs and symptoms) of a baby who is having trouble breathing.
5. **TAKE APPROPRIATE ACTION.** Use the information from the history and physical examination to resuscitate a baby.
6. **EVALUATE / REPEAT THE PROCESS.** Decide the results of helping a baby who is having trouble breathing. Repeat the problem solving steps to find out whether there is a change in the problem.
7. Demonstrate how to resuscitate a baby.
8. Identify when a resuscitated baby must be referred to the doctor / hospital.

Introduction

Nearly 1 million babies in the world die each year because they do not breathe normally at birth. When a baby can not breathe, someone must help the baby start to breathe right away. For these babies, newborn resuscitation can be life saving!

Breathing is very important because once the baby is born it can no longer depend on the mother's body for oxygen, warmth, or food. The baby begins to make changes at the time of birth. The most important changes are breathing and circulation. Both of these changes are needed so the baby can get enough oxygen to live and grow. Most of the time, when the baby is born, the heart is beating. For the circulation changes to take place, the baby must begin to breathe on its own. Normally this happens without any problem or assistance.

In this section, you will review the care of the baby at birth. You will learn how to resuscitate the baby that is not breathing and does not have a strong heart beat. This information will help you answer the review questions and case studies and to use the skills in your work. The learning aids give additional information. Some of these will help you review what you already know, while others will have new information for you to learn. The skill checklists will guide you when doing infant resuscitation, see *Guide for Caregivers – Skill Checklists*.

A Midwife's Experience...

I sucked out mucous, dried and warmed the baby. I saw no respirations and felt no heart beat. I positioned the baby, wiped the face, breathed in the mouth, and performed full CPR. Soon the heart started beating….after a little while, the breathing! I knew I did it!

LSS Midwife, Indonesia

Common Medical Terms

AIDS – acquired immune deficiency syndrome. A sickness resulting from infection with HIV. See HIV.

Amniotic fluid – the liquid surrounding the fetus inside the uterus.

APGAR – a rapid assessment of the baby's condition at birth. The Apgar score does not determine need for resuscitation.

Apnea – a condition in which respirations stop for more than 20 seconds.

Asphyxia – when the baby does not begin or does not continue breathing at birth.

Aspiration – breathing or sucking in material such as meconium, mucus, or other liquid into the airways (trachea or lungs).

Breathing resuscitation – clearing the airway and getting air (oxygen) into the baby who is not breathing is called breathing resuscitation.

Cardiopulmonary Resuscitation (CPR) – doing breathing resuscitation and chest compressions until the baby breathes and the heart beats.

Centimeter – a measure of one-hundredth part of a meter; 100 centimeters (cm) = 1 meter; 2.54 centimeters = 1 inch.

Emergency – a time when action must be taken immediately to save a person's life. For instance, if someone is not breathing, you must help the person to breathe now so that she will not die.

Flaring nostrils – nostrils that widen or move with each breath.

Gasping – to breathe (especially inhale) with short, difficult and noisy breaths. Gasping is a sign of a serious breathing problem and the baby needs resuscitation.

HIV – Human immunodeficiency virus. HIV attacks the disease-fighting (immune) system in the body.

Meconium – dark greenish, sticky stool (feces or bowel movement) in the intestine of a baby. This is the first stool passed.

Neonate – a newborn, an infant, a baby from birth through the first 28 days of life.

Oxygen – the gas in the air that supports life. Oxygen is carried by red blood cells to all parts of the body.

Premature – prematurity, preterm, a baby who is born before the body is mature, usually before 37 weeks gestation.

Resuscitation – actions to help a baby start and continue breathing.

Skin to skin contact – placing a baby (naked except head covered) on the mother's chest and covering both of them, using the mother as a heat source for the baby.

Stimulation – Rub up and down baby's spine with the heel of your hand while the baby is wrapped in the cloth, or towel. Stimulation helps the baby's breathing and increases the heart rate.

Ventilate – to blow air into the baby's lungs using either mouth to mouth, or bag and mask.

Vernix – a whitish, creamy substance that covers the fetus in the womb to protect the skin. After birth the vernix is seen mostly in body creases. It is absorbed gradually and does not need to be washed off.

Vigorous baby – baby cries and/or breathes on its own (good breathing effort), holds arms with elbows bent and legs with knees bent tight and close to body (good muscle tone), and heart rate (more than 100 beats per minute).

Equipment

- Flat surface (table, bed)
- Timing device (clock, watch, pulsometer)
- Stethoscope
- Suction bulb or mucus suction extractor
- Gloves, do not need to be sterile
- Two small containers for soap & water
- One basin for soiled gauze
- Baby-sized self-inflating bag, facemasks
  - Bag volume 250 – 400 ml
  - Facemasks: size 1 term, 0 premature
  - Apron or other covering
- Three pieces of clean gauze
  - one to clean mouth / nose
  - one to dry mouth / nose
  - one for protective barrier
- Three pieces of clean dry cloth
  - one to dry baby
  - one to cover and warm baby
  - one to position baby
- Oxygen where available
- Helper (assistant or family member)
- Other ways to keep baby warm

Be Prepared for Baby's Problems

You can not always tell which babies will have trouble breathing at birth. Be prepared to do newborn resuscitation at all births. When things are not ready, a few minutes may pass before you can help the baby. The baby can have brain damage or die during that time. Be ready: collect equipment, have a helper or assistant, warm the room, have a flat surface for resuscitation, monitor the woman and baby during labor, see Module 3: Labor, and identify that the baby is having breathing problems.

In the delivery area, a warm place free from drafts should be set aside for resuscitation. *All necessary equipment must be kept together in this place. Resuscitation can be successful when there is no bottled oxygen*. A referral hospital should always have someone who has skills to do endotracheal intubation and give medications for resuscitation.

If the midwife does home deliveries, all necessary equipment for resuscitation should be kept together in the delivery bag or in a small container.

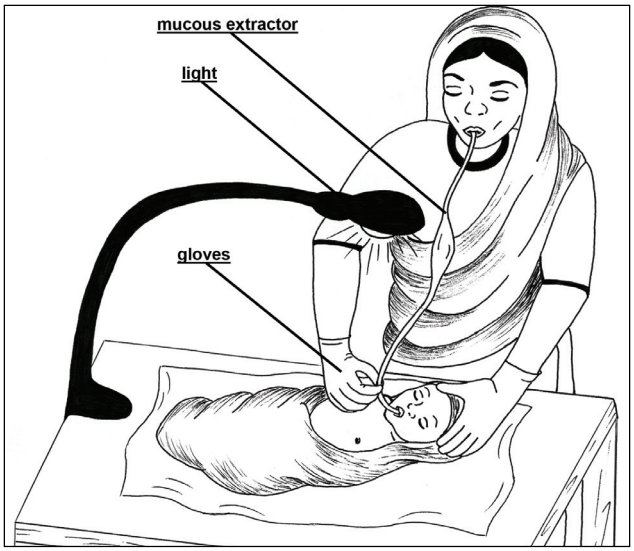

Figure 1. A warm place and flat surface to help the baby.

Important: Careful monitoring of the baby during labor can help the midwife know when the baby is having trouble and will need resuscitation. See Module 3: **Labor.** Sometimes there is no warning and a baby is born having trouble breathing. A midwife should always be ready to do resuscitation. There are many things that warn the midwife that the baby **may have trouble** before and/or at the time of birth. These include:

During pregnancy	During labor / birth
Bleeding	Bleeding (placenta praevia or abruption)
Diabetes	Difficult or instrument delivery, C-Section
Infection (general or STI)	Fetal distress (cause unknown)
No antenatal care	Meconium stained liquor
Postmaturity	Preterm labor
Pre-eclampsia / eclampsia	Prolapsed cord
Premature rupture of membranes	Prolonged or obstructed labor
Sickle cell disease	

Care of the Baby at Birth

From Module 3: **Labor – Monitor Progress and Give Care, Second Stage Care**.

"Once the baby is born, note the time of birth and lay the baby on the mother's abdomen or on the delivery table or bed between the mother's legs so she can see and touch her baby. Give newborn care: dry the baby with one cloth, including the head and face. This stimulates the baby to breathe and prevents the baby from getting cold. LOOK to see if the baby is breathing. If not breathing, and help the baby breathe."

SKILL: Help Baby Breathe at Birth

The purpose of helping the baby breathe is to get oxygen into the baby's body. **This is a life saving skill**. Babies usually start to breathe within 1 to 2 minutes after birth. Sometimes babies cry, but many times babies breathe well and do not cry at birth.

A baby who is having trouble breathing needs help. Signs of breathing problems:

- nostrils open wide when trying to breathe (flaring nostrils)
- skin between the ribs sucks in (retractions)
- grunting, irregular respiration (labored respiration)
- no respirations (apnea)

When the Baby is Having Trouble Breathing.

1. **CALL FOR HELP.** Tell mother and helper the baby has some trouble breathing and you are going to try to help the baby breathe.

2. **WARM.** Remove the first cloth and cover the baby including the head with another dry cloth. Keep the face and upper chest uncovered so you can see the baby breathing. Delay cord clamping for 2 to 3 minutes (can be longer if you are busy helping the baby breathe). Be prepared to cut the cord if you need to move the baby to another place for resuscitation.

3. **WATCH MOTHER and BABY.** Ask the helper to watch for vaginal bleeding and support the mother. If you are alone watch the mother for bleeding. Keep the baby warm, LOOK if baby starts to breathe, and do the following.

4. **POSITION.** Put baby on her back. Position the head so that it is slightly extended, in the ”sniffing position.” Use a folded piece of cloth under the shoulders, see Figure 2.

