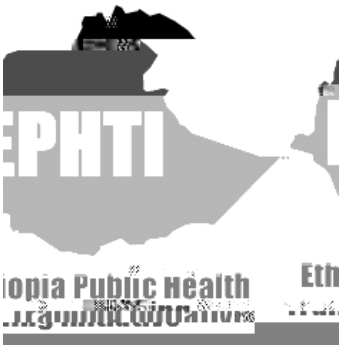
MODULE

Maternal Bleeding

Diploma Program
For the Ethiopian Health Center Team



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UNIT ONE
INTRODUCTION

1.1 Purpose and Use of this Module

This module is designed for Ethiopian health center teams who are expected to work at the district where there is no adequate facility for investigation and specialized professional for consultation. Therefore the information contained in this module will benefit the health professional who needs to review or improve their knowledge and skill as well as the inexperienced professional who needs refresher information to become capable in helping patients.

The goal of this self learning module is to provide the midlevel health professional with the knowledge and essential skills required to care a patient with maternal bleeding and recognize the severity of its potential problems.

In addition the module provides a basic foundation for understanding the key concept of maternal bleeding. The module is not intended to provide complete instruction. Thus, the team is expected to read further to pertaining to this broad topic to acquire and maintain adequate skills and enrich knowledge.

1.2 Direction for using the module:

Before starting to read this module, please follow the directions given below:

Use a separate sheet of paper to write your answers and label it ‘pre-test’ answers.

Try answering the questions twice, before and after going through the module and see your progress

The pre-test has two parts: Part one and part two.

Part one: contains common questions to be answered by all categories

Part two: contains questions for each category and work out the part specific to your professional category.

When you are through with the core module proceed to the satellite module corresponding to your category.

UNIT TWO

CORE MODULE

2.1 Pre-tests for all categories

First attempt all the questions both before and after going through the module, and then check your answers against the keys

2.1.1 Pre-test for all categories

Instruction: Read the following and choose yes or no.

1. Maternal bleeding is a minor public health problem in Ethiopia.

   A. Yes B. No

2. The laboratory test that should be performed in case of maternal bleeding is only ABO and RH determination:

   A. Yes B. No

3. The most common type of ectopic pregnancy is abdominal..

   A Yes B. No

4. Vaginal bleeding during pregnancy (after 28 completed weeks of gestation) is mainly due to placenta previa.

   A. Yes B. No

5. The commonest cause of induced abortion in our-set-up is congenital anomaly of the fetus.

   A. Yes b. No

6. Hematuria is one of the laboratory markers of maternal bleeding.

   A. Yes B. No

7. The commonest cause of postpartum hemorrhage (PPH) is genital injury during birth.

   A. Yes B. No

8. Ante partum hemorrhage (APH) is a risk factor for postpartum hemorrhage

   A. Yes B. No

9. If a pregnant mother delivers an alive, healthy fetus and expelled placenta, there is no need of further follow up.

   A. Yes B. No

10. Active management of third stage of labor includes use of uterotonic drugs and controlled cord traction with out awaiting signs of placental separation.

    A. Yes B. No

2.1.3 Pre-test for diploma Nurses

Chose the best answer for the following questions

1. Which one of the following sign is a late sign of obstructed labour?

5. All of the followings pregnant mothers are at risk of PPH during 3rd stage, except:

A. Multiple pregnancies

B. Polyhydramnious

C. Primi mothers

D. Anemic mother

6. What would be the first procedure in nursing management of a mother with PPH?

A. Remove the placenta manually.

B. Massage the uterus.

C. Give ergometrine 0.5 mg IM.

D. Shout for help.

7. All of the following could be the causes of bleeding before 28th weeks of pregnancy **except:-**

A. Uterine atony

B. Abortion

C. Ectopic Pregnancy.

D Cancer of the cervix

8. A Women's death from unsafe abortion is considered as a double failure of the health system and a tragedy, this is because of the following reasons, **except: -**

A. Failure to prevent unprotected sex.

B. Failure to prevent unplanned pregnancy.

C. Failure to avoid sexual intercourse completely.

D. Failure to manage the complications of unsafe abortion.

9. All are the complications of obstructed labour, except:

A. Spontaneous rupture of the uterus

B. VVF/RVF

C. Still birth

D. None of the above

10. All of the followings used in the preventions of obstructed labour and uterine rupture,

except:

A. Constant and careful antenatal checkups

B. Teach the community to ban early teenage marriage

C. Monitor the rate and the dose of pitocin in induction/ augmentation.

D Allow women with previous C/s to deliver at health center

2.1.4 pre-test for health extension workers

Instruction: Say true or false.

1. Abortion is not a common cause of maternal bleeding in Ethiopia.
2. Abortion can happen spontaneously.
3. Pregnancy may continue after bleeding from the gravid uterus
4. It is possible to be pregnant few days after abortion.
5. A mother with APH cannot encounter shock without excessive, visible vaginal bleeding.
6. The health extension worker decides whether to refer a mother with APH or not after doing vaginal examination.
7. If the labour is not difficult and the placenta is removed, there is always no risk of bleeding for the mother post partally.
8. If the fetus is expelled, there is no need to refer a mother with abortion to a health center.
9. Antenatal care can prevent significant proportion of maternal bleeding.
10. All mothers that may bleed after or during delivery can be identified during antenatal follow up.

2.2. Significance and brief description of maternal bleeding

According to the 1995 WHO report more than hal

Maternal bleeding is defined as bleeding that occurs in the ante partum, intra-partum or postpartum period. It is one of the major causes of maternal death in both developing and developed countries. As a result of poor health care system in the developing countries, maternal bleeding has more disastrous impact on maternal mortality and morbidity than that of developed countries.

Similar to other developing countries, Ethiopia has one of the highest MMR, estimated to be more than 870 per 100,000 live births. Maternal bleeding due to abortion (mainly unsafely induced), uterine rupture and postpartum hemorrhage (PPH) …etc, contribute significantly as a direct cause of maternal deaths and to the related sequels of morbidities.
Like other causes of maternal deaths, maternal death due to maternal bleeding is preventable if locally available resources and appropriate techniques are used effectively during pregnancy, labour /delivery and postpartum care of a woman.

