MODULE

Safe Motherhood

For the Ethiopian Health Center Team

Ethiopia Public Health Training Initiative

Yohannis Fitaw, Amsalu Feleke, Getu Degu, Sisay Yifru, Mengesha Admasu, Hana Bewketu, Mulunesh Abuhay, Birhanu Sendek, Yared Wondimkun, Endris Mekonnen, Getachew Hailemariam

University of Gondar

In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education

April 2005

Funded under USAID Cooperative Agreement No. 663-A-00-00-0358-00.

Produced in collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education.

ACKNOWLEDGMENTS

The preparation and development of this module on safe motherhood has been the contribution of many teaching staffs of the Gondar University College. It had undergone through many discussions and revisions formally and informally before completion. The authors highly appreciate the Dean's office, the University staff and others who had encouraged us to produce this teaching material.

We would like to express our deep appreciation to the EPHTI/ Carter Center, Ms Carla Gale, Ato Aklilu Mulugeta and all the staff in the office for the day-to-day follow up, encouragement and funding the production of such relevant teaching material.

The contribution made by peer reviewers, i.e. Dr Nuru Abseno, Dr Endale Tefera, Dr. Solomon Kumbi, Ato Mesfin Negussie, Dr. Habtemariam Tekle and Dr. Yohannes Tilahun is highly appreciated. They critically reviewed our first draft and their comments are accommodated. We are highly indebted to Charlotte Houde Quimby, Patrica White and Dr. Feruz, international reviewers who critically commented on the last draft.

Last but not least, we appreciated our secretaries and those who were involved directly or indirectly to finalize this module.

ABBREVIATIONS

ABC = Airway, Breathing, Circulation
AIDS = Acquired Immuno Deficiency Syndrome
ANC = Ante Natal Care
APH = Ante Partum Hemorrhage
ART = Anti Retro Viral Therapy
BCC = Behaviour Change Communication
BP = Blood Pressure
BPM = Beat Per Minute
CBW = Community Based Worker
CCT = Controlled Cord Traction
CHW = Community Health Worker
CPD = Cephalo Pelvic Disproportion
D & C = Dilitation and Curretage
DPB = Diastolic Blood Pressure
DPT = Diptheria, Pertussis, Tetanus
E & C = Evacuation and Curretage
EBF = Exclusive Breast Feeding
ELISA = Enzyme Linked Immuno Sorbent Assay
FGM = Female Genital Mutiliation
FHR = Fetal Heart Rate
FP = Family Planning
HC = Health Center
HCl = Hydrochloric acid
HIV = Human Immuno Deficiency
I U = International Unit
ICU = Intensive Care Unit
IEC = Information, Education, Communication
IM = Intra Muscular
IPT = Intermittent Preventive Therapy

ITNS = Insecticide Treated Nets
IUCD = Intra Uterine Contraceptive Device
IUGR = Intra Uterine Growth Retardation
IV = Intra Venous
KOH = Potassium hydroxide
MAS = Meconium Aspiration Syndrome
MMR = Maternal Mortality Ratio/ Rate
MTCT = Mother-To-Child-Transmission
MVA = Manual Vacuum Aspirator
OR = Operation Room
P/E = Physical Examination
PID = Pelvic Inflammatory Disease
PMTCT = Prevention of Mother to Child Transmission
PNS = Post Natal Care
PPH = Post Partum Hemorrhage
PROM = Premature Rapture of Membrane
RD = Respiratory Distress
RH = Reproductive Health
ROM = Rupture of membrane
RPR = Rapid Plasma Reagin
STIs = Sexually Transmitted Infections
TAT = Tetanus Anti Toxin
TB = Tuberculosis
TBA = Traditional Birth Attendant
TT = Tetanus Toxoid
TTBA = Trained Traditional Birth Attendant
U/A = Urine analysis
UTI = Urinary Tract Infection
V/S = Vital Sign
VDRL = Venereal Disease Research Laboratory
VIP = Ventilated Improved Pit latrine

VLBW = Very Low Birth Weight

WBC = White Blood Cell

TABLE OF CONTENTS

Topic **Page**

Acknowledgment i
Abbreviations ii
Table of Contents v
UNIT ONE Introduction 1
1.1 Purposes and use of the module 1
1.2 Directions for using the module 2
UNIT TWO Core Module 3
2.1 Pretst 3
2.2 Learning Objectives 7
2.3 Learning Activity I- Case Study 8
2.4 Significance of Safe Motherhood 10
2.5 Epidemiology 11
2.5.1 Causes of maternal mortality & morbidity 12
2.5.2 Risk factors for maternal health problems 14
2.5.3 Indicators of maternal health 16
2.6 Obstetric emergencies and common maternal health problems 18
2.6.1 Obstetric Hemorrhage 18
2.6.2 Early pregnancy complications 19
2.6.3 Unsafe abortion 19
2.6.4 Hypertensive diseases in pregnancy 20
2.6.5 Obstructed labour and uterine rupture 21
2.7 Essential Maternal Health Services 22
2.7.1 Family planning 22
2.7.2 Ante Natal Care 23
2.7.3 Delivery Care 24
2.7.4 Postpartum Care 29
2.7.4.1 Postpartum maternal Care 29
2.7.4.2 Essential Newborn Care 29

2.7.5 Sexually Transmitted Infections including HIV/AIDS 30
2.7.6 Post abortion Care 31
2.8 Preventive and Promotive Aspects of Maternal Health 32
2.8.1 Behavior Change Communication 32
2.8.2 Immunization 34
2.8.3 Improving status of women 35
2.8.4 Environment in safe motherhood 37
2.8.4.1 Universal precaution 38
2.8.4.2 Safe and adequate water supply 43
2.8.4.3 Personal Hygiene 44
2.9 Roles of different stake holders in safe motherhood 45
2.10 Health information management system in maternal health ... 51
2.11 Learning Activity 2- Exercise 53
2.12 Keys to the Learning Activity 1 54

UNIT THREE Satellite Modules 56
3.1 Health Officer Students 56
3.2 Public Health Nurse Students 93
3.3 Medical Laboratory Technician Students 113
3.4 Environmental Health Technician Students 121
3.5 Community Health Workers & Care Givers 126

UNIT FOUR Post Test 137

UNIT FIVE Bibliography 140

UNIT SIX Glossary 142

UNIT SEVEN Annexes 144

UNIT EIGHT Authors 151

UNIE ONE

INTRODUCTION

1. INTRODUCTION

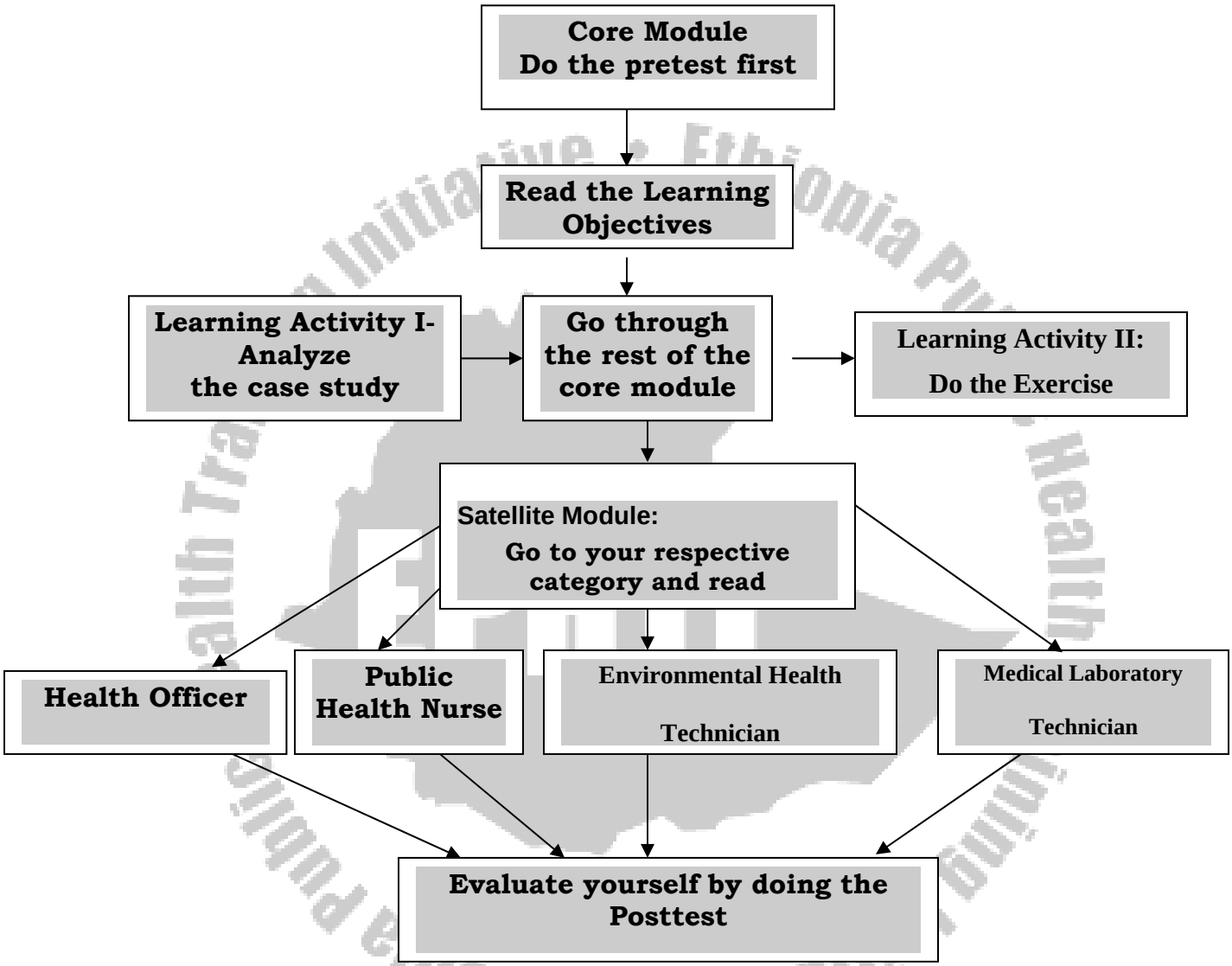
1.1 Purposes and Uses of the Module

This module is mainly prepared for the Health Center Team comprised of Health Officer, Public Health Nurse, Environmental Health Technician and Medical Laboratory Technician students. But it may also be used by other categories of students and those at the service areas. It serves as a guide in the management of basic maternal health problems at the health center level.

The module will help students to work together as a team and be able to appreciate the contribution that can be made by the team members as caretakers. The core module reflects the general activities that can be performed by all categories of students and the satellite modules emphasize the specific activities that can be performed by each category of students. However, this material is not intended to replace standard textbooks or references.

1.2 Directions for using the module

Follow the sketch below for better understanding and utilization of this module.



UNIT TWO

COREMODULE

2.1 PRETEST

Instruction: All groups should attempt to answer the following questions before reading the core module.

1. Maternal health services that make motherhood safe include:
   a. Care by skilled health personnel before, during and after childbirth
   b. Emergency care for life-threatening obstetric complications
   c. Prevention of unsafe abortion and management of problems
   d. Provision of family planning service
   e. All of the above
2. Which of the following is not a direct cause of maternal death?
   a. Hemorrhage
   b. Unsafe abortion
   c. Anemia
   d. Obstructed labor
   e. Pre-eclampsia
3. Which of the following do not have a negative effect on maternal health?
   a. Early marriage
   b. Female genital mutilation
   c. Inadequate health service coverage
   d. Breast feeding
   e. Sexual abuse
4. Which one of following methods is best to diagnose maternal anemia?
   a. White Blood Cells count
   b. Blood film examination
   c. Blood hemoglobin
   d. Differential white cell count
   e. All of the above

5. The number of mothers having follow up during pregnancy per hundred pregnant women is:

a. Attended birth
c. Antenatal Coverage
e. Maternal care
b. Health service coverage
d. Birth spacing

6. Which one of the following is/are true about the increasing incidence of Sexually Transmitted Infections (STIs)?

a. Change in the sexual attitude
b. Advancement in technologies to diagnose
c. Migration and urbanization
d. Low socio economic status
e. All of the above

7. The vaccine you give to women to prevent maternal and neonatal tetanus is:

a. TAT
b. DPT 1-3
c. Measles
d. TT 1-5
e. All of the above

8. Safe motherhood can be promoted by giving health education:

a. Before pregnancy
b. During pregnancy
c. After delivery
d. All of the above

9. Finding a high-risk mother in a health institution is an example of:

a. Passive case detection
b. Active case detection
c. Neither active nor passive case detection
d. Either active or passive case detection

10. Which one of the following is not the objective of recording and reporting?

a. To know the magnitude of mortality and morbidity
b. For health service planning

c. For resource allocation

d. For controlling health professional being at work

e. All of the above

11. Maternal mortality ratio is the number of maternal deaths per

a. 1000 pregnancies

b. 10,000 pregnancies

c. 100, 000 live births

d. 100, 000 pregnancies

e. 100,000 women aged 15-49

12. Antenatal health services include:

a. Health education

b. Follow up during pregnancy

c. Immunization

d. High-risk detection

e. All of the above

13. Prevention of maternal mortality includes:

a. Community education

b. Easy access to health institutions that provide care for obstetrical emergencies

c. Providing quality health care

d. Empowerment of women

e. All of the above

14. Hand washing is important, **except:**

a. In handling a baby

b. Always after a toilet

c. Always before and after preparing food

d. Before leaving the clinic

e. None of the above

15. Pregnant women should practice the following, **except:**

a. Using pit latrines

b. Fetching water from distant water source

c. Taking bath
d. Attending health services
e. Preparing food at home

2.2. Learning Objectives

At the end of the core module the readers should be able to:

- Describe the magnitude of maternal morbidity and mortality,
- Identify common causes of maternal morbidity and mortality,
- Provide Ante natal care, delivery, postnatal care,
- Detect early emergency obstetric conditions and related complications,
- Promote personal hygiene and environmental sanitation, and
- Document and report activities.

2.3 Learning Activity 1- Case Study

Fate of Worknesh Tesefaye

Worknesh, beautiful young lady with attractive personality, was born from a poor family. Her father Ato Tesfaye always dreams that he will be rich if Worknesh gets married to one of the young rich farmer in the village.

Their village is far from the health center, which is around 40 km away and she needs to walk a minimum of 7 hours. There is no transport infrastructure. Worknesh had undergone genital mutilation during her childhood and was not immunized.

She married at the age of 15 years to young rich farmer named Belete. After one year she became pregnant. The pregnancy, as it was her first pregnancy, made her worried. She didn't have antenatal care follow up. She was busy with household activities.

After nine months of pregnancy, labor started spontaneously. A traditional birth attendant in the village was called to attend the delivery. She started to massage the abdomen with butter and let her have a cup of Teff gruel (Atmit) only. Worknesh was ashamed of urinating and defecating. Labor continued for 2 days. Worknesh became weak and extremely exhausted as the labor became prolonged. The TBA believed that the case was too difficult to be managed by her and decided to refer. Worknesh's family resisted the referral but as the labor progressed with no improvement they agreed to the referral.

Worknesh was taken to the nearest health center located 40 km away from the vicinity, carried on a wooden bed by the neighbors and reached the health center nine hours after the referral.

Then, the health worker responsible examined her and noticed that Worknesh was exhausted, dehydrated with full bladder and the fetus was in distress. She was catheterized and IV line secured. Immediately Workinesh was referred to the nearest hospital, which is 15 km away from the health center where delivery could be attended by vacuum or operative deliveries. As Worknesh reached the hospital, she was not seen by the health care providers for about one hour. After one hour, she was admitted to a maternity ward and delivered a male neonate weighing 3.5 kg with bluish discoloration of the body and abnormal breathing by caesarian section. After 10 days of stay in the hospital, the catheter was removed and she was discharged. Two months later Worknesh visited the health center again complaining continuous leakage of urine and feces per vaginum. On history she claimed that the leakage started immediately after discharge.

Questions for group discussion

1. Discuss the three delays that occurred in Workenesh's case?
2. How could these delays be improved?
3. What risk factors contributed for Worknesh's problem?
4. List the possible complications that could occur due to obstructed labor.
5. What would be the immediate management for Worknesh during and after delivery?
6. State important measures to be taken for the newborn?
7. What preventive methods should have been undertaken to prevent these risk factors and complications?

N.B. Look at the key to the above questions at the end of the core module.

2.4 Significance of Safe Motherhood

Safe motherhood is women's ability to have a safe and healthy pregnancy and delivery

Safe motherhood can be achieved by providing high-quality maternal health services to all women. Services to help make motherhood safe include:

- Care by skilled health personnel before, during and after childbirth
- Emergency care for life-threatening obstetric complications
- Services to prevent and manage the complications of unsafe abortion
- Family planning to enable women to plan their pregnancies and prevent complications related to too many, too close, too early and too late pregnancies
- Health education and services for adolescents, community education for women, their families and decision-makers.

There is a global effort that aims to reduce deaths and illnesses among women and infants, especially in developing countries. This effort is called **Safe Motherhood Initiative**. The global safe motherhood initiative was launched in 1987 to improve maternal health and reduce the number of maternal deaths by half in the year 2000. It is led by a unique alliance of co-sponsoring agencies that work together to raise awareness, set priorities, stimulates research, mobilize resources, provide technical assistance and share information. When the initiative was launched, the extent of deaths from the complications of pregnancy and childbirth was little known. During the initiative's first decade, these safe motherhood partners developed model programs, tested new technologies and conducted research in a wide range of countries and settings. The essential services that are identified and the most important lessons learned through ten years record of the initiative are summarized here:

Essential Services for Safe Motherhood

Services for safe motherhood should be readily available through a network of linked community health care providers, clinics and hospitals. Integrated services include:

1. Community education on safe motherhood
2. Prenatal care and counseling, including the promotion of maternal nutrition
3. Skilled attendance during childbirth
4. Care for obstetric complications, including emergencies
5. Postpartum care
6. Post-abortion care and, where termination of pregnancy is not against the law, safe abortion services
7. Family planning counseling, information and services
8. Reproductive health education and services for adolescents
9. Right based approach to reproductive health and services

2.5 Epidemiology

Around 50 million pregnant women worldwide experience morbidity each year, of which 15% of them have long term disabilities like fistula, foot drop, vaginal scarring, uterine prolapse, anemia, infertility, etc. Over 300 million women in the developing world, currently, suffer from short term and long term illness related to pregnancy and childbirth.

In many developing countries, including Ethiopia, complications of pregnancy and childbirth are among the leading cause of death among women of reproductive age. More than one-woman dies every minute from such causes. WHO estimates that more than 600,000 women die each year worldwide. Of which, 99% occur in developing countries. Of the total 600,000, 273,000 women die each year in Africa, 46,000 women die each year in Ethiopia. Maternal deaths account to 25 % of all deaths in women aged 15-49 years.

Maternal mortality and morbidity can be reduced or avoided by providing and expanding resources and services that are principally targeted in achieving maternal health and safe motherhood.

More than one woman dies every minute from complications of pregnancy and childbirth

Maternal care is poorly utilized in the developing countries. There is a correlation between socioeconomic status and maternal death. No body knows the exact number of maternal deaths that occur each year in developing countries due to the difficulty with reporting such deaths.

2.5.1 Causes of Maternal Mortality and Morbidity

Women's lifetime risk of death is 40 times higher in developing countries as compared to developed countries. In general, women lifetime risk of death in developing countries is 1 in 48 as opposed to 1:1800 in developed countries.

More than seventy percent of maternal deaths are due to hemorrhage, unsafe abortion, hypertensive diseases in pregnancy, infection and obstructed labor, which are preventable. Out of these, more than 60% of maternal deaths are occurring in the first 24 hours after delivery.

Maternal death: Death of any woman from any pregnancy related cause while pregnant or with in 42 days of termination of pregnancy, irrespective of the duration and the site of pregnancy.

A. Causes of Maternal Mortality

Direct obstetric deaths are those that result from obstetric complications of the pregnancy, labor and purperium from interventions, omissions, and incorrect treatment or from chain of events while pregnant or during the first 6 weeks (42 days) after delivery.

Examples: Abortion, Ectopic Pregnancy, Preeclampsia, Eclampsia, Obstructed Labor, Infection, anesthesia, etc.

Seventy percent of maternal deaths are usually preventable. The commonest causes of maternal deaths include:

1. **Hemorrhage**: Includes antepartum, postpartum, abortion, and ectopic pregnancy.

   Hemorrhage accounts for 21% of maternal deaths in Ethiopia.

2. **Unsafe Abortion** It is the commonest cause of maternal death in our country accounting for 20 –40% of deaths.
3. **Hypertensive diseases in pregnancy**: This includes pre-eclampsia, eclampsia, etc. Preeclampsia and eclampsia account for 10-12% of maternal deaths.
4. **Obstructed Labor and uterine rupture**: The prevalence of obstructed labor is expected to be high in Ethiopia. It accounts for 9% of the total maternal death.
5. **Infection:** The introduction and multiplication of microbial agents in the pelvic organs and other systems having an effect on the health of the mother and newborn. It includes infection of the uterus, tubes, urinary system and fetal infection. It contributes for 10% of maternal deaths.

Women's Lifetime Risk of Death: Is the risk of an individual woman dying from pregnancy or childbirth during her lifetime.

Indirect Obstetric Death

Deaths resulting from previously existing diseases or diseases that developed during pregnancy which were aggravated by the physiologic effects of pregnancy, this includes:

1. Anemia: This is the commonest indirect cause of maternal death in our country since malaria is endemic and iron supplementation is low.
2. Other indirect causes include heart disease, diabetes mellitus, HIV/AIDS, TB, malnutrition, etc. The indirect obstetric deaths account for about 20% of maternal deaths.

Incidental/Coincidental/ causes

These are deaths that were neither due to direct nor indirect obstetric causes.

E.g. car accident, fire burn, bullet injury, etc.

B. Causes of Maternal Morbidity:

Maternal morbidity is difficult to measure due to variation in the definition and criteria to diagnose. The risk factors for maternal morbidity include prolonged labor, hemorrhage, infection, preeclampsia, etc. The most common long-term complications of pregnancy and childbirth include:

1. **Infection**: There is high risk of infection of the genital organs (cervix, uterus, tubes, Ovaries and peritoneum) after prolonged labor.
2. **Fistula:** are holes in the birth canal that allow leakage from the urethra, bladder or rectum into the vagina. Women present with continuous leakage of urine or feces or both. The commonest cause in our country is obstructed labor as opposed to surgery and cancer in the developed world.
3. **Incontinence:** is involuntary leakage of urine.
4. **Uterine prolapse**: the falling or sliding of the uterus from its normal position into the vaginal canal. Commonest predisposing factors include prolonged labor, heavy exercise, multiple childbirths, etc.
5. **Infertility:** inability to become pregnant for a year despite unprotected sexual intercourse.
6. **Nerve Damage:** As a result of prolonged labor, there may be compression or damage of the nerves in the pelvis (Sciatic nerve) may result in foot drop and contractures.

Psychosocial problems: such as anxiety, depression, and psychosexual problem. Others Include pain during intercourse, low back pain, anemia, etc.

Maternal Morbidity: Any deviation, subjective or objective, from a state of physiological well being of women made worse by pregnancy.

2.5.2 Risk factors affecting Maternal Health

Socio-cultural factors: lack of literacy, early marriage, early childbirth, harmful traditional practices including female genital mutilation, etc.

Economy: Socio economic status affects women's status by affecting their decision making roles in the community, educational status, health service accessibility, prostitution, etc.

Inadequate Health Service Coverage: More than 70 % mothers do not get care during pregnancy and more than 90 % of deliveries are unattended. This can be due to lack of transportation, distance from health facilities, small number of health facilities, lack of knowledge about importance of health services, lack of money, and lack of family support.

The three D's (delays)

- Delay in negotiation and decision
- Delay in transportation
- Delay in getting proper care at the health facility

Delays can kill mothers and newborns. There are three phases during which delays can contribute to the death of pregnant and postpartum women and their newborns.

These phases are:

1. Delay in deciding to seek care

   Factors contributing to these are:

   - Failure to recognize signs of complications
   - Failure to perceive severity of illness
   - Cost consideration
   - Previous negative experience with the health system
   - Transportation difficulties

2. Delay in reaching care

   Factors contributing to these are:

   - Lengthy distance to a facility
   - Condition of roads
   - Lack of available transportation

3. Delay in receiving care

   Factors contributing to these are:

- Uncaring attitudes of providers
- Shortage of supplies and basic equipment
- Non-availability of health personnel
- Poor skills of health providers

Life threatening delays can happen at home, on the way to care, or at the place of care, which, therefore, plans and actions that can be implemented at each of these points are mandatory.