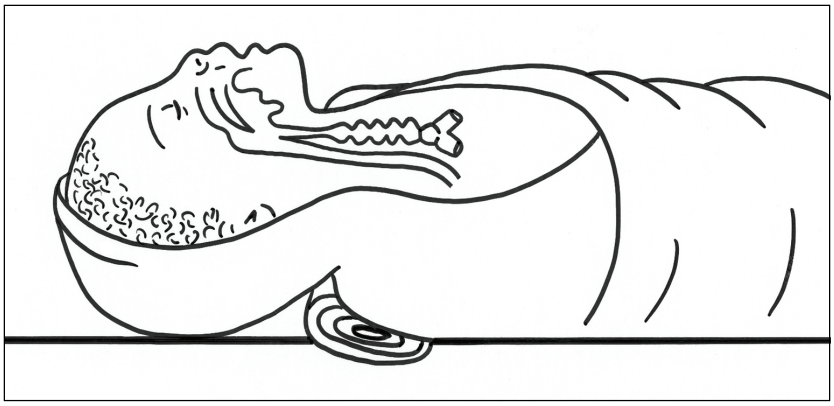

Figure 2. Correct head position, 'sniffing'.

5. **SUCTION.** Clear the airway and **LOOK** for breathing. Wipe mouth and nose with your finger or gauze, to clear them.

   If there still is something in the airway, use your high level disinfected suction equipment (suction bulb or mucous extractor) to clear the airway. Remove all fluids, blood, and meconium you see.

   - It is important to suction a baby with meconium stained fluid if the baby has trouble breathing (gasping or not breathing), or is limp (poor muscle tone), to remove meconium and clear the airway.
   - Do not suction too deep in the throat or nose as this may cause the baby's heart rate to decrease.

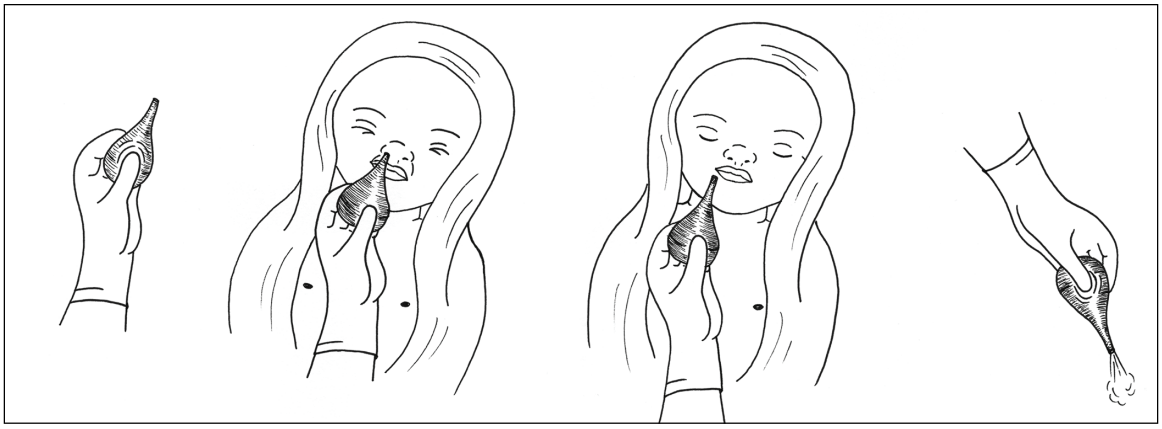

Figure 3. Using suction bulb.
Suck mouth first and then each nostril.

   - To use the suction bulb (sometimes called an ear syringe), See **Learning Aid 4** about other mucous extractors.

     a. First squeeze the bulb.
     b. Gently put the tip of bulb into the mouth first. If the nostrils are sucked out first, it may cause the baby to gasp and choke on fluids in the mouth.
     c. Release the suction bulb while moving it around in the mouth and while pulling it out of the mouth. The bulb will suck up the fluids.
     d. Squeeze fluids out of bulb.
     e. After sucking the mouth, suction each nostril to remove all mucus and fluids.
     f. LOOK for breathing. The baby may start breathing because suctioning may stimulate breathing.

6. **STIMULATE. Rub up and down baby's spine** with the heel of your hand while the baby is wrapped in the cloth, or towel. Stimulation helps the baby's breathing and increases the heart rate. **Caution** - Never slap baby's feet or back hard. Never bend or rub baby roughly as baby may get broken bones or injuries to soft tissue. Never put hot or cold water on baby. Hot water may burn skin. Cold water lowers temperature which can cause death.

LOOK for breathing.

FINDINGS:

If baby **is breathing**, give baby to the mother for warmth, stimulation, love and energy (breast feeding). Breast feeding also stimulates uterine contractions and helps bonding. Continue to watch the baby. See Module 3: **Labor** – Fourth Stage Care.

If baby **has trouble breathing, is gasping, or is not breathing**, help the baby breathe. This baby needs help right away to prevent brain damage. Most babies can be saved with breathing resuscitation, see next page.

REMEMBER

The time from birth to start of breathing resuscitation should take no longer than 30 seconds.

SKILL: Breathing Resuscitation

The Baby Has Trouble Breathing, is Gasping, is Not Breathing.

1. **POSITION THE BABY.** Make sure the head is in 'sniffing' position as in Figure 2. Keep the baby warm.

2. **DO TEST BREATH.** If no Ambu bag, do mouth-to-mouth.[1] *Place the mask or your mouth over the baby's mouth and nose.* Do 1 test breath to make sure the air is going in to the lungs. Make sure there is a tight seal so there is no leakage of air from your mouth or mask. Blow air into the baby. Use only air in your mouth when you blow. Give oxygen if available.[2] See **Learning Aid 5** for Ambu bag and mask technique.
   .

Figure 4. Help baby breathe. Lay on flat surface in 'sniffing' position covered. Breathe through gauze, cloth or protective airway.

3. **LOOK.** Look to see if the baby's chest does rise as you breathe for the baby. If the chest does not rise, the air is not getting in the baby's lungs. Reposition baby's head see Figure 2, clear airway and make sure there is a tight seal with mouth or mask over baby's mouth and nose. Repeat steps 1 and 2.

---

[1] Wipe all blood and fluid from baby's mouth and nose. Wash face with soapy water and rinse. Use protective cloth or gauze over mouth and nose.

[2] Give oxygen at a rate of 6 liters/minute. Give the oxygen in the nose of the baby as babies breathe through their nose and not their mouth. If doing mouth to mouth, put the oxygen tube into the mouth while you are breathing for the baby. Your breath will carry the oxygen to the baby's lungs. When the baby starts breathing on her own, move the oxygen back to the nose and give 2 liters/minute. *Room air may also be used.*

4. **BREATHE FOR BABY.** Breathe for the baby about 40 breaths in a minute. If doing mouth to mouth,[3] breathe using only the air in your mouth, not from your chest. Do not blow too hard or too much as the baby's lungs are very small and delicate. LOOK to see that baby's chest rises to know that air is going in the baby's lungs.

5. **LOOK and FEEL after each 40 breaths**.

   BREATHING. LOOK if baby is breathing.

   HEART RATE. Count the heart rate for 6 seconds.[4]

FINDINGS and ACTIONS:

If baby **is breathing and heart rate is above 60**, stop breathing for the baby and continue to watch the baby. When the Apgar is above 6, help the mother keep her baby warm and stimulated. Breast feeding may begin when the baby is interested. If the Apgar remains 6 or below, the baby may need more care from a hospital / doctor.

If baby **is not breathing and heart rate is above 60,** repeat steps 4 and 5 until the baby starts to breathe. Then stop breathing for the baby and continue to watch the baby. When the Apgar is above 6, help the mother keep her baby warm and stimulated. Breast feeding may begin when the baby is interested. If the Apgar remains 6 or below, the baby may need more care from a hospital / doctor.

If **heart rate is 60 or below,** [5] baby needs breathing resuscitation and chest compression (CPR), see next page.

[3] Doing mouth to mouth breathing has a small risk of passing infection between the baby and the midwife. Wiping all blood and fluid from mouth / nose, washing the face, and using a protective cloth or gauze may help reduce that risk. You may have a mask or breathing tube to use. Or you may have a bag and mask to use, see **Learning Aid 5**. For the method you use, make sure the equipment is clean, working properly, and you are trained in using it. Module 7: **Infections** has information about preventing infections and cleaning equipment.

[4] Feel the umbilicus or apical pulse; or use stethoscope and count the heart rate for 6 seconds. Add a 0 (zero) behind the number you counted for the number of heart beats in a minute. For example: if you count 12 beats in the 6 seconds place a 0 behind the 12 and get 120 beats per minute.

[5] Chest compressions are necessary for a heart rate that is less than 60 beats per minute. Breathing for the baby (mouth to mouth or other device) is the most effective action in neonatal resuscitation. But chest compressions may compete with effective ventilation. Midwives should be sure that **breathing for the baby is being done correctly (correct position, air is going in the baby's lungs) before starting chest compressions**.

SKILL: Cardiopulmonary Resuscitation (CPR)

The Baby is Not Breathing and Has a Heart Rate of 60 or Below.

Continue the steps for helping a baby breathe: keep baby warm and head in 'sniffing' position. Give oxygen if available.[6] Help the baby breathe and massage the heart (CPR).

1. **DO 15 CYCLES: BREATHE AND PUSH** – one cycle is 1 breath and 3 chest compressions. See Figure 7.

2. **BREATHE for the baby 1 time** using the same baby position and placement of mouth or mask over the baby's mouth and nose, Figure 4. This breath should take ½ second - this is the 1 count.

3. **PUSH (CHEST COMPRESSIONS).** There are two ways to help the heart beat, see Figures 5 and 6.