Thus, based on the above mentioned facts, this module is intended to help, the health team working at the rural areas, where most cases of maternal deaths occur, to acquire the basic knowledge and skills about causes & strategic interventions to control and prevent maternal bleeding that contributes significantly in the effort done to reduce the prevailing high rate of maternal mortality and morbidity in the nation.

2.3 Learning Objectives:

Upon completion of this module, the health center team members will be able to:

- Define maternal bleeding.
- Identify the magnitude of maternal bleeding.
- List the clinical presentations of different etiologies of maternal bleeding
- Describe the initial essential management of common causes maternal bleeding.
- Explain the preventive and control strategies of maternal bleeding

2.4 Definition of crucial terms

Induced abortion: - Termination of unwanted pregnancy before viability

Unsafe abortion: - Is a procedure for terminating pregnancy either by person(s) lacking the necessary skills or in an environment lacking the minimum medical standards or both.

Post abortion Care: - is an approach of reducing mortality and morbidity from incomplete and unsafe abortion and resulting complication for improving women's sexual and reproductive health and lives.

Active Management of third stage of labor: - Consists an interventions designed to speed the delivery of the Placenta by increasing uterine contraction and to prevent post partum hemorrhage by averting uterine atony.

Standards of care: - define as a specific level of performance based on state- of the art practices supported by current scientific knowledge.

Maternal mortality is death of pregnant women during pregnancy, labour or postpartum due to condition related to or aggravated by pregnancy. **Anemia: -** red cell disorder, which occurs when the concentration of hemoglobin falls below what is normal for a person's age, gender, environment, resulting in low oxygen-carrying capacity

Hematuria: - The presence of large no of intact RBCs in the urine.

Hemoglobinuria:- The occurrence of free hemoglobin in the urine specimen

Bacteriuria:- The presence of significantly large number of bacteria in urine specimen

Pyuria:- The presence of large no of puscells (WBCs) in urine specimen

Syphilis:- is an infectious venereal disease caused by treponema pallidum

Hemoglobin:- A red pigment in RBC which helps to transport oxygen from the lung to tissues and carbon dioxide from tissues to the lung.

Hematocrit (HCT):- is the proportion of whole blood occupied by red blood cells

Cross matching:- the test between the recipient blood and the donor's blood

2.5 Epidemiology

Maternal bleeding is important cause mortality and morbidity in both developed and developing countries. Abortion alone constitutes one of the five leading causes of maternal death in the developing world. Globally, unsafe abortion claims the lives of 200 women daily, or 78,000 women yearly of these 34,000 are women African accounting 44% of the global figure. One community- based study done in Ethiopia revealed that abortion accounts for 32% of direct cause of maternal mortality. Besides, postpartum hemorrhage (PPH) accounts for 30% of direct cause of maternal mortality in developing countries.

Incidence of common causes of maternal bleeding

Ectopic pregnancy:- one in 50 to 200 pregnancies.

Spontaneous abortion:- 10-20% of all pregnancies.

- Incidence: 2 –4% all pregnancies

Etiologies of Antepartum hemorrhage

1. Placental

1.1 Abruption placenta

1.2 Placenta preavia

1.3 Marginal or sinus bleeding

1.4 Missillaneous: Vasa previae, placenta membranious, sercumvallet placenta

2. Non placental

2.1 Local causes: Cervicitis , Cervical polyp , eversion , varices , infection , trauma , malignancies

2.2 Decidual bleeding

2.3 Heavy show

2.4 Ruptured uterus

2.5. Systemic illness leading to bleeding eg. CLD, DIC …etc

2.6. Unknown Causes:- In many of cases no causes is found clinically or by investigation.

C) Bleeding after childbirth (Postpartum hemorrhage)

Postpartum hemorrhage (PPH): - is defined as bleeding in excess of 500ml after vaginal birth or over 1000ml following c/s delivery.

Incidence: 10% of all deliveries

Types:

- Immediate (primary) PPH: - Occur within 24 Hours of delivery.

5. Inverted uterus:- uterus is said to be inverted if uterine fundus is it turns inside – out of cervical canal during delivery
6. Others: - Systemic or hematologic disorders such as DIC…etc.

Common etiologies of late PPH

1. Severe anemia: - Hgb less than 7g/dl or Hct <20%

b. Clinical features of immediate or primary PPH

Usual presentation is heavy vaginal bleeding that can quickly lead to signs and symptoms of hypovolemic shock, that reflects the combination of high uterine flow (blood) and uterine atony (most common cause of PPH). Sometimes, a significant amount of blood can be retained in the uterus behind a partially separated placenta /membrane or blood may collect in an atonic uterus. Thus, strict monitoring of uterine size and tone is crucial following delivery of placenta.

If the cause of bleeding is not uterine atony, then blood loss may be slower and clinical features of hypovolemia may develop over a longer time frame.

Two important facts worth bearing in mind are;

1. Caregivers usually underestimate visible blood loss by as much as 50%
2. Symptoms of hypovolemia may not develop until a large volume of blood has been lost because most women giving birth are healthy and compensate for blood loss very well
   - Most common delivery position (semi-recumbent) with the leg elevated masks the actual loss.

Thus, rapid recognition and diagnosis of PPH is essential for successful management. The major factor in the adverse outcomes associated with severe hemorrhage is a delay in initiating appropriate management.

N.B. The clinical findings in hypovolemia are listed in the core module.

Degree of blood loss is divided into 4 (four) classes depending on the amount of volume deficit.

Class- I

Blood loss of less than or equal to 900 ml

Or Volume deficit of less than or equal to 15 % is asymptomatic.

Class II

Blood loss of 1200 ml up to 1500 ml or Volume deficit of 20 to 25%

Clinically, Manifested by

Rapid pulse rate & respiratory rate

Delayed refilling

Narrow Pulse pressure

Class III.