Psychological factors: Fear of childbirth, too many pregnancies, death of other children illness in family. Women are at great risk of depression after sexual abuse, divorce as a result of marriage with out consent and after Vesico-Vaginal/Recto-Vaginal fistula (VVF/RVF).

Health and nutrition services: The health status of women who are not getting adequate nutrients and proper reproductive health services could be affected.

Interaction with providers: Some health care providers are not empathetic and caring. They do not respect women's cultural preferences for privacy, birth position, or the preference for treatment by women providers.

Gender Discrimination: The family may give more attention to a male child with regard to education, nutrition; may want the mother to produce boys. Policy decisions, inheritance etc.

2.5.3 Indicators of Maternal Health

Some of the parameters that help to see the effect of implementation of safe motherhood in the country include:

A. **Maternal mortality ratio (MMR):** refers to number of maternal death per 100,000 live births. E.g. Ethiopia, 871/100,00 live births, Addis Ababa 566/100,00 LB.
B. **Total Fertility rate:** refers to the number of children that a woman can have in her reproductive life if she conforms to country's age specific fertility rate. E.g. 5.9 children per woman for Ethiopia.
C. **Contraceptive prevalence rate:** Refers to the number of women using any method of family planning per 100 women aged 15-49. E.g. Ethiopia 8.1%.

D. **Perinatal mortality rate:** refers to the number of perinatal deaths per 1000 live births e.g. 112/1000 live births for Ethiopia.

E. **Antenatal Coverage:** is the number of mothers receiving care during pregnancy per hundred women. E.g. in Ethiopia ANC coverage is 25.3%.

F. **Attended Birth:** is the percentage of pregnant mothers who receive delivery services by trained or skilled person. E.g. in Ethiopia the percentage of attended birth is 6 %.

G. **Post natal care:** is the percentage of mothers who receive health services after 42 days after delivery. E.g. in Ethiopia postnatal care is 3.5%.

H. **Birth spacing:** is the percentage of mothers who deliver after two years of the previous delivery.

I. **Women's lifetime risk of death:** The risk of death of a woman from pregnancy and childbirth during her reproductive life. For Ethiopia, it is around 1:12.

J. **Infant Mortality Rate:** is the number of deaths of infants up to the age of one year per 1000 live births in a given year. E.g. for Ethiopia it is around 97 per 1000 live births.

K. **Under Five Mortality Rate:** The number of deaths of children Under 5 years of age per 1000 children age 5 years in a year. E.g. for Ethiopia it is 166.2/ 1000 live births.

L. **Neonatal Mortality Rate:** The number of infant deaths up to 28 days of age in a calendar year per 1000 live births in a given year. For Ethiopia it is 48.7 per 1000 live births.

M. **Post Neonatal Mortality Rate:** Is the number of infant deaths between 28 days up to 1 year of age per 1000 live births in a given year. For Ethiopia it is around 48.3/ 1000 live births.

By now you must have appreciated the commonest causes of maternal mortality and morbidity. Now it is time to discuss essential maternal health services and obstetric emergencies.

2.6 Obstetric Emergencies and Common Maternal Health Problems

Timely intervention of maternal problems during pregnancy and childbirth will decrease maternal mortality and morbidity. Obstetric emergencies that need attention include:

2.6.1 Obstetric Hemorrhage: This is comprised of antepartum and postpartum hemorrhage as well as complications of first and second trimester pregnancy.

A. Antepartum hemorrhage refers to any vaginal bleeding after 28 weeks (7 months) of pregnancy up to the delivery of the fetus. The causes include placenta praevia (abnormal placentation), abruptio placentae (premature separation of the placenta), local causes, etc.

NEVER PERFORM A DIGITAL PELVIC EXAMINATION ON A PREGNANT WOMAN WHO IS BLEEDING

If these patients are not treated immediately, they usually develop shock, fetal and maternal death.

1. **Causes**

- Abruptio placenta
- Placenta previa
- Abnormalities of placenta- e.g. circumvalent placenta
- local causes e.g. cervical polyp
- Uterine rupture
- Heavy show
- Vasa previa

Clinical Feature

Abruptio placenta-dark vaginal bleeding associated with pain. The extent of bleeding not comparable with amount of bleeding, uterine tenderness

Placenta previa- **bright-red vaginal bleeding, causeless, recurrent and painless**

- Clinical condition of patient comparable with extent of amount of bleeding

B. Postpartum Hemorrhage means bleeding from the genital tract after delivery of the baby to the amount of 500 ml or any amount that can change the mother's vital signs or hematocrit drop by 10% from baseline hematocrit.

Causes

- Uterine atony (80%)
- Genital laceration
- Retained placental tissue
- Bleeding disorder

Predisposing factors for uterine atony

1. Multiple pregnancy, macrosomia, polyhydramnios
2. Prolonged difficult and obstructed labor
3. Infected uterus and abnormality of uterus
4. Previous PPH
5. Drugs Like-oxytocin
6. Instrumental delivery and uterine manipulation
7. Precipitated labor
8. Uterine tumors
9. Multiparity
10. Retained placenta
11. Anemia

2.6.2 Early pregnancy complications: This includes abortion, ectopic pregnancy, gestational trophoblastic diseases, etc. Ectopic pregnancy is an emergency with a triad of amenorrhea, abdominal pain and vaginal bleeding. Management of ectopic pregnancy is to secure an IV line and refer to a health facility where surgical intervention is possible.

2.6.3 Unsafe Abortion is termination of pregnancy by unskilled individual outside proper health institutions with improper or unsterile instruments. It usually manifests with vaginal bleeding and passage of conceptus tissue. Complications

include hemorrhage, infection, genital tract injuries, bowel injury, sepsis, shock, tetanus, death, etc.

Clinical Feature common symptom Amenorrhea followed by vaginal bleeding, abdominal pain and passage of conceptus tissue.

Serious symptoms and signs of post-abortion complication include.

- Profuse vaginal bleeding
- Pallor
- High grade fevers, sweating, foul smelling vaginal discharge and lower abdominal tenderness
- Shock

2.6.4 Hypertensive diseases in pregnancy

Preclampsia and Eclampsia. It is more common in young pregnants primigravidas and black race.

Preeclampsia is defined as:

A. Rise of blood pressure- blood pressure of 140/90 mmHg on two occasions 6 hours apart or single measurement of 160/110 mmHg or more.

B. Proteinuria: It can be measured qualitatively (+1, +2, +3, etc) or quantitatively (over 300 mg per 24 hours).

C. Edema: it is not always the case. But edema in the independent areas like face, fingers may indicate pathology.

D. Headache

E: Blurred Vision

Preclampsia could be severe or mild.

Signs of severe Preclampsia

1. BP$\geq$ 160/110 mmHg
2. Prteinuria - dipstick $\geq 3^{+}$
   - 24 hr urine protein $\geq$ 5gm
3. Blurring of vision, head ache, epigastric pain, right upper quadrant tenderness

4. Urine out put<500mL/24hr
5. Generalized edema with pulmonary edema
6. Other abnormal laboratory tests

Eclampsia is generalized tonic clonic convulsion in preeclamptic mothers with no other causes of convulsions.

2.6.5 Obstructed labor and uterine rupture:

Failure of descent of the fetus inspite of good uterine contraction. i.e. it is mechanical problem and absolute condition. **Causes** may include:

- Cephalo-pelvic disproportion /CPD/- e.g. contracted pelvis
- Mal-presentation and mal-positions. e.g.-transverse lie, occiputo posterior position
- Fetal abnormalities, e.g. hydrocephalus
- Abnormality of genital tract, e.g. – Transverse vaginal septum
  - Genital scar
- Genital tumors, e.g. Myoma, Ovarian Tumor

Diagnosis

- Usually Teenagers and multipara
- Exhausted, dehydrated, tired
- Abnormal vital signs due to hemorrhage and infections
- Distended and atonic bowel
- Hypo or hyperactive uterus
- Uterus distended with gas
- Distended and edematous bladder
- Bloody urine
- Caput and moulding
- Vulvar and vaginal edema
- Foul smelling liquor Amini
- Fetal distress, fetal death
- Uterine rupture commonly in multipara

- Signs of peritonitis and hemorrhage
- Vaginal bleeding
- Hypertonic uterine contraction followed by sudden cessation of uterine contraction
- Fistula- Leakage of faces and urine
- Common in primigravida

2.7. Essential Maternal Health Services

Safe motherhood can be achieved by providing high quality maternal health services to all women during pregnancy, child bearing, and the postpartum period. These services could be provided at different levels including home and health institutions. All health team members could play their roles in the following services to make motherhood safe.

2.7.1. Family Planning

Family planning refers to actions taken by individual/ couples to have the desired number of children and spacing when they want.

To achieve the above objectives, the service should offer:

- A range of contraceptives and counseling for well informed choice
- Screening, follow up and referral for FP services.
- Integrated services like prevention and treatment of STIs including HIV/AIDS

Among the wide variety of contraceptive methods, the commonly used methods in Ethiopia are:

1. **Natural methods**
    - Breast feeding
    - Abstinence
    - Withdrawal (Coitus interrupts)
    - Calendar methods
    - Billing's Method (Cervical mucous)

2. Modern methods

- Barrier methods
  - Diaphragm
  - Condom- male and female
- Intra-uterine Contraceptive device (IUCD)
- Hormonal
  - Pills
  - Implants
  - Injectable
- Surgical methods (Permanent)
  - Tubal legation (ligating the oviduct).
  - Vasectomy (ligating the sperm duct).

Even though various methods are available and accessible, clients do not get the opportunity to discuss with health care providers how/when to use and where to obtain. Therefore, it is important to ensure provision of information and counseling in family planning services.

The major activities to be carried out with clients:

1. Follow the acronym ***GATHER***.
2. Understand and respect the clients' rights.
3. Reviewing of all available methods in a simple and understandable manner.

G- Greet the clients when they come in.

A- Ask clients about themselves and their needs including RH history.

T- Tell clients about all available methods.

H- Help clients to choose methods by themselves.

E- Explain how to use the chosen method, initiate to ask.

R- Return for follow up, explain when and why.

2.7.2. Antenatal Care

Pregnancy and child bearing are special events in women's lives and, indeed, in the lives of their families. This can be a time of great hope or fear, joy or suffering

and even death. Pregnancy is a normal physiological process associated with certain risks to the health of woman and the infant she bears. These risks can be overcome through proper antenatal care. Antenatal care refers to care given to pregnant women.

Why do we need pregnancy care?

- To improve the general health of mothers
- To treat existing diseases
- To monitor the progress of pregnancy
- To detect high-risk mothers with possible complications that should be managed in a safer place
- To deliver a healthy baby.
- To plan place and mode of births
- To discuss about family planning

In order to provide appropriate antenatal care, you are expected to do the following:

- Thorough medical and reproductive history taking, physical examination including height, weight and blood pressure, estimating fetal age and fetal well being.
- Laboratory investigations: HIV testing, VDRL, Hemoglobin, Blood Group and Rh factor, Urinalysis, Blood Glucose level, HIV testing and counseling.
- Immunization.
- Health education and counseling. To promote healthy behaviours and increase knowledge of complications.
- Promotion of health

2.7.3 Delivery Care

It is not always possible to anticipate which pregnancies will develop complications. Therefore, it is essential to provide delivery services by skilled attendant to all pregnant women in order to provide timely help for complications of labour and delivery.

A **normal birth** is a biological process defined as follows:

"It is a spontaneous in onset, low-risk at the start of labor and remaining so throughout labor and delivery. The infant is born spontaneously in the vertex position between 37 and 42 completed weeks of pregnancy. After birth, mother and infant are in good condition."

Aim of delivery care is to achieve:

1. A healthy mother and child with the least possible level of intervention.
2. Early detection and management of complications.
3. Timely referral of obstetric emergencies (if any) to a level where it can be managed appropriately.

You are expected to be familiar with the following points to make labor and delivery safe:

- Assessing and monitoring the maternal and fetal conditions during the progress of labor using partograph.

Partography

Definition: Graphic recording of progress of labor and maternal, fetal conditions.

Advantages

- prevent or reduce prolonged labor
- possibly decreases operative interventions
- Improves neonatal outcome
- Simplifies patient hand over
- Early warning system to transfer patient to hospital

Components

- Cervicography (cervical dilatation graph) which is plotted with an "X"

- If labor progress at cervical dilation of <1cm/hr in active phase it is an abnormal progress.
- In latent phase start plotting at time zero hours, once in active phase, plotting of dilatation is transferred to Alert line.

- **Alert line**

- Graphic recording to right of alert line indicates abnormal labor; so consider transfer of patient from health center to hospital.
- Graphic recording to left of alert line is considered as normal labor (satisfactory progress).

- **Action line** - Arbitrary line drawn 4 hours after the alert line

- Active intervention should be taken, in hospital step up.

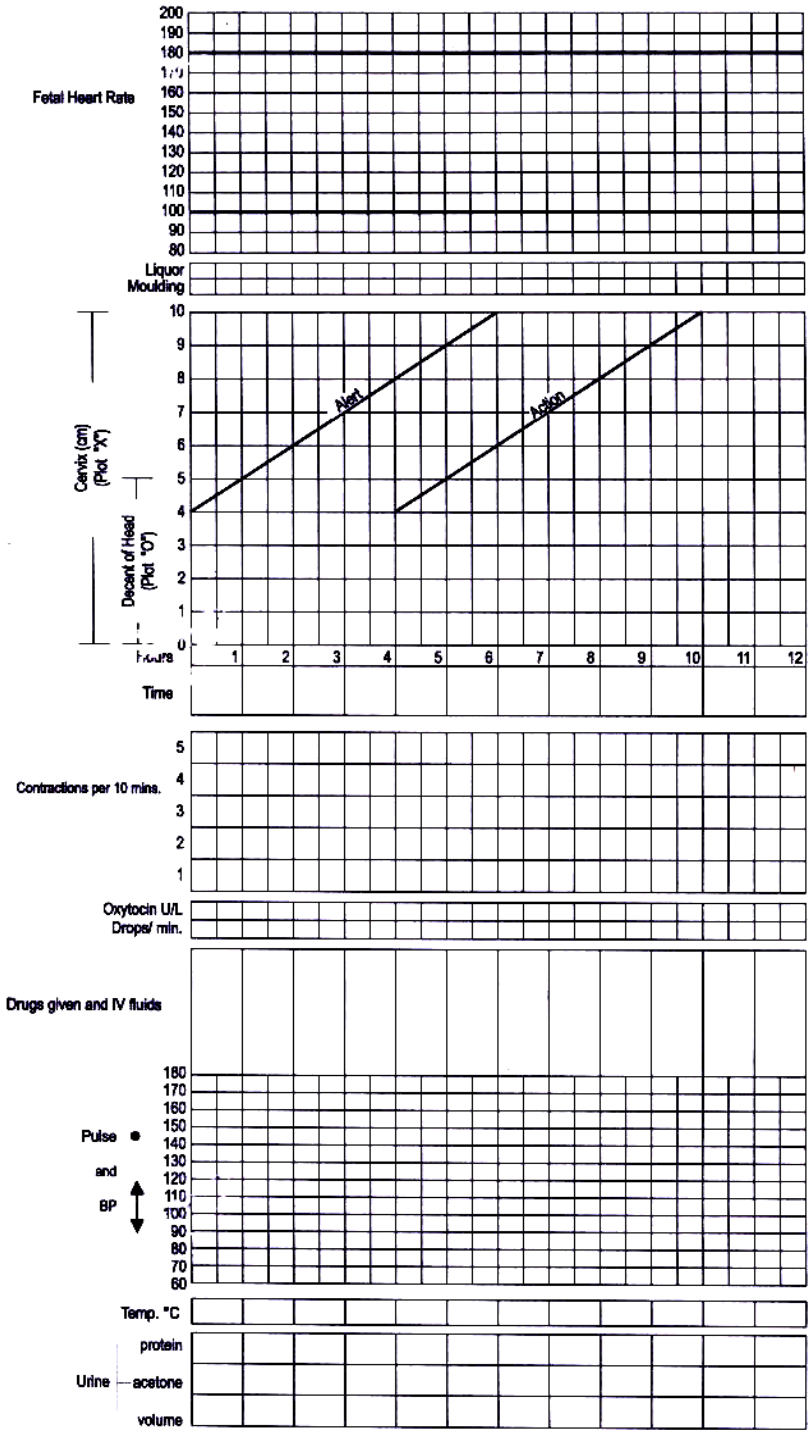
Principle

- Used in Patient with established labor (latent or active phase) that have no complication that require immediate action.
- Vaginal examination done 4 hourly, unless indicated for example rupture of membrane, FHR abnormality, **Alert line** is passed.

PARTOGRAPH

Name | Gravida | Para | Hospital no.

Date of admission | Time of admission | Ruptured membranes | hours



Maternal condition – vital signs

- Urine protein, ketone, volume
- Drugs, oxytoxine, IV fluid recording.

- Descent → abdominal palpation, rule of 5 i.e number of fingers accommodating between symphysis pubis and anterior shoulder of fetus.
  e.g. 4/5 → 4 fingers between anterior shoulder → symphysis pubis
  2/5 → equivalent to station 0, engaged.
- State of liquor C = clear I= Intact
  M = meconium stained A= ruptured but no liquor
- Molding (0 = no molding)
  (M= molding= +, ++, +++)
- Contraction → check frequency, duration and intensity.
  → Normal contraction in active phase = 3-5 in l0 minutes, duration
  = 40-60 seconds.
- Fetal condition = normal (120-160 BPM)
  - monitor every 30 min in 1st stage labor.

Abnormal FHR - > 160 BPM – tachycardia
- < 120 BPM – Bradycardia

- Fetal distress should be managed aggressively. A woman with fetal distress in health center should be transferred to hospital immediately.

While in labor the woman should be encouraged to:

- Woman should give birth where she feels safe and comfortable. That place should be "at the most peripheral level at which appropriate care is feasible."
- Women should be allowed to drink and to eat something light.
- A woman in labor should have around her the people she trusts and feels comfortable with. At the same time the woman has the right to privacy.
- Help a woman to cope with pain of labor. This includes allowing the woman to move around, take any position she wishes except supine and letting her to have a bath or shower.

- The woman giving birth, the birth attendants, the place of birth, and the materials to be used during delivery should be clean.
- Help the newborn to have essential cares like eye- care, cord care, initiation of breast feeding, warmth, airway etc.

2.7.4 Postpartum care

Wherever the birth takes place, puerperium is an integral part of the process of child bearing and should be used as an opportunity to provide care to the woman and the neonate.

Puerperium or postpartum period starts after the delivery of the placenta up to six weeks.

Both the mother and the newborn need special attention during the postpartum period.

2.7.4.1 Postpartum Maternal Care

It is important to note that the 1st 24 hour is the most critical period and women leave institutions well aware of danger signs of eminent complications in the post partum period and when to come back for post partum care. To reduce maternal deaths during this period, ensure the health of the woman by doing the following activities:

- Ensure cleanliness and hygiene of the mother.
- Early detection and treatment of postpartum hemorrhage.
- Make sure that her body is returning to its pre-pregnancy state.
- Advice on breast-feeding, immunization, nutrition, family planning, exercise, and traditional practices that may be harmful.
- Provide advices on how to care for the baby and her breasts.

2.7.4.2 Essential Newborn Care

Any intervention to prevent neonatal deaths must focus on the mother since direct causes of neonatal deaths such as asphyxia, respiratory distress syndrome and

sepsis are related to the health or care of the mother. The majority of neonatal deaths (around 66%) occur in the first week of life.

You are expected to provide the following essential newborn care during this period:

- Initiation of breathing and resuscitation when needed
- Immediate initiation of exclusive breast-feeding (EBF)and orientation of the mother about the importance of EBF
- Cleanliness
- Prevent heat loss, (Warming and drying of baby and keep the delivery room warm)
- Eye care, cord care
- Immunization
- Vitamin K Administration.
- Management of newborn illness

2.7.5 Sexually Transmitted Infections Including HIV/AIDS

Sexually transmitted infections are infections acquired mainly through unprotected sexual intercourse.

World wide about 250 million new cases of Sexually Transmitted Infections occur each year. Among the causes for the increasing incidence of STIs:

- Migration and urbanization
- Change in sexual attitude, premarital sexual experimentation
- Advancement in technology to diagnose
- Resistance of causative agents
- Low socio-economic status, etc.

Women are affected more than men and the burden is most noticed on women and their babies. The effects include chronic PID, ectopic pregnancy, chronic pelvic pain, discomfort, difficulty in the relationship, shame/embarrassment, reluctance to seek treatment, infertility, and psychological trauma to the woman and infection to the baby.

Infections are frequently mixed and treatment should focus on the different sexually transmitted diseases. STIs facilitate the transmission of HIV/AIDS. Diagnosis is usually based on symptoms, signs and laboratory examinations.

HIV/AIDS is a major public health problem in Ethiopia. About 12.8% of pregnant women in Ethiopia are living with HIV/AIDS. Almost there is a 25% - 40% chance of HIV transmission to her child during pregnancy, delivery and breast-feeding. Therefore, prevention of mother to child transmission (PMTCT) is a good strategy.

The commonest sexually transmitted diseases include the following:

- Candidiasis is caused by a fungus known as Candida albicans.
- Trichomoniasis is caused by a protozoa parasite called Trichomonas vaginalis.
- Gonorrhea is caused by a bacterium called Nisseria gonorrhea.
- Chancroid is causes by a bacterium called Hemophilius ducreyi.
- Chlamydia
- Syphilis is caused by a spirochete known as Treponema pallidum.

2.7.6 Post-abortion Care

Many women with an unwanted pregnancy seek to terminate it. Where safe abortion is not available, women may risk their lives and health by having unsafe abortions. To reduce the heavy toll of death and disability caused by unsafe abortion, make sure that every one has access to family planning and communities are educated about reproductive health.

Whatever the legal status of abortion is, high quality service for treating and managing complications of abortion should be available. It includes:

- Emergency treatment of post-abortion complications. Emergency care must be available for 24 hours
- Referral for an going care
- Family planning and counseling
- Linkage with other RH services
- Health education on:

- How to prevent unwanted pregnancy
- How to avoid unsafe abortion
- How to recognize and seek appropriate treatment for abortion complications.

2.8 Preventive and Promotive Aspects of Maternal Health

Safe motherhood is viewed as a human right that governments are obliged to provide and promote. Interventions to improve maternal health are not only cost effective but also clearly feasible, even in poor settings. Therefore, the following preventive and promotive strategies are mandatory to alleviate maternal health problems.

- **Behavioral Change Communication (BCC)**
- **Immunization**
- **Improving women's status**
- **Environment in Safe Motherhood**

2.8.1 Behavioral Change Communication (BCC)

Behavior Change Communication can be defined as an approach, which attempts to change or reinforce a set of behaviors in a "target audience" regarding a specific problem in a predefined period of time with emphasis on behavior change.

The target audience: All pregnant women including adolescents, young women in post natal period, a woman in reproductive years, the men who are partners of spouses; community and religious leaders; elders; family members are the target for BCC.

Specific Maternal Health Topics for each Target Audience

Community level

1. Promote healthy behaviors to women, families and communities

- Appropriate self-care (diet/rest)
- Compliance with advice or medical regimens such as e.g. Iron
- Maternal tetanus toxoid immunization
- Recognition and treatment of STIs and HIV prevention, testing and counseling

- Supplementation, completion of treatment regimens or referral for additional care, and contact tracing for STIs
- Breast-feeding and an appropriate transition to artificial contraception. Promote
- Family Planning

II. Promote recommended appropriate use of maternal health care.

- Timely and regular use of recommended source of preventive prenatal, intrapartum and postpartum care
- Use of trained birth attendant and hygienic birth practice
- Use of and preparation of appropriate place of delivery (e.g. Home, Clinic, Health Center etc).