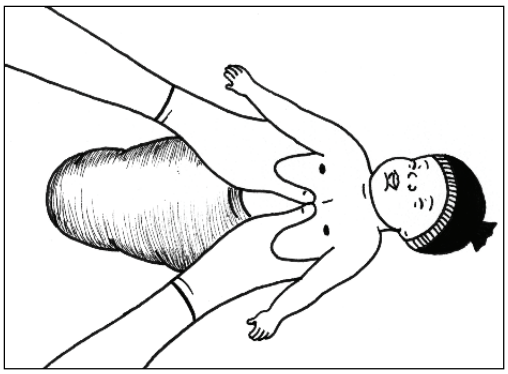

Figure 5. Two thumbs method.

Two thumbs method: Place your thumbs on the center of the baby's chest just below the nipple line with your hands around the chest and fingers supporting the baby's back. This places your fingers over the baby's heart. The two thumbs method compresses the heart the best and is recommended for the newly born baby. **Two people are needed to do the this method of resuscitation:** Person 1 does the breathing. Person 2 does the chest compressions using two thumbs method.

Two fingers method: Place your index and middle fingers at a right angle to the chest, on center of the chest, just below the nipple line (an imaginary line drawn between the baby's nipples). Support the baby's head with your other hand.

Figure 6. Two fingers method.

[6] See footnote 2, page 6.11.

PUSH the chest down (front to back) 1/3 chest diameter 3 times, counting 2 and 3 and 4 (each push = ½ second). A pushing-resting ratio with a slightly shorter pushing than resting helps blood move best in a newly born baby. Let the chest fully re-expand during resting, but do not lift your fingers off the chest.

Count: *Breathe and 2 and 3 and 4 (Cycle 1); Breathe and 2 and 3 and 4 (Cycle 2); Breathe and 2 and 3 and 4 (Cycle 3); Breathe and 2 and 3 and 4 (Cycle 4);* and continue until 15 cycles are done in 30 seconds. Each event (breathing or compression) takes about ½ second. **Do not breathe and push on the chest at the same time.**

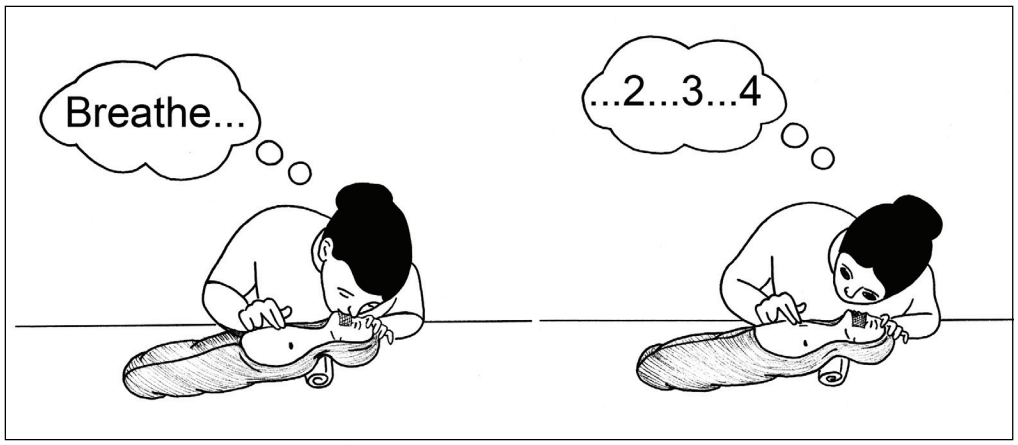

Figure 7. ONE CPR CYCLE = 1 breath and 3 heart compressions in 2 seconds.

Do 15 CPR CYCLES.

4. **LOOK and FEEL AFTER EACH 15 CYCLES** (30 seconds): breathing and heart rate.

FINDINGS:

If **heart rate more than 60 and no breathing**, continue breathing until the baby is breathing spontaneously.

If **heart rate is 60 or below**, repeat CPR Cycle and continue to LOOK and FEEL until the spontaneous heart rate is above 60 beats per minute.

At any time the baby begins to breathe and the heart rate is above 60, stop CPR and continue to watch the baby. When the Apgar is above 6, help the mother keep her baby warm and stimulated. Breast feeding may begin when the baby is interested. Give baby Apgar Scores at 1 and 5 minutes. If the Apgar remains 6 or below, the baby may need more care from a hospital / doctor.

WHEN TO STOP RESUSCITATION

When breathing and heart compression (CPR) is done adequately, there usually is a heart rate while doing CPR. The heart rate may drop in beats per minute and eventually stop when CPR is stopped.

- **If there is no spontaneous heart response to CPR after 10 minutes, stop CPR.** If CPR is continued longer the baby may have the risk of brain damage and other problems. This is not an easy decision to make. It is best to stop CPR and explain to the family what has happened.
- **If there is no gasping or breathing at all after 20 minutes of breathing for the baby, stop breathing for the baby. If there was gasping but no spontaneous breathing after 20 minutes breathing for the baby, stop breathing for the baby.** This is never an easy decision. It is best to stop breathing for the baby and explain to the family what has happened.

COUNSEL THE WOMAN AND FAMILY

Talk with the mother and family about the resuscitation and the baby's death. Answer any questions they may have. Give the mother and family care that is culturally acceptable. Be sensitive to their needs. Find out what they wish to do with the baby's body. Explain to the mother and family that:

- The mother will need rest, support and a good diet at home.
- The mother should not return to a full workload too early.
- The mother's breasts will become full around day 2 – 3. She may have fever for a day or two.
- The mother may feel very emotional and cry a lot. The normal changes in a woman's hormones after pregnancy can make her feel very sad, worried or irritable. Because the baby died, feelings may be worse than usual. Encourage the mother and family to speak with a health worker if they wish to talk.

FOLLOW UP

Explain the importance of checking on the woman at 6 -10 days, 4-6 weeks and at 6 months. If at all possible, try to make the visits in the home. Ask the woman if she can come to the clinic at 4-6 weeks so that you can do an examination on the woman. Ovulation will resume soon because she is not breast feeding. Many women who do not breast feed ovulate by 3 weeks postpartum. See Module 10: Postpartum and *Guide for Caregivers – Family Planning Counseling.*

5. **RECORD THE RESUSCITATION ACTIONS** see Module 3: **Labor**, Back of Partograph.

Note: The above steps seem to take a long time when learning, practicing and discussing. In the delivery place, all equipment is ready so that when something is needed there is no delay. A difficult or emergency delivery may cause different reactions. Panic has no place in an emergency. A well-prepared and skilled midwife is calm and steady. A skilled midwife **LOOKS** at the baby and makes a decision while drying and warming. If the baby is not breathing, time is not wasted. Position, suction and if no response, stimulate the baby. If there is still no response, the midwife immediately helps the baby to breathe.

REMEMBER

- DRY and WARM while looking and deciding.
- If baby having trouble breathing: POSITION, SUCTION, AND STIMULATE.
- If baby still having trouble breathing, gasping, or not breathing: HELP BABY BREATHE.
- If heart rate is 60 or below and not breathing: HELP THE BABY – DO CPR.
- If baby begins to breathe, heart rate is above 60, Apgar Score is 6 or below – REFER.

Review Questions

What Did I Learn?

Find out what you know and understand by answering the following questions. When you are finished, look for the answers in this module on the pages in parentheses ( ).

1. Describe immediate care of the baby at birth (page 6.7).

2. Describe the action you will take at delivery for the baby who is limp and has meconium in the amniotic fluid (page 6.9).

3. What actions will you take for a newly delivered baby that is not breathing (page 6.11)?

4. What actions will you take for a newly delivered baby that you have given 40 resuscitation breaths but is still not breathing and has no heart beat (page 6.13)?

Case Study 1 – Problem Solving Method

The Problem Solving Method is a step by step way of giving care. The Problem Solving Method is a way of thinking about the care you give. This case study helps you review the Problem Solving Method and use it for a baby with asphyxia.

The five steps of the Problem Solving Method are:

1.

2.

3.

4.

5.

Check your answers by looking in Module 1, **Introduction** - Problem Solving Method.

Infant resuscitation helps keep the newly delivered baby's nose and mouth clear, lungs breathing, and the heart beating. Then the baby's blood can carry oxygen all around her body. **This is a life-saving skill**.

Resuscitation must be started as soon as the midwife identifies the need. If the baby is not breathing by the time the fluids are cleared from the mouth and nose, or if the baby is born limp and not breathing, the problem must be identified. The baby is not going to live unless the midwife does something **now.** Remember, careful monitoring of the fetal heart rate during labor may let the midwife know that there is a problem and that the baby will need resuscitation.

ASK and LISTEN

You just delivered Mrs. I. R. of a baby girl. She had a latent phase of 7 hours, an active phase of 10 hours, and an episiotomy.

In this case gather the **ASK and LISTEN** (history taking) information during the labor and delivery. It is very important to get information as soon as you see the mother. Then, in case of an emergency, you know most of the information.

You know that Mrs. I. R. is a primipara with a long labor. She needed an episiotomy to deliver her baby. You also know that meconium–stained fluid was passed before delivery. The fetal heart was beating strong and steady during the labor.

LOOK and FEEL

What did you **LOOK and FEEL**?

See Module 6.

When you first see the head, wipe the face with gauze. When the body is born, you dry and warm the baby. You then **LOOK** and see that her breathing is not normal; she is gasping and there is no cry. You quickly position, suction and stimulate the baby. After these actions the baby is only gasping.

IDENTIFY THE PROBLEM

What is the problem with the baby?

See Module 6.

You decide that the baby is having trouble breathing (irregular breathing, gasping and there is no cry).

TAKE APPROPRIATE ACTION

What action do you take?

See Module 6.

You continue to stimulate the baby and keep it warm. You help the baby breathe. You give oxygen at 6 liters in a minute, if available, and continue to check the heart rate and breathing until she is pink and crying. You remember that you must never slap hard on the baby's feet or back. You do not put hot or cold water on the baby or roughly rub or bend her.