Blood loss of 1800ml up to 2000 ml or Volume deficit of 30 to 35%

Clinically manifested by

Overt Hypotension

Marked tachycardia (120-160 bpm)

Marked tachypnea (30-35 / minute)

Cold and clammy skin

Class IV

Blood loss of more than or equal to 2400ml or volume deficit of more than equal to 40%, manifested by:

Weak or absent Bp and PR

Oliguria/ anuria

Cardiovascular collapse

Cardiac arrest

Death

2.8. Complications of maternal bleeding

a) Immediate

I) Related to Bleeding - Hemorrhagic shock /sever anemia/

- Acute renal failure (ARF)
- Adult respiratory distress syndrome (ARDS)
- Infection
- Intra –abdominal organ Injury
- Death

II) Related to resuscitation & blood Transfusion

Infection (HBV, HIV)

Hemolytic anemia

Fluid over load - pulmonary edema

Acute lung Injury

b) Late: - Infertility secondary to amenorrhea (sheen syndrome)

- Give blood as soon as possible of there is an indication for.
- Fresh whole blood or stored whole blood is preferable

iII) **Evaluation**

- Close follow up of vital signs – maintain systolic Bp > 90 mm/Hg
- Urine output (maintain at 30-60 m/hr or 1ml/kg/hr)
- Continuous monitoring of the fetus is essential if alive

III) Arrest hemorrhage

- Ascertain cause and treat or refer accordingly

Example – retained placenta – Manual removal with standard precautions

- Evacuation (MVA/E&C) – for incomplete abortion
- Uterine massage /compression / uterotonic drugs for uterine atony …etc
- Patient must be cared until hemodynamic, respiratory and renal status appear to be satisfactory.

IV) Refer to hospital if there is indication for referral after securing I.V line, & indwelling urinary catheter with attending health personnel.

Complications such as the following warrant referral:

Acute renal failure: -

Adult Respiratory distress syndrome (ARDS):

DIC

Severe infection with signs of sepsis

Uncontrollable bleeding

APH

Refractory shock

NB. Specific management of common etiologies of maternal bleeding is listed in the satellite module.

UNIT THREE

SATELLITE MODULES

3.1 Satellite Module for Diploma Nurses

3.1.1 INTRODUCTION

Maternal bleeding in pregnancy, labour and early post partum period is a major contributing factor to maternal mortality worldwide. It is one of the gravest emergencies in obstetric practices. More than half a million mothers die each year worldwide. The most common causes are hemorrhage, including uterine rupture, obstructed labour, unsafe abortion, puerperal infection, and eclampsia. Underlying these medical causes are the socio-economic, geographic and cultural factors.

However, health professionals including nurses often fail to take appropriate and timely action when there are actual or potential risks of maternal bleeding. This again makes it difficult to reduce the mortality and morbidity from this major problem.

This satellite module is designed to strengthen the contribution of nursing students and other staff nurses in the management of maternal bleeding. The major points regarding maternal bleeding are described in the core module and activities specifically geared to nursing are highlighted here. Effort was also made to incorporate the nursing assessment and nursing diagnosis for common causes of maternal bleeding. Case studies and study questions are also incorporated in order to create an interactive learning approach.

3.1.2 Directions for using this satellite module:

3.1.3 Learning objectives:

Abortion:

Definition: The death or expulsion of fetus before 28th weeks of gestation
(Before it is viable or less than 500 gm wt)

Causes: i. Chromosomal abnormalities
ii. Uterine - Cervical incompetence
- Congenital abnormality
- Fibroids:
iii. Maternal - Febrile illness
- Syphilis
- Hypertension
- Diabetes

Classifications of Abortion

1. Spontaneous-Threatened

- Missed abortion
- May go to term
- Inevitable abortion (may be either complete or incomplete)
- Recurrent /habitual abortion

2. Induced

- Therapeutic
- Non- therapeutic (safe/ usually unsafe, leading to septic abortion)

Spontaneous abortion

Is an abortion which has not been interfered /happens spontaneously. Many pregnancies end in the 1st trimester because of spontaneous abortion.

Causes:

About 50 % of early spontaneous abortions are related to chromosomal abnormalities.
Teratogenic drugs
Faulty implantation due to abnormalities of the female reproductive tract,
Weakened cervix, or placental abnormalities,
Chronic maternal diseases, endocrine imbalances and maternal infections from the TORCH group (Toxoplasmosis, rubella, cytomegally virus and herpes virus).

Missed abortion.

When fetus is dead and retained in the uterus for about eight weeks.

S/S - brownish vaginal discharge

-Pregnancy test is negative.

- Uterus fails to enlarge.
- Other S/S of pregnancy will be reduced or vanished

Obstetric Management

- oxytocin infusion
- D & C / MVA.

Complication - DIC

-Sepsis

Habitual Abortion: when a woman has 3 or more consecutive abortion spontaneously.

Cause - Cervical incompetence due to weakness or repeated D & C

- It can also be caused by chromosomal abnormalities

Obstetric Management- Shirodkar stitch. The stitch should be removed at term (at 38 weeks of gestation)

Unsafe Abortion:

Definition: is an abortion procured by unskilled person or in an environment where aseptic technique is lacking.

In our setup, it is usually performed illegally for the sake of benefits or favor.

World literature shows that abortion contribute to about 15% of all maternal deaths

The majority of these deaths occur in Africa.

Ethiopia has one of the highest maternal mortality in the world.

According the 2000 DHS report maternal mortality rate in Ethiopia is 870 / 100,000 live births of which unsafe abortion contribute about 22-54%.

Complications of unsafe abortion

Shock (hypovolemic, septic)

Severe vaginal bleeding.

Sepsis

Uterine perforation.

Intra abdominal injury.

Management at H/C:

Open air way

IV fluid.

Triple antibiotic

Monitor V/S, and intake & output

Administer TAT

Refer her to hospital

General management of Unsafe Abortion includes:

Emergency treatment of complications

Post abortion counseling and family planning.

Link to other RH services

Post Abortion counseling and Family planning, why?

To break the cycle of repeated abortion, which is one of the major causes of Maternal morbidity and mortality

Abortion reflects unmet need of FP.

It is ethically wrong (for the providers).

*** Counsel the post abortion clients before discharge about:**

Return of fertility; that fertility returns soon. Thus start contraception soon if sex is inevitable.

About contraception:

Methods Available.

When to start

Where to go to get the contraception.

NB: Never repeat unwanted pregnancy and unsafe abortion.

Consequences of unsafe Abortion

Infection, hemorrhage and repeated abortion

Increases burden to the family, country, hospital etc.

Detrimental for women's economical, social and psychological well being.

Ex. In our setup it affects the girls' ability to continue their education.

Infertility that can be devastating to women's well being especially in countries where women derive their status from child bearing.

Die of unsafe abortion means a double failure of the health system,

1. Because of failure to prevent unsafe and unplanned pregnancy.
2. Because of failure to manage the complications of unsafe abortion.