III. Increase community awareness and organization

- Development of community emergency transportation schemes and other means to increase women's access to needed care
- Promote acceptance of alternative service provision (maternal waiting rooms, distribution of iron and foliate tablets through trained traditional birth attendant)
- Develop mechanisms to increase women's role in FP and maternal health care decision making
- Improved acceptance of fee-for-service or cost sharing

IV. Discourage practices which harm maternal health

- Reduce incidence of female circumcision
- Decrease use of unsafe abortion techniques
- Decrease use of labor enhancing drugs
- Eliminate harmful delivery practices

Nutrition Education in Mothers

- Encourage client to take food of variety of sources (Balanced diet)
- Discourage pregnant woman from drinking alcohol and other social drugs
- Encourage the use of high fiber foods and plenty of fluids to avoid constipation
- Help the client understand the importance of weight gain during pregnancy

Educational materials and methods

- Use variety of materials posters, leaflets, etc
- Use variety of methods as appropriate: health talk, group discussion, counseling, demonstration etc

2.8.2 Immunization

Maternal tetanus is one of the most easily preventable causes of maternal mortality. Maternal tetanus occurs during pregnancy or within 6 weeks after the end of pregnancy. Unhygienic delivery techniques and unsafe abortions are blamed in most cases. Simple avoidance of introducing tetanus spores (i.e. dust or dirt) in to the genital tract during pregnancy, delivery, abortion or the postpartum period dramatically reduces the occurrence of maternal and neonatal tetanus.

A child is said to be fully immunized for tetanus not only by receiving the required vaccines directly but when the infant's mother is protected from the risk of tetanus. Tetanus prevention education should include:

- Pregnancy /prenatal care, Safe delivery practice, Postpartum care, Care of new born, TT immunization

The type of vaccine is toxoid with target group- women of childbearing (15 – 49) age

Tetanus toxoid vaccine schedule

	Minimum interval	Duration of protection
TT_1	-	0
TT_2	4 weeks	3 years
TT_3	6 months	5 years
TT_4	1 year	10 years
TT_5	1 year	life long

If a woman was given 3 doses of DPT vaccination during childhood, provided that a written document of her immunization is available, and the doses are given at the right interval, the 3 doses of DPT can be counted as two doses of TT

2.8.3 Improving Status of Women

A woman's status is often described in terms of her income, employment, education, health and fertility as well as the role she plays within the family, the community and society. It also involves society's perception of these roles and the value it places upon them. The status of women implies a comparison with the status of men and is therefore a significant reflection of the level of social justice in a society.

Some of the major ones which may greatly contribute to mortality and morbidity are:

1. **Unregulated fertility ("The four Toos" – Too many children, too early, too late, too closely spaced)**

The risks involved in repeated childbearing are many. The second and the third births are the most trouble free, while the risk of serious complications, such as hemorrhage, rupture of the uterus and infection rises steadily from the third birth onwards. Repeated short interval pregnancy, childbirth and breastfeeding deplete the woman from the necessary nutrient reserves and her body does not recover from the effects of previous pregnancies resulting in malnutrition, anemia and accompanying health problems.

2. **Education**

Education has been described as "medication against fatalism". Illiterate women have little understanding of the physiology of reproduction or how it can be altered and to accept pregnancy as divinely ordained. Studies have shown that as a general rule the number of children a woman bears declines as her level of education rises. An uneducated woman is more likely to be exposed to harmful

traditional practices and less likely to seek professional health care and her deliveries are too often not attended by trained health workers.

3. Health

The low status of women is reflected in conditions that directly or indirectly affect their health and hence increase maternal mortality and morbidity. Many health problems that affect women have their roots in childhood. Son preference is sometimes reflected by giving less food to females. Such phenomenon may be observed in societies where son preference is not visibly acknowledged. Studies have also shown that women are affected by food taboos, many of which are related to pregnancy.

4. Type of Work and Income

Gender inequalities arise from the different values placed on women's and men' work. Men's work is judged to be productive and markets are seen as a way to judge the value of that work. Barriers to this sphere of work often exist for women who have difficulties gaining title to land, access to credit, and access to other assets. Traditionally, women have had the main responsibility for seeing to the needs of families in their homes. Responsibilities in this reproductive arena limit women from participating in so-called 'productive' work. Although child care, care of the elderly, obtaining fuel, preparing meals, and maintaining the home are demanding tasks, deemed to be important to households and recognized as essential for society, they are usually unpaid. Another major reason for undervaluing women's work is that households are usually viewed as sites of consumption rather than producers of goods and services.

Gender and Maternal Health

Gender describes the socially constructed roles, activities, and responsibilities assigned to women and men in a given culture, location, or time. It differs from sex which describes biological and genetic differences between men and women. Gender is learned and changes over time. Gender functions at the household,

community, and national levels and thus is embedded in a society's social, cultural, economic, and political systems.

Patterns of health and illness in women and men show marked differences. Women as a group tend to live longer than men in nearly all countries. Part of women's advantage in life expectancy is biological in origin. When the female potential for greater longevity is not realized, it is an indication of serious health hazards in their immediate environment

Women suffer considerable mortality and morbidity in relation to their sexual and reproductive health. Fertility regulation, pregnancy, childbirth, sexually transmitted diseases, infertility, and diseases of the reproductive system require health services for women. Biological and social factors do not function separately. In malaria, tuberculosis, schistosomiasis, and HIV/AIDS there is a dynamic interaction among these factors which often is disadvantageous for women. Exposure to malaria, for example, is slightly higher in men than women. However, women's immunity is compromised during pregnancy making them more likely to become infected and implying differential severity of consequences. Malaria during pregnancy is an important cause of maternal mortality, spontaneous abortion, and stillbirths. Particularly during pregnancy, malaria contributes significantly to the development of chronic anemia. Lack of time, limited mobility, and other social constraints may prevent women from attending health services

Thus gender equality should be promoted in all spheres of life, including family and community life, and to encourage and enable men to take responsibility for their sexual and reproductive behaviour and their social and family roles.

2.8.4 Environment in Safe motherhood

Environmental factors have direct effects on individuals' reproductive health and communities' response to reproductive health conditions. The delivery room is the immediate environment affecting mother's health significantly. In the delivery room the five cleans should considered:

- Clean environment
- Clean hands
- Clean delivery surface
- Clean perineum
- Clean cord cutting instruments

2.8.4.1 Universal precautions in infection control should be strictly followed in the delivery room

Infection prevention: Standard or universal precautions include:

Key concept you will learn:

- Why hand hygiene is important?
- When and how to wash your hand?
- Hand hygiene practices
- Barriers to appropriate hand hygiene?
- How to improve hand hygiene practices?

Why is hand hygiene important?

- Intensity of contact with patients and/or blood and body fluids
- Likelihood of microbial transmission
- Patient's susceptibility to infections
- Procedures being performed

Hand hygiene practices

- Hand washing
- Hand antiseptic
- Antiseptic hand rub
- Surgical scrub

Hand Washing

Objective: Mechanically remove soil and debris from the skin and reduce the number of transient microorganisms.

Steps:

- Thoroughly wet hands
- Apply plain soap (antiseptic agent is not necessary)
- Vigorously rub all areas of hands and fingers for 10-15 seconds, paying close attention to fingernails and between fingers.
- Rinse hands thoroughly with clean water
- Dry hands with a paper towel or clean, dry towel, or air-dry them.
- Use a paper towel when turning off water if there is no foot control or automatic shut-off.

Wash hands before:

- Examining (direct contact with) a client/patient
- Putting on gloves

Wash hands after:

- Any situation in which hands may become contaminated
- Removing gloves

Hand Antiseptics

- Similar to that for plain hand washing. The soap detergent contains an antiseptic agent (often clorhexidine, iodophors, or triclosan) instead of plain soap or detergent.

When to use hand antiseptics?

Before:

- Examining or caring for highly susceptible patients (e.g. premature infants, elderly patients, or those with advanced AIDS)
- Performing an invasive procedure (E.g. intravascular device)
- Leaving the room of patients on contact Precautions (e.g., hepatitis A or E)

Objective:

Remove soil and debris as well as to reduce both transient and resident flora.

Steps:

-Apply enough alcohol-based hand rub to cover the entire surface of hands and fingers (about a teaspoonful)

-Rub the solution vigorously into hands, especially between fingers and under the nails, until dry.

Alcohol-based solution for hand rubs:

- Add glycerin or sorbitol to alcohol (2ml in 100 ml of 60-90% ethyl or isopropyl alcohol solution)
- Use 5 ml for each application and continue rubbing the solution over hands until they are dry (15-30 seconds).

Note: Antiseptic hand rub is more effective in killing transient and resident flora than hand washing with antimicrobial agents or plain soap and water, but it should not be used when the hands are visibly soiled.

Surgical Hand scrub:

Steps:

-Remove rings, watches, and bracelets

-Thoroughly wash hands and forearms to the elbow with soap and water

-Clean nails with a nail cleaners

-Rinse hands and forearms with water

-Apply an antiseptic agent

-Vigorously wash all surfaces of hands, fingers, and forearms for at least 2 minutes

-Rinse hands and arms thoroughly with clean water, holding hands higher than elbows.

-Keep hands up and away from the body, do not touch any surface or article. And dry hands with a clean, dry towel or air dry by shaking the hands.

-Put on sterile or HLD gloves

How to improve hand washing

- Have supplies available and at " point of use"
- Disseminate and promote guidelines.
- Reinforce guidelines
- Involve everybody
- Give positive feedback
- Reward role modeling
- Benchmark best practices

Using of Barriers

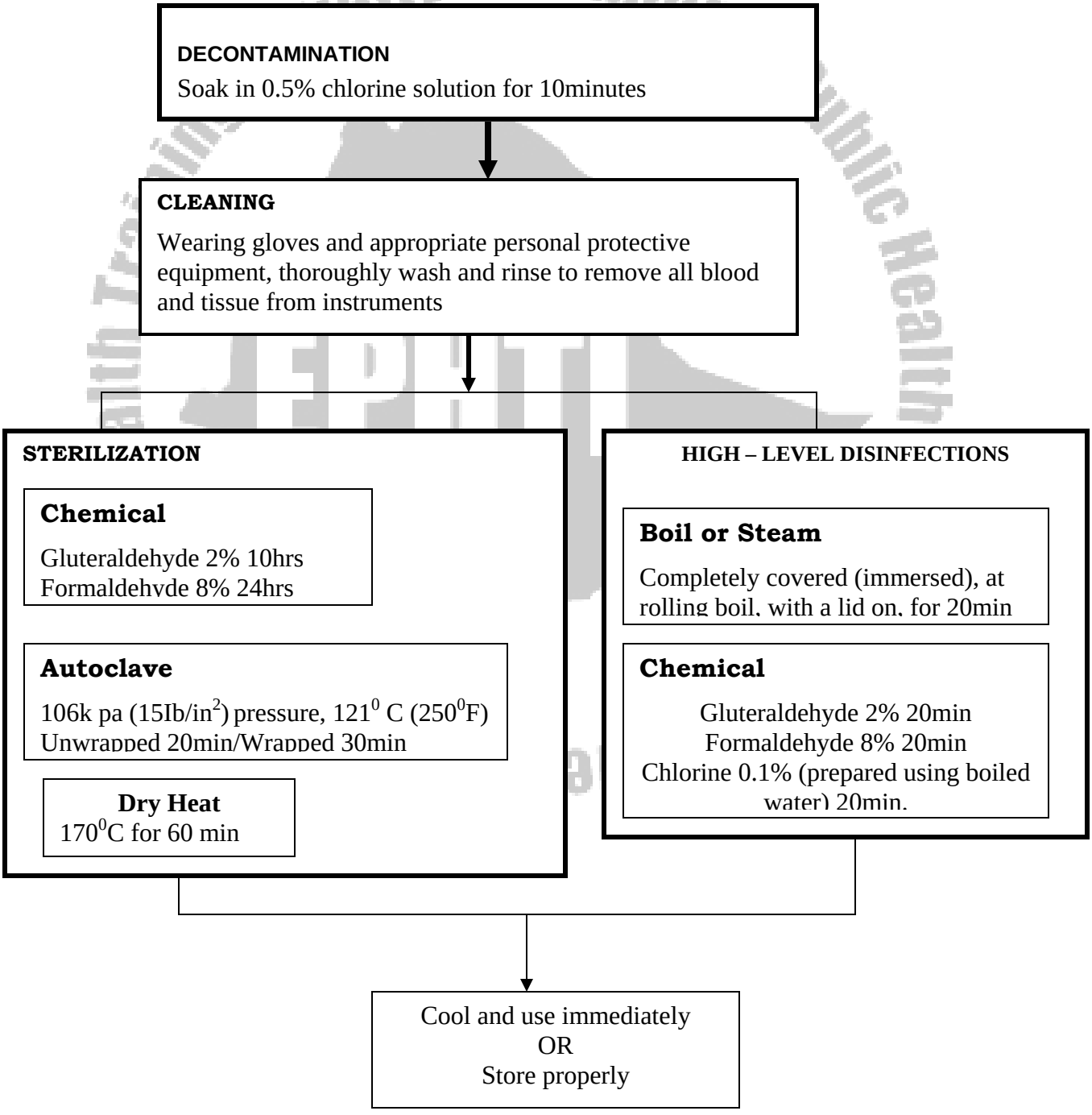
- Wear gowns, aprons, gloves, masks and eye covering.
- Whenever doing patients care involving blood and body fluids or bloody items.
- Whenever you expect to have exposure to that of your body.

Decontamination and Disinfections

Instrument processing

In working to create an infection-free environment, it is important that the rationale of each of the recommended infection prevention processes, and their limitation, be clearly understood by clinic staff at all levels-from health care providers to cleaning and maintenance.

Figure 1: Key steps in processing contaminated instruments, Gloves and other items



Important measures to be taken to reduce risk of contamination

Gloves: For contact with blood, body fluids, secretions and contaminated items

For contact with mucous membranes and non intact skin

Masks, goggles, face masks: Protect mucous membranes of eyes, nose and mouth when contact with blood and body fluids in likely

Gowns: Protect skin from blood or body fluid contact, Prevent soiling of clothing during procedures that may involve contact with blood or body fluids

Linen: Handle soiled linen to prevent touching skin or mucous membranes, do not pre-rinse soiled linens in-patient care areas.

Patient care equipment: Handle soiled equipment in a manner to prevent contact with skin or mucous membranes and to prevent contamination of clothing or the environment, clean reusable equipment prior to reuse

Environmental Cleaning: Routinely care, clean and disinfect equipment and furnishings in patient care areas

Sharps: Avoid recapping used needles, Avoid removing used needles from disposable syringes, Avoid bending, breaking or manipulating used needles by hand, Place used sharps in puncture – resistant

Patient resuscitation: Use mouthpieces, resuscitation bags or other ventilation devices to avoid mouth – to – mouth resuscitation

Patient placement: Place patients who contaminate the environment or cannot maintain appropriate hygiene in private rooms

2.8.4.2 Safe and adequate water supply

Water affects health of a woman through helping or hindering the transmission of communicable diseases such as diarrhea, schistosomiasis, and malaria. Water from stream or river should be boiled for at least 10 minutes, cooled, filtered before drinking, and protected from contamination. Water should be fetched from protected source, safely transported, stored and served.

2.8.4.3 Personal Hygiene

It is a part of hygiene, which tells us how a woman preserves, improves and maintains the health of her own mind and body.

To maintain good personal hygiene:

- They should have head cover, clean clothes and apron.
- They should be screened annually to identify carriers of typhoid and intestinal parasitosis for treatment.
- The use of protective shoes should also be encouraged.

How to get rid of contaminants (faces)

- Hand washing
- Water hygiene
- Food hygiene
- Fly control

Maintain body hygiene

- Frequent body washing
- Dental Care
- Perineal care

Hygienic delivery care

Sanitation

Understanding the connection of sanitation to health requires knowledge about the types of diseases involved, how they are transmitted, and how sanitation and hygiene promotion are likely to affect them.

Women's health can be improved by:

- Good housing
- Proper use of toilet facilities and waste disposal
- Avoidance of overcrowding.

Encourage proper utilization of health services

- The prevention and curative facilities/ services
- The existing waste disposal facilities

2.9 Roles of different stake holders in safe motherhood The BP/CR Matrix: Pregnancy

POLICY MAKER	FACILITY
Creates an environment that supports the survival of pregnant women and new borns	*Is equipped, staffed and managed to provide skilled care for the pregnant woman and new born*
▪ Promotes health and survival for pregnant women and newborns. ▪ Ensures that skilled antenatal care policies are evidence-based, in place and politically endorsed ▪ Uses evidence-based information to support systems that routinely update service delivery and cadre-specific guidelines ▪ Promotes and facilitates the adoption of evidence-based antenatal care ▪ Ensures that adequate levels of resources (financial, material, human) are dedicated to supporting antenatal care and an emergency referral system ▪ Encourages and facilitates participation in policy-making and resource allocation for safe childbirth and emergency referral services by communities, families, individuals and advocacy groups. ▪ Coordinates donor support to integrate birth preparedness and complication readiness into antenatal services ▪ Has a national policy document that includes specific objectives for reducing maternal and newborn deaths ▪ Ensures that protocols are in place for clinical management, blood donation, anesthesia, surgical interventions, infection prevention and physical infrastructure ▪ Advocates birth preparedness and complication readiness through all possible venues (e.g., national campaigns, press conferences, community talks, local coalitions, supportive facilities	• Has essential drugs and equipment • Follows infection prevention principles and practices • Has a functional emergency system, including: o Communication o Transportation o Safe blood supply o Emergency funds • Has service delivery guidelines on appropriate management during the antenatal period • Has job aids to assist providers in performing appropriate antenatal care • Ensures availability of a skilled provider 24 hours a day, 7 days a week • Is gender and culturally sensitive, client-centered and friendly • Involves community in quality of care • Reviews case management of maternal and neonatal morbidity and mortality

…The BP/CR Matrix: Pregnancy

PROVIDER	COMMUNITY
Provides skilled care for normal and complicated pregnancies, births and the postpartum period.	*Advocates and facilitates preparedness and readiness actions.*
• Provides skilled antenatal care, including: • **Detecting and managing complications** • **Promoting health and preventing disease, including:** - Provision of iron/folate and tetanus toxoid - Vitamin A and iodine in areas with deficiencies - Presumptive treatment of malaria and worms in areas of prevalence - Encourages use of bed nets • Screening for and managing HIV/AIDS, tuberculosis, STDs • Assisting the woman to prepare for birth including: - Items needed for clean birth - Identification of skilled provider for the birth - Plan for reaching provider at time of delivery -Identification of support people to help with transportation care of children /household, and accompaniment to health facility -Complication Readiness plan in cases of emergency: emergency funds, transportation, blood donors, and decision-making • Counseling/educating the woman and family on danger signs, nutrition, family planning, breastfeeding, HIV/AIDS • Informing woman and family of existence of emergency funds • Referring to higher levels of care when appropriate • Honoring the pregnant woman's choices ▪ Supports the community s/he serves ▪ Respects community's expectations and works within that setting ▪ Educates community members about birth ▪ Preparedness and complication readiness promotes concept of birth preparedness and dispels misconception and harmful practices that could prevent birth Preparedness and complication readiness	• Supports and values use of skilled provider at childbirth • Supports implementing the woman's Birth preparedness plan • Makes sure that the woman is not alone during labor, childbirth and immediate postpartum period • Supports the woman in reaching place and provider of her choice • Has a functional blood donor system • Recognize danger sings and supports implementing the complication readiness plan • Supports mother-and baby-friendly decision-making in case of obstetric emergencies • Can access facility and community emergency funds • Supports timely transportation of woman • Promotes community norms that emphasize priority of transportation for pregnant women and obstetric emergencies • Promotes and works together with provider on expectations • Supports the facility that support skilled health care • Promotes concept of birth preparedness and dispels misconceptions and harmful practices that could prevent birth preparedness and complication readiness ▪ Dialogues and works together with provider on expectations ▪ Supports the facility that serves the community ▪ Educates members of the community about birth preparedness and complication readiness ▪ Advocates for policies that support skilled healthcare ▪ Promotes concept of birth preparedness and dispels misconceptions and harmful practices that could prevent birth preparedness and complication readiness

…The BP/CR Matrix: Pregnancy

FAMILY	WOMAN
Supports pregnant woman's plans during pregnancy, childbirth and the postpartum period.	*Prepares for birth, values and seeks skilled care during pregnancy, childbirth and the postpartum period.*

▪ Advocates for skilled healthcare for woman ▪ Supports and values the woman's use of antenatal care, adjusts responsibilities to allow attendance ▪ Makes plan with woman for normal birth and complications ▪ Identifies a skilled provider for childbirth and the means to contact or reach the provider ▪ Recognizes danger signs and facilitates implementing the complication Readiness plan ▪ Identifies decision-making process in case of obstetric emergency ▪ Knows transportation systems, where to go in case of emergency, and support persons to accompany and stay with family ▪ Supports provider and woman in reaching referral site, if needed ▪ Knows supplies to bring to facility or have in the home ▪ Knows how to access community and facility emergency funds ▪ Has personal savings for costs associated with emergency care or normal birth ▪ Knows how and when to access community blood donor system ▪ Identifies blood donor	▪ Attends at least four antenatal visits (obtains money, transport) ▪ Makes a birth plan with provider, husband, family ▪ Decides and acts on where she wants to give birth with a skilled provider ▪ Identifies a skilled provider for birth and knows how to contact or reach the provider ▪ Recognizes danger signs and implements the complication Readiness Plan ▪ Knows transportation systems, where to go in case of emergency, and support persons to accompany and stay with family ▪ Speaks out and acts on behalf of her and her child's health, safety and survival ▪ Knows that community and facility emergency funds are available ▪ Has personal savings and can access in case of need ▪ Knows who the blood donor is

The BP/ CR Matrix: Labor and Childbirth

POLICY MAKER	FACILITY
Creates environment that supports the survival of pregnant women and newborns.	*Is equipped, staffed and managed to provide skilled care for the pregnant woman and newborn*
• Promotes improved care during labor and childbirth • Ensures that skilled care policies for labor and childbirth are evidence-based, in place and politically endorsed • Uses evidence-based information to support systems that routinely update service delivery and cadre-specific guidelines • Promotes and facilitates the adoption of evidence-based practices • Supports policies for management of complications based on appropriate epidemiological, financial and sociocultural data • Ensures that adequate levels of resources (financial, material, human) are dedicated to skilled care at birth and an effective emergency referral system. • Encourages and facilitates participation in policy-making and resource allocation for safe childbirth and emergency referral services by communities, families, individuals, and advocacy groups. • Coordinates donor support for improved management of labor and childbirth • Ensures that protocols are in place for clinical management, blood donation, anesthesia, surgical interventions, infection prevention and physical infrastructure • Advocates birth preparedness and complication readiness through all possible venues (e.g. national campaigns, press conferences, community talks, local coalitions, supportive facilities)	• Has essential drugs and equipment • Follows infection prevention principles and practices • Has appropriate space for birthing • Has a functional emergency system, including. • Communication • Transportation • Safe blood supply • Emergency funds • Has service delivery guidelines on appropriate management of labor and childbirth • Has job aids to assist providers in performing labor and childbirth procedures • Ensures availability of a skilled provider 24 hours a day, 7 days a week • Is gender and culturally sensitive, client-centered and friendly • Involves community in quality of care • Reviews case management of maternal and neonatal morbidity and mortality

….**The BP/ CR Matrix: Labor and Childbirth**

PROVIDER	COMMUNITY
Provides skilled care for normal and complicated pregnancies, births and the postpartum period.	*Advocates and facilitates preparedness and readiness actions.*
• Provides skilled care during labor and childbirth, including: • Assessing and monitoring women during labor using the partograph • Providing emotional and physical support through labor physical support through labor and childbirth • Conducting a clean and safe delivery including active management of 3rd stage of labor • Recognizing complications and providing appropriate management • Informing woman and family of existence of emergency funds (if available) • Referring to higher levels of care when appropriate • Supports the community s/he serves • Respects community's expectations and works within that setting • Educates community about birth preparedness and complication readiness • Promotes concept of birth preparedness and dispels misconceptions and harmful practices that could prevent birth preparedness and complication readiness.	• Supports and values use of skilled provider at childbirth • Supports implementing the woman's Birth preparedness plan • Makes sure that the woman is not alone during labor, childbirth and immediate postpartum period • Supports the woman in reaching place and provider of her choice • Has a functional blood donor system • Recognize danger sings and supports implementing the complication readiness plan • Supports mother-and baby-friendly decision-making in case of obstetric emergencies • Can access facility and community emergency funds • Supports timely transportation of woman • Promotes community norms that emphasize priority of transportation for pregnant women and obstetric emergencies • Promotes and works together with provider on expectations • Supports the facility that support skilled health care • Promotes concept of birth preparedness and dispels misconceptions and harmful practices that could prevent birth preparedness and complication readiness

The BP/CR Matrix: Labor and Childbirth

FAMILY	WOMAN
Supports pregnant woman's plans during pregnancy, childbirth and the postpartum period.	*Prepares for birth, values and seeks skilled care during pregnancy, childbirth and the postpartum period.*
• *Advocates for skilled health care for woman* • *Recognizes normal labor and facilitates implementing birth preparedness plan* • *Supports woman in reaching place and provider of choice* • *Supports provider and woman in reaching referral site, if needed* • *Aggress with woman on decision-making process in case of obstetric emergency* • *Recognizes danger signs and facilities implementing the complication readiness plan* • *Discusses with and supports woman's labor and birthing decisions* • *Knows transportation systems, where to go in case of emergency, and support persons to stay with family* • *Knows how to access community ad facility emergency funds* • *Has personal savings for costs associated with emergency care or normal birth* • *Purchases necessary drugs or supplies* • *Knows how and when to access community blood donor system* • *Identifies blood donor*	• *Chooses provider and place of birth in antenatal period* • *Recognizes normal labor and understands birth preparedness plan* • *Recognizes danger signs and understands complication readiness plan* • *Knows transportation systems, where to go in case of emergency, and support persons to stay with family* • *Can access community and facility emergency funds* • *Has personal savings and can access in case of need*

2.10 Health information management system in maternal health

Health information management system on safe motherhood refers to the complete system of recording, reporting, compiling, analyzing and disseminating information for the purpose of planning, management and operation of maternal health activities.