You feel relieved that the baby is breathing by herself. You think about what you would have done if she did not respond to your actions after delivery.

TAKE APPROPRIATE ACTION

If the baby did not respond, what action do you take?

See Module 6.

You must continue to help the baby breathe and **FEEL** for the heart rate! Continue to keep the baby warm. Continue position to keep the airway open. Place a small towel or cloth under the baby's shoulders so that the head is slightly extended in the "sniffing" position. This is the best position to keep the airway open, see Figure 2. Continue to stimulate as needed. Give oxygen, if available. Start full CPR for the baby for 15 cycles. A CPR CYCLE = 1 breath + 3 pushes = 2 seconds. Do 15 CPR cycles. Be sure to count: Breathe and 2 and 3 and 4 (Cycle 1): Breathe and 2 and 3 and 4 (Cycle 2): Breathe and 2 and 3 and 4 (Cycle 3): Breathe and 2 and 3 and 4 (Cycle 4): and so on until you have done 15. When the baby responds, give Apgar Score and put her with her mother. Later, you do a physical examination on the baby.

What problems would cause you to refer this baby to the hospital?

See Module 6.

EVALUATE and REPEAT PROCESS

This is the fifth step of the Problem Solving Method. Decide if the actions taken were effective at resolving the problem. The evaluation will be immediate for resuscitation.

When the baby begins to breathe and the heart rate is above 60, continue to warm and stimulate and watch the baby. If the Apgar remains 6 or below, the baby may need more care from a hospital / doctor. When you see the baby for a follow-up visit, repeat the Problem Solving Method to evaluate progress of the baby and refer as needed.

Case Study 2 - What Is the Problem?

Read the **ASK and LISTEN** and **LOOK and FEEL**, in this case study. Then decide what you think the **PROBLEM** is and what **ACTION** you should take to help the woman. Remember that **ACTION** may include treatment, education, counseling, more laboratory tests, referral, and follow up.

Prevention is important, so there is a question asking you how you think this problem could be prevented. Sometimes it is very difficult to decide before a problem happens that it might be a problem. Other times it is very easy to say that a certain action can prevent a problem. Sometimes a problemcan not be prevented.

When you finish, look on the next page for some answers that will help.

ASK and LISTEN

The mother arrived at your clinic and delivered a baby boy as soon as she reached the labor unit. The placenta immediately followed the baby and the mother was not bleeding.

LOOK and FEEL

The baby was pale. He was breathing and his heart rate was 120.

IDENTIFY THE PROBLEM

What is the problem with the baby?

TAKE APPROPRIATE ACTION

What action do you take?

Was this PROBLEM preventable? If yes, how?

EVALUATE and REPEAT PROCESS

This is the fifth step of the Problem Solving Method. Decide if the actions taken were effective in helping the woman and baby. The evaluation will be immediate for birth care. When you see the woman and baby for a postpartum follow-up visit, repeat the Problem Solving Method to evaluate progress of the woman and baby and refer as needed.

ANSWERS - Case Study 2

What is the PROBLEM?

There is no problem. A normal newborn is usually a little blue or pale, is breathing and has a heart rate above 100.

What is the ACTION?

When the head is visible, wipe the mouth and nose.

As soon as the baby is delivered, dry and warm the baby by wrapping the baby in a dry cloth or towel.

Lay the baby in a position so the airway is open. Rub his back, up and down the spine, through the cloth for stimulation, if necessary. Keep the baby warm until he is pink and crying.

Check breathing and heart rate to make sure they stay normal.

Was this PROBLEM preventable? If yes, how?

There was no problem. However, the mother could be asked to come earlier the next time she is in labor.

Case Study 3 - What Is the Problem?

Read the **ASK and LISTEN** and **LOOK and FEEL**, in the following case study. Then decide what you think is the **PROBLEM** and what **ACTION** needs to be taken to help the woman. Remember that action may include treatment, education, counseling, more laboratory tests, referral, and follow up.

Prevention is important, so there is a question asking you how you think this problem could be prevented. Sometimes it is very difficult to decide before a problem happens, that it might be a problem. Other times it is very easy to say that a certain action can prevent a problem. Sometimes a problem can not be prevented. When you finish, look on the next page for suggested answers.

ASK and LISTEN

A baby girl is born at your clinic, the second child for this mother, after a second stage of 70 minutes. The umbilical cord was short.

LOOK and FEEL

You immediately see that her skin color is pale. She is not breathing.

IDENTIFY THE PROBLEM

What is the problem?

TAKE APPROPRIATE ACTION

What action do you take**?**

Was this **PROBLEM** preventable? If so, how?

EVALUATE and REPEAT PROCESS

This is the fifth step of the Problem Solving Method. Decide if the actions taken were effective in helping the baby breathe. The evaluation will be immediate for resuscitation. When you see the woman and baby for a postpartum follow-up visit, repeat the Problem Solving Method to evaluate progress of the woman and baby and refer as needed.

ANSWERS – Case Study 3

What is the PROBLEM?

The baby is not breathing.

What is the ACTION?

As soon as you see the baby's head, wipe the mouth and nose. When the baby is delivered, immediately dry the baby with one cloth and then wrap in a second warm cloth. When you see the baby is not breathing, position the baby to keep the airway open and suction with the bulb syringe. Then rub the back to stimulate.

If the baby does not begin to breathe or is gasping, stimulate again. Give oxygen if the baby is gasping and if it is available. LOOK for breathing. Breathe one time for the baby and LOOK to see if the chest rises.

If the chest rises and the baby does not begin to breathe, reposition, suction, and continue to stimulate. Then breathe 40 times (each breathe about 1 second), and LOOK for breathing.

If the baby begins to breathe, keep the baby warm, continue oxygen. LOOK for breathing and count the heart rate (greater than 60 and rising is good).

Was this PROBLEM preventable? If so, how?

It is difficult to say how this problem could have been prevented. Sometimes, the fetal heart rate is normal and there is no sign of problems. There was no way to know that the umbilical cord would be short.

ADULT RESUSCITATION

Goal

The midwife will review and update her knowledge and skills about adult resuscitation using the problem solving process.

Objectives

The midwife caring for the person will be able to:

1. Show the actions to help a person who is not breathing but does have a heart beat.
2. List the causes of no breathing or no heart beat in an adult.
3. Show the correct actions to help a person who has no heart beat and is not breathing.

Introduction

Resuscitation is a very important life saving skill. The midwife may need to use resuscitation skills for a woman with hemorrhage, sepsis, reaction to medication or a convulsion. (How to manage these conditions is discussed in other modules and *Guide to Caregivers – Protocols*.) Resuscitation is needed when a person is not able to breathe and/or her heart is not beating. The skills can be used to help any adult with these life or death problems. You may find a person in need of resuscitation in the market, on the street, or in your maternity or clinic.

In this section you will learn the skill of adult resuscitation. Review questions and case studies will help you learn and use the information. Skill checklists will guide you while you are practicing the skills. There are also learning aids with more information. Some things you know already and some you should review or learn.

A Midwife's Experience...

One morning very early I was called from my bed. A customs worker who works the night shift felt dizzy and fell to the ground. She was rushed into my consultation room with no breathing and no pulse. When I realized she was not breathing, I pulled her on the sheet onto the floor. The room was crowded with people who came to see what had happened. They were at the windows too. I told them all to move back as the woman needed air to breathe. I did CPR. She revived. She started thrashing around. I had her friends organize transport. I went with her. She had a convulsion on the way to the hospital and died. I was happy that I had the skill to try to save this woman, even though she did not live. Her friends were very happy with me too (that I tried).

LSS Midwife, Ghana

Common Medical Terms

Cardiopulmonary Resuscitation (CPR) – doing breathing resuscitation and chest compressions until the baby breathes and the heart beats.

Choking – a blocking of the airway by something like a piece of food sealing off the throat, a spasm of the throat, or the throat feeling tight. This stops the person from breathing. Oxygen can not get in the lungs and to the brain and other vital organs.

Emergency – a time when action must be taken now to save a person's life; for example, if a person is not breathing, you must help the person breathe now so that she will not die.

Heart Attack (myocardial infarction) – when the heart muscle needs more blood (oxygen) than it is getting. Usually caused by narrowing or complete blocking of the coronary artery, which causes the muscle of the heart to die from not getting oxygen. Usual symptom is a pressure or pain in the chest that lasts for 2 or more minutes, does not get better with rest.

Heimlich Maneuver – an action used on a choking person to prevent death. The object caught in the throat is pushed up into the mouth by pressing below the xiphoid process.

Larynx – voice organ located at the upper end of the trachea below the back of the tongue.

Pharynx – passage for air from nose to larynx and for food from mouth to esophagus.

Resuscitation – getting air (oxygen) into the person by breathing into the mouth.

Sternum – a narrow, flat bone in the center of the chest in front. The *xiphoid process* is at the bottom of the sternum and is used as a marker for heart compression.

Trachea – the windpipe or part of the airway which connects the larynx and the two bronchial tubes of the lungs.

Xiphoid Process – the lowest part of the sternum, made up of cartilage. Some abdominal muscles are attached to it.

Equipment

You are all that is needed in an adult resuscitation emergency!

Reasons A Person May Need Resuscitation

Not Breathing: There are many reasons **why an adult is not able to breathe**, including:

1. Airway is blocked. If the airway is completely blocked, air (oxygen) can not get into the lungs and into the blood. A few minutes after lungs stop working, the heart will stop.
2. Allergic reaction. Response to medicines or insect bite causing a person to stop breathing.
3. Injury to the brain. Injury from an accident (motor car accident, falling, or other), overdose on drugs, a stroke, or severe shock can depress the respiratory center in the brain and it stops working.
4. Injury to the chest. Injury causing serious damage to the lungs and ribs. The lungs may collapse (pneumothorax).
5. Drugs. Some types of drugs (used for mental problems, for pain, other) can slow the respiratory center in the brain and stop a person's breathing.
6. Electrocution (shock from electricity) can paralyze the breathing muscles. Drowning or suffocation will block oxygen from coming into the lungs.
7. Cardiac arrest (heart attack, myocardial infarction).