Ectopic pregnancy

Definition_ - Implantation outside the uterus (outside endometrial cavity), commonly in the fallopian tube but occasionally can be abdominal or ovarian.

* Primary Abdominal pregnancy - when the ovum primarily fertilized and embedded in the abdomen.

***Secondary abdominal pregnancy aborted through f/ tube and implanted in the abdomen.

Cause - PID

S/S - Amenorrhea

- Lower abdominal pain
- Pain precedes bleeding
- Adnexial tenderness and mass (only to 30-50 %)

Outcomes of Tubal pregnancy

- Tubal rupture.
- Tubal mole
- Tubal abortion abdominal pregnancy

S/S of ruptured ectopic pregnancy

- Severe lower abdominal pain
- Referred pain to the shoulder.
- Shock
- Brownish vaginal bleeding

Management at H/C

- IV drip.
- Monitor V/S
- Lie flat
- Urgent referral to hospital

Dx at hospital -Pelvic Examination

- Pregnancy test
- Ultrasound if available
- Complete blood count to rule out infection

- Culdocenthesis: - Aspiration of non- clotted blood, using a syringe through the posterior cervix and in to the Cul- de-Sac of the peritoneal cavity in case of ruptured ectopic.
- Laparatomy to visualize the ectopic

Management at hospital

- Serum quantitative HCG until it becomes normal
- Contraception during the follow up.

Complications

DIC

Bleeding and shock

Choriocarcinoma

Common Causes of bleeding after 28th weeks of pregnancy

Antepartum Hemorrhage/APH

Definition: Any bleeding from the genital tract from the end of 28th weeks of gestation until the end of 2nd stage of labour**.**

Causes of APH:

signs and symptoms are the same as with concealed type.

Complications- PPH, shock, DIC, Renal failure, and postpartum pituitary necrosis/ Sheehan's syndrome

The management of mild/revealed type, less than 38 weeks:

- Ultrasound and speculum examination and she may go home if bleeding is stopped.
- If at term, induction and vaginal delivery
- If fetal distress is noted C/S.

Management of concealed and mixed type of placenta abruption at hospital:

The aim will be to restore blood loss and deliver the baby as soon as possible to prevent complications

- IV infusion with blood transfusion to prevent shock and renal damage.
- Morphine / pethedine for pain relieve
- Induction with artificial rupture of membrane.
- C/S if fetus is alive
- Strict v/s monitoring (every 15 mints)
- Catheterization to monitor intake and output
- Apply active management. of 3rd stage to prevent PPH

***NB:** generally the obstetric management of abraptio placenta is induction and Vaginal delivery and that placenta praevia is C/s*

3.1.4.2 Causes of Bleeding during Labour and postpartum Obstructed labour

Definition: -Failure of the descent of presenting part for mechanical reasons in spite of good uterine contraction.

Causes: -CPD

- Fetal malformation such as hydrocephaly
- Pelvic tumor

Signs

Early signs:

1. Presenting part doesn't enter the pelvic despite good contractive.
2. Cervix dilates slowly, edematous
3. The presenting part not well applied to the cervix.

3. Early rupture of membrane.

Late Signs

Maternal distress.

Fetal distress.

Abdomen is tense and hard to palpate.

Contractions are long, strong with little or no relaxation between.

Retraction ring of *Bandyl's ring* is seen.

Lower uterine segment becomes very thin and ready to rapture.

On V/E: The presenting part is stuck at the brim.

- Excessive cuput and moulding.
- Cervix hangs as an empty sleeve.
- Meconium stained amniotic fluid on fingers.

Management of Obstructed labour at H/C

- Resuscitation
- IV drips.
- Keep the bladder empty
- Urgent referral with accompany

Danger|Complications

- Rupture of uterus |abrupt Rapture
- VVF/RVF
- Still birth/Birth injuries
- Sepsis
- Shock
- Death.

Rupture of uterus: it is a tear on the wall of the uterus, which can be complete or incomplete.

Risk factors*:*

Previous C/s scar /silent rupture

Obstructed labour/abrupt rupture

Operative manipulation (ECV, destructive deliveries)

Extension of old cervical scar

Signs of uterine Rupture

Cessation of contractions.

Fetal distress followed by cessation of FHB

Fetal part felt under the skin.

Maternal shock.

Nursing Management of ruptured uterus at H/C:

- ü Lie flat
- ü IV drip
- ü Accompany to hospital
- ü Psychological support

Management at Hospital:

- ü Iv drip
- ü Blood group and X-match
- ü Inform OR staff to get ready for ¾mergency

Preventions of obstructed labour and rupture of the uterus

Constant and careful ANC checkups

Screen high risk pregnant cases for hospital delivery.

Women *with* previous C/S must deliver at hospital.

Monitor the dose and the rate of pitocin.

Refer cases of obstructed labour to hospital as soon as possible.

Care should be taken during manipulation.

Careful observation during labour using partograph.

Pelvic assessment for all primi gravidas at 38 weeks.

Educate the community to avoid early marriage.

Complications of 3rd stage:

Postpartum hemorrhage (PPH)

Í to avoid 4ðrly marriage] /P <</MCID 9 >]TJE37./P <</m -0cau0.4:mmunity to avoid 41e (P

- Á Previous PPH
- Á Current APH
- Á Polyhydramnius etc

NB: It is advisable to practice active management of third stage of labour for all deliveries, as PPH may not be predicted in significant number of cases.

Procedure for active management of 3rd stage:

- o Give ergometrine 0.5 Mg IV or oxytocin 5 IU IM after the anterior shoulder of the single fetus is delivered /after the anterior shoulder of the second fetus is delivered in case of twin pregnancy.
- o Check the uterus for contractions and remove the placenta soon by CCT.
- o Manage all stages of labour carefully.

Retained Placenta

Definition: When the placenta is left in the upper uterine *segment* and caught in the cervix, for more than 30 minutes after the baby is delivered.

Cause: Poor uterine contraction and / Hourg90 Tc T*(Cau4b 7wqn0.0007 Tclctio>>BDC /T4n5rcp)584DJ.0

Management: Using your gloved fist of hand push the uterus back into place gently.