Surveillance

The term surveillance refers to the continuous monitoring of disease and other health related events relevant to the prevention and control of disease and health problems within a population

The main purposes of surveillance are to:

1. Enable the early detection and control of health and health-related problems
2. Provide baseline information for priority setting, planning and evaluating disease control program
3. Provide information for understanding the distribution of disease and health related problems by time, place and person.

Surveillance involves the following activities:

- Data collection and recording
- Reporting and notification
- Data compilation, analysis and interpretation
- Dissemination of findings to take action in terms of prevention and control.

Surveillance is based on two mechanisms for the detection of disease and health related problems.

A. **Passive case detection**- This involves cases detected in the course of the normal operation of the health services, through the self-reporting of patients to health institution**s.**

B. Active case detection- It involves an active search for cases, by special surveys or other methods outside of the routine health service activities.

To improve the health of mothers, the health information management system should be strengthened in the following areas:

1. Family planning, ANC, delivery and post-natal care services.
2. STIs/HIV/AIDS.
3. Active and passive surveillance.
4. Information dissemination.
5. Progress measurement in safe motherhood with respect to change in maternal morbidity and mortality.
6. Data collection formats, (refer lists of available and commonly used formats in Annex

Exercise 1: Visit the nearby health institution and write a short note on the data management system with greater emphasis given to maternal and child health services, (You can take the following points into consideration):

- **Recording,**
- **Reporting,**
- **Getting the required information easily,**
- **Use of tabular and graphical presentations of data,**

Sources of information

- Surveillance data (household surveys)
- Health institution records
- Vital registrations, etc.

Problems usually seen in documenting and reporting

- Lack of accountability, inaccuracy, carelessness, lack of responsiveness' incompleteness, untimely reporting, etc.

To solve the above problems, you should perform the following activities:

- Document all activities on time.
- Use the right formats.
- Compile and revise the data.
- Report to the right offices on time.

- Keep and handle records/document properly.
- Get feedback on your report.

Particular emphasis should be given to:

1. **Record-Keeping on continuity of care**
2. **Analysis and interpretation of data**
3. **Preparing summaries of service records in such a way as to provide a quick and accurate feedback to responsible bodies at all levels**
4. **Strengthening of surveillance activities**
5. **Monitoring and evaluation of the activities**
6. **Applied research**

2.11 Learning Activity 2 – EXERCISE

The following deaths occurred during 1993 E.C. in a certain district where total live births during the year were 1500; 15 women died that year from pregnancy-related causes:

Age interval	**Number of deaths**
Birth to < 1 week	30
1 week to - 28 days	33
1 month to < 1 year	135
1 year to < 5 years	150

Based on the above data calculate/answer the following questions:

a. Maternal mortality rate (ratio)
b. Neonatal mortality rate
c. Post-neonatal mortality rate
d. Infant mortality rate
e. Under-five mortality rate
f. What do you understand from your answers in relation to maternal health?

g. Comment on the nature of the above data, which were taken from one of the Ethiopian districts.

2. 12. Keys to the Learning activity 1: Case Study

1. Delay in health care seeking
   Delay in reaching the appropriate health facility
   Delay in receiving prompt and adequate care at the facility
2.-Health education in order to create awareness on how to set an access to health care system.
   -Improving transportation facility
   -Establish a system in each institution to provide patients priority for the care of critically sick / emergencies/
3. Early marriage, Delay in giving health care, Delayed transport, Inappropriate provision of health care by TBA
4. Infection, Uterine rupture, Fistula, Psychological problems
5. Early identification of fetal distress
   Closely follow the progress of labor
   Secure an IV line
   Prompt treatment of infections with antibiotics
   Emptying the bladder by catheterization
6. Assess vital sign
   Keep air way clean
   Put on radiant heat
   Give vitamin K
   Cord care
   Oxygen delivery
   Screen for infection

7. Early identification of progress of labor

   Early referral

   Avoid early marriage

   Appropriate initial care (catheterization, rehydration)

   Give preference at each level

3. SATELLITE MODULES

3.1 SATELLITE MODULE FOR HEALTH OFFICER STUDENTS

3.1 INTRODUCTION

3.1.1. Purpose and Use of this Satellite Module

The aim of this satellite module is to produce health officers who can identify and effectively manage maternal health problems.

In the core module, you have gone through the major maternal health problems, essential health services to mothers and strategies to make motherhood safe. In this satellite module, you will be dealing with management of common obstetric emergencies, complications, and the preventive health services available to curb the problem. Therefore, you are expected to go through this satellite module.

3.1.2. Directions for using the satellite module

- Understand the Learning objectives.
- Read, understand and work out the questions under the Learning Activity – Case Study.
- Go through the rest of the satellite module.

3.1.3 Learning Objectives

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

- Provide essential maternal health services
- Identify high-risk pregnancy and its complications
- Manage high-risk pregnancy and its complications
- Manage Sexually Transmitted Infections
- Undertake community based preventive and promotive activities regarding maternal health.

3.1.4 Learning Activity I - Case Study

Almenesh is a 16 years old high-school girl from Gondar town. She lives with her family. The monthly income of her family is 300.00 Birr. She was raped three months back while returning from school. She presented to the health center with vaginal bleeding of 4 hours. She has been ammenhoric for the past three months. On repeated questioning Alemnesh revealed that she visited a backstreet abortionist where the pregnancy was terminated with a metallic rod. On arrival to the health center, she was lethargic with blood pressure of 60/20 mm Hg, pulse rate of 136/minute, feeble and had temperature of 39 ^{0}C.

Questions for group discussion

What is/are the possible diagnosis?

What are the complications you anticipate in this patient?

What investigations do you order?

How do you manage this patient?

What preventive measures do you know to avoid the problem stated above?

3.2. Family Planning

Rational For Family Planning (FP)

- Can reduce maternal and child mortality by preventing pregnancy as well as high-risk pregnancies.
- In developing countries child bearing is generally far more dangerous than using oral contraceptives, IUCDs or condoms
- FP methods are safe and free from substantial risk of major complications as compared with other drugs, surgical procedures and Childbearing,
- FP has health benefits in preventing diseases like STIs/HIV
- Reduce the number of abortions and abortion-related complications

By monitoring and preventing high-risk, often unwanted, pregnancy, FP reduces health expenditures that would be necessary later to treat mothers and infants with high risks.

Family Planning improves family-well being.

Family Planning helps everyone:

- **Women:** Protects themselves from unwanted pregnancies. Many women's lives have been saved from high-risk pregnancies or unsafe abortions. If all women could avoid high-risk pregnancies, the number of maternal deaths could fall by one-quarter.
- **Children:** Family planning saves the lives of children by helping women space births.

Contraceptive Effectiveness

Effectiveness refers to the ability of any given contraceptive method to prevent conception.

- Theoretical Effectiveness is an expression of the reliability of a method when it is used correctly. It is a measure of inherent biological effectiveness under ideal circumstances.
- Use effectiveness is a measure of observed reliability of a method among a large group of users and includes errors, omissions or discontinuation of use.
- Program effectiveness refers to the success of a particular method in a program at national, state or local level.
- Cost effectiveness refers to a comparison of costs of a method or an overall program to the expected outcome, which may be the number of acceptors; the number of continuous users, the couple-years of protection, the change in prevalence level or the change in fertility level.

Such factors are often used to measure the difference between various methods or approaches. Collection of these data can be carried out at a single clinic or in a multi center trial.

Table 1. Family Planning Methods and Characteristics

Types of Methods	Mode of action	Frequency of administration	Failure rate	Advantages	Side Effects	Reversibility
Hormonal methods 1.Combined oral contraceptives (The pill) - Monophasic pills - Biphasic pills - Triphasic pills.	Suppression of ovulation	Daily for 21 days in a cycle	Pregnancy rate 0.1-3 per 100 woman years	- Convenient - Easy to use -The combined pills provide protection against PID, ectopic pregnancy, endometrial cancer, ovarian cancer and common menstrual disorders	- Minor side effects include nausea, headache, weight gain, gastrointestinal complaints, inter-menstrual bleeding. -Major side effect Thromboembolism, increased risk of cardiovascular disease and stroke for women over 35 years and who smoke.	Immediate to short delay only
2.Progestion-only pill (minipill)	-Thickening the cervical mucous -change in the endometrium	Daily through out the cycle	-0.5-3 per 100 woman years	-Side effects of estrogen associated with the combined pill are eliminated	Increased menstrual irregularity	Immediate to short delay
3. Injectable (Depo Provera, DMPA)	-Inhibition of ovulation -cervical mucosal change -Endometrial changes	Once every three months	0.3-0.4 per 100 woman years	-Convenient -Not related with coitus -does not interfere with lactation -no need to take daily	-Heavy intermenstural bleeding and amenorrhea -Possible effects on carbohydrates and lipid metabolism	Delay of 4-8 months possible

Table 1. Family Planning, (continue)

Types of Methods	Mode of action	Frequency of administration	Failure Rate	Advantages	Side Effects	Reversibility
4. Implants (Norplant R system) consist of 6 silicone rubber capsules filled with levonorgestrel Inserted under the skin of the arm.	-Suppress ovulation -Decrease tubal motility -Change endometrium -Thicken cervical mucus	-once every 5 years	Pregnancy rates of 0.00-0.5 per 100 woman year	- Convenient -long acting, -reversible, not related to coitus,	-Major: Similar with injectables -Minor: infection of the implant site	Immediate upon removal
5.Intrauterine Contraceptive Devices (IUCDs) Copper Medicated	-inhibition of sperm migration in the upper female genitalia -inhibition of ovum transport -inhibition of fertilization and ovulation	- 8-10 years -The progestin releasing IUCDs are effective for only a year.	-0.3-1.0 pregnancy per 100 woman year for the metal devices -Progestin release pregnancy rate varies from 1.9-2.0	- Convenient - long term method - not related to intercourse -Progestin-releasing IUCDs decrease menstrual blood loss	-Increased or irregular menstrual bleeding - Dysmennorhea - PID -ectopic pregnancy	Immediate upon removal

Table 1. Family Planning, (continue)

Types of Methods	Mode of action	Frequency of administration	Effectiveness	Advantages	Side Effects	Reversibility
Physical Barrier 1. Condoms	-Prevents sperm from entering the vagina	-Prior to every act of sexual intercourse	The pregnancy rate is 3-15per 100 woman Years	- No apparent health risks - Protection against STIs including AIDS	- disrupt sexual pleasure for some -may affect sensation for some -man must be willing	Immediate
2. Diaphragm/cervical Cap	- Cover the cervix to prevent sperm from entering -Kill the sperm on contact (spermicide)	-Prior to sexual intercourse – must be in place 6 hours after intercourse	Pregnancy rate 3-19 per 100 woman years	- No apparent health risks	-Some find it messy -May increase chances of bladder infections	Immediate
Natural methods 1. Withdrawal/Coitus Interrupts	- Keep the sperm away from the uterine opening	-Applicable at each coital act	-20-25 pregnancies per 100 woman years	- Does not involve use of any physical hormonal or chemical methods	- May interrupt spontaneity of sexual intercourse	Immediate
2.Periodic abstinence/Rhythm method	- Couple refrains from intercourse when the women is ovulating	-Avoid intercourse between day 10 and 28 of the 28 day cycle	-9-20 pregnancies per 1000 woman years	-No systematic side effects -Requires no medication or device	-Requires several days of abstinence -Inappropriate in women with irregular menstruation	Immediate
3. Lactational Amenorrhea Method (LAM)	-Frequent intense suckling disrupts secretion of gonadotrophin releasing hormone (GnRH)	Women who: Are fully or nearly fully Breast-feeding, Have not had return of menses < 6 months	-Pregnancies per 100 women during first 6 months of use	Does not interfere with sexual intercourse, No systemic side effects	User-dependent (requires following instructions regarding breastfeeding pactices)	Immediate

Table 1: Family Planning Continued

Types of Methods	Mode of Action	Frequency of administration	Effectiveness	Advantages	Side Effects	Reversibility
Emergency contraception 1. combined pills (Ethinyl estradiol and norgestrol)	Prevents ovulation	2 pills with in 12 hours after intercourse and 2 pills after 12 hours	2 %	-when no contraception has been used - when there is misuse of contraception like condom rupture, failed coitus interruptus, miscalculation of periodic abstinence	-Nausea -Vomiting -Irregular Uterine Bleeding -Breast tenderness	-Immediate to short delay only
2. Copper releasing IUDs	Prevents implantation	with in 5 days of unprotected sex	< 1 %	-All advantages of combined pills -additionally especially unprotected intercourse elapsed 12 hours when client consider to continue IUCD	-PIDs -ectopic pregnancy	Upon removal

Table 1. Family Planning, (continued)

Types of Methods	Mode of action	Frequency of administration	Effectiveness	Advantages	Side Effects	Reversibility
Sterilization 1. Vasectomy (Male)	- Sperm can not enter the seminal fluid and reach the female genital tract	- Once	- 0.10-0.15 per 100 woman Years	- Permanent - not coitus-related - no impairment of sexual function	- temporary pain and swelling - needs temporary methods for 3 months	Irreversible
2. Tubal Ligation (female)	Ovum can not be transferred to be fertilized	Once	0.1-0.3 pregnancies per 100 Woman years	- Permanent	- Operative and post-operative complication	Irreversible

Risk and contraindications to OCP

Risk factor	absolute contraindication	relative contraindication
-Family history of Cardiovascular disease	known atherogenic lipid profile	Normal blood profile
-Diabetes mellitus	poorly controlled, or diabetic complications present, e.g. Retinopathy, retinal damage	Well controlled, and no complications, young patient with short duration of DM
-Hypertension	BP >160/95 mm hg on repeated testing	Systolic BP 135-160 mm hg Diastolic BP 85-95 mm hg
-Cigarette smoking	>40 cigarettes/day	5-40 cigarettes/ day
-Increasing age	>35 in all smokers. Age alone is not an absolute contraindication	40-50 years non-smokers
Excess weight	>50 % above ideal for height (BMI >35)	20-50 % above ideal (BMI 30-35)
-Migraine	Focal, crescendo or requiring treatment with ergotamine	Uncomplicated/acceptable to the woman

Contraindications to IUD

Absolute

1. Known or suspected pregnancy
2. Undiagnosed abnormal vaginal bleeding. Once malignancy or other uterine pathology is excluded and menstruation returns to normal, an IUD can be fitted
3. Suspected malignancy of the genital tract.
4. Active pelvic inflammatory disease (PID). Fitting an IUD will increase the severity of the infection
5. Copper allergy- for copper devices only.

Relative

1. Previous ectopic pregnancy.
2. Cervical or vaginal infection. After successful treatment an IUD can be inserted
3. A recent history of treated pelvic infection

COUNSELING

- Help clients make and carryout their own choices about reproductive health and family planning.
- Makes clients more satisfied.
- Helps clients use family planning longer and more successfully.

Counseling should be tailored to each client. At the same time, most counseling about method choice covers 6 topics.

- Effectiveness
- Advantages and disadvantages
- Side effects and complications
- How to use
- STI prevention
- When to return

3.1. Antepartum hemorrhage

Management:

- Secure IV line and never do digital vaginal examination.
- Refer to the health facility as soon as possible where there is operation room, OR facility with 2-3 attendants and health workers.
- Person accompanying referred cases need to be well built and healthy enough to donate blood.

3.2. Postpartum Hemorrhage

Management

It is a group work needing call for help. Prevention-identify risk factors during ANC, labor and delivery.

Active management of 3rd stage of Labor

- Secure IV line with crystalloid
- Oxytocin 20 IU in 1000 cc of fluid or ergometrine 0.2mg IM stat or oxytocin 3IU-5IU bolus after delivery of anterior should for cephalic, after delivery of head in breech and after delivery of 2nd twin
- Uterine massaging
- Inspect genital tract & if there is tear repair
- If there is retained placenta tissue, manual removal of placenta is indicated.
- If there is resistance during controlled cord traction and suspicion of adherent placenta, refer to place where operation possible.
- If bleeding persistent and not able to control bleeding, urgent referral and at the same time uterine massaging and uterine compression.

2.6.3 Unsafe Abortion

The elements of post-abortion care include:

1. Community and service provider partnership
2. Support and counseling even beyond family planning services on emotional and physical health
3. Treatment of incomplete and unsafe abortion
    - Secure IV Line
    - Prevention and treatment of infection
    - Evacuation of uterus (E and C, D and C or MVA). MVA is ideal to evacuate uterine size of less than 12 weeks.
    - Treat Anemia
    - If there is suspicion of perforation, uncontrolled Infection or hemorrhage, urgently refer.
4. Contraceptive and family planning services
5. Look for other problems like STIs and manage accordingly.
6. Post-abortion care link with other RH component (service)

3.4 Hypertensive diseases in pregnancy

Management

- Refer to hospital management
- Start Diazepam 30mg in 5% 1000 cc fluid running 40 drops/minute for severe preclampsia and eclampsia
- Hydralazine 5 mg if DBP> 110 mmHg in preeclampsia and eclampsia
- Put patient in left lateral position 30^0
- Avoid accidental trauma
- Maintain air way breathing and circulation

Eclampsia

Management:

- It is a hospital management with ICU facility and Operation room.
- Immediately after detection, refer to best facility.
- Making sure the airways are clear and the woman can breathe.
- Controlling the fits
- Controlling the blood pressure
- General care and monitoring, including controlling fluid balance.
- Delivering the baby
- Monitoring carefully to prevent further fits and identify complications.

3.5 Management of labor and Delivery

Normal labor and delivery

Admission

- Identify between true labor and false labor. True labor – painful contraction that is regular, increasing intensity, with change in cervical dilatation and effacement. Show, usually present, rupture of membrane may or may not be present.

Assessment of laboring women

- **History** – Obstetric history (age, parity, previous obstetric history)
  -ANC status, any risk factor.

- **P/E** – General P/E, Vital sign, weight, height.
    - **Obstetrics. Examination** – leopold's examination.
        - Uterine Contraction, Fetal Heart Rate.
    - **Pelvic and vaginal** examination.
        - PV not done if there is history of vaginal bleeding, ROM without labor.
        - Look for Vaginal bleeding and leakage of liquor.
    - **PV -**cervical dilation, effacement, presentation, position, pelvic capacity.
    - **Lab Investigation** – Blood group and RH status, Hematocrit,
        - U/A, VDRL – if not done or No ANC
        - If ANC – update Hematocrit and U/A
- Assessment – after History and P/E
    - High risk/ low risk
    - Stage of labor – then record on partography.
    - Any labor abnormalities.

Management Of 1st stage

- All finding at 1st evaluation should be recorded on partography.

2 phases of 1st stage

- Latent phase – cervical dilation <3 cm, effacement <90%.
  Average time primigravida. = 8hrs
  Multipara = 5hrs
- Active phase – cervical dilatation 3 -10 cms and fully effaced
  Average time primigravida = 5-8 hrs
  Multipara = 4-6 hrs
- Cervical dilatation in active 1st stage of labor for multipara > 1.2cm/hr and multipara>1.5cm/hr, if less than this, it should be considered as an abnormal labor.

Maternal well being monitoring

- Positioning → avoid supine position
- vital sign – Pulse rate, Temperature, Blood Pressure at least 4 hourly

- nutrition → generally avoid oral intake
    - IV fluid if 12 hrs without taking per os.
    - Small fluid diet is considered if mother stay longer time before delivery.
- Pain Management – continuous emotional support
    - Analgesics based on maternal discomfort.

Monitor progress of labor

- Uterine contraction
- Descent → abdominal palpation
  → Per vagina (station)
- Vaginal examination → every 4 hr unless indicated. If rate of cervical dilation is < 1 cm/hr → abnormal progress of labor.

Abnormal Progress of labor

1. Cervical dilation < 1.2cm/hr in primipara and <1.5cm/hr for multipara or no cervical dilation for 2hrs in both case
2. Descent < 1cm/hr for nullipara and <2 cm/hr in multipara or no descent for 1 hr for both.

If abnormal progress of labor, look for possible causes like uterine dysfunction, malposition/malpresentation, Cephalo Pelvic Disproportion (CPD). Use artograph to follow the progress of the labor. **(Refer core module)**

Fetal monitoring

FHR can be monitored using pinnard stethoscope every 30 minute for low risk and every 15 minute for high risk. You should also check for meconium in the liquor amini. On monitoring observe for abnormal signs of labour like CPD, malpresentation/ malposition, vaginal bleeding, FHR abnormalities.

Management of 2nd stage

- Duration – medium duration in nullipara is 50minutes and multipara is 20min.
- Prolonged 2nd stage
  Nullipara ≥ 2hrs
  Multipara ≥ 1hr

- FHR should be monitored every 15 minutes for low risk patient and every 5 minutes for high risk patient
- Monitor maternal vital sign more frequently and look for general condition like fatigue, sign of Dehydration.
- To check progress of labor, descent should be every 1hr. The descent should be at least 1cm/hr in nullipara and 2cm/hr multipara.

Management of prolonged 2nd stage

- Management depends on the cause
- Instrumental delivery if preconditions are fulfilled
- Look for inefficient uterine contraction, CPD, malposition, malpresentation, inadequate voluntary effort.
- Position in the lithotomy position and empty bladder. Apply sterile drape, perineal care (antiseptics),
- Instruct the patient, attendant should be gloved and well dressed (Gaun, drape, mask, …)
- Prepare set for neonatal resuscitation.
- Attend delivery properly → Episiotomy individualized, prevent rapid delivery and support perineum, clear and wipe face, aspirate mucus (oropharynx and nose), cord clamping.
- Neonatal care → prevent heat loss, evaluate APGAR score, tie cord and label Baby, weight, height, eye prophylaxis and vitamin K.

3rd stage

The interval between deliveries of fetus to delivery of placenta is called the 3 rd stage of labor. The average time is about 5 minutes.

- 95% deliver placenta in 15 minutes.
- Retained placenta is diagnosed when placenta fails to separate and get expelled after 30 minutes of delivery of baby
- Most maternal mortality or morbidity from hemorrhage and retained placenta take place in 3rd stage of labor

Management of 3rd stage

1. Physiologic Management of 3rd stage
    - for low risk patient for PPH
    - Look for sign of placental separation, observe for excessive Bleeding
    - Controlled cord traction (CCT)
    - Administer oxytocin or Ergometrine after Delivery of placenta
    - Examine placenta for completeness and abnormalities
2. Active Management of 3rd stage
    - For high risk patient (PPH) look PPH Management
3. Management of retained placenta
    - Look for sign of excessive Bleeding,
    - Manual removal of placenta indicated in
    - Any time during 3rd stage if there is excessive bleeding or placenta can not removed by CCT

In retained placenta

Precaution: Aseptic technique, Analgesics, empty bladder

If no placental cleavage line stop manual removal (i.e. adherent placenta).

Management of "4 stage" Labor Immediate one hour after delivery of placenta

- To detect the presence of PPH
- Monitor V/S every 15 minutes
- Examine uterine fundus: palpate to look uterus if it is well contracted. If relaxed massage and start with oxytocin
- Inspect perineum for hematoma
- Look for vaginal Bleeding
- Encourage urination to avoid distension of Bladder

3.6 Puerperal sepsis or puerperal infections

Temperature ≥ 38^0C, excluding the first 24 hrs post partum and including the first 10 days, temperature measured on two days.