Heart Not Beating: There are reasons **why the heart stops beating** so there is no circulation of blood throughout the body, including:

1. Cardiac arrest (heart attack, myocardial infarction).
2. Severe shock due to a large hemorrhage.
3. Injury to the heart.
4. Drugs that cause the heart to slow down.
5. Respiratory arrest. If breathing stops, the heart will stop after a few minutes. The heart muscle slowly dies from lack of oxygen.

SKILL: Adult Resuscitation

An adult who is not able to breathe or keep her heart beating is in **an emergency situation.** If she does not receive help quickly, she will die. **In 4 minutes, brain damage will start. In 10 minutes, she will die.** A skilled midwife uses the Life-Saving Steps (ABCS) for helping this person.

Airway - make sure the airway is open
Breathing - make sure the person is breathing
Cardiac Function - make sure the heart is beating
Shock - make sure the person is kept warm

AIRWAY – make sure the airway is open

1. Speak to the person. ASK, ''Are you all right?" This way you will know she is not choking or just sleeping. If there is anyone else around, call for help.

2. Roll her onto her back on a hard surface (floor). If the person is on a mattress or other soft surface, compressions of the heart will not help. If the person was in an accident she may have damage to her spine, neck, or head. It is important that you roll her over as a unit (so her whole body rolls at the same time). Ask for help from anyone who may be close by.

3. LOOK at the person's chest breathing.

4. Look into her mouth to make sure the airway is open. Until the airway is clear, no resuscitation efforts will be successful.
   a. If you can see the tongue (most common cause of a blocked airway), change the position of the head to move the tongue.
   b. If you can see something solid like loose dentures (false teeth) that is blocking the airway, try to remove it. Turn the person on their side or take it out with your fingers.

5. Move the head into a position that will prevent the tongue from falling into the throat and cutting off the air (oxygen) supply to the lungs.
   a. Put one hand on the person's forehead and press firmly backward.
   b. With your other hand, press your fingers under the jaw near the chin and lift the chin until the teeth are almost closed, see Figure 8.

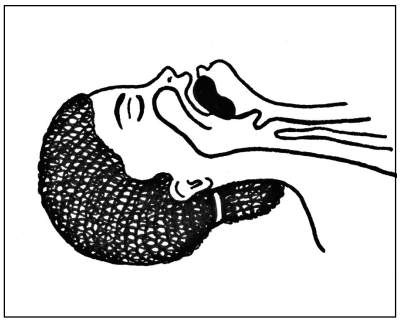

Figure 8. Position of the head to open the airway.

6. LOOK at the person's chest. Now that the head is in a position where the tongue is not blocking the airway, the person may begin to breathe on her own.

BREATHING – Help the person breathe (Resuscitation)

Woman Is Not Breathing.

1. Kneel at her side. Wipe off her mouth and face. Place a mask, gauze, or cloth over the her mouth before breathing into her. Then you will have less chance of getting HIV, hepatitis, tuberculosis, and so forth. For more information on adult breathing aids, see **Learning Aid 6.** Pinch her nose closed with your fingers and do 1-2 test breaths into her mouth, see Figure 9. Make sure there is a good mouth to mouth seal and that each breath takes about 1 second.

Figure 9. Position for mouth to mouth resuscitation.

2. **LOOK.** Does the chest rise? Does the air enter her chest easily? **If the chest does not rise, air is likely not entering the chest.** You still have a blocked airway.

   LOOK into the mouth again. With your fingers, take out anything you can see or feel that is blocking the airway. Change the position of her head and try again.

   Does the air enter her chest easily? If not, try the Heimlich Maneuver to remove any object that might be blocking her throat, see **Learning Aid 9** – Heimlich Maneuver. After doing the maneuver, do 1-2 test breaths. You should see the chest rise with each breath you blow.

3. If no response **FEEL** for the carotid pulse. On the person's neck, find her trachea. Slide your fingers off the trachea into the groove on the side between it and the neck muscles and just below the end of the jaw bone. You should feel the carotid pulse there. FEEL for 10 seconds.

4. If the person **has a pulse, but is not breathing, continue to do breathing resuscitation**. Breathe into the person's mouth about 10 times per minute (once every 5 - 6 seconds). Recheck pulse every 2 minutes after about 20 breaths.

CARDIAC FUNCTION

No Pulse And No Breathing

1. **DECIDE TO DO CPR.** If the person does not have a pulse, and is not breathing, you will **have to breathe for her and help her heart to contract (beat).** You have to do cardiopulmonary (breathing and compressions) resuscitation (CPR).

2. **CORRECT HAND PLACEMENT**.
   a. Place the heel (palm) of one hand on the bottom of the sternum, the xiphoid process – just below the nipples.

Figure 10. Source: American Red Cross 2006.

   b. Place the heel of your other hand on top of the first hand (either fingers stretched over the first hand, Figure 10 or made into a fist, Figure 11).

   c. Position your body directly over your hands. Keep your arms straight and your elbows locked. Press straight down over your hands, see Figure 11. Do not move your body back and forth as you do the compressions.

Figure 11. Position for chest compression.

3. **PUSH (CHEST COMPRESSIONS). Give 30 compressions.** Push FAST and hard. **Push** down about 4 - 5 cm (1 to 2 inches) into the chest. Each time, let the chest rise completely. **Do not lift your hands up off the chest.** NOTE: If you are alone, you will need to lift your hands off the chest to hold the head in correct position for mouth to mouth breaths.

4. **BREATHE for the person 2 times. The chest should rise.** Remember to pinch her nose and keep the head tipped back a little, so the tongue does not block the airway, see Figure 9.

5. **PUSH AND BREATHE.** Your movement should be smooth and continuous. This helps to give you the proper rhythm and timing. The time to press down and release should be equal. Push at a speed of about 100 compressions in a minute.

   ONE CYCLE = Count the 30 compressions quickly: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. **Breathe 2 times.** The chest should rise. (American Red Cross, 2006).

6. **CHECK AFTER EACH 3 - 5 CYCLES**. Recheck the woman's carotid pulse. If she has a heart beat, look to see if she is breathing.

   If no heart beat and no breathing, continue (30 compressions followed by 2 breaths, then repeat) until the woman recovers or help arrives.

   If there is a heart beat but no breathing, continue with the breathing at the rate of about 10 - 12 times per minute for 2 minutes, and recheck for breathing. **Do not do more heart compressions.** Continue with the breathing until the person starts to move and breathe.

REMEMBER

You can cause serious damage to the heart, if
you do compressions on a heart that is beating on its own.

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7. It takes a lot of strength to do cardiopulmonary (breathing and compressions) resuscitation. You will soon become tired. If anyone around you is trained in the procedure, ask them to help you. Tell them to hold the person's head in position as you did, so you can quickly breathe after giving 30 heart compressions. Ask someone around you to find transportation. After you have resuscitated the person, you should travel with her to the hospital for further care.

8. Continue to resuscitate the person until the heart starts beating and the person is breathing or you are so exhausted that you can not do it anymore. You may be able to do resuscitation in the back of a truck on the way to the hospital or in an ambulance. You must do it on a hard surface. If the person is on a mattress or other soft surface, the compressions of the heart will not work.

9. **RECORD THE RESUSCITATION ACTIONS** on the record or chart.

SHOCK.

The person is in **SHOCK.** Wrap her in a blanket or dry cloths to keep her warm while resuscitating her. This is especially important if she is wet or cold. See Module 8: **Stabilize and Refer.**

Review Questions

What Did I Learn?
Find out what you know and understand by answering the following questions. When you are finished, look for the answers in this module on the pages in parentheses ( ).

1. What are the ABCS of resuscitation (page 6.28)?

2. How do you check the carotid pulse (page 6.29)?

3. Why do you place the person on a hard surface before starting resuscitation (page 6.28)?

4. What are the steps you will take if an adult person does not have a pulse (pages 6.30 - 6.31)?

5. What is the proper hand position for adult chest compressions (page 6.30)?

6. Why must you never do chest compressions on a person who has a pulse (page 6.31)?

Learning Aid 1 – Infant Resuscitation Chart

Findings	Normal Baby Care	Baby Has Trouble Breathing Breathing Resuscitation	Heart Rate is 60 or Below Cardiopulmonary Resuscitation (CPR)
		Remember: Wipe baby's face before doing mouth to mouth / nose resuscitation	
Action	1. LOOK at breathing while doing steps 2. DRY with clean dry cloth, if trouble breathing, help baby breathe. 3. WARM by covering with second clean dry cloth 4. Delay cord clamping 5. Give to mother skin to skin 6. Apgar scoring.	1. CALL for help 2. POSITION and KEEP WARM 3. SUCTION or wipe: Breathing? 4. STIMULATE: Breathing? 5. Oxygen * 6. TEST BREATH 1 time. Does chest rise? IF NO, check position, clear airway, seal 7. BREATHE 40 times (give 1 breath in about 1 second) 8. CHECK breathing and heart rate. • If trouble breathing and heart rate more than 60, repeat steps 7- 8 • If heart rate 60 or below, do CPR • If baby breathing spontaneously, monitor and support with warmth, stimulation, oxygen* 9. REFER if Apgar Score 6 or below	1. DO 15 CPR CYCLES (one cycle = 1 breath + 3 heart pushes in 2 seconds) 2. CHECK breathing and heart rate • If heart rate 60 or below, repeat steps 1 and 2 • If trouble breathing and heart rate more than 60, do breathing resuscitation • If baby breathing spontaneously, monitor and support with warmth, stimulation, oxygen* 3. APGAR SCORE • More than 6, give to mother • If 6 or below, REFER 4. STOP resuscitation after 10 minutes if no spontaneous heart beat, after 20 minutes if no spontaneous breathing.