- Get your assistant to give ergometrine IV while your hand is still inside.
- Remove your hand when action of ergometrine starts.
- Don't try to expel the placenta**.**
- Keep the patient NPO and refer as soon as possible to hospital

Hematomas

Hematomas are usually the results of injury to a blood vessel with out noticeable trauma of the superficial tissue. The most frequently observed hematomas are of the vagina and the vulva. The soft tissue in the area offers no resistance, and hemtomas containing 250-500ml of blood may develop rapidly. Hematomas may also develop in the upper portion of the

3.1.4.3 Preventions of maternal bleeding and death from its complications

Proper Antenatal care

Antenatal care is a preventive medicine that includes nutrition and health education. The purpose of ANC is to promote good health throughout the course of pregnancy while screening for and managing any complication that will occur during pregnancy including:

Provision of comprehensive RH services.

Antenatal Health Education topics should include but not limited to:

- Danger signals of pregnancy
- Prevention and proper treatment of STIs and anemia (including hookworm and malaria).

Proper management of all stages of labour including starting IV infusions when bleeding occurs.

Refer the following high risk factors that increase the risk of hemorrhage:

- Grand multiparty
- Anemia
- Malpresentations
- Multiple pregnancy
- Previous C/s
- Polyhydramnious
- Antepartum Hemorrhage
- Previous history of PPH

Training and supervising the TTBAs

TBAs should be trained to conduct clean and safe deliveries, and midwives/nurses should provide them with technical support and guidance and frequent supervision. The trained TBA who is aware of her limitations and capabilities can ascertain when complications arise and refer the patients at the right time and in good condition.

The role of the trained traditional birth attendants:

The trained TBAs should be able to:

- Recognize the signs of pregnancy.
- Register pregnant women at the primary H/C.
- Promote the concept of antenatal care and encourage women to attend antenatal clinics for regular check-ups.
- Provide health education

- Teach pregnant women and the community at large about the danger signs of pregnancy, e.g. bleeding during pregnancy; visual disturbance; headache.
- Identify and refer high risk women to the hospital for better care.
- Advise pregnant women to take iron, folic acid and anti-malarial drugs as prophylaxis.
- Identify the signs of onset of labour.
- Recognize the signs of prolonged labour.
- Avoid the injudicious use of oxytocin.
- Perform safe and clean delivery.
- Understand the signs of post-partum hemorrhage.
- Take emergency measures if post-partum hemorrhage occurs. These include massaging the uterus, abdominal aortic compression during transportation to the hospital putting the mother in shock position, emptying the bladder, and immediate referral to the nearest health facility.
- Proper management of third stage of labour.
- Recognize the signs of separation of the placenta, such as; gush of blood; lengthening of the cord; hard and movable uterus.
- Be aware of the referral system if the placenta is retained.
- Motivate the women to obtain family planning

3.2. Satellite Module for Health Extension Workers

3.2.1 Introduction

The purpose of this satellite module:

This module is intended to be used by Health Extension Workers (HEW) so that they can be provided with the basic information on the common causes of maternal bleeding. Consequently, it will enable them to use this information for the prevention and management of maternal bleeding within their limitations. Study questions have also been incorporated in order to create an interactive learning atmosphere,

3.2.2 Directions for using this satellite module:

First try the pretest, next go through the material, then do the test again to see your own progress.

3.2.3 Learning objectives

At the end of reading this satellite module, the HEW should be able to:

List the common causes of maternal bleeding.

Demonstrate the role of HEPW in different causes of maternal bleeding

Identify the preventive measures of maternal bleeding.

Record and report of necessary data regarding maternal bleeding.

3.2.4 Maternal Bleeding

Maternal bleeding/ vaginal bleeding in pregnancy, labour and early post partum period is a major contributing factor to maternal mortality worldwide including Ethiopia.

3.2.4.1 Common Causes of Vaginal Bleeding:

3.2.4.2 Common causes of vaginal bleeding during pregnancy

Abortion/ Miscarriage

Ectopic pregnancy

Ante partum hemorrhage

3.2.4.3 Common causes of Bleeding during Labour and postpartum

Obstructed labour and Uterine rupture

Postpartum hemorrhage

3.2.4.3.1. Bleeding before 28th wks of pregnancy:

The major (95%) cause of bleeding during the first and second trimester of pregnancy is abortion. Other complications that can cause bleeding in the first half of pregnancy are: Cervical conditions (Cervical tumors, cervicitis and erosion).

Abortion: The death / expulsion of fetus before 28th weeks of gestation (loss of a fetus

Despite the above management if bleeding persists

Inevitable abortion

Inevitable abortion is when it is impossible to continue pregnancy.

S/S - Severe backache and bleeding

- Cervix dilated.

- Membrane ruptured.

Outcome: either complete or incomplete abortion.

Emergency Management at Home:

- Monitor V/S
- Lie down the patient with the feet up.
- Refer her for MVA or E and C

Missed abortion

Definition: When fetus died and retained in the uterus at least for 8 weeks.

S/S - brownish vaginal discharge

-Pregnancy test is negative.

- Uterus fails to enlarge.

- Other S/S of pregnancy will be reduced or vanished

Management – Refer to H/C.

Habitual Abortion

Definition

Complications of unsafe abortion

- Shock
- Severe vaginal bleeding.
- Sepsis
- Uterine perforation.
- Intra abdominal injury.

Management at Home:

- Monitor V/Ss and urine out put
- Refer her to health center immediately.

Be aware that early treatment of abortion complications prevents **illness**, **infertility**, and **death**!

A woman with any of the danger signs after abortion (heavy bleeding, severe pain in the abdomen, high fever, bad smelling vaginal discharge. fainting and confusion) needs medical help fast! She should go immediately to a H/C or hospital where she can get the care she needs. Most of the time the womb must be completely emptied using vacuum aspiration or E and C.

Management of heavy vaginal bleeding

Heavy bleeding is the most common problem during or after an abortion. It is usually caused by pieces of the pregnancy tissue that are left in the womb. The womb cannot squeeze itself shut and keeps bleeding. If the pieces are removed, often the bleeding will stop. Sometimes the bleeding is caused by a torn cervix, which must be stitched for the bleeding to stop.

12. Take her to a hospital right away, even if you think you have removed the tissue and the bleeding has stopped. She still needs to have her womb emptied to prevent complications. If the bleeding does not stop, continue to rub or massage her lower belly while taking her to the hospital.

General management of unsafe abortion includes:

Emergency treatment of complications

Post abortion counseling and family planning.