Causes: infection of genitourinary tract related to labor, delivery and puerperium e.g. endometritis, UTI

- **Extra genital:** E.g. mastitis, episiotomy site infections, pelvic thrombophlebitis
- **Incidental infection**

E.g. pneumonia, malaria, typhoid fever HIV/ AIDS

Predisposing factors: STI and Vaginal infection, prolonged rupture of membrane, diabetes mellitus, Anemia, Repeated pelvic examination, Postpartum hemorrhage, Poor infection control practice, Malnutrition

3.7 Uterine infection (endometritis)

Clinical features: fever for 2 to 3 days, vaginal discharge, uterine tenderness,

Management

Antibiotics, Refer if complicated

Prevention – avoids and treats risk factors

3.8 Urinary tract infection:

Clinical features: dysuria, frequency, urgency, fever, costovertebral angle tenderness and suprapubic tenderness.

Management

Prevent and treat risk factors, Antibiotics, Fluid intake.

3.9 Wound infection (episiotomy site infection)

Clinical features – pain and discharge from episiotomy site, fever on 4^{th} or 5^{th} day, swelling and tenderness of wound site

Management

-Prevent and treat risk factors for wound infection

-Open the wound by removing the stitch

-Debridment

-Mechanical cleaning

3.10 Mastitis

Clinical feature: usually occurs in one or more weeks. Usually one breast, one lobe or one quadrant of breast is affected

Fever, purulent discharge, pain, localized mass, redness and tenderness is observed.

Management

Local heat, Support the breast and restrict breast stimulation.

Administer Antibiotics, Drainage of Abscess Give analgesia as needed.

3.11 Premature rupture of membrane (PROM)

Rupture of membrane before onset of labor.

Clinical feature: passage of liquor amini per vagina, wet perineal area

Management

-Assess gestational age

-If <37 wks refer

-If > 37 wks follow next steps

-Assess for infection (fever, foul discharge and abdominal pain)

If Infection is present, give antibiotics, antipyretics, refer if no early delivery

If no evidence of infection, observe for labor

Assess duration of labor

If labor > 12 hrs – manage as prolonged labor

If in early labor or not in labor, observe progress

Refer after maximum of 12 hrs.

Prevent and gestational treat risk factor

3.12 Fetal distress

Fetal distress occurs whenever the fetus is deprived of either nutrients (chronic metabolic deficiency) or oxygen (acute or chronic uteroplacental insufficiency).There could be tachycardia or bradycardia which can be diagnosed using fetoscope. Thick meconium gives clue for fetal distress

Causes of fetal distress

Prolonged difficult and obstructed labor, Hypertension, APH, Post term, IUGR, multiple pregnancy, Maternal dehydration and hypotension, Hypertonic uterine contraction, Infection

Management

- Prevent and treat risk factors

- Left lateral position should be advised
- Intra nasal oxygen by mask, 6 liter/ minute
- Give normal saline
- Treat other causes
- Refer to place where cesarean section is possible if no response for the treatment and delivery is not imminent in short period of time.

3.13 Care of the Newborn

In order to reduce Neonatal morbidity and mortality health care provision at all level must be improved just after birth. Especially new borns with risk factors need special attention.

Risk factors

- Maternal diabetes, pregnancy induced Hypertension
- Maternal infection, poor obstetric history (still birth, operative delivery)
- Multiple gestation, post term gestation
- Maternal anemia
- Abnormal presentation
- Prolonged rupture of + membrane >24hr
- Meconium stained liquor and cord prolapse
- APH
- Prematurity
- LBW: Birth weight < 2500gm**.**

Important procedures for neonatal care as initial steps:

- Prevent heat loss (e.g. place under warmer)
- Open air way, clean secretion
- Initiation of breathing and Tactile stimulation
- Early breast-feeding with in an hour of birth
- Give Vitamin K to reduce bleeding tendencies
- Eye care with silver nitrate and tetracycline
- Give BCG and OPV-0 at Birth if possible Hepatitis B

- Recognize major newborn illness and manage accordingly like hypoglycemia. respiratory distress)

Actions to be taken if a newborn *doesn't respond* to the initial steps are:

- Free flow oxygen (If available)
  - Central cyanosis with Normal respiration and HR >100/minute
  - If not refer
  - Bag and mask ventilation (ambubag)
    - Indication - gasping respiration and HR< 100
    - Contraindication - Meconium Aspi
      - Diaphragmatic Hernia.
  - Chest compression if HR is 60-80/ minute
  - Refer to near by Health services for possible resuscitative measures (for intubation, volume expansion)

Common Neonatal problems

Identifying common Neonatal problems help the health officer to assess the newborn, those who need referral, those who need treatment at the health center and treatment at home. These are:

I. Perinatal asphyxia (Birth asphyxia)

- Cause being due to placental insufficiency
- Directly related to gestational age and Birth weight
- Mostly manifest in form of depressed reflexes, disturbance of respiration altered mentation and convulsion
- Anticipated complications depends on different organ damage such as myocardial dysfunction, Renal failure, respiratory distress, Brain damage
- Management should include
  - IV fluid maintenance 2/3 (to avoid brain edema)
  - Appropriate Respiratory support
  - Anticonvulsant if there is associated seizure
  - Avoid Hypothermia & Hypoglycemia

II. Respiratory Distress in the new born

a. General signs – RR > 60/minute - Grunting - Cyanosis
- Chest indrawing - flaring of ala nasie

b. Common cause

1. **Hyaline membrane disease**
   - Inadequate pulmonary surfactant
   - Most commonly in premature baby.
   - Symptom of RD begin at birth or with in 6 hrs of life
2. **Congenital pneumonia**
   - Commonly seen in premature rupture of membrane, prolonged duration of labor (>24 hrs) and Unclean vaginal examination.
   - Causative agent group B streptococci, E. coli and Listeria,
   - RD seen after birth & Hypothermia
3. **Meconium Aspiration syndrome (MAS)**
   - Common in Newborn with placental insufficiency post maturity, breech deliveries and fetal Hypoxia
   - RD seen after birth, Hyperinflated chest (barrel chests) meconium stained skin, umbilicus are most features**.**

c. General management of a neonate with RD

- Keep warm
- Adequate circulation
- Oxygen (if available)
- Antibiotics for congenital pneumonia, MAS – commonly used drugs are Ampicilline and Gentamycin
- Treat associated Hypothermia and Hypoglycemia

III. Hypoglycemia

- Blood sugar < 40mg /dl
- Mostly a common problem of LBW (Birth weight <2500gm), VLBW (Birth weight =<1500gm) extremely VLBW (<100^0gm) and preterm neonate

- Also common in infant of diabetes mother
- Mostly manifested with Jitteriness (tremor), convulsion, episodes of apnea with cyanoses and depressed neonatal reflexes
- Management should include
  - Determination of blood sugar level
  - Give a bolus 2ml/kg of - 10% dextrose then continue maintenance with monitoring of glucose level.
  - Encourage breast-feeding immediately or by using NG tube feeding.

IV. Sepsis and Meningitis

- Commonest causative agents are E.coli, group B. streptococci and Listeria
- Common in preterm and LBW neonate.
- Manifestations are non – specific but Hypothermia, refuse to suck, lethargy /inactive, convulsion and depressed neonatal reflexes.
- Lumbar puncture and blood culture is diagnostic choice
- Management – should include:-
  - Treatment of associated illness like hypoglycemia & hypothermia
  - Antibiotics – Gentamycin and Ampicillne. Dose-high dose and based on weight of newborn.

V. Prematurity

- **Commonest problem in this neonate are: -**
  - Hypothermia - Respiratory distress
  - Hypoglycemia - Sepsis
  - Anemia - Intracranial bleeding
  - Cardiac problems (congenital heart disease**)**

- Therefore needs careful assessment and management of problems as they result.

- Other neonatal problem which should not be neglected includes Jaundice, Birth injuries (such as cephalhematoma and congenital anomalies (-meningocele) should be addressed**.**

Post-Natal care (PNC)

- Is a care up to six weeks in post partum period
- Has two period of time
  1. **1st day after delivery**
     - Most life threatening conditions such as hemorrhage should be looked
  2. **From 1st day to 6 weeks**
     - Most post natal care like breast care family planning to be discussed

- Always give equal attention and care for both the mother and the new born.
- As a health care provider during PNC, it is important to remember the following care services: -
  - Anticipation early detection and management of immediate life threatening conditions

However all causes of fever in the puerperium including UTI need to be recognized

- Prepare at least one post partum visit with in one week, where a women unable to leave home as for example due to cultural reason, health center should organize an out reach service in collaboration with CHW

- Suitable care of the breast and gentiles
  - Advantages of breast-feeding for mother and newborn

    E.g.- Stasis of breast milk (-mastitis)

    -Hypoglycemia in newborn
  - Weaning period and exclusive breast-feeding should be discussed.
- Discussion and make plans for the resumption of contraception depending upon the choice of method and breast-feeding intention.

- Breast-feeding is not an effective contraceptive in itself and needs to be combined with another method by the time the baby is 4 month old

- The diet of puerperal women should be
  - Varied and balanced which include adequate protein for renewal of old tissue and milk production, iron and vitamins to counteract anemia.
- Other postnatal care should include
  - Examination of uterus for involution

- Inspection of perineum and vulva to ensure any trauma is healing satisfactory
- Immunization and sun exposure to new born
- Encouraging ambulation and exercise
  - Advantage – increase muscle tone and venous return from legs and lower abdomen.
    - Encourage drainage of lochia and the voiding of urine

3.14 Anemia in pregnancy

Anemia in pregnancy occurs when Hemoglobin less than 11gm/dl.

Causes: iron deficiency, folic acid deficiency, thalasemia, hook worm, malaria

Management

- Prophylaxis iron and high iron containing diets
- Therapeutic iron for mild to moderate anemia
- Treat hook worm and malaria.
- If there is severe anemia refer for transfusion.

3.15 Management of STI (sexually transmitted infections)

There are 4 level of Management of STIs

1. Syndromic Management
2. Syndromic + clinical Management
3. Syndromic + clinical Management and limited laboratory tests.
4. Clinical management plus laboratory tests (etiological diagnosis)

Level of management used in service site depends on the knowledge and skills of service providers and on the availability of laboratory facilities

Syndromic Management

- Bases treatment on groups of symptoms (patient complaint) and signs (patient and provider observation), which can be explained by more than one possible infection.
- Provider is required to know most common causative organisms for each syndromes and appropriate antimicrobial treatment.

- Enable provider to offer treatment when there is lack of laboratory facilities
- Most relevant STI syndromes are:
  - Genital ulcer
  - Vaginal discharge
  - Lower abdominal pain.

I) Genital Ulcer: - defined as loss of continuity of skin of genitalia. The genital ulcer may be painful or painless and frequently accompanied by inguinal lymphadenopathy. Genital ulcer can be caused by syphilis, chancroid, granuloma inguinale, LGV, herpes simplex virus.

If genital ulcer

Examine patient

1) Multiple small blister – like painful lesions

⇒ Treat to relieve symptom of herpes and lesions should improve within 7 days

2) If genital ulcer: Open sore; may be painful or pain less; may have swollen lymph node in groin, treat for syphilis and chancroid

   Follow-up 7 days after visit

If no improvement, the patient should be referred to higher-level care

Treatment: Benzanthine pencilline 2.4 million IU in 2 I.M. site (for syphilis Plus for chancroid, erythromycine 500mg 4x p.o /d for 7 days.

⇒ If allergic for penicilline, for syphilis TTC 500mg P.O. 4x/d for 15 days or Doxycline 100mg P.O 2x/d for 15 days.

⇒ If allergic to pencilline and pregnant, for syphilis and charcorid only erythromycine 500mg P.O. 4x/d for 15 days.

N.B. * Stress on completing full course of treatment

* Notify the partner and treat partner

* Avoid intercourse till treatment is complete.

II) Vaginal Discharge

Definition: STI related vaginal discharge is abnormal in color, odour and /or amount. The discharge may be accompanied by pruritis, genital swelling, dysuria or lower abdominal or back pain.

Cause: trichomonas vaginales, candida albicans, bacterial vaginosis cause vaginal discharge directly, but N. Gonorrhoae and C. trachomatis do so in-directly via cervicitis and cervical disease.

1. If vaginal discharge is accompanied by lower abdominal pain or pain on moving cervix, use lower abdominal pain algorithm.
2. History of high risk includes (02 or more of following)
   - Sexual contact with person with STD.
   - Age < 21 years
   - Multiple sexual partners
   - New partner in last 3 months
   - Patient single.

If Vaginal discharge

1) **Risk assessment Negative =** speculum examination
   a. No discharge seen → follow up after 7 days.
   b. White, thick, curd like discharge ⇒ candidiasis treatment
   c. Profuse vaginal discharge ⇒ trichomoniasis, Bacterial vaginosis treatment.
   d. Mucopurulent from cervix ⇒ Gonorrhea, Chlamydia treatment.
   ⇔ Follow up after 7 days ⇒ No improvement ⇒ refer to higher level care.
2) **Risk assessment positive** ⇒ speculum examination
   a. No discharge seen or mucous for cervix ⇒ Gonorrhea, Chlamydia treatment.
   b. White thick discharge ⇒ gonorrhea, Chlamydia treatment.
   c. Profuse vaginal discharge ⇒ Gonorrhea, Chlamydia, trichomoniasis, Bacterial vaginosis treatment

N.B. ⇒ risk assessment positive ⇒ partner notification and treatment
⇒ Avoid intercourse till treatment is completed.
⇒ Follow up after 7 days ⇒ No improvement, refer for higher-level care.

Treatment

1) **Candidiasis** ⇒ clotrimazole 500 mg tablet inserted once per vagina or clotrimazole or miconazole 200 mg inserted per vagina once daily for 03 days.

2) Trichomoniasis and bacterial vaginosis.

⇔ Metronidazole 2 gm P.O. stat or 400 – 500 mg P.O. 2x daily for 7 days. Metronidazole is contraindicated in 1st trimester pregnancy.

3) Gonorrhea and chlamydia

For gonorrhea ⇒ ceftriaxone 250 mg IM stat or ciprofloxacin 500 mg P.O. stat or specitinomycine 2 gm IM stats.

For chlamydia ⇒ T.T.C. or Erythromycin 500mg P.O. 4x/d for 7days

Doxycyline 100mg P.O. 2x/d/7days

T.T.C. is contraindicated in pregnancy.

III. Lower abdominal pain

Definition: Lower abdominal pain in women is often associated with PID, it includes (Salpingitis, endometrits, parametritis, ophoritis, pelvic peritonitis) caused by microorganisms, which generally ascend form lower genital tract to invade the endometrum, fallopian tubes, ovaries and peritonium.

On examination the provider should exclude medical surgical emergencies (e.g septic abortion, appendicitis, ectopic pregnancy, intestinal obstruction) and evaluate for:

- Lower abdominal tenderness
- Vaginal discharge
- Ulceration on external genitalia
- Presence of IUD
- Tenderness on cervical movement
- Adnexal tenderness and/or mass on bimanual examination
- $T^{o} \geq 38^{0}_{C}$

If Lower abdominal pain

1) Take history and do abdominal and vaginal examination

- If missed/over due period/ Pregnant/

- Recent childbirth or abortion? Or rebound tenderness or guarding? Vaginal Bleeding? Pelvic mass? If any one of above present ⇒ Refer to Hospital immediately.

2) If No to all above Questions and temperature ≥ 38^0_C, pain during examination, vaginal discharge ⇒ If any one of question yes

- Treat for PID
- Patient with IUD, remove IUD 2-4 days after starting treatment
- Partner notification and treatment.

⇒ Then re-evaluate in 3 days or sooner, if pain gets worse or no improvement

⇒ refer to high level care.

⇒ If improvement or cure ⇒ complete treatment.

3.6 Malaria in Pregnancy

Malaria is pregnancy has adverse consequence for mother and Babies. Malaria May account for 2-15% of maternal Anemia, 5-14% of low birth weight, 3-5% of newborn death. Areas affected by malaria can be classified as:

- **Stable Area:** Level of Acquired Immunity are high (pregnant women are semi-immune), Low peripheral parasitemia, heavy placental infection
- **Unstable Area**: Level of Acquired Immunity are low, heavy parasitemia, low placental infection

Effect of malaria on pregnancy - stable transmission

- Low birth weight
- IUGR
- Maternal Anemia
- Risk of still birth

Effect of malaria on pregnancy - unstable transmission areas

- Low Acquired Immunity
- Severe Disease ⟶ High Risk to mother
  ⟶ High Risk of fetus

- Complicated malaria: include severe Anemia, cerebral malaria, Hypoglycemia, Pulmonary edema, acute renal failure.
- Complicated malaria and maternal mortality is very common in unstable malaria areas.

Effect of malaria on fetus and new born

1. Low birth weight
   - Intra Uterine Growth Retardation
   - Prematurity
2. Abortion or still birth
3. Congenital malaria
4. Infant mortality

Components of malaria control During Pregnancy

1. Quality focused ANC and health education
2. Intermittent preventing treatment (IPT)
3. Use of Insecticide treated Nets (ITNS)
4. Case management of Malaria disease

1. ANC and Health Education

ANC visits provide a unique opportunity for:

- Monitoring maternal and fetal health
- Provision of micronutrient supplementation (e.g. Iron folate)
- Health education and counseling about malaria in pregnancy
- IPT with effective Antimalaria drug (like Sulfadoxine-Pyrimethamine (Fansidar)
- Prompt Diagnosis and treatment of malaria

Pregnant women (especially primigravida, HIV infected women) are at high risk of malaria complication.

2. Intermittent preventive treatment (IPT)

- Approach for effective preventing and controlling malaria during pregnancy
- Based on assumption that every pregnant woman in malarious area is infected with malaria.

- Recommend that every pregnant women receive at least 02 treatment Doses (After 24 weeks and less then 32 weeks, at 4 weeks Interval) of effective Anti malaria drug.
- Fansidar is currently the recommended and most effective Drug for IPT.
- Single Dose of 03 tables is taken at once.

3. Use of Insecticide treated Bed Nets

4. **Case management of malaria Disease**
    - Effective drugs are needed for P. falciparum
    - Drug of choice depends on geographic area
        - Fansidar is drug of choice
        - Quinine is drug of choice for complicated malaria

Treatment of uncomplicated malaria

- Provide 1st line Antimalarial drug used in pregnancy (Fansidar)
- Treat fever with analgesics
- Diagnosis and treatment of Anemia
- Provide fluid

Complicated malaria treatment

- Weigh the patient
- Administration of Quinine as soon as it is diluted
- Manage fever (Analgesics and tepid sponging)
- Monitor for severe Anemia, hypoglycemia, acute renal failure and treat as needed
- Refer, if not skilled in managing complicated malaria

Drugs not used in pregnancy

- T.T.C/ Doxycline
- Primaquine
- Halofantrine

3.17 HIV in Pregnancy

Females are at high risk of HIV infection 2-3 times more exposed because of biological factors and socio-cultural factors. Biological factors include vulval and

vaginal inflammation and ulceration, STI, inadequately treated clamydial infection and other STI. Socio – cultural factors like Gender inequalities, poverty. Without any intervention, up to 30% or more HIV positive mothers transmit the virus to the baby.

Prevalence current HIV prevalence rate in Ethiopia is estimated to be 6.6%

- Addis Ababa – 15.6%
- Other Urban – 13.7%
- Rural – 3.7%
- Reported AIDS cases – 107,575 (June, 2002)

Timing of mother to child transmission (MTCT) of HIV

- MTCT is generally 14 - 42%. With the advent of Anti Retroviral Therapy (ART), the transmission rate is reduced to 1-2%. The MTCT is considered to be:
  - During pregnancy (5-10%)
  - During labour and delivery (10-20%)
  - During breast-feeding (5-10%)

Effect of HIV infection on pregnancy

- High rate of abortion
- Preterm labor and still birth
- PROM and abruptio placenta
- Low Birth weight or IUGR
- Bacterial pneumonia and UTI
- Post partum infections and complications

Risk factors for MTCT

1) **Viral factors** – load, viral resistance, viral genotype and phenotype
2) **Maternal factors**
   a. Immunological factors
   b. Nutritional factors
   c. Behavioral factors like smoking, Drug use
   d. Placental factors like Placental disruption, abruptio placenta
   e. Obstetrical factors
      - Prolonged ROM (>4hrs)

- Mode of delivery (C/S-50% reduction)
- intrapartum hemorrhage
- Invasive fetal monitoring

3) **Fetal factors** – prematurity, multiple pregnancy
4) **Infant** – breast-feeding
    - Immature immune system.

ANC

Allows interaction between health facilities and sexually active women to:

- Provide information on HIV
- Promote safer sex practice
- Provide the pregnant woman to know her HIV status
- Identify and treat STI
- Provide malaria prophylaxis

ANC provides opportunities to discuss the interventions for reducing the risk of MTCT.

Antenatal Interventions to reduce MTCT

- HIV testing and counseling services
- Behavior change communication → sexual, alcohol and smoking
- Prevention of new infections in pregnancy
- Identification and treatment of STIs (genital ulcers and abnormal vaginal discharge).
- Prevention and treatment of anemia (balanced diet and nutritional supplementation e.g. Iron folate, multivitamin)
- Avoiding invasive testing procedures in Pregnancy (e.g. amniocentesis, external cephalic version)
- Antiretroviral prophylaxis
    - During pregnancy
    - In labor
    - Post partum

→ long term zidovudine (after 14 weeks reduce 67% transmission risk)

→ Short-term zidovudine (after 36 weeks, during labor or delivery→ reduce transmission 50%)

Intrapartum Intervention to reduce MTCT

- Use of universal precautions
- Application of good infection prevention practices during pelvic examinations
- Avoid unnecessary artificial rupture of membrane
- Avoid prolonged labor and prolonged ROM.
- Avoid unnecessary trauma during delivery like:
  - Unnecessary episotomy
  - Fetal scalp electrode monitoring
  - Forceps and vacuum delivery.
- Minimize risk of PPH
  - Active management of 3rd stage (administer oxytocine immediately after delivery, CCT, uterine massage)
  - Repair of any genital tract lacerations
- Practice safe Transfusions.
  - Avoid unnecessary transfusions
  - Transfuse blood that has been screened
- Vaginal cleansing in labor with chorhexidine swab (0.25-0.4%)
- Anti retroviral therapy (ART)

Post partum intervention

- Information on early symptoms of infection and instruction of perineal care and handling of blood stained materials.
- Information on care of babies without risk of exposure to infection
- Modification of infant feeding after informed decision after counseling infant feeding options

  →exclusive breast-feeding followed by early cessation of breast feeding

  → heated treatment of expressed milk (62.5^0 C for 30minutes)

- Prevention of pregnancy by use of family planning and counseling on safer sex.
- HIV primary medical and pediatric care.

Treatment of PID

Use this regimen if the patient is well enough to take food and liquids, walk unassisted, take her medication and return for follow up. Otherwise refer to higher-level care.

a) Single dose therapies for gonorrhea
   → ceftriaxone 250mg I.M. stat or
   → ciproflaxcine 500mg P.O. stat or
   → spectinomycin 2gm I.M. stat Plus
b) Treatment for chlamydia
   → Doxycline 100mg P.O. 2x/d for 14 days or
   → T.T.C 500mg P.O. 4x/d for 14 days plus
c) Treatment of anaerobic infections
   → Metronidazole 500mg P.O. 2x/d for 14 days

N.B. stress on importance of completing full course of treatment and treatment of partner. Avoid having intercourse until patient completed treatment.

3.18. Prevention of disease and promotion of maternal Health

Promoting health and prevention of disease to tackle the basic problems that happen in a mother and a child. This can be carried out through preventive health care, which operates on three levels: -

1. Before a disease process starts
   e.g. Immunization, nutrition
2. To alleviate or arrest disease
   e.g. screening, early diagnosis and treatment
3. To limit the effects of a disease

These levels of health care system largely implemented through health education and health promotion.

- Health education involves working with individuals or groups to enhance or change knowledge, with the aim of helping people to make informed and positive choices.
- Health promotion recognizes the importance of social and environmental influences on health.

Specific maternal health topics to be disseminated at community level are summarized below.

[For details refer the core module]

1. Promote healthy behaviors to women, families and communities
2. Promote appropriate use of maternal health care
3. Increase community awareness and organization.
4. Discourage practices, which harm maternal health

Maternal Nutrition

Poor nutrition before and during delivery contributes in a variety of ways to poor maternal health, obstetric problems and poor pregnancy outcomes.