*When oxygen is available:

- If using mouth to mouth put oxygen tube into mouth, or if using bag and mask attach oxygen tube to bag. Give at 6 liters / minute.
- When baby starts breathing, move oxygen to nose. A baby normally breathes through the nose. Give at 2 liters / minute.

Learning Aid 2 – Directions for Infant Resuscitation

WORD	DIRECTIONS FOR INFANT RESUSCITATION (1)
DRY	• Dry the baby with a towel or cloth, from head to toe, until most of the amniotic fluid, blood, and meconium are gone. • Take away the wet towel.
WARM	• Warm the baby by putting a cap on (or covering) the head and wrapping quickly in a dry towel or cloth. You can also put a light over the baby to provide extra heat if you have one.
POSITION	• Place a small folded towel or cloth under the baby's shoulders so that the head is slightly extended in the "sniffing" position. This is the best position to keep the airway open.
SUCTION	• Wipe the baby's mouth and nose with a cloth to remove all fluids, blood and meconium. • If airway is not clear, suction with a bulb syringe or DeLee suction. Suction only while pulling suction tube out, NOT while putting it in. • Suction baby (first mouth then nose). • Do not stimulate baby until baby is suctioned. • LOOK to see if baby starts breathing.
STIMULATE	• Rub the heel of your hand up and down the baby's spine to stimulate the baby. This can be done without removing the cloth or the towel in which the baby is wrapped. • LOOK to see if baby is breathing.
OXYGEN	• When oxygen is available: o If using mouth to mouth put oxygen tube into mouth, or if using bag and mask, attach oxygen tube to bag. Give at 6 liters/ minute. o When baby starts breathing, move oxygen back to nose, as a baby normally breathes through the nose, and give at 2 liters/minute.
HEART RATE	• Check heart rate after giving first 40 breaths • To figure the baby's heart rate, count for 6 seconds and add a "0" behind the number you count. • For example: if you count 12 beats in 6 seconds, place a 0 behind the 12 to get 120 beats per minute (BPM). If you count 3 beats in 6 seconds, add a 0 behind the 3 to get 30 beats per minute, and so on.

WORD	DIRECTIONS FOR INFANT RESUSCITATION (2)
BREATHE FOR THE BABY	1. **If no Ambu bag and doing mouth-to-mouth:** wash baby's face with soapy water, rinse with clean water, cover mouth and nose with gauze 2. **Position baby** 3. **Do test breath 1 time:** o If doing mouth to mouth, cover baby's mouth and nose with your mouth making a good seal, give oxygen o If using Ambu bag, cover baby's chin, mouth and nose with mask making a good seal, give oxygen o Breathe for baby 1 time and see if chest rises 4. **If chest does not rise check:** baby position, if airway is clear, and seal over baby's mouth and nose. **If chest does rise,** continue with 5 and 6. 5. **Breathe 40 times for the baby** (1 breath in about 1 second) 6. **After each 40 breaths, recheck breathing and count heart rate** o If trouble breathing and heart rate more than 60, repeat steps 5 and 6 o If heart rate 60 or below, do CPR o If baby spontaneous breathing, monitor and support with warmth, stimulation, and oxygen if available
CPR ***Note***: If 2 people are doing the resuscitation: Person 1 does the breathing. Person 2 does the chest compressions using two thumbs method.	1. Correct hand placement: **Two Thumbs Method**. Place your thumbs on the center of baby's chest just below the nipple line. Put your hands around the chest and fingers supporting the baby's back. This places your fingers over the baby's heart. Use this if 2 people are doing the CPR. **Two Fingers Method.** Place your index and middle fingers at a right angle to the chest, on center of the chest, just below the nipple line (an imaginary line drawn between the baby's nipples). Use this when one person is doing the CPR. 2. **One cycle** = Breathe 1 time then push the chest down 3 times (down 1/3 front to back chest diameter). 3. **Do 15 cycles** (1 cycle = 1 breath and 3 compressions). This is a 1: 3 ratio. **Count:** Breathe and 2 and 3 and 4 (Cycle 1); Breathe and 2 and 3 and 4 (Cycle 2); Breathe and 2 and 3 and 4 (Cycle 3); and continue until 15 cycles are done in 30 seconds. This helps the baby to get the best resuscitation results. Each event (breathing or compression) takes about ½ second. Do not push on baby's chest and breathe for baby at same time. 4. **Check breathing and heart rate** o If heart rate 60 or below, repeat steps 3 and 4 o If trouble breathing and heart rate more than 60, do breathing resuscitation o If baby spontaneous breathing, monitor and support with warmth, stimulation, oxygen, if available 2. **Stop CPR if no spontaneous heart beat after 10 minutes. Stop resuscitation if no spontaneous breathing after 20 minutes.** 3. **After successful resuscitation** o Apgar score more than 6, give to mother o Apgar score 6 or below, REFER.

Learning Aid 3 – Apgar Scoring Chart

The APGAR Scoring System, developed by Dr. Virginia Apgar, is a test to help you decide how well the baby is doing after birth. It is an important indicator of the baby's condition at birth. "The Apgar score, at 1 minute of age, focuses attention on the condition of the infant immediately after birth. At 5 minutes, it is a rapid method for assessing effectiveness of newborn care and the condition of the infant," (Papile, 2001). As soon as you see the baby's head, you are already **LOOKING** at the color of the baby. When the baby is delivered, you are also **LOOKING** at the baby's breathing. If the baby is breathing, use the APGAR chart and score the baby 1 minute after birth and again at 5 minutes. **If the baby is not breathing or gasping, help is needed NOW, APGAR is not scored.** Any baby who scores 6 or below after resuscitation should be taken to the doctor / hospital.

LOOK, LISTEN and FEEL:

- **LOOK** at the color of the baby's skin (appearance).
- **LISTEN / FEEL** the baby's heart beat. Count the number of beats (pulse).
- **LOOK** at the baby's face for response when you touch the feet or rub the baby with your fingers (grimace).
- **LOOK** as the baby moves its arms and legs (activity).
- **LOOK** at the baby's chest and abdomen to see the baby breathe (respirations).

Normal (Score of 7-10) – Abnormal (Score of 0- 6)

CRITERIA	2 POINTS	1 POINT	0 POINTS
Appearance (color)	Completely pink body and face	Pink body, blue arms and legs	Pale or blue body and face
Pulse (heart rate)	More than 100 beats per minute	100 or less beats per minute	No heart beat
Grimace (reflex to stimulation)	Crying, coughing, or sneezing	Grimace or puckering of face	No response
Activity (muscle tone)	Active movement; waving arms and legs; flexion	Some movement; some flexion	Limp arms and legs; no flexion; no movement
Respirations (breathing)	Strong cry, regular breathing	Slow, irregular breathing; retracting of chest wall; grunting or weak cry	No breathing, no cry

Learning Aid 4 – Mucous Suction Extractors

Mucous extractors are used to remove mucous and other fluids from a newborn baby's mouth and nose. One tube is put in your mouth so you can suck and the other tube is put into the baby's mouth and nose. Mucous extractors may look different but all work the same way. Here are samples of three extractors.

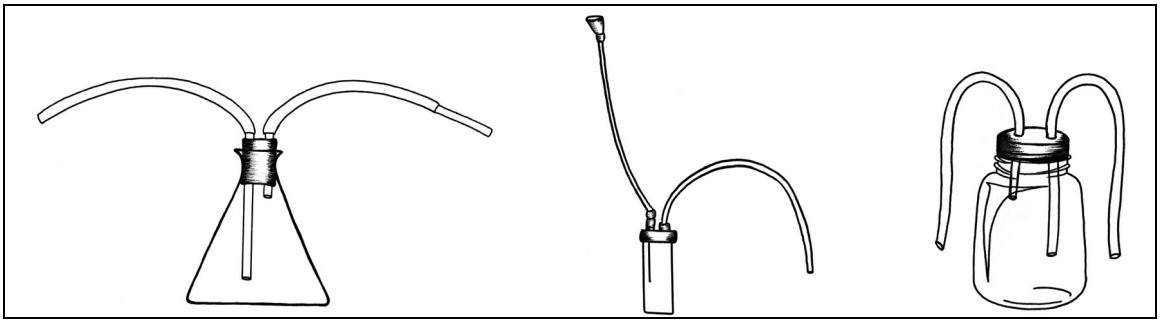


Figure 12. Mucous suction extractors.

HOW TO MAKE A SUCTION EXTRACTOR

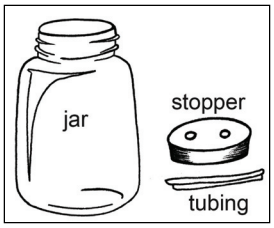


Figure 13. Equipment

Equipment: A small jar (may be a medicine vial), a stopper that fits tightly into the top of the jar, 2 pieces of soft tubing that can be high level disinfected.

1. Make 2 holes in the stopper. The holes should be just big enough to push the tubing through.
2. Push one tube (sucking tube) through the hole until it is just below the stopper.
3. Push the other tube (suction catheter) through the hole until it is close to the bottom of the jar.

HOW TO USE THE MUCOUS SUCTION EXTRACTOR

Suck mouth of the baby first. Place sucking tube in your mouth. Put 5 cm [7] of the suction catheter into the baby's mouth. Suck while slowly moving the suction catheter around the mouth and pulling out.

