

# OBSTETRICS MANAGEMENT PROTOCOL

For Health Centers



**ጤና ሚኒስቴር - ኢትዮጵያ**  
**MINISTRY OF HEALTH - ETHIOPIA**

**የዜጎች ጤና ለሃገር ብልፅግና!**

**HEALTHIER CITIZENS FOR PROSPEROUS NATION!**

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## FOREWORD

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Despite a significant achievement made to reduce maternal mortality in Ethiopia, currently around 14,000 and 38 mothers are dying yearly and daily respectively.

In Ethiopian health care system, health centers are included in the primary health care level where most women seek diverse range of maternal health care services. Hence, implementing standard evidence based cost-effective interventions at health center will improve access and quality of care and ultimately will help in achieving universal health coverage and sustainable development goal.

In line with this, Ministry of Health-Ethiopia, revised the 2014 health center protocol by organizing two workshops involving experts from universities, professional associations, partners and ministry of health staff. Relevant evidence based global, national guidelines and recommendations were included in the revised protocol considering the national policy and strategy, potential implementation capacity and challenges on maternal and newborn health care.

Having evidence based revised version of this obstetric protocol at health center will help to ensure standardized care and promotes positive maternal and newborn health outcomes. This protocol designed for health professionals working at health centers.

Implementation of the protocol fully will contribute significantly in improving quality of maternal and newborn health care. Hence, I sincerely request all concerned bodies to put their effort for the implementation of this protocol in all health centers across the country.



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## ACRONYMS

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AIDS	Acquired Immuno deficiency Syndrome	IUFD	Intrauterine Fetal Death
AMTSL	Active Management of Third Stage of Labor	IUGR	Intrauterine Growth Restriction
ANC	Antenatal care	IV	Intravenous
APH	Antepartum Hemorrhage	LAM	Lactational Amenorrhea Method
ARM	Artificial Rupture of Membranes	LMP/LNMP	Last normal menstrual period
AZT	Azidothymidine	MRN	Medical Record Number
BCG	Bacille Calmette Guerin	MTCT	Mother To Child Transmission
BMI	Body Mass Index	MVA	Manual Vacuum Aspiration
BP	Blood Pressure	mU	milli Units
BPM	Beats Per Minute	NRFHR	Non Reassuring Fetal Heart Rate
CBC	Complete Blood Count	NVP	Niverapine
COC	Combined Oral Contraceptive	OPD	Out Patient Department
CPD	Cephalo Pelvic Disproportion	OPV	Oral Polio Vaccine
CS	Cesarean Section	PID	Pelvic Inflammatory Disease
DM	Diabetes Mellitus	PIH	Pregnancy Induced Hypertension
DPT	Diphtheria, Pertusis, Tetanus	PMTCT	Prevention of mother to child transmission
DT	Diphtheria, Tetanus	PO	Per Oral
DTR	Deep Tendon Reflex	PPFP	Postpartum Family Planning
DVT	Deep Venous