1. **Stunting -** exposes women to the risk of cephalopelvic disproportion.
2. **Anemia-** the cause may be due to inadequate intake, parasitic infestation and malaria. Women with anemia are more vulnerable to infection and at increased risk of death due to obstetric hemorrhage.
3. **Severe vitamin A** deficiency may make women more vulnerable to obstetric complications including infection and associated mortality.

A diet for pregnant and non-pregnant women should contain daily allowance of vitamin A of 800 mg. It is good to advice for women to have dark green, yellow or orange fruits and vegetables, liver as a source of vitamin A.

However high doses of vitamin A during pregnancy may cause teratogenic effect on fetus (doses higher than 50,000 IU are toxic).

4. **Iodine deficiency** increases the risk of stillbirth and spontaneous abortion in severely deficient areas of a country like Ethiopia. It can also contribute to maternal death through hypothyroidism. The daily allowance of iodine is 150 mg and 175 mg for non-pregnant and pregnant women, respectively. Diets containing iodine such as iodized salt and seafood should be encouraged.

In summary, the health care provider should encourage women to take foods of varieties and be able to supplement with available drugs during antenatal visits (Iron, vitamin A, Iodine, folic acid etc)

5. Immunization

Prevention of Tetanus can be achieved by a combination of two approaches: -

1. Improving maternity care with emphasis on increasing the proportion of deliveries attended by skilled attendants.
2. Increasing the immunization coverage of women of childbearing age, especially pregnant women with tetanus toxoid (TT).

Important control measures include licensing health care providers providing professional supervision and health education as to methods, equipment and techniques of asepsis in childbirth; educating mothers, relatives and attendants in the practice of strict asepsis of the umbilical cord of the newborn. Any women of childbearing age visiting a health facility should be screened and offered immunization, no matter, what the reason for visit.

3.20 ORGANAIZATION OF MATERNITY SERVICES

Maternity services should be set up in a manner that will provide the best possible care to the mother, her baby and her family. An example of organization of maternity services at different levels of the health system is described below.

Hospitals (Referral units)

There should be an efficient referral centre where all emergencies are handled during 24 hours each day. Careful rotation of staff including those trained to perform emergency obstetric interventions and anaesthesia should be established at every referral centre.

Many recommend the establishment of Maternity Waiting Areas at every referral hospital where mothers with problems or at high risk, from far away areas may stay with a member of their family while awaiting labour to start.

Health Centres

In these units there should be an experienced midwife/Health officer able to identify problems in obstetrics and know when to refer them. S/he should be able to handle life saving skills in the event of lack of time. Health workers working in these centres should be well trained to handle certain emergencies within the means available at the centre. Good two-way communications is essential for smooth transfer of clients in emergency. A means of transportation for medical evacuation is of utmost importance.

Health Post

The health post follows women with lowest risk group. However, it should be remembered that every pregnancy carries a risk. Thus in the event that there are any potential or actual problems the client must be referred to the nearest health centre.

Community

It is important to identify TBAs train and supervise them because most of the births in the country are attended by them, although several experts may not agree on putting resources in training of TBAs as indicated earlier. The health system should be prepared to use TBAs as bridges between itself and the community. Often they are more trusted.

3.2 SATELLITE MODULE FOR PUBLIC HEALTH NURSE STUDENTS

3.2 INTRODUCTION

3.2.1. Purpose and Use of the Satellite Module

In the core module you have already been through concepts of safe motherhood, the magnitude of maternal problems, the strategies to ensure safe motherhood.

This satellite module has been prepared to give you more detailed information on the functions that you may need to perform as a nurse or in collaboration with the team. It begins with general discussions on your role as a nurse in the health center in the reduction of maternal morbidity and mortality and continued with the specific nursing activities in all areas of the maternal health service. You are expected to read thoroughly and to do all exercises.

Studying only this module may not be sufficient to be equipped with the necessary knowledge, attitude and skills important to safe guard maternal health. Therefore when you need to study more on some areas, you should refer to books **on reference** list for **greater** detail.

3.2.2. Directions

For good understanding of this satellite module follow the directions below.

- Read and understand the parts of the satellite module.
- Read, discuss and answer the questions under the Learning Activity – Case Study.

3.2.3. Learning Objectives

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

- Identify the role of public health nurse in safe motherhood.
- Provide Maternal health services in relation to safe mother hood.
- Provide health education related to safe mother hood at any level.

- Prevent maternal health problems.
- Promote maternal health in the community.

3.2.4. ROLE OF NURSES IN SAFE MOTHERHOOD

Nurses play a key role in assisting safe motherhood. The nurse functions independently, particularly in the area of teaching and anticipatory guidance, in the preventive, promotive, curative and rehabilitative active ties of maternal health.. At times, however, the nurse may need to refer women to other health care providers. On the other hand, nurses have to ensure the continuity of care and follow up visits.

Furthermore, you should assist women and the community in anticipating outcomes and consequence, as well as help to take action through health education. It includes improving self-awareness.

1. FAMILY PLANNING

Reproductive age begin when a child moves through puberty and develops into an adult. This change from childhood to adulthood brings the ability to become pregnancy to a girl. Every year, women around the world have 75 million unwanted pregnancies. Some are due to lack of access to family planning. Family planning refers to the actions couples take to have a desired number of children in spacing, when they are wanted. Family planning service means allowing choice, not chance to determine the number and spacing of children.

WHO recommends that action should be taken to ensure that every one has access to “client-oriented and confidential family planning information and service that offer a side choice of modern contractive methods.”

Highlights of available family planning methods those are commonly utilized in our country.

i. Condom (male and female)

1. Can prevent pregnancy and STDS/HIV/ AIDS.
2. Easy to use with a little practice
3. Effective if used correctly and consistently (every time).

ii. Contraceptive pills

1. Combined oral contraceptives

Advantage

- Effective(97-99%) and reversible
- Safe for most women
- Can be used by women in all ages
- Menstrual period become regular
- Dysmenorhea and premenstrual symptom relived
- Decreased incidence of certain cancer and anemia.
- Can be used for emergency contraceptives.

Disadvantage

- Take every day for best protection
- Nausea and vomiting.
- Weight gain for some women
- Aggravated a certain preexisting health problems, like cardio vascular and liver diseases, and malignancy .

2. Progestin- only oral contraceptives

- Good choice for lactating mothers who want pills, beginning at 6 weeks after childbirth. (Very effective while breast feeding)
- If used when not breast-feeding, bleeding changes are a normal side effect especially spotting and bleeding between periods.
- Can be used as emergency contraception.

C. Injectable contraceptives (one inject every 3 months)

- Very effective and safe
- Bleeding changes are a normal (spotting and light bleeding between periods), some weight gain and mild headaches can occur.
- Can be used by women of all age, whether or not they have children.
- Women who stop using DMPA may take an average of 4 months longer than usual to get pregnant.
- Safe during breast feeding, beginning at 6 weeks after childbirth.

- Help prevent uterine tumors and pregnancy out side the womb(Ectopic pregnancy)

Women should not use this method:

- hypertensive cases Pregnant woman
- If the woman has unidentified vaginal bleeding
- Woman with malignant tumor
- Severe hypertensive cases

D. Norplant's (6 small capsules placed under the skin of the upper arm)

- Very effective for up to 5 years (and perhaps longer).
- Can be used by women of all age, whether or not they have children.
- A woman can have the capsules taken out any time and get pregnant once the capsules are taken out.
- Bleeding changes are normal (spotting and light bleeding between periods), and mild headaches can occur.
- Safe during breast feeding, beginning at 6 weeks after childbirth.
- Help prevent anemia and pregnancy out side the womb.

E. IUCD: small device placed inside the womb to prevent implantation.

- Very effective (97-98%), reversible and long-term method.
- Menstrual periods may be heavier and longer, especially at first. Brief discomfort coming after IUD is put in.
- No effect on breast-feeding.
- Pelvic infection more likely if the user gets STI. Serious complications are rare.
- May come out especially in the first month, so checking for the strings is important.

Contraindications for IUD:

- Pregnancy
- PID
- History of excessive vaginal bleeding.
- Having more than 2 C/S.

F. Permanent methods (Female sterilization and vasectomy)

- For men and women who are sure that they will not want more children.
- Safe, simple, convenient surgery.
- Very effective (99-100%). If it is properly done and informed clients.
- No known long term side effects.
- No effect on sexual performance or desire.

The following contraceptive methods are possible but not as reliable.

- **Fertility awareness based methods** (Mucus or Billings methods, temperature method and Sympto-thermal method) needs more time to teach since all women using these methods should clearly understand about the menstrual cycle (ovulation-menstruation). This method same times called fertility awareness method is not used commonly in our country.
- **Spermicidals, diaphragm or cervical cap-**require practice and skill to place appropriately over the cervix each time before sex for this reason, it is often not preferred.

In general you are expected to do the followings in family planning services

- Educate on fertility and reproduction
- Promote use of contraceptives.
- Supply contraceptives: explaining the use of methods, their indications, and side effects and where they can be obtained.
- Assess and manage for side effects
- Refer for permanent sterilization and investigation of infertility to the higher institutions
- Train, supervise and supply community- based distribution.

ANTENATAL CARE

What is the role of a nurse in pregnancy care?

It is not always possible to identify which women are at higher risk of complication ahead. Therefore, all women should receive preventive care called “Antenatal care” and those in need of extra help should get it promptly.

Antenatal care is the health care and education provided during

What are you going to do in antenatal clinic will be discussed as follows.

A. The first antenatal visit

This visit should occur as soon as the woman thinks she is pregnant, no later than the fourth month of pregnancy. Do the following activities in all first antenatal visits:

- Take a thorough personal history including medical, surgical, obstetrical and social
- Do physical examination, B/P, Height <145 cm: estimate fetal size
- Depending on the facilities available at the institution, certain laboratory tests may be carried out such as:
  - Blood tests (Hemoglobin, Blood grouping and VDRL [preferably before 16 weeks of gestation])
  - Counseling voluntary and testing for further help and follow up to the mother and baby
  - Vaginal fluid tests
  - Urine test (Protein and Sugar)
- Give a few basic medicines that can help a women have a healthy pregnancy. Such as:
  - Antimalarial drug in areas where malaria is common
  - Iron tables, folic acid and Vitamins to prevent anemia and make sure the mother and baby get the right nutrients.

- If VDRL is reactive (positive), treat both partners with appropriate antibiotics and repeat serology within the last trimester and after delivery.

- Provide tetanus toxoid, appropriate health education and nutritional counseling depending on the stage of pregnancy.
- Discuss women's preference for delivery, who will assist, preparation, plan for emergency transportation on where to deliver ,based on the women's health and history

B. Later antenatal visit

Even women who are healthy and have no problems should have at least three or four antenatal visits to ensure that the pregnancy and delivery are free of problems. Women who have a problem, or are at risk of developing one, should go more often

Do the following activities in the later antenatal visits:

- Take history of problem since the last visit is taken
- Do short physical examination that includes measuring the growth of the fetus and listening to the heart, checking weight gain, and measuring blood pressure
- Test for urine and blood when appropriate
- Provide appropriate health education and counseling depending on the stage of pregnancy
- Continue planning where to deliver based on the whether problems are treated or new one develop

C. Education and Counseling

Information gathered when a woman come to antenatal clinic that we discussed before can be used as the basis for continuous discussion about what the woman can and should do to stay in good health. You should use simple and understandable language to explain about nutrition, danger signs and personal hygiene. Encourage asking questions or talking about any special problems and preparing for birth and post partum care of mother and infant.

D. Prevention of mother to child transmission of HIV

It is known that HIV can be transmitted from the mother to the child in-utero, around the time of labor, delivery or through breast-feeding. So the Nurse should encourage

pregnant women to have voluntary counseling and testing for further advice and treatment in prevention of mother to child transmission of HIV during ANC.

Action for safe pregnancy begins in the pre-conception period or during intra pregnancy period by making a woman ready what to do and do not immediately when she knows her conception.

Tell all women the “Dos and do nots” listed in the box

Summary: Early Pregnancy and Self – care

DOS:
Pregnant women should:

- **Go for antenatal care as soon as they know they are pregnant and at least three or four times serious during pregnancy**
- **Sleep at least 8- 10 hours each night harm the baby**
- **Rest as much as possible; for Example, lie down for one hour every day first trimester**
- **Keep clean by washing hands Frequently, washing perinum daily**
- **Get regular exercise, for example by walking for half an hour every day**
- **Wear loose, comfortable clothing and low-heeled shoes that support the feet**
- **Continue to have sexual relations as long as they want to, unless there is bleeding from the vagina, contractions have started, or the bag of water has broken .**
- **Drink plenty of liquids and eat enough food, especially the right kinds of food (energy-giving, body-building, and protective)**

DO NOTS:
pregnant women should not:

- **Lift or carry heavy loads**
- **Drink alcohol – it can cause problems for the body**
- **Smoke – smoking cigarettes can**
- **Be exposed to chemicals such as hair dyes, pesticides to kill insects, or herbicides to destroy weedsin the**

E. Detecting high-risk mothers

Women at high risk should be treated with appropriate care and encouraged to go for antenatal care often and to deliver in the health institutions by trained birth attendant. The followings are considered as risk

- Elderly or young primigravida (over 35 or under 18)
- Previous scar of caesarean section
- Previous perinatal death (still birth, premature delivery)
- Previous prolonged labor (24 hours).
- Grand multiparty (> 5 deliveries)
- Women with previous third stage complications like post partum hemorrhage
- Multiple pregnancy
- Previously repaired fistula
- Rhesus negative women
- Mal presentation and suspected CPD.
- Ante partum hemorrhage
- Hypertensive or pre- eclampsia
- Anemia (Low hemoglobin < 11g%).
- Polyhydraminion or big baby.
- Serious medical disorder like Diabetes, Heart disease and renal disease.

After screening the above high risk cases, some needs very especial attention and referral immediately. The management of some common and potentially dangerous risks discussed as follows:

For Anemia:

- At community level, you are expected to detect anemia clinically or by laboratory examination or inspection and to refer to the nearest health center. You can commence iron and folate treatment if you have at hand.
- At health center level, you should treat her with iron and folate. Treat for malaria if she lives in highly malarious area, stool test and provide worm treatment
- Refer to hospital if very pale (or hemoglobin < 7mg/dl.) and shortness of breath.

For Pre-eclampsia

- Reinforce instructions about bed rest.
- Check BP twice weekly (If diastolic and systolic B/p increases by 30 and 15 mmhg respectively, it indicate as there is preeclampsia).
- Refer if BP rises and/or there is an edema or worsening symptom. If diastolic BP is>100 with or without protinurea refer to hospital after sedation (valium 10 mg).

For Eclampsia

- Making sure the airways are clear and the woman can breathe
- Prevent injury, tongue bite, and fall accident
- Give anti convulsant drug like magnesium sulphate 4g of 20% magnesium sulphate IV slowly over 5 minutes and followed by 5g IM in each buttock, repeat the dose every 4 hourly until 24 hours from delivery while watching for its side effect .If magnesium sulphate is not available, give Diazepam 10mg IV slowly over two minutes. If convulsion recurs, repeat the loading dose. Maintenance dose should Diazepam 40mg in 500ml IV fluid (Ringer lactate or Normal saline).
- Refer to hospital as soon as possible.

For Anti-partum hemorrhage

- Treat shock first, using Ringer lactate, Plasma expenditure or normal saline and then organize blood donors and refer to hospital.
- Do not perform PV examination.

For premature rupture of membranes

- If ruptured more than 12 hours and not in labor do not perform repeated vaginal examination, give antibiotics and refer to hospital.

F. Delivery Service

Plans for delivery should be made before labor begins. Some women have a high risk of complications during labor. However assessment of risk is only approximately. Many high-risk women have a perfectly normal pregnancy while some low-risk women develop unforeseen complications. (Therefore, where facilities and equipments are available, it is tempting to treat all birth with the same interventions that are needed when complications occur).

3. Nursing management

- **Management of first stages**

  - Admission - Take a quick history of labor, check her general condition, vital sign and fetal heart rate, and do careful abdominal/ vaginal examination. Record all your findings immediately on partograph.
  - Maintain her hygiene, empty her bladder, and keep bed as clean and dry as possible.
  - Show her how to relax in between contraction
  - Encourage her to be out of bed and walking around in early labor
  - Allow her to find whatever position makes her breathing and pushing easier
  - Relieve pain e.g. massage the back
  - Encourage her to drink and eat light foods

- **Management of second stage**

  Allow her to select positions

  - Don't leave her alone
  - Do careful assessment of general condition, maternal pulse, fatal heart and descent of presenting part and cervical dilatation. Note on partograph
  - Encourage her to push with each contraction and relax in between
  - Help delivery according to the presentation and position when it is possible.
  - Take care of the baby
    - Lay baby down on mother's abdomen
    - Clear the airway gently
    - Clamp and cut cord
    - Check APGAR **Score**, if low (<or= 7) resuscitate the newborn as soon as possible. (APGAR Score refer to Annex IV).
    - Wipe the eyes and mouth as soon as the head born
    - Identification
    - Keep the baby body and hair dry.
    - Warm the baby skin contact with its mother and using cotton and wool cloths

- Physical examination
- Initiate breast-feeding as soon as possible.

- **Management of third stage**
  - Massage the uterus
  - Give Oxytocine 5 IU or Ergometrin 0.5 IM after shoulder is delivered
  - Remove the placenta by control cord traction
  - Examine for tears and suture if necessary
  - Clean up the patient and make her comfortable
  - Give mother baby to hold
  - Examine placenta and observe blood loss
  - Check blood pressure and pulse
  - Note in chart.

If certain problems arise like bright red vaginal bleeding, eclampsia, prolonged labor and postpartum hemorrhage, manage as was discussed in core module.

4. Postpartum Care

The postpartum period or a puerperium, starts about an hour after the delivery of the placenta and includes the following six weeks.

Postpartum hemorrhage is the supple most important cause of maternal death at this time.

Care within the first eight hours of birth.

The mother

- Make sure that the uterus remains well contracted and that there is no heavy loss of blood. If uterus is soft and bulky, express clots and give ergometrine.
- Encourage passing urine.
- Encourage taking shower that will often help to bring relief.
- Care for breasts: maintain cleanliness, assess proper positioning and attachment, prevent engorgement, manage inverted or cracked nipples, and treat breast infection. Recognize and refer for abscess.

- Care for genitals: Regularly inspect the perineum, promote regular cleaning and replace of sanitary cloths. Manage infected tears and episiotomy. Refer any cases of incontinence.
- Check for signs of infection. If fever: Identify the cause and treat also malaria, pneumonia, UTI accordingly. Refer if no improvement after 3 days.
- If puerperal sepsis:
  - Treat mild cases with antibiotics (Ampicillin 1g orally followed by 500 mg orally every 6 hours plus metronidazole [500mg orally every 8 hours] for 10-14 days.) and analgesics.
  - Increase oral fluids.
  - Refer if very sick or any signs of peritonitis, septic shock, pelvic abscess, tetanus or failure to improve in 48 hours.
- If there is secondary postpartum hemorrhage treats any shock, give oxytocics, antibiotics, IV fluid and refer to hospital.
- If there is anemia: screen with available method and treat similar with treatment as mentioned in ANC

The Newborn

- Avoid dangerous heat loss by making sure the room is warm and that the body is next to its mother.
- Early skin-to-skin contact between baby and mother encourage early sucking and better bonding and communication.
- Apply eye ointment or drops in the first hours to prevent Opthalmia neonatorum.
- Breastfeeding should start as soon as possible preferably with the first hour of birth. The frequency and duration of breastfeeding should not be restricted.
- Supplementary formulas or other fluid should be avoided for 6 months
- Avoid traditional mal-practices .
- Keep the cord clean and dry until falls off. Treat any infection promptly.
- Ensure that the baby get his or her immunization as soon as possible especially BCG and polio 0.
- Use malaria nets if possible.

Care in the first week after birth: Encouraged to eat well balanced diet, rest, and breast feeding and personal hygiene

Care 6 weeks after the births: Family planning service and continue tetanus toxoid immunization.

Post Partum care

Women need	Newborn's need
♦ Information /counseling on - Support from health care - Self care - Care of baby and breast - Feeding - Education about changes - Sexual matters - Nutrition - Contraception -Support from health care Providers, - Time to care for the baby - Help with domestic tasks - Maternity leave	♦ Nurturing and stimulation ♦ Warmth, Body temperature stable ♦ Appropriate food ♦ Easy accessibility of the mother ♦ Safety ♦ Cleanliness ♦ Observation the general condition of the baby by care givers and/or the nurse for appropriate help and action ♦ Protection from - Disease - Harmful practices - Abuse ♦ To be accepted whether male or female and whatever their size or appearance.

5. Post-abortion care

Whatever the legal status of abortion is, high quality service for treating and managing complications of abortion should be available. This includes.

- Emergency treatment of post-abortion complication
  - Rapid removal products of conception are necessary in case of incomplete abortion. Vacuum aspiration by provider is familiar with the procedure.
  - If there is sepsis or uterine perforation, give such as appropriate first aid and refer the patient.
- Emergency care must be available 24 hours a day.

- Provided accurate information on family planning and counseling

6. STI/HIV/AIDS

The emergency of HIV/AIDS and the prevalence of other STIs heighten the morbidity and mortality of mothers and their children in our country. That means prompt diagnosis and treatment of STI will have the favorable outcome for both the mother and newborn. For this reason, diagnosis and treatment of STIs is considered a critical part of any safe motherhood programs.

The approach to the management of STIs varies depending on resources. In resource rich areas we can use etiologic treatments that target the eradication of the particular etiologic agent. On the other hand in, scarce resources area we have to use syndromic management that relies on identification of specific syndromes. Whatever approach we use, thorough patient assessment is mandatory

The major STI's include:

Syphilis: Ulcer at primary stage, which starts as small papule and ulcerate to produce a painless lesion with clean base and refined edge.

Genital herpes: Painful macules, vesicle, pustule, ulcer and crust.

Chancriod: Painful lesions with papule, pustule, ulcer with soft chancer.

LGV: Painless papule and ulcerate to painful regional Lymphadenopathy after week.

Granuloma ingunale: Chronically progressive ulcer, non-supportive genital lesion develops from firm papule, painless ulcer with non papular base.

Vaginal Discharge

- Evaluate the amount, color and odor of the discharge. We have to identify the risk first. If a person have the following criteria, he/she is considered **risk assessment positive:**
  - Partner symptomatic
  - Single
  - More than one partner
  - New partner in the last 3 months

- Then treat as follows
  - If risk assessment positive

    Ciprofloxacin 500 mg PO stat OR

    Spectromycin 2 mg IM stat PLUS

    Doxycycline 100mg PO bid for 7 days PLUS

    Metrnidazole 500mg PO bid for 10 days

    (Doxycycline is contraindicated to a pregnant and lactating mother. Therefore give Erythromycin instead of Doxycycline.)
  - If risk assessment negative

    Metronidazole 500mg PO bid for 7 days PLUS

    Clotrimazole vaginal tabs 200mg at bedtime for 3 days.

Lower abdominal pain

- Usually result from ascending infection of cervix or vagina. It includes endometritis, parmetritis, salpingitis e.t.c. clinically may include fever, lower abdominal and adenexal tenderness, cervical tenderness and pelvic mass, exclude other causes of lower abdominal pain such as appendicitis.
- Treat at out patient level with

  Ciprofloxacin 500 mg PO stat OR

  Spectinomycin 2 mg IM stat PLUS

  Doxycycline 100mg PO bid for 14 days PLUS

  Metrnidazole 500mg PO bid for 10 days

  Remove IUDs

  Refer if uncertain diagnosis, pregnancy, pelvic abscess and fever persisting after 72 hours of antibiotics.

STD associated neonatal infection

- An infant of a mother with history of syphilis should be tested and treated as congenital syphilis with
  - Crystalline penicillin 50,000 IU/kg IV daily for 10 days OR
  - Procaine penicillin 50,000 IU/kg IM daily for 10 days.
- Neonatal conjunctivitis should be treated with
  - Spectromycin 50 mg/kg IM stat PLUS

- Erythromycin 50 mg/kg PO in 4 divided doses.

.

8. Nursing interventions to promote health and function

Health Education

The public health nurse should provide health education during reproductive cycle, including preconception period, family planning, antenatal care, delivery, and postnatal services.

Record and documentation

Nurses are expected to improve the reporting and documentation in the following areas: Prenatal, perinatal complications, referral, delivery care, contraception and follow up health institutions workload should also document.