Suck nostrils. Put the suction catheter 3 cm [8] into each of the baby's nostrils. **Do not suction deep in the throat as this may cause more problems for the baby** making it more difficult for him to breathe**.**

Figure 14. Using suction extractor.

[7] 5 cm approximate measure of distance from end of index finger to second knuckle

[8] 3 cm approximate measure of distance from end of index finger to first knuckle

Learning Aid 5 – Newborn Resuscitation Aids: Ambu, Tube and Mask

Face Mask Size and Position:

- Term baby size 1
- Premature or low birth weight baby size 0

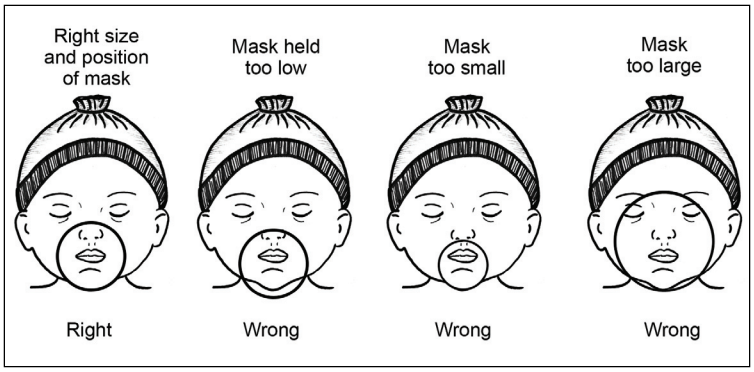


Figure 15. Position of face mask.
Source: World Health Organization, 2005

To use the bag and mask when baby is having trouble breathing:

1. Keep baby warm and position to keep airway open.

2. Test the mask. Block the mask by making a tight seal with the palm of your hand. If it makes enough pressure, you will feel the pressure against the palm of your hand. When you release the pressure, the bag should fill again.

3. Re-check position of baby.

4. Put the mask over baby's face: chin, mouth, and nose to form a seal. To form a seal press down firmly on the mask and lift the chin. The mouth can close – air will go in through the nose. Be sure your fingers holding the mask are not over the baby's throat or eyes.

5. Squeeze the bag 1 times, and watch the chest rise.

6. **If the chest does not rise** or if you hear air coming from around the mask, reposition mask. The most common leak of air is between the nose and the cheeks.

7. **If the chest rises,** squeeze the bag 40 times in a minute. Be sure the chest rises each time.

Figure 16. Helping baby breathe with bag and mask.

Use the tube and mask:

1. Keep baby warm and position to keep airway open.

2. Test the mask. Block the mask by making a tight seal with the palm of your hand. Blow in the tube. You should feel the pressure against the palm of your hand.

3. Re-check position of baby.

4. Put the mask over baby's face: chin, mouth, and nose to form a seal. To form a seal press down firmly on the mask and lift the chin. The mouth can close – air will go in through the nose. Be sure your fingers holding the mask are not over the baby's throat or eyes.

5. Blow 1 time, and watch the chest rise.

6. **If the chest does not rise** or if you hear air coming from around the mask, reposition mask. The most common leak of air is between the nose and the cheeks.

7. **If the chest rises,** blow 40 times in a minute. Be sure the chest rises each time.

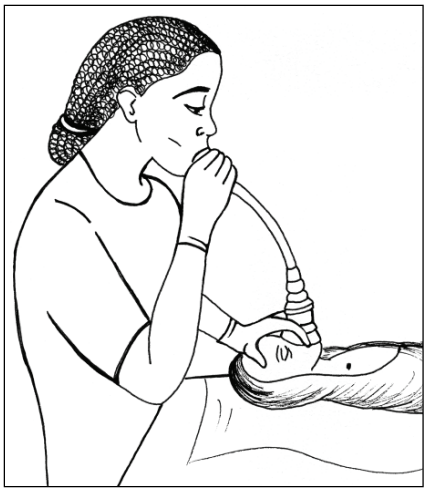


Figure 17. Helping baby breathe with tube and mask.

Learning Aid 6 – CPR Reference Table for Adult and Baby

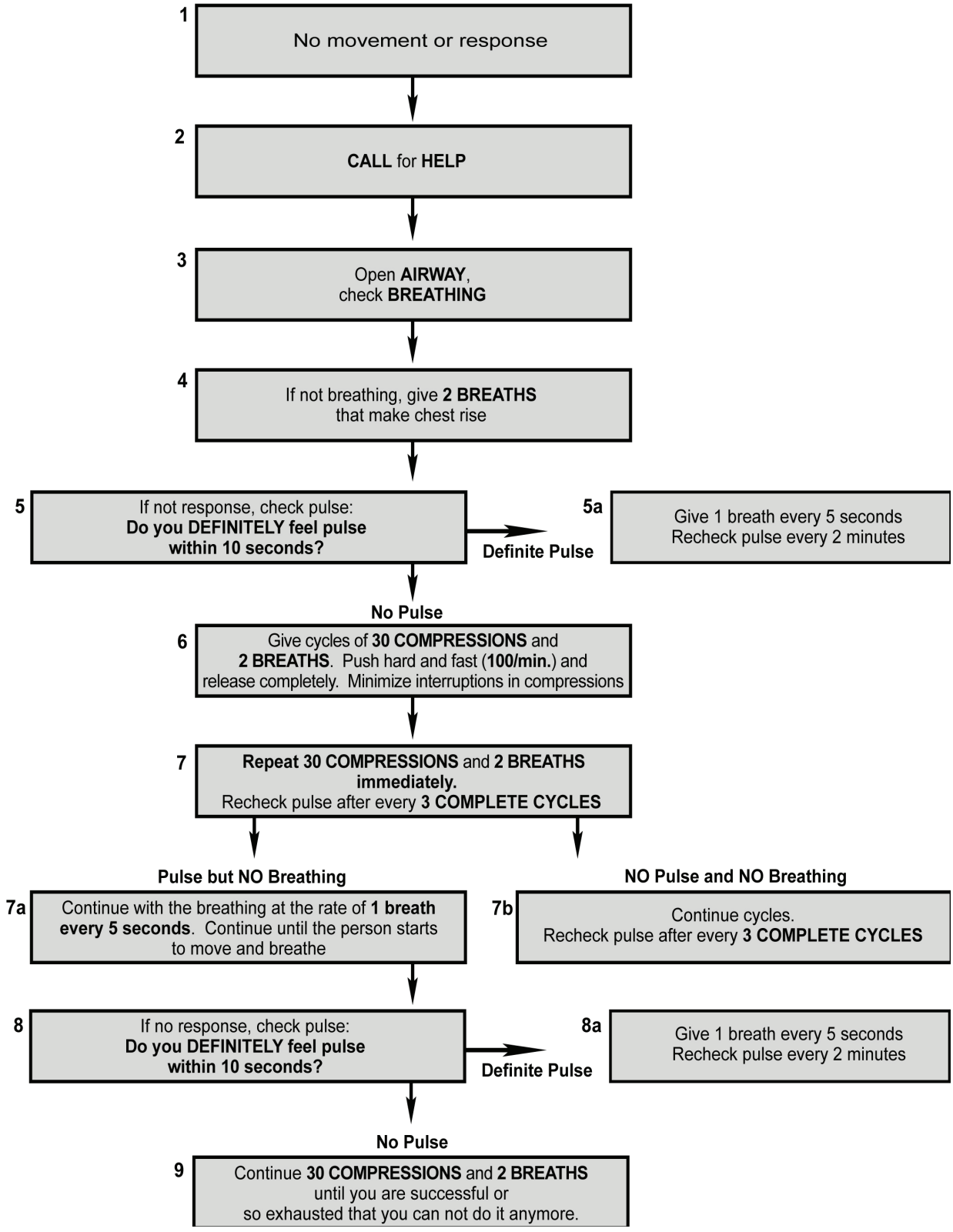
This table summarizes resuscitation for the adult and for the newborn. Look at the differences.

ACTIONS	Adult	Newborn
Help the person to breathe: victim has a pulse. ***Give 1 breath over...***	1 second (use normal breath) LOOK chest rises	1 second (use air in mouth) LOOK chest rises
Breathing support with no chest compressions…	20 breaths (10 per minute), then recheck	40 breaths per minute, then recheck
Locate compression landmark when no pulse…	Between the nipples, center of the chest	Just below nipple line at the center of the chest
Perform compressions with...	2 hands, one on top of the other, heel of one hand on lower half of sternum	2 fingers on sternum **or** 2 thumbs on sternum with hands around the chest, fingers supporting the back
Rate of compressions per minute…	100	100
Compression depth…	4-5 cm (1½ to 2 inches)	1/3 front to back diameter of chest
Chest compressions to breaths ratio…	30 compressions to 2 breaths	3 compressions to 1 breath

Source: Adapted from Effron 1992, American Red Cross 2006.

Learning Aid 7 – Adult Resuscitation Chart

Source: American Heart Association 2005, adapted for LSS 4th edition 2008.



Learning Aid 8 – Adult Breathing Aids

Sometimes a breathing aid is used because a person does not want to use mouth to mouth contact. The midwife can not depend upon these aids alone. Someone may need resuscitation where there are no breathing aids available.

REMEMBER

When a breathing aid is used, the AIRWAY MUST BE CLEAR and
A TIGHT SEAL must be formed around the airway or face piece.

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1. Using the mouth to oxygen mask (or anesthesia mask).
   a. Tilt the head slightly back (sniffing position).
   b. Cover the mouth and nose with the correct size mask.
   c. Prevent air from leaking; press firmly against sides of face piece to make a seal.
   d. Place your mouth on the opening where the hose fits.
   e. Follow all of the other steps for mouth to mouth resuscitation.