Link to other RH services

Post Abortion counseling and Family planning, why?

To break the cycle of repeated abortion.

Major cause of maternal mortality and morbidity.

Counsel the post abortion client:

Fertility returns soon

Start contraception soon if sex is inevitable.

Methods available for family planning.

Where to get the contraception.

Advice: Never repeat unwanted pregnancy and unsafe abortion!

Consequences of unsafe Abortion

Increases Burden to the family<t nt of complications

Outcomes of Tubal pregnancy

- Tubal mole
- Tubal abortion abdominal pregnancy
- Tubal rupture.

S/S of ruptured ectopic pregnancy

- Severe lower abdominal pain
- Referred pain to the shoulder.
- Shock
- Brownish vaginal bleeding

Management at Home

-Monitor V/S

- Lie flat
- Urgent referral.

Management at hospital

- Admission
- Resuscitation
- -Laparatomy salpigo-ophorectomy

3.2.4.3.2 Common Causes of bleeding after 28th weeks of pregnancy

Antepartum Hemorrhage/APH

Definition*:* any bleeding from the genital tract from the end of 28th weeks of gestation until the end of 2nd stage of labour**.**

Common causes of APH:

1. Placenta praevia/unavoidable bleeding
2. Placenta Abruption/accidental hemorrhage

Management of unclassified APH at Home level:

Count pads to assess amount of bleeding over a given time period, save any tissue or clots expelled and provide fresh pads/clean clothes.

Assess if there are contractions.

Prepare for urgent referral

Arrange blood donor and refer the pt with pertinent history.

(**Caution**: never do V/E or rectal examination).

Placenta praevia:

Definition. Is a bleeding from abnormally situated placenta/ situated wholly or partly in the lower uterine segment.

Diagnosis of the placenta praevia

PrepaHigh h /A, sipl sprae. artloblique lie

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Arrangbdo x ArranFHB h /rereasilyJEMC /P <</MCID 11 >>2DC 0 Tc 0 -1

Ption

- Uterus is tender and palpation is painful
- Fetal distress and IUFD

3. Mixed: a combination of both where some bleeding retained and some escapes. Other **S/S**: is the same as with concealed type.

ü Provide postoperative care.

Complications:

Shock

Peritonitis

Paralytic ileus

Peritonitis

Venous thrombosis

Adhesions

Pulmonary edema

Septic wound

Preventions of obstructed labour and rupture of the uterus

Constant and careful ANC checkups

Screen high risk pregnant cases for hospital delivery.

Women with previous C/S must deliver at hospital.

Refer cases of obstructed labour to hospital as soon as possible.

Careful observation during labour

Have all primi gravidas specially young and old ones deliver at hospital.

Educate the community to avoid early marriage.

Complications of 3rd stage:

Post partum hemorrhage (PPH)

Retained placenta.

Adherent placenta.

Inversion of the uterus.

Shock.

Post partum hemorrhage

Definition: It is a bleeding from the genital tract during 3rd stage or postpartum to the amount 500 ml or any amount that alters the maternal condition.

Types of PPH:

1. Primary PPH -with in 24 hours.

2. Secondary- PPH from 24 hours- 6 weeks. It is also said to be puerperal hemorrhage.

Avoid prolonged labour.

Manage all stages of labour carefully.

Retained Placenta

Definition*:* When the placenta left in the upper uterine segment and caught in the cervix, for more than 30 minutes after the baby is delivered.

Cause: Poor uterine contraction

Management: Refer the mother for Manual removal

Inversion of the uterus

Definition: When the uterus turns inside out.

Cause:

Mismanagement of 3rd stage as:

Combined method of placental expulsion.

Traction of the cord in an atonic uterus

Polyps (chronic inversion)

Management:

- Don't try to expel the placenta**.**
- Elevate the buttock by putting the pillow under the buttock.
- Keep the patient NPO and refer as soon as possible to hospital

Summary of vaginal bleeding, causes and management

BLEEDING DURING PREGNANCY OR AFTER CHILD BIRTH		
Bleeding Problem	**May be caused by**	**what to do**
Bleeding during the first 3 months of Pregnancy with constant pain or pain that comes and goes	Pregnancy in the tube	URGENT! Send to a H/C right away.

Bleeding during the last 3 months of pregnancy

3.3. Satellite Module for Diploma Medical Laboratory Personnel

3.3.1 Learning objectives

Up on completion of the activities in this module, you will be able to:

- Name, describe and perform specific laboratory tests that could be undertaken during maternal bleeding
- Carry out calibration for cyanmethemoglobin method of hemoglobin determination
- Know the normal hemoglobin and hematocrit values in different age groups
- Define packed cell volume
- Discuss the clinical significance of hemoglobin and Hematocrit determination
- List and describe the methods used for diagnosis sexually transmitted infections
-

- Screening sexually Transmitted Infections

  Syphilis screen
  - Non treponemal test
    Such as (VDRL,RPR,ART,EIA)
  - treponemal –specific tests
    E.g TPHA, FTA-AB
  - Dark field Microscopy

  } serologic tests

  screening other sexually transmitted infections
  -Gram stain smear
  -Wet (saline) mount preparation
  -Culture

I. HAEMIGLOBIN CYANIDE (HICN) TECHNIQUE

Principle of test

Whole blood is diluted 1 in 251 in a drabkins solution which contains potassium ferricyanide and Potassium cyanide. The red cells are hemolyzed and the hemoglobin is oxidized by the fericyanide to methamoglobin. This is converted by the cyanide to stable haemiglobincyanide (HicN). Absorbance of the HicN solution is read in a spectrophotometer at wave length 540 nm or a filter colorimeter using a yellow-green filter. The absorbance obtained is compared with that of a reference HicN standard solution

Advantage -convenient method

- Readily available and stable standard solution
- All forms of hemoglobin except sulfhemoglobin (SHb) are readily converted to HicN

Reagent: The diluents is detergent modefied drabkin's solution

Materials
- Spectrophotometer or colorimeter
- Micropipet or sahli pipet
- Test tubes or small bottles with stopper

Procedure :

1. measure Carefully 20 l (0.02ml) of capillary blood or well-mixed venous blood and dispense it in to 4 ml diluents (Drabkin's fluid)
2. stopper the tube, mix and leave the diluted blood at room temperature, protected from sunlight, for 4-5 mints.
3. Place a yellow-green filter (e.g. [illegible]

Note:

- Drabkin's fluid must be stored in a light opaque container, e.g. brown glass bottle. It is a pale yellow clear fluid and must not be used if it loses its color or becomes turbid.
- Hemoglobin standard solutions are stable for long period (2 years or longer) when stored tightly capped and refrigerated (2-6^{o}c)

Reference Values:

Adult women: 12-16 g/dl or 1.86 – 2.48 nmol/L

Adult men : 13-5-17.5 g/dl or 2.09 –2.71 nmol/L

New born (both genders) : 14 – 20 g/dl

3.3.3.2. Determination of Packed cell volume (PCV) or Hematocrit (Hct)

Principle of test: The PCV is proportion of whole blood occupied by red cells. Anticoagulated blood in a glass capillary's of specified length, bore size, and wall thickness is centrifuged in a micro hematocrit centrifuge at RCF 12000-15000 xg for 5 minutes to obtain Constant packing of the red cells. The PCV value is read from the scale of dividing the height of the red cell column by the height of the total column of blood.

Specimen: To measure the PCV either well mixed well oxygenated EDTA anticoaguated blood or capillary blood collected in to a heparinized capillary can be used.

Materials

- Micorhematocrit centrifuge
- Reading device, it can be a ruler or micrhematocrit reader
- Heparinized or plain capillary tubes
- Sealant (wax or plastic clay)

There are two methods of determination

1. The microhematocrit method
2. Macrohematocrit (wintrobe) method

→ Although recommended by the ICSH as an alternative method, it is no longer in routine use because of technical problems and centrifugation time required (30 mint) to achieve maximal packing of cells.

Microhaematocrit determination

Test procedure:

1. Fill about three quarters of the tube by capillarity (if anticoagulated venous blood, adequate mixing is mandatory)
2. Seal the unfilled end, preferably using a sealant material. If unavailable, Heat-seal the capillary using a small flame from a spirit lamp or pilot flame of a Bunsen burner, rotating the end of the capillary in the flame.
3. Place the filled capillary in one of the numbered blots of the microhematocrit rotor with the sealed end against the rim gasket (to prevent breakage).
4. Centrifuge for 5 minutes (RCF 12000 – 15000 xg),
   Note: If the PCV is more than 0.50, centrifuge for a further 5 Minutes to ensure Complete packing of the red cells
5. Immediately after centrifuging, read the PCV
   To read The PCV in a hand –held microhematocrit reader, align the base of the red cell column (above the sealant) on the 0 Line & the top of the plasma column of the 100 Line. Read off The PCV from scale. The Reading point is the top of the Red cell column just below the buffy coat layer (consisting of WBC& platetates).
   When no reader is available: use a Ruler to measure the length of the total column of blood in mm & the length of the red cell column (base to below buffy coat layer).
   Calculator the PCV as follows:

Serology

Principles: - infection of humans with T.pallidum provokes in the host a complex antibody response. Serologic tests for syphilis are based on the detection of one or more of these antibodies. Host antibodies are of two know types:

1. non – treponemal antibodies, or reagin which react with lipid antigen
2. treponemal antibodies which react with T. pallidum & closely related strains.

Serologic testing is the most commonly used procedure in the diagnosis & is useful in follow up of syphilis

Sensitivity & specificity of serologic tests vary depending on the type of test performed and the stage of the disease

Serologic testing is the only method for detecting latent and tertiary syphil is

Amplified nucleic acid tests (e.g, PCR) may be available in some laboratories.

There are two types Of serologic tests carried out: non –treponemal tests & treponemal – specific tests

Specimens:

- Serum
- CSF
- Serous fluid of the lesson

Non – Treponemal tests

First line tests used for screening, detect antigens that are not specific to treponems. Tests include: Venereal disease Research Laboratory test (VDRL), Rapid Plasma Reagin Test (RPR), Automated Reagin Test (ART), Toludin Red Unheated Serum Test (TRUST), Reagin Screening Test (RST) and Enzyme Immuno Assay (EIA)

Advantage :

- Rapid & technically simple
- VDRL test is useful for evaluation of CSF

Disadvantages:

- A delay of 1 to 4 weeks between time of development of the primary chancre & detection of antibodies
- False –positive results owing to non-specific cross reactivity
- False–negative results in up to 40% of cases of primary syphilis & 25% cases of untreated late latent syphilis.

Treponemal - specific tests

Supplemental tests used for confirming non- treponemal test results: measure antibodies to cellular components of treponemes. Tests include: Treponema Palladium Hemaggultination test (TPHA),Fluorescnt treponemal antibody absorption test (FTA – ABS).

Advantage:	Disadvantages:
• confirmation of non-treponemal test results	• cross reaction with non –venereal treponematoses (i.e yaws, pinta & non-venereal syphilis)
• FTA-ABs is highly sensitive & the first serologic test to give a Positive result in infectious syphilis	• Not beneficial in the evaluation of CSF • Not Useful for assessing response to treatment,

ü **VDRL QUALITATIVE TEST ON SERUM**

Materials

- Mechanical rotator (adjustable at 180 rpm)
- Slides
- 18-,19-, and 23 –gauge hypodermic needles with syringe
- 30ml, round, glass _ stoppered, narrow-mouthed bottles

Reagents

- VDRL antigen: containing 0.03% cardiolipin, 0.9% cholestrol lecithin → to produce standard Reactivity (0.21%)
- 1.0% buffered saline solution
- 0.9% saline

Preparation of Antigen Suspension

1. Pipette 0.4ml of buffered saline to the round glass (bottle)
2. Add 0.5 Ml of antigen & rotate the mixture genetly & continuously.
3. continue the rotation of the bottle for 10 seconds
4. Add 4.1 mL of buffered saline from a 5. ml pipette
5. place the top on the bottle & shake from the bottom to the top

6. The antigen suspension is now ready for use & may be kept for 1 day. When ever the suspension is used, it should be mixed gently.

Preparation of specimen (serum)

1. Heat clear serum in a 56^{o}c water bath for 30 mints before testing (to destroy complement)
2. Examine the serum when it is removed from the water bath.
3. If serum is allowed to remain untested for 4 hrs or more after original heating, you need to reheat for 10 Minutes at 56^{o}c before testing
4. When tested, the serum must be at room temp.

Procedure

1. Pipette 0.05 ml of heated serum in to ringed slide
2. Add one drop of antigen suspension on to each serom with 18- gauge needle & syring.
3. Rotate the slides for 4 mints on a mechanical rotaton adjusted at 180 rpm.
4. Read tests microscopically with 10x ocular & a 10x objective immediately after rotation.

READING AND REPORTING OF RESULTS

No clumping (slight roughness) **: Non reactive**

Small clumps**: Weakly reactive**

Medium or large clumps**: Reactive**

Note : A prozone reaction is occasionally encountered. This Type of reaction is demonstrates when complete or partial inhibition of reactivity occurs with undiluted serum; maximum reactivity is obtained only with diluted serum. This prozone rxn may be so Pronounced that only on weakly reactive (or "rough" non reactive) result.

ü **RAPID PLASMA REAGIN (RPR) CARD TEST ON SERUM**

Materials

- 20 guage needle
- plastic dispensing bottle
- plastic coated cards
- Dispenser (0.05m/per drop)
- Capillary pipettes (0.05 m L capacity
- Stirrers

- Rotating machine (adjustable at 100 rpm) cardioipin, charcoal allows the result to be read macroscopically.

- Wet mount preparations to detect motile trichomonas vaginalis (Trichomoniasis)
- There are expensive laboratory technologies that helps to diagnose other STIs

  E.g. Tissue culture, ELISA or PCR are usually required to diagnose urogenital chlamydia infections (chlamydia trachomatis)

10. Examine the smear microscopically, first wi

unknown red cells with serum containing known antibody where as the Reverse grouping is accomplished by mixing unknown serum with red cells containing known antigen.

The cell Grouping is performed by:

A) Slide method and

B) Test tube method

Both test tube and slide methods are recommended. The serum grouping is performed by the test tube method only, the slide method is not usually recommended because of the presence of weak antibodies in the unknown serum so that result is easily overlooked or difficult to read. When we use test tube method there is a chance or possibility of shaking and centrifugation, which facilitate the agglutination reaction and so the result Is less likely over Looked.

NB: Do not relay on reverse grouping alone to decide the blood group. It is done to check or double check the foreward grouping.

Rapid cell ABO grouping

A. Slide method

1. Label a glass slide as follows:

Anti –A	Anti – B

2. Pipette into each division as follows

   Anti –A 1 drop anti –A serum

   1 drop donor's capillary blood

   Anti – B 1 drop anti – B serum

   1 Drop donor's capillary blo

3. Mix the contents of each division using a clear piece of stick for each.
4. Tilting the slide from side to side, look for agglutination and record the results after 2 Minutes.

Important: Allow a full 2 minutes before recording the results to avoid missing weak reactions

5. Interpret the result as follows:

Anti – A	Anti – B	Group*
+	-	A
-	+	B
+	+	AB
-	–	O

* Confirm by tube cell and serum grouping

B. Test Tube method

Materials

- Normal saline sol. 0.9% or 0.85%
- Wash bottle
- Chemically clean & dry test tube (10x15mm)
- Droppers
- Electrical centrifuge
- Markers
- Optical (hand lens or microscope)

1. Prepare about a 2-5% suspension of fresh red Cells in saline.
2. Label two test tubes as A and B
3. Add a drop of anti.-A to tube labeled A and a drop of anti-B to tube labeled B
4. Add 2 drops of unknown 2-5% RBC suspension to each tube
5. Centrifuge at 1000-2000 rpm for 1min. or leave at room temperature for 1 hour.
6. Examine for agglutination. Readings may be checked by using a hand lens or low power of a microscope.

Interpretation :-

The same as the slide method

Source of error

- Drying on a slide
- Examining longer than 2min
- Technical and clerical errors

Specimen could be:

- Whole Blood
- From finger prick
- Washed blood

II. Rh Typing

There are three methods of Rh- typing

A) slide test method
B) saline tube test method
C) Modified tube test

A) Slide method

1. prepare a 40-50% suspension of cells in their own serum or use whole Blood, finger puncture or coagulated blood
2. Label two slides as C and T
3. Place one drop of reagent anti-Rho(D) on slide labeled as T.
4. Place one drop of albumin or other control Medium on another slide labeled as C.
5. To each slide add 2 drops of well mixed (40-50% suspension of cells) in plasma or serum
6. Thoroughly mix the cell suspension & spread evenly the mixture over most of the slide.
7. Place both slide on a viewing box surface which is Lighted and tilt gently and continuously
8. Observe for agglutination

NB: C Refers to control
T refers to test

Interpretation:-

Agglutination of red cells → **Rh positive**.

No red cell agglutination → **Rh negative**

A smooth suspension of cell must be observed in the control.

Note: Check negative reaction microscopically.

UNIT FOUR

ANNEXES

4.1 Annex-I: Bibliography /References

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4.2 Annex-II: Key for pre-test questions

	Category				
S.No	All category	Health officers	Nurses	HEW	Medical Lab
1	B	T,F,T,F, F,	B	F	-hematuria, hemoglobinuria, Normocytic normochroic red blood cells
2	D	T,F,T,T,F	C	T	-CBC, VDRL/ RPR, Gram stain, ABO and Rh- blood grouping, PAP-smear examination, pregnancy test etc..
3	B	T,F,T,T,F	B	T	- Acid hematin (sahli hellige), Cyanmethamoglobin method, Hemocue method, Oxyhemoglobin method.

4.3 Annex-III: Abbreviation

HC- Health Center

IV- Intravenous

FHB - Fetal Heart Beat

C/s - Cesarean Section

EPHW – Extention Package Health Workers

APH – Antepartum haemorrhage

PPH – Postpartum Haemorrhage

GAS – Gestational age (in weeks)

CLD- Chronie Liver Disease

D/C – Disseminated Intravascular coagulation

HPN – Hypertension

DM – Diabetus mellitus

V/S – Vital signs

S/S – Symptoms and signs

RL – Ringer's lactate

NS – Normal Saline

VVF – Vesico Vaginal Fistula

RVF – Recto vaginal fistula

MVA – Manual Vacuum Aspiration

WHO – World Health Organization

LB – Live birth

MMR- Maternal mortality ration

VDRL:- Venereal disease research laboratory

RPR:- Rapid plasma reagin

ART:- Automated reaagin test

EIA:- Enzyme Immuno Assay

TPHA:- Treponema pallidum hemaggultination