Immunization

Nurses should ensure the effectiveness of immunization at all level through

- Maintenance of cold chain
- Appropriate administration of vaccines (the right type, dose, route, schedule etc.)
- Appropriate documentation and reporting
- Encouraging the community through health education and home visiting.

Nutritional Education

Educations on nutrition and vitamin supplementations are among the very important preventive and promotive activities in safe-motherhood. Therefore nurses have to give information for the community as well as provider available supplementations of vitamins for women and their children.

Home Visiting

Home visits are important to understand the real background of their living condition and the environment of families. The public health nurse does home visiting for the following purposes

- To establish good relationship with families
- Encourage families participation in safe motherhood activities
- To detect problems early like complications of pregnancy and STIs.
- For frequent and easy follow –up.
- To observe their real environment in relation to their health.

- To identify barriers in terms of safe motherhood.
- To encourage families participate in safe mother hood activities.
- Peoples are free to talk at their home

Therefore, the public health nurse has to do the following during home visiting

1. Thorough assessment of their health and environment
2. Give health educations on the identified areas of problem
3. Encourage good health practices in the family you identified.
4. Provide maternal services that are possible at home level like family planning, ANC, postpartum care, etc.
5. Make a record of your visit what you found; what you did.
6. Traditional Health Malpractices

Harmful traditional health malpractices like uvulectomy, tonsillectomy, and female genital mutilation are widely practiced in Ethiopia. These malpractices are associated with risks like massive bleeding, infection, and transmission of diseases like HIV/AIDS. Therefore, you as a public health nurse should be involved in activities against traditional malpractices, which affects the health of both the mother and newborn through health education, Counseling and support.

Increase the awareness of the community in the harmful/ dangers of: traditional mal practices such as:

- Uvulectomy
- Tonsillectomy
- FGM
- Food taboos such as pork, gruel, cabbage, etc
- Sleeping in dark and unhygienic places during postpartum period from cultural reason
- Inappropriate rest and exercises
- Washing a newborn immediately after birth with cold water to make him/her cry.
- Leaving the cord untied after cutting
- Applying dung and other dirt in umbilicus
- Feeding only a single breast.

Treat and advice a woman with problems related to malpractices accordingly. Respecting the women (not be judgmental) and considering socio-cultural aspects are important when we help the women.

7. Learning Activity – Case Study

W/rt Mintiwab was an 18-year-old unmarried girl living in Azezzo, North Gondar, Ethiopia. She interrupted her education a year back when her father died. When she confirmed her pregnancy of two months, she felt shock. It was really unwanted. Another two months passed of worrying and thinking how to cope with this burden. One day she discussed with her friend about termination and they decided to go to the known traditional abortionist next day. He told her that there is no problem to abort the fetus and how much she should pay. Finally Mintwab and her friend agreed for abortion. After a week she came to Gondar hospital, which is about 8 km far away, with lower abdominal pain and vaginal bleeding. On examination, she was very pale, weak with non-recordable B/P, feeble pulse, ridged and distended abdomen with no peristaltic movement, a foreign body was found in her vagina and she had a low hemoglobin report. The diagnosis was septicemia secondary to septic abortion, uterine perforation and sever anemia were made. Evacuation of the uterus was done, she was transfused with a unit of blood and antibiotics were administered. However, she died a few hours after admission. Post – mortem examination revealed about 500 ml of blood in the peritoneal cavity and later uterine perforation.

How could you prevent such type of maternal deaths as a Public Health Nurse?

3.3 SATELLITE MODULE FOR MEDICAL LABORATORY TECHNICIAN STUDENTS

3.3 INTRODUCTION

3.3.1. Purpose and use of the satellite module

This satellite module is prepared for students of medical laboratory technicians. It is prepared to give emphasis on areas of laboratory diagnosis, which were not covered in the core module.

3.3.2. Directions

- Be sure you have gone go through the core module.
- After completing the satellite module, students should answer questions of the post-test.
- Compare your answers of both the pre and post-tests.

3.3.3 Learning Objectives

After going through this satellite module, the student will be able to:

- Describe the main infectious diseases that affect maternal health.
- Determine some hematological, serological, biochemical, and other laboratory investigations that are helpful in the practice of safe motherhood.

3.3.4 Laboratory Diagnosis

Laboratory investigations increase accuracy of disease diagnosis. Many infectious diseases and serious illnesses can only be diagnosed reliably by using laboratory methods. The laboratory has an essential role not only in screening for ill health but also in assessing response to treatment. The laboratory plays a vital role in public health service. It gives the service a scientific foundation by providing accurate information to those with the responsibility for treating patients, monitoring their response to treatment as well as deciding health priorities and allocating resources.

Without reliable laboratory support patients are less likely to receive the best possible care and even the sources of disease may not be identified. Therefore, the most relevant laboratory tests that may play a great role in the reduction of maternal morbidity and mortality will be discussed in this unit.

Main Infectious Diseases That Affect Maternal Health

Among the infectious agents that affect human being, the under mentioned are most common cause of maternal morbidity and mortality, in developing countries like Ethiopia.

1. **Anemia** is the most common causes of maternal morbidity and mortality that could be due to extrinsic are intrinsic causes. Extrinsic causes include secondary to malaria infection and other helminthes infection like Hookworm.

2. **Malaria in pregnancy**: - as malaria is endemic in our country. Infection of pregnant mothers and fetus is common with its complications (preterm labor, stillbirth, anemia etc)

3. **Urinary tract infectious:** UTI is very common during pregnancy because of dilative effects of progesterone, compressive effect of gravid & complication of Gestational diabetic mellitus. Common causative agents include:-

- Group B streptococci
- Escherichia coli
- Candida species

4. **Sexually transmitted infections (STI)**

With the emergence of HIV/AIDS in the 1980s STDs received increased attention, although they have long been a major public health problem in all population groups and social strata. The most common agents are Neisseria gonorrhea Treponema pallidum, Trichomonas vaginalis, Chlamyida trachomatis, Genital herpes simplex virus, Genital papilloma virus, and now, the most worrisome, HIV/AIDS.

A. Hematological tests

Blood consists of three types of cells: red cells, white cells and platelets suspended in fluid called plasma. Plasma contains many substances in solution, including proteins, carbohydrates, fats, salts, etc.

Many diseases of the body are recognized by:

- Changes in the appearance (morphology) and numbers of blood cells
- Changes in the composition of plasma
- Identification of infectious organism in body fluids.

For our immediate need we will see the purpose of blood examination for the reduction of maternal morbidity and mortality. As we read in the core module, among the major causes of maternal morbidity and mortality are hemorrhages, hypertension, sepsis and parasitic infections.

In the diagnosis of the above pathological conditions, the following hematological investigations are helpful.

- Blood hemoglobin determination
- Hematocrit (packed cell volume)
- WBC count
- Differential white cell count
- Blood film examination

The first two tests are helpful to diagnose whether there is anemic condition that is most common in pregnant women and in most mothers after delivery. Total white cell count, though non-specific, is performed to diagnose sepsis and other bacterial infections in which are altered the normal ranges.

Normal values:

Hemoglobin : women 12 -16 mg %

Hematocrit : women 37- 47 %

Procedure for total white cell count

- Dilute the blood with white cell diluting fluid using 1% HCl or 2% acetic acid
- Mix the solution well and discard the first four drops before filling the counting chamber

- Transfer a representative solution, avoid overfilling and formation of air bubbles in the chamber
- Count the white cells in the 4 W sections using the 10X objective
- Add the number of white cells counted and multiply by the dilution and volume correction factors
- Report the white cell count per cubic milliliter of blood.

  Normal value: 4500 –11,00/ mm^3

Differential white cell count

It is a count of the five different types of white cells up to a total of 100. This is to estimate their percentage coverage using stained blood film. These counts provide grows information about the infectious agent, if there is any. For instance, elevated level of neutrophil could be bacterial infection and elevated level of lymphocytes indicates viral infection.

Procedure for the differential white cell count

- Make a smear of the blood specimen on a glass slide
- Allow to air dry and stain it with Wright's or Giemsa stain
- Wipe the back of the slide with cotton and allow the film to dry
- Put a drop of microscopic oil and look under the microscope using 100X objective
- Count 100 white blood cells and report the different types of white blood cells in percentage.

NORMAL RANGES:

Neutrophil: 40 –75 %

Lymphocyte: 15 –45%

Monocyte: 1- 10 %

Eosinophil: 1-7 %

Basophil: 0 –2 %

Note: Inspection of red cell morphology for detection of anemia can be done on the same slide. The thin portion of the blood film is used for morphological study and blood parasite identification.

Determination of hemoglobin can be done using the classical Sahli-Hellige method or Cyanmethemoglobin method of which the latter is the choice of method for estimation of hemoglobin in blood.

B. Urinalysis

Urine is the fluid excreted by the kidney, which contains the waste products of body metabolism. It is examined to detect diseases of the kidney and the urinary tract. Urine is also examined to detect certain metabolic disease of the body. For pregnant mother, urine examination is mainly to diagnose urinary tract infections that may occur secondary to dilative effect of progesterone and compressive effect of gravid.

The commonly requested tests in urinalysis are:

i. Urine sediment examination is done after collecting about 10 ml of urine and centrifuging at medium speed for five minutes. The sediment is obtained after decanting the urine gently and a small portion of the sediment is transferred to a glass slide and covered with a cover slip. The preparation is then carefully examined using the 10X and then a 40X objective.
ii. Urine glucose and protein determination is done nowadays-using urine strips or sticks. Following instructions strictly with each test kit is mandatory for valid and reliable results.

C. Serological tests

Serology is the study of antigen and antibody reactions. Serological tests are important to detect whether there is infection or not by detecting presence of antibody in the patient's serum produced against infectious agent antigen or detecting antigen using a known antibody.

For pregnant mother the most frequently done tests are RPR or VDRL. These are screening tests for the diagnosis of a sexually transmitted infection, which is called syphilis, caused by a spirochaete *Treponema pallidum*. It has a potential to cause stillbirth, intrauterine growth retardation and can be transmitted congenitally.

Mothers, as members of the community, are at risk of infection with HIV/AIDS. Most often diagnosis of HIV infection is based on detection of antibody. Antibody tests are usually detected by the Enzyme Linked Immuno- Sorbent Assay (ELISA) techniques. ELISA and rapid tests are used for initial screening of samples. There are different techniques of ELISA according to the manufacturer's kit. It is, therefore essential to understand and follow exactly the principles and procedures when performing the test.

Rapid HIV tests are qualitative tests for detection of HIV antibody, which usually can be performed more quickly than the standard laboratory based tests. These tests can be done on whole blood, serum or plasma. The commonly used rapid tests in Ethiopia are:

- Determine HIV 1/2
- Capilus HIV 1/2
- Unigold HIV 1/2

D. Microbiological examinations

A variety of bacterial agents affect mothers. The common bacterial infections of mothers include:

a. Gonorrhea: Is caused by a bacterium known as Neisseria gonorrhea. Gonorrhea is diagnosed by staining appropriate bacteriological samples, cervical swabs and vaginal discharges by the grams staining technique. With this technique the organism is seen as a gram-negative diplococcic, which is typically found inside the white blood cells. Culture of the organism on appropriate culture media like Thayer martin medium or chocolate agar medium is helpful to isolate the organism if it is found in few numbers.

b. Candidiasis: This is a fungal infection caused by a yeast cell Candida albicans. The condition is best diagnosed by wet mount preparations using saline or KOH

(potassium hydroxide). Candida species can be found in materials swabbed from the female genitalia or discharges and also in urine more concentrated after centrifugation.

Gram's stain: The most commonly used microbiological staining technique that group organisms into two categories as gram positive and gram negative based on the reactions with the staining dyes.

Procedure

- Make a smear of the specimen and fix the dried smear
- Cover the fixed smear with crystal violet stain for 30 seconds
- Rapidly wash off the stain with clean water
- Tip off all the water and cover the smear with Lugo's iodine for 30 seconds
- Wash off the iodine with clean water
- Decolorize rapidly with acetone alcohol
- Wash immediately with clean water
- Cover the smear with neutral red stain for 2 minutes
- Wash off the stain with clean water
- Wipe the back of the slide clean and dry
- Examine the smear microscopically

E. Parasitological examinations

Parasitological tests to detect and identify intestinal parasites are mandatory for pregnant mother especially in the developing countries like Ethiopia where there is high prevalence of intestinal parasitosis.

Trichomoniasis: This is a parasitic infection caused by a protozoan Trichomonas vaginalis. It is diagnosed by the wet mount technique using physiological normal saline. The parasite can be recovered from discharges of the genitalia or from urine sediment. The wet mount preparation should be examined for the parasite immediately before the parasite is immobilized. If delay is unavoidable the preparation or the specimen should be kept at 37 ^{0}c until it is done.

F. Clinical Chemistry tests

Among clinical chemistry tests, blood glucose determination is the most frequent to be routinely requested since gestational diabetes millets is common. Blood glucose can be determined using either glucose sticks or spectrophotometer.

Blood glucose

Plasma glucose is measured mainly in the diagnosis and management of diabetes mellitus. Good control of blood glucose level in diabetes helps to prevent or delay the development of complications, which may lead to blindness, kidney failure, coronary thrombosis, and gangrene of the lower limbs. For pregnant mother blood glucose determination is essential to diagnose gestational diabetes mellitus and its complications.

G. Preparation of Important Reagents and Chemicals

In the laboratory proper preparation and storage of reagents and chemicals are of the best strategies to have accurate and reliable test results. The common procedures that we need to follow include:

a. Always label clearly all reagents, including the full name of a reagent, its concentration, date of preparation and date of expiration.
b. If a reagent is harmful, toxic, corrosive or flammable, include this on the bottle label.
c. Store reagents in completely clean bottles that have leak-proof screw-caps or stoppers.
d. Protect all reagents from sunlight and excessive heat.
e. Filter stains as required, into stain dispensing containers.

3.4 SATELLITE MODULE FOR ENVIRONMENTAL HEALTH TECHNICIAN STUDENTS

3.4. INTRODUCTION

Environmental factors have direct effects on individuals' reproductive health and communities' response to reproductive health conditions. They also affect service access and quality.

The most chronic environmental health problems in Ethiopia are: Water, sanitation and personal hygiene related. The cycle that leads to faeco-oral disease transmission begins with poor sanitation. Failure to dispose off human excreta safely can contaminate the environment and people get infected. While contaminated water supplies are one route, poor personal hygiene and household practice can spread disease in other ways. Therefore pregnant women who live in poverty stricken communities, with poor sanitation and totally inadequate nutrition, will remain at risk.

3.4.1. Purpose and the use of satellite Module

This satellite module is prepared for environmental health technician (sanitarian) students. The satellite module emphasizes only areas that are specific to sanitarian students and not covered by the Core Module.

3.4.2. Directions

- Study the core module before going into the satellite module.
- Refer to the Core Module whenever indicated.

3.4.3. Learning Objectives

At the end of the session you will be able to:

1. Identify the possible risk of environmental factors affecting maternal health.
2. Increase the awareness of the communities about the importance of maternal health through Health Education; such as accessed to safe, adequate water

supply, which will be important to keep their personal hygiene, and clean food utensils, and reduce the work load of the women.

3. Facilitate personal hygiene as a household model in the village.
4. Proper disposal of harmful medical and domestic wastes.

Screening

- Participate in identifying the number of women, who are at risk of: height <150 cm; weight (<38 kg); and age (<18yrs and 35 yrs) in relation to pregnancy.

3.4.4. Prevention and control of maternal health related problems

Environmental Health Measures

Construction of latrines (VIP, water flush toilet, etc.)

In order to reduce the risk of diarrhea disease transmission:

- All family members above 5 years age should use existing pit latrines.
- Parents should take care of their children's faeces in a controlled manner.

Domestic wastes disposal methods.

- Domestic waste products should be sorted out for reuse and proper disposal
- Waste should be disposed in a controlled manner to avoid from being breeding media of insects and rodents and causes of fire accidents.

Harmful medical wastes

- Proper disposal method like **Incinerator** to dispose dry and combustible wastes.
- Proper disposal method like **composting** and **controlled pits** to dispose of garbage, decomposable, and dead body wastes.
- Proper disposal methods for liquid wastes, like **septic tank** and **seepage** to dispose waste drainage cannels.

Participation in the development of protected water sources is important to:

To let the water sources are:

- Accessible to fetch water
- Adequate
- Safe

Proper handling of water such as:

- Use of clean water
- Safe transportation of water away from contamination
- Avoid dipping system of stored water at household level (use Jerricans)
- Using clean cups for drinking water

Good housing conditions

- Proper arrangements of furniture to their appropriate place and origin
- Provide adequate ventilation and light
- Avoid overcrowding conditions (Should have separate kitchen and animal housing)

Personal hygiene

- Hand washing (refer to core module)

Hygienic delivery care (the 5 cleans)

- Clean environment
- Clean hands
- Clean delivery services
- Clean perineum (external genital)
- Clean cord cutting instruments.

Health Education

1. Understand the importance and the role of health education in the prevention and control of maternal health problems.
2. Increase the communities awareness/ knowledge and practice on:
    - Personal hygiene
    - Safe and proper nutrition during pregnancy
    - Clean home and environment
    - Proper utilization of health services
    - Hygienic care for delivery and new born
    - Dangerous harmful traditional practice (blood letting, FGM, Uvulectomy)
    - Early reporting of danger signs in pregnancy and endemic diseases.

3.4.5. Learning Activity - Case study

The Chief's Latrine

In a village, it was discovered that toilet facilities were non-existent, and worm infestation was a common health problem with serious effects, especially for children and pregnant women. Indiscriminate defecation was a common practice; inhabitants released their waste products in bushes anywhere. The community members believe that children's faeces is harmless. Water sources became heavily contaminated, especially when it rained, coupled with the laundry and bathing activities carried out in the rivers. Quite a number of people reported to the health center with intermittent mucoid diarrhea, sometimes bloodstained with abdominal pain and anorexia. Anemia was highest in women of reproductive age group.

With awareness of the consequences of these habits, the Zonal Health Department decided to enforce the construction of latrines, protected water sources, and health education on personal hygiene in this village without finding out why the inhabitants never constructed latrines despite various campaigns on sanitation. Some of the organizers were charged with the responsibility of seeing to the construction of latrines. Since the authorities were from the organizers, the community members complained but never used the latrines and protected spring. In this particular community, it was taboo to use latrines because of the belief that faeces of males and females and also adults and children should never mix.

Six months later a monitoring team was assigned to report on the water and sanitation status of the area. Among other things, it was discovered that the latrines were referred to as "Leader's Latrine" because they were constructed to obey the instruction. This meant that the problem of water and sanitation were worse than before.

- **What could be the reasons that community leaders were not using the latrines?**
- **Were there a need assessment done prior to the projects?**
- **If your answer is “no” what is your explanations?**
- **Are all members of the family having the same right to use the project?**
- **If your answer is “no” then what is you explanation?**
- **List some of the important points of discussions from the text?**

3.5 SATELLITE MODULE FOR COMMUNITY HEALTH WORKERS AND CARE GIVERS

A. FOR COMMUNITY HEALTH WORKERS

3.5 INTRODUCTION

3.5.1. Purpose and use of the module

This module is prepared for community health workers i.e. community health Agents and Trained Traditional Birth attendants. To use this satellite module, translation into the local language is essential. This module could also be used as a resource for health professionals for training community health workers and community members. It provides only the most important aspects of safe motherhood.

3.5.2. Direction to use the module

Attempt to answer the questions first and read the learning objectives. Study the case given and discuss the knowledge and experience you gain from the case with your colleagues. Study the significance and brief descriptions of safe-motherhood with your role in safe-motherhood. The activities you have to do to make motherhood safe are discussed at the end. Finally test your self how much you understood the module using

3.5.3 Pre-test

1. The role of CHW/TTBA in safe motherhood include
    a. Increase the awareness of the community through health education.
    b. Treating minor health problems if trained
    c. Refer cases that need further medical help.
    d. Mobilize the community for community based health services.
    e. All

2. Which one of the followings are causes of maternal death
    a. Bleeding
    b. Abortion
    c. Difficult labor
    d. Infection
    e. All

3. Which one of the following improves women's health?
    a. Early marriage
    b. Unavailability of health institutions
    c. Higher educational status
    d. Inadequate nutrition
    e. Harmful traditional practices.

4. CHW activities before conception (pregnancy) includes
    a. Family life education
    b. Nutritional education
    c. Encouraging immunization
    d. Family planning service
    e. All

5. Which one of the following is discouraged during pregnancy?
    a. ANC follow up

b. Rest and regular exercise
c. Eating all type of foods
d. Alcohol drink
e. Immunization

6. Which of the following cases should be referred by CHW/TTBA during pregnancy?
a. Abdominal pain and/or vaginal bleeding.
b. General body swelling and headache.
c. Convulsion
d. Rapture of membranes without labor
e. All

7. CHW/TTBA has to refer laboring mother in following conditions except
a. General weakness
b. Severe abdominal pain
c. Prolonged labor (>18 hours)
d. Rapture of membranes
e. Bleeding

8. On what points do you counsel the mother after delivery?
a. Nutrition
b. Personal hygiene
c. New born care
d. Postpartum follow up
e. All

9. W/ro Meaza had absence of monthly menses for the last 3 months. If her husband calls you because she has lower abdominal pain and vaginal bleeding, what do you do for her?
a. Massage the abdomen

b. Tell her husband to fire the gun
c. Refer her to health center
d. Give herbal drug
e. Restrict her from taking fluid and food.

10. Role of CHW/TTBA in the prevention of HIV/AIDS is/are
    a. Identify misconceptions about STIs/HIV/AIDS in the local community and give health education about facts of it.
    a. Encourage voluntary counseling and testing.
    b. Refer cases of genital ulcer and discharge for early treatment.
    c. Promote care and support for people living with HIV/AIDS.
    d. All

3.5.4. Learning objectives

At the end of this module, you should be able to

- List common causes of maternal illnesses and deaths.
- State factors affecting maternal health.
- Educate the community about safe motherhood.
- Provide Family planning, delivery and postnatal care at community level.
- Identify dangerous problems and refer for help on time.

3.5.5. Learning Activity – Case Study

Birke, 17 years old, became pregnant after marriage with one village farmer. She attended antenatal care regularly until term. One afternoon, she went into labor at home. She was assured of assistance by grandmother during delivery, so she did not see the need to go to the health institution. On the following day, she was having strong contraction and pushing down sensation with no progress. Her grandmother reassured her saying "it will take a long time since it is your first time, but you will deliver". At about 10 local time in the afternoon her grandmother became worried and started to look for help and then she send message to TTBA who live 2 km far from their home.

Until TTBA came, her grandmother agreed with their neighbors to try local (traditional) help. They started massaging her abdomen with butter and gave her gruel with butter to drink.

By the time TTBA reach their home, Birke was still pushing and very exhausted. Then TTBA evaluated her until midnight and she decided to refer Birke to the nearest health institution. TTBA told the family to be prepared for travel early in the morning. After 48 hours passed after the onset of labour, Birke arrived at health center and she gave birth of dead fetus by help of health workers. The health worker ordered medication to her to prevent infection but Birke and her family return to their home with out buying the drug.

After 5 days, Birke developed fever, bad smelling of excessive vaginal discharge and abdominal pain. Her families call the TTBA for help. She told them that it was because Birke did not take the ordered drug and they had to return to the health institution immediately.

What do you learn from Birke's history?

3.5.6. Significance and brief description of Safe motherhood

Women in most developing countries are at risk of dying from childbearing related problems. More than one-quarter of all adult women living in the developing world-currently suffer from short- or long-term illnesses and injuries related to pregnancy and childbirth. Maternal illnesses and death can be reduced or avoided by providing and expanding resources and services that are principally targeted in achieving maternal health and safe motherhood.

3.5.7. Role of community health worker in safe motherhood

Community health workers play a great role to increase awareness of the Community through Health education about traditional malpractices, the need for maternal health care, treating minor health problems and refer cases when it is necessary.

3.5.8. Definition of safe motherhood

Safe motherhood is woman's ability to have a safe and health pregnancy and delivery.

3.5.9. Cause of maternal illnesses and death

- Bleeding
- Abortion
- Prolonged and difficult labor
- Infection
- Anemia
- Others like increased blood pressure, malaria. Etc.

3.5.10. Factors affecting women's life

A. Socio-cultural factors: including early marriage, early childbirth, harmful traditional practices including female genital mutilation, etc.

B. Economy: these factors affect the women's status by affecting their decision making roles in the community, educational status, health coverage, level of sexual abuse, etc.

C. Health and nutrition services: Inadequate nutrition and poor reproductive health services affect women health status.

D. Gender Discrimination: e.g. giving more attention to the male child

3.5.11. Activities of community health workers

A. Care for the mother

Before conception (pregnancy)

- Family life education: Educate adolescents and adults on reproduction, sexuality, infant care, child development, STIs and AIDS.
- Nutrition: Promote better nutrition (with locally available sources) and increase in diet when requirement increased (pregnancy and lactation).
- Immunization: encourage TT immunization for all women (15-49 years) and vaccines of six child killer diseases for all children.
- Family planning: Promote and provide contraceptive methods as appropriate.
- Traditional malpractices: discourage harmful practices like early marriage, female genital mutilation, having many children, etc.

Family planning

- Educate on fertility and reproduction
- Promote use of contraceptives
- Supply contraceptive pills, condoms and spermicidal with appropriate counseling. Refer those who need others contraceptive to the nearest health institution.
- Identify misconceptions about contraceptives and discourage false believes.

During pregnancy

- Encourage pregnant women to do the followings
  - Nutrition: Promote better nutrition (with locally available sources) and pregnancy. –
  - Rest, Cleanliness, and regular exercise (simple home activities).
  - Antenatal cares follow up.
  - Preparation for clean delivery.

- Discourage
  - food taboos that restrict pregnant women from taking variety of foods and rather allowing herbal substances
  - abdominal massages, alcohol drink and smoking
- Identify risk mothers like very short, chronic illness and soon.
- Convince women and families of the importance of delivering at an appropriate facility.
- Refer cases to closest health institution if they have
  - Abdominal pain and/or vaginal bleeding.
  - General body swelling and headache.
  - Convulsion
  - Rapture of membrane
  - Fever

During delivery

- Perform a clean delivery, if you are not trained call for TTBA.
- Keep the newborn warm and put in breast.
- Refer if bleeding is prolonged labor (> 18 hr), sever abdominal pain and general weaknesses.

After delivery

- Counsel on nutrition, personal hygiene and infant care including immunization.
- Counsel on need of postpartum check up.
- Refer women with postpartum complications like hemorrhage and infection.

Abortion care

- Detect and refer cases of lower abdominal pain and/or vaginal bleeding or discharge.
- Educate about danger of abortion especially unsafe one.
- Promotion and provision of family planning

Care of a newborn

- Keep the newborn warm and put in breast.
- Counsel on exclusive breast feeding and infant care including immunization.

- Discourage traditional malpractices like application of animal dung on umbilicus, uvulectomy and avoidance of sun light exposure.

STIs and HIV/AIDS

- Refer cases of genital lesion or ulcer and discharge for further investigation and treatment.
- Educate the community about STIs (symptoms, means of transmissions, treatment and prevention)
- Encourage treatment of partner.
- Identify misconceptions about STIs and HIV/AIDS and dispel false believes.
- Counsel clients about HIV/AIDS and encourage voluntary counseling and testing.
- Promote prevention of mother to child transmission of HIV/AIDS.
- Encourage the community for care and support of people living with HIV/AIDS and peoples affected by HIV/AIDS.
- Discourage stigma and discrimination of people living with HIV/AIDS, vulnerable groups and those affected by HIV/AIDS like orphans.

B. Prevention and promotion of women health

To prevent maternal illness and death and promote women health in ones community, CHW/TTBA has to consider the following areas of activities.

- Provision of Health education
- Home visiting
- Facilitation and active involvement in outreach immunization programs and national immunization days.
- Community mobilization for community based reproductive health activities.
- Documenting and reporting maternal health related conditions to the responsible offices.

POST TEST: Do the pretest again and evaluate yourself comparing with your pretest grade.

B. HOME TAKE MESSAGE FOR CARE GIVERS

1. Before conception (pregnancy)

- Promote better nutrition (with locally available sources) and increase diet for pregnant and lactating women..
- All women (15-49 years) must take TT vaccine.
- All under five year children must take vaccines of six child killer diseases.
- All sexually active women and men can use family planning service to space birth and avoid unwanted pregnancy.
- Avoid harmful traditional practices like early marriage, female genital mutilation, having many children, etc.

2. During pregnancy

- Pregnant women need better nutrition (with locally available sources) and do not restrict pregnant woman from taking variety of foods.
- Encourage rest and regular exercise (simple home activities).
- Help her to keep her cleanliness
- Encourage her to have antenatal cares follow up.
- Prepare for clean delivery.
- Do not message her abdomen.
- Avoid alcohol drink and smoking during pregnancy.
- Take her to health institution if she have
  - Abdominal pain and/or vaginal bleeding.
  - General body swelling and headache.
  - Convulsion
  - Rapture of membrane
  - Fever

3. During labor

- Call for TTBA. If TTBA is not available, it is better to go to health institution.

4. After delivery

- Provide more nutrition.
- Keep her cleanliness.

- Keep the newborn warm and clean.
- Avoid application of dung on umbilicus, allowing the newborn to swallow butter and other fluid, uvulectomy, female genital cutting, etc.
- Allow the newborn top feed breast as frequent as possible.
- Expose the baby to sunlight every day.
- Take the newborn to immunization.
- Encourage the woman to go for postpartum check up.

5. STIs and HIV/AIDS

- Anybody should go to health institution if she/he has genital lesion or ulcer and discharge.
- Treatment of partner in case of STIs helps to prevent further infection and complication.
- Encourage prevention of STIs/HIV/AIDS through abstinence, one to one or using condom consistently and correctly.
- Voluntary counseling and testing is helpful to know HIV status.
- Care and support people living with HIV/AIDS and peoples affected by HIV/AIDS.
- Avoid stigmatization and discrimination of people living with HIV/AIDS, vulnerable groups and those affected by HIV/AIDS like orphans.

UNIT FOUR

POST TEST

4.0 POST TEST

INSTRUCTION: Attempt to answer the following questions and compare your results with the answer key.

1. Maternal health services that make motherhood safe include:
   a. Care by skilled health personnel before and after childbirth
   b. Emergency care for life-threatening obstetric complications
   c. Prevention and management of unsafe abortion
   d. Provision of family planning service
   e. All of the above
2. Which of the following is not a direct cause of maternal death?
   a. Hemorrhage
   b. Unsafe abortion
   c. Anemia
   d. Obstructed labor
   e. Pre-eclampsia
3. The followings are risk factors for maternal health, **except**:
   a. Early marriage
   b. Female genital mutilation
   c. Inadequate health service coverage
   d. Breast feeding
   e. Sexual abuse
4. Which one of following methods is best to diagnose maternal anemia?
   a. White Blood Cells count
   b. Blood film examination
   c. Blood hemoglobin
   d. Differential white cell count
   e. All of the above

5. The number of mothers having follow up during pregnancy per hundred women is:
   a. Attended birth
   b. Health service coverage
   c. Antenatal Coverage
   d. Birth spacing
6. Which one of the following is/are true about the increasing incidence of Sexually Transmitted Infections (STIs)?
   a. Change in the sexual attitude
   b. Advancement in technologies to diagnose
   c. Migration and urbanization
   d. Low socio economic status
   e. All of the above
7. The vaccines you give to women to prevent maternal and neonatal tetanus is
   a. TAT
   b. DPT 1-3
   c. Measles
   d. TT 1-5
   e. All of the above
8. Safe motherhood can be achieved by giving health education:
   a. Before pregnancy
   b. During pregnancy
   c. After delivery
   d. All of the above
9. Finding a high-risk mother in a health institution is an example of:
   a. Passive case detection
   b. Active case detection
   c. Neither active nor passive case detection
   d. Either active or passive case detection
10. Which one of the following is/are the importance of reporting and recording?
   a. To know the magnitude of mortality and morbidity
   b. Health service planning
   c. Resource allocation
   d. Controlling health professional being at work
   e. All of the above

11. Maternal mortality ratio is the number of maternal deaths per
    a. 1000 pregnancies
    b. 10,000 pregnancies
    c. 100, 000 live births
    d. 100, 000 pregnancies
    e. 100,000 women aged 15-49
12. Antenatal health services include
    a. Health education
    b. Follow up during pregnancy
    c. Immunization
    e. High-risk detection
    f. All of the above
13. Prevention of maternal mortality include
    a. Community education
    b. Easy access for health institutions
    c. Providing quality health care
    d. Empowerment of women
    e. All of the above
14. Hand washing is important, **except:**
    a. Handling a baby
    b. Always after a toilet
    c. Always before and after preparing food
    d. When wearing white clothes
    e. None of the above
15. Pregnant women should practice the following, **except:**
    a. Using pit latrines
    b. Fetching water from distant water source
    c. Washing frequently
    d. Attending health services

UNIT FIVE

BIBILIOGRAPHY

1. WHO: International Maternal Health Care 1995
2. DFID: Guidance Manual on Water Supply and Sanitation Programs, 1994.
3. UNFPA: The sate of World Population, 2001.
4. World Health 5th year No. 3, May-June 1998.
5. Cheesbrough Monica, Medical Laboratory Manual for Tropical Countries, Vol. II, 1992.
6. Cheesbrough Monica, District Laboratory Practice in Tropical Countries, Part I, 2001
7. F.J. Baker, R.E. Sillverton, Introduction to Medical Laboratory Technology, 7th ed, 1998
8. Technical Guidelines in maternal and newborn care MOH-1998
9. International Maternal Health Care, 1996
10. Manual of neonatal basic life support, Assaye Kassie, 1 st ed, 1997.
11. Myle's text book of Midwives
12. The White Ribbon Alliance. Awareness, mobilization, and Action for Safe Motherhood: A Field Guide, 2000.
13. WHO. Information, Education and Communication Lessons from the past; Perspectives for the future, 2001.
14. WHO. Advancing Safe Motherhood Through Human Rights, 2001.
15. CSA. Demographic and Health Survey Report, 2000.
16. Saving Women's Lives, Population report Series L, Number 10, Population Information Program, John Hopkins School of Public Health September 1997.
17. Why Family Planning Matters, Population report Series J, Number 49, Population Information Program, John Hopkins School of Public Health July 1999.
18. New data on the prevention pf MTCT of HIV and their policy implications WHO, UNICEF/UNAIDS October 2003.
19. Guidelines for the use of antiretroviral drugs in Ethiopia MOH, AA, February 2003.
20. Handbook of Family Planning and Reproductive Health Care edited by Nancy Loudon, Anna Glasier, Ailsa Gebbie, third edition, 1995.

21. JHPIGHO. IMPAC (Integrated system for the management of pregnancy and child birth). www.reproline.ghu.edu.
22. V. Ruth Bennett, Linda K, Brown Myles Textbook for Midwives thirteenth edition, 1999.

UNIT SIX

GLOSSARY

Abstinence (to abstain): Going without something voluntarily, especially refraining from indulgence in food, alcoholic beverages, or sexual intercourses.

Abortion: The termination of pregnancy before the fetus reaches the stage of viability.

Antepartum Hemorrhage: bleeding that appears in the third trimester of pregnancy before delivery of the fetus.

Core Module: The main teaching module prepared for all team members of a health center including CHWs.

Eclampsia: Coma and convulsive seizures between the twentieth week of pregnancy and the end of the first week postpartum.

Ectopic Pregnancy: Implantation of the fertilized ovum outside of the uterine cavity proper.

Female Genital Mutilation: Removal of the clitoral prepuce, excision of the clitoris, removal of the labia minora and sometimes most of the labia majora; the two sides may be sutured together to occlude the vagina.

High-risk pregnancy: Is a pregnancy where there is a condition which may lead to an increase in maternal and /or prenatal mortality and morbidity. Pregnancy involving factors such as diabetes, hypertension, kidney disease, viral infections, vaginal bleeding, multiple pregnancies and certain lifestyle and environmental factors such as drug, alcohol, or cigarette abuse or exposure to toxic chemicals. Pregnancy in association with these conditions produces a greater risk to the mother's health, the health of the embryo, or both.

Obstetric: The branch of medicine that concerns management of women during pregnancy, childbirth and the puerperium.

Obstructed Labor: Is failure of descent of the presenting part despite adequate uterine contractions because of mechanical factors. Interference with fetal passage through the birth canal. Causes include fetal malposition, malpresentation, and cephalopelvic disproportion.

Postpartum Hemorrhage: Sever bleeding that occurs after childbirth.

Preeclampsia: A complication of pregnancy characterized by increasing BP of 140/90 mm hg and proteinuria. The condition may progress rapidly from mild to severe and, if untreated to eclampsia.

Primigravida: A woman during her first pregnancy.

Proteinuria: Protein, usually albumin, in the urine.

Satellite Module: A complementary learning-teaching module to the core module prepared for each category based on professional or task requirement.

UNIT SEVEN

ANNEXS

ANNEX I

CLASSIFYING FORM

Criteria for classifying women for the basic component of the new antenatal care model

Name of patient: _____ clinic record number:
Address:_____ Telephone _____

INSTRUCTIONS: Answer all of the following questions by placing a cross mark in the corresponding box

OBSTETRIC HISTORY	NO	YES
1. Previous stillbirth or neonatal loss?	☐	☒
2. History of 3 or more consecutive spontaneous abortions?	☐	☒
3. Birth weight of last baby < 2500g?	☐	☒
4. Birth weight of last baby > 4500g?	☐	☒
5. Last pregnancy hospital admission for hypertension or pre-eclampsia /eclampsia?	☐	☒
6. Previous surgery on reproductive tract? Myomectomy, removal of septum, cone biopsy, classical CS, cervical cerclage)	☐	☒

CURRENT PREGNANCY	**NO**	**YES**
7. Diagnosed or suspected multiple pregnancy?	☐	☐
8. Age less than 16 years?	☐	☐
9. Age more than 40 years?	☐	☐
10. Is immunization Rh (-) in current or in previous pregnancy?	☐	☐
11. Vaginal bleeding?	☐	☐
12. Pelvic mass?	☐	☐
13. Diastolic blood pressure 90mm HG or more at booking	☐	☐

GENERAL MEDICAL	**NO**	**YES**
14. Insulin-dependent diabetes mellitus?	☐	☐
15. Renal disease?	☐	☐
16. Cardiac disease?	☐	☐
17. Known 'substance abuse (including heavy alcohol drinking)?	☐	☐
18. Any other server medical disease or condition?	☐	☐

Please specify _____

A "yes" to any *ONE* of the above questions (i.e. *ONE* shaded box marked with a cross) means that the woman is not eligible for the basic component of the new antenatal care model.

Is the woman eligible? (circle) ***No*** ***Yes***

If NO, she is referred to _____

Date _____ Name _____ signature _____
(Staff responsible for ANC)

ANNEX II:

New WHO antenatal care model basic component checklist

Note: mark the activities carried out as appropriate (unshaded boxes). (Use the closest gestational age at the time of visit.)

Name of patient _____ **Address & telephone No**._____

_____

Clinic record No. _____ _____

FIRST VISIST for all women at first contact with, regardless of gestational age. If first visit later than recommended, carry out all activities up to that time Date: / /	**Visit** 1st <12wks	2nd	3rd	4th
Classifying form which indicates eligibility for the basic component of the programme				
Clinical examination				
Clinically severe anemia? Hemoglobin test				
Ob. exam: gestational age estimation, uterine height				
Gynecological Exam (can be postponed until second visit)				
Blood pressure taken				
Maternal weight/height				
Rapid syphilis test performed, detection of symptomatic STIs.				
Urine test (multiple dipstick) performed				
Blood type and Rh requested				
Tetanus toxoid given				
Fe/folic acid supplementation provided				
Recommendation for emergencies/hotline for emergencies				
Complete antenatal cord				
SECOND VISIT and SUBSEQUENT VISISTS Date / /	Gestational age – approx.# of weeks **26 wks**			
32wks 38wks				
Clinical examination for anemia				
Ob. Exam: gestational age estimation, uterine height, fetal heart rate				
Blood pressure taken				
Maternal weight (only women with low weight at first visit)				
Urine test for protein (only nulliparous women/ women with previous pre-elclampsia)				
Fe/folic acid supplementation given				
Recommendation for emergencies				
Complete antenatal cord				
THIRD VISIT: add to second visit Date / /				
Haemoglobin test requested				
Tetanus toxoid (second dose)				
Instructions for delivery/plan for birth				
Recommendation for lactation/contraception				
FOURTH VISIT: add to second and third visit				
Detection of breech presentation and referral for external cephalic version				
Complete ANC card, recommend that it be brought to hospital				

ANNEX III

Formats

1. Antenatal, Labor, Delivery and postnatal card

A. Antenatal

- Individual/Demography
- Past medical/surgical History
- Post Obstetric History
- History of present pregnancy
- General Examination
- High Risk Factors Observed, Referral

B. Present Pregnancy

- Risk factors for identification during pregnancy (Graph)

C. Labor and Delivery

- Admission
- Follow up-Membrane, Contraction
- Type of Delving

D. New born

E. Mother condition after Delving

F. Baby's condition on discharge

G. Postnatal visit

2. Family Planning Recording Card

A. - Demography
- History of pregnancies
- Vaccination

B. FP checklist

B. Follow up visits

3. Mother and Child H/card

A. General Information B. Child immunization Record, Vitamin A deficiency.

C. Mother (lady) immunization Record D. Vaccination Appointments (mother and Child) E. Growth monitoring card.

Annex - IV

Assessment of Baby's Condition /Apgar Score/

Provided the baby is seen to be making some respiratory effort, the health worker attending the delivery can proceed to dry the infant gently (to minimize evaporate heat loss) while attending also to the foregoing procedures. At 1 minute after the baby's birth, she will make an assessment of his/her general condition and will repeat this assessment at 5 minutes. This involves consideration of five signs and the degree to which they are present or absent. The factors assessed are heart rate, respiratory effort, muscle tone, reflex response to stimulus, and color. A score of 0, 1 or 2 is awarded to each of the signs in accordance with the guidelines with the following table. This scoring system, the **Apgar Score (Apgar 1953)** is recognized and used universally. Of the five signs the heart rate and respiratory effort are the most important and color is the list important.

Table: The Apgar Score: The score assessed at 1 minute and 5 minutes after birth. Medical aid should be sought if the score is less than 7. 'Apgar minus color' score omits the fifth sign. Medical aid should be sought if the score is less than 6.

Sign	Score		
	0	1	2
Heart Rate	Absent	Less than 100 bpm	More than 100 bpm
Respiratory effort	Absent	Slower, irregular	Good or crying
Muscle tone	Limp	Some flexion of limbs	Active
Reflex response to stimulus	None	Minimal grimace	Cough or sneeze
Color	Blue, pale	Body pink, extremities blue	Completely pink

ANNEX-V

Romanowsky stains

A. Giemsa Stain

Purchase ready - made or prepare using the following formula:

Reagent preparation

To make about 500ml of Giemsa stain

Giemsa powder 3.8g

Glycerol (glycerin) 250ml

Methanol (methyl alcohol) 250ml

1. Weigh the Giemsa on a piece of clean paper (pre-weighed), and transfer it to a dry brown bottle of 500ml capacity which contains a few dry glass beads
   Note: Giemsa stain will be spoilt if any waster enters the stock solution during its preparation or storage.
2. Using a dry cylinder, measure the methanol, add to the stain and mix well.
3. Using the same cylinder, measure the glycerol, add it to the stain and mix well
4. Place the bottle of stain in a water bath at 50-60^0 c, or if not available at 37^0 c for up to 2 hours to help the stain to dissolve, mix well at intervals
5. Label the bottle, and mark it flammable and toxic store it at room temperature in the dark.

B. Wright stain

To make about 400ml of working Wright stain

Wright stain powder …… 1.0g

Methanol (methyl alcohol)…… 400ml

1. Weigh the Wright powder and transfer it to a dry brown bottle. Add a few glass beads to assist in dissolving the dye.
2. Using a dry cylinder, measure the methanol and add this to the stain. Mix well at intervals until the powder is completely dissolved. Warming the solution in a 37^{0}c water bath will help the dye to dissolve.
3. Label the bottle and mark it flammable and toxic. Store it at room temperature in the dark.

WBC diluting fluid

To make 100ml working WBC diluting fluid:

Acetic acid, glacial……2ml

Distilled water. ……..98ml

Gentian violet, 1% w/v…….2ml

1. Fill a 100ml cylinder to the 98ml mark with distilled water
2. Add 2ml concentrated (glacial) acetic acid and mix
3. Add the gentian violet solution, mix and transfer to a storage bottle
4. Label and store in the dark at room temperature.

Sulphosalicylic acid

To make 250 ml working Sulphosalicylic acid:

Sulphosalicylic acid……. 50g

Distilled water……250ml

1. Weigh the acid, and transfer it to a 250 ml volumetric flask or bottle pre-marked to hold 250 ml.
2. Half fill the flask with water and mix to dissolve the acid.
3. Make up to the 250 ml mark with water and mix well.
4. Transfer to a clean leak proof bottle.
5. Label the bottle and store at room temperature.

   N.B The reagent is stable for several months.

ANNEX V

A. Answer key for pre and posttest of the core module

1. **E**
2. **C**
3. **D**
4. **C**
5. **C**
6. **E**
7. **D**
8. **D**
9. **A**
10. **D**
11. **C**
12. **E**
13. **E**
14. **E**
15. **B**

B. Answer key for Community Health Workers pre test (3.5.3)

1. **E**
2. **E**
3. **C**
4. **E**
5. **D**
6. **E**
7. **D**
8. **E**
9. **C**
10. **D**

UNIT EIGHT

THE AUTHORS

1. **YOHANNIS FITAW** is an Assistant Professor in Public Health. He received his MD from University of Gondar and MPH from the Addis Ababa University. He worked in various capacities from General Medical Practitioner, Assistant lecturer, Lecturer.
2. **AMSALU FELEKE** is an Assistant Professor in Public Health in the Department of Community Health at the University of Gondar. He graduated from the then Public Health College of Gondar with Diploma in Medical Laboratory Technology and later on B.Sc. in Public Health. He obtained his MPH from Boston School of Public Health, USA. He has worked with several capacities of many years in the Ministry of Health, Ethiopia. He was a laboratory technician, public health practitioner and Regional Health Manager. He was teaching in Alemaya University in the Faculty of Health Sciences then he joined this university and was coordinating the Health Officer training. Currently he is coordinating the Field Education and Team Training Office of the University.
3. **SISAY YIFRU** is an Assistant Professor in Pediatrics. He received his MD from the University of Gondar. He did his specialization in Tikur Anbessa Medical Faculty, Addis Ababa University.
4. **MENGESHA ADMASU**

   Mengesha Admassu is an Assistant Professor in the Department of Environmental Health, University of Gondar. He obtained: Diploma in sanitary Sciences from GCMS; an equivalent of M.D. degree from Leningrad State of Medicine and Hygiene, the former Soviet Union, and M.P.H. from Addis Ababa University, Faculty of Medicine. He has worked as a sanitarian in a state farm and health center. Then, he has been teaching for many years both as a junior and senior staff of GCMS.

5. **GETU DEGU** *(BSc, MSc),* Associate Professor and Head of the Department of Community Health, University of Gondar

6. **MULUNESH ABUHAY** is Head, and assistant lecturer in the department of midwifery of the University of Gondar. She received her Diploma in comprehensive nursing from Gondar University College (G.C.M.S), Diploma in midwifery from Addis Ababa midwifery school and B.S c in public health from Gondar University. She has worked in the rural hospital and health center, and she is the one who started midwifery-training program in the University of Gondar.

7. **HANA BEWKETU** is assistant lecturer in the department of Nursing of the University of Gondar. She received her Diploma in comprehensive nursing from Gondar University College (G.C.M.S) and B.Sc in Nursing from Jimma University**.** Currently she is in USA for her second degree in Nursing.

8. **YARED WONDIMKUN** is Associate professor of physiology and currently is the President of the University of Gondar. He has many years of teaching, researching and managing experiences.

9. **BERHANU SENDEK,** *MD,* Lecturer in gynecology and obstetrics in University of Gondar. He had been working in different health institutions under the Ministry of Health of Ethiopia.

10. **ENDRIS MOKONNON** Assistant Lecturer in the school of Medical laboratory Technology, the University of Gondar. He obtained his Diploma and BSC in Medical laboratory Technology from Gondar College of Medical Sciences and Jimma University respectively. Currently he is doing his M.Sc. in medical parasitology at AAU.

11. **GETACHEW HAILEMARIAM** Assistant Lecturer in the school of Medical laboratory Technology, University of Gondar. He obtained his Diploma and BSC in Medical laboratory Technology from Gondar College of Medical Sciences and Jimma University respectively.