2. Using a bag and mask. The mask is fitted to a self-inflating bag, with a special valve that allows the bag to refill. Without removing the mask, the person can breathe out. A common problem is that the person holding the mask fails to hold it firmly enough against the person's face, so there is **not a tight seal**. Check to see that the mask is **the correct size.**

   a. Hold the mask firmly over the person's face with one hand.
      - Press your thumb over the rim of the mask.
      - Place your index finger over the chin part.
      - Use your third, fourth, and fifth fingers to firmly pull the chin upward and backward. **Never push the mask down on the person's chin, as this may bend the neck and block the airway**.

   b. While holding the mask with one hand (as described above), squeeze the bag with the other hand about once every 5 seconds.
      - Squeeze until the chest rises.
      - Release to allow breathing out (exhaling). When the bag is released, the air inlet at the bottom of the bag opens to allow it to refill with air. The valve at the mask prevents breathing back into the bag.
      - Release the bag quickly to allow the valves to work.

   c. If you hear air leaking out, hold the mask more tightly and squeeze the bag again.

   d. Watch for signs of vomiting. Vomit could be forced into the airway, causing aspiration of the fluids or blockage of the airway.

3. Using the S-tube. This mouth to airway aid prevents direct mouth to mouth contact. It can be used **IF** the midwife has been trained in the use of the S-tube, **IF** the S-tube is the correct size, and **IF** the S-tube is available. It is more difficult to use than a mask.

    a. Tilt the head back (sniffing position).

    b. Insert the S-tube as in “mouth to pharynx airway”.

    c. Pinch the person’s nose closed and press the flange firmly over the mouth to prevent air leaking.

    d. Hold the chin up so that the front of the neck is stretched. This keeps the airway straight. Breathe into the S-tube.

    e. Follow all of the other steps for mouth to mouth resuscitation.

4. Using the mouth to pharynx airway (oropharyngeal airway) for mouth to airway breathing. This is more difficult to use than mouth to S-tube.

    a. Use one hand, with the thumb and index finger crossed, to open the mouth.

    b. Use the other hand to insert the tube. Start with the curved part entering the mouth.

    c. As you insert it deeper, turn the tube to the proper position (over the tongue). This prevents the tongue from being pushed back into the throat. If you have trouble with the tongue, hold it forward with your index finger.

    d. Pinch the person's nose closed and hold the jaw firmly to prevent air leaking.

    e. Breathe into the tube, continuing with the count and watching the chest as with mouth to mouth resuscitation.

Learning Aid 9 – Heimlich Maneuver Procedure
(Prevention of Choking to Death)

Most often, adults choke on bites of food. Sometimes they inhale or laugh while eating. A piece of food gets sucked into the airway. Children may choke on food in the same way. They often choke on nuts, fish bones, fruit seeds, pieces of toys, or small objects from around the home. Infants may choke on milk when sucking from a bottle. They often choke when taking a bottle while lying on their backs.

If something is blocking the airway (trachea or larynx) the Heimlich maneuver can be used to remove it. This action can be used on an adult, child, or infant. It can be used on a person who is unconscious or one who is conscious. If you are with the person when she chokes, you will notice her grab her throat. The person is **unable to speak.** She may become **agitated** and **move her arms wildly.** The **face** may become **purple (dark).** The person **gradually loses consciousness** and is at risk of dying because oxygen is not going to the brain. See *Guide for Caregivers – Skill Checklists Heimlich Maneuver Procedure.*

ASK and LISTEN

Ask the person if she can speak. If she shakes her head **no**, or makes crowing sounds when she tries to breathe, or grabs her throat, she may be choking. If the person is coughing or making crowing sounds when she breathes, the airway may be only partly obstructed (blocked). If the person is unconscious, do not waste time trying to speak to her.

LOOK and FEEL

If the person is unconscious, open her mouth and look in. **FEEL** inside the mouth with your fingers to remove anything in the mouth. If you were not with the person when she became unconscious, also check the pulse. You may need to prepare to do complete cardiopulmonary resuscitation. See the section on **Adult Resuscitation** for a complete review of how to do this.

IDENTIFY THE PROBLEM

It is important that you do something now. Do not waste time checking with family and neighbors to get a complete history. Save the person's life. Later you can find out what caused the choking.

TAKE APPROPRIATE ACTION

FINDING: Conscious Person Choking

1. If the person is conscious, encourage her to cough out the object by herself. If her throat is partly blocked from a fish bone or other small object, have the person eat and swallow some food. If this does not move the object, take her to hospital / doctor to have the object removed.

2. If the person is conscious but not able to speak, stand behind her where she is sitting or standing. Keep telling the person you are there to help her. This will help control her feelings of panic.

3. Put your arms around the person, holding your hands together on her upper abdomen just below the xiphoid process and above her navel (umbilicus).

4. Make your hand nearest to the abdomen into a fist.

5. Hold your fist with your other hand.

6. Press your fist into the choking person's abdomen with a quick inward and upward push (thrust). **Note the thrusting action is made with your hands**, not with your arms pressing against the person's ribs. If your hands are placed properly there is little chance of damaging the person's ribs or internal organs.

Figure 18. Make a fist against the upper abdomen.

7. Continue to make the quick thrusting movements with your hands until the object is not stuck in the person's throat.

8. If the person loses consciousness, help her to the floor or ground and lay her on her back.

FINDING: Unconscious Person Choking

1. Open the person's mouth and see if you can see what is blocking the throat. Take out anything you can see or feel that is blocking the airway.

2. Move the head into a position that will prevent the tongue from falling into the throat and cutting off the air (oxygen) supply to the lungs. Do this by placing one hand on the person's forehead and pressing firmly backward. With your other hand, press the fingers under the jaw near the chin; lift the chin until the teeth are almost closed. This position will keep the tongue out of the throat, see Figure 19.

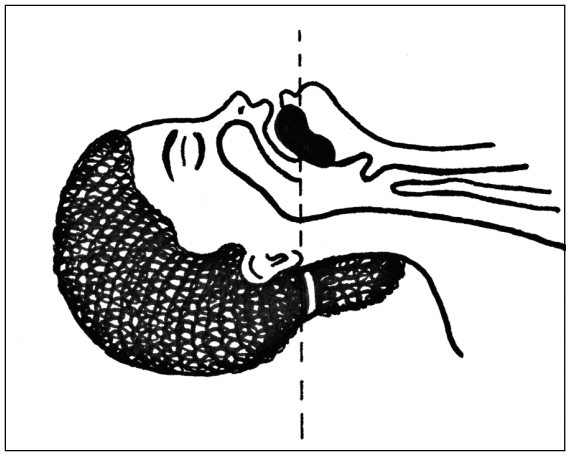

Figure 19. Head position to move the tongue out of the airway.

3. Kneel at the feet of a small child or over the thighs of an adult, facing the person's head. (See Figure 20.)

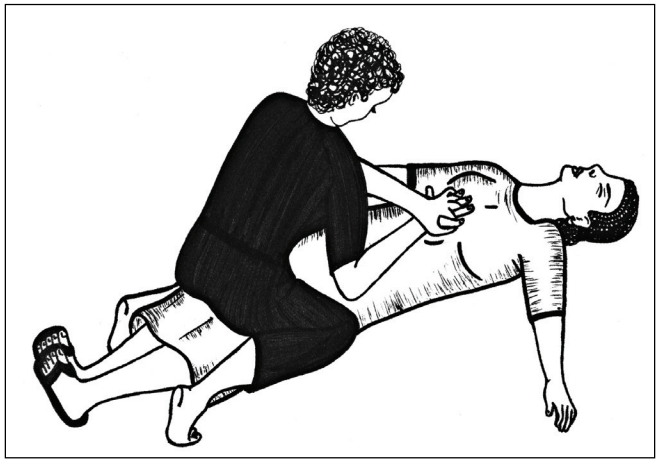

Figure 20. Kneeling and hand positions

4. Put one hand in the middle of the person's abdomen a little higher than the umbilicus. Put your second hand on top of your first hand. In a pregnant woman, place your hands higher on the abdomen.

REMEMBER

Make certain that your hands are not placed too high
where you might be pushing on the tip of the xiphoid or the ribs.

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5. Press the heel of your hand (palm) quickly into the abdomen and toward the head. The force of the push (thrust) should be in the center of the body. This will push air from the person's lungs up the trachea and larynx, pushing air against the object that is blocking the airway, so it is pushed out.

6. Thrust (push inward and upward) 6 to 10 times, if needed, one after the other. Thrust more gently in an infant or child. You can turn children upside down to loosen the blockage in the throat. You may need to **gently** hit the center of the back with the palm of your hand. You can also roll an adult to her side and give her a series of hits (blows) at the center of her back with the palm of your hand.

7. The person may now be coughing or making a crowing sound. Have her spit the object out if she can. Look into the mouth again and see if you can help to remove the object.

8. If the person continues to crow (a partly blocked airway) or gives no response, repeat the series of thrusts.

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The Life-Saving Skills Manual for Midwives and its pocket-sized clinical reference book is used for day-to-day duties and as a part of a training course. It is written and reviewed by experienced midwives for use in settings around the world including health centers, clinics, and smaller hospitals with only the most basic resources. The manual was first developed in 1990 and has been used by NGO and governmental organizations in Africa, Asia, the Americas, and the Caribbean. This 4th edition has been revised and expanded with the participation of many LSS midwives, trainers and Safe Motherhood Workers from more than 10 countries. The writing is easy to translate.

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- Labor progress monitoring
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- Active fourth stage care, focused postpartum care, breast feeding, and LAM
- Updated best practices
- Expanded HIV information
- Care for women and families with dignity and respect

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- Indonesian mother

American College of Nurse-Midwives
8403 Colesville Road, Suite 1550
Silver Spring, MD 20910, U.S.A.
www.midwife.org • lss@acnm.org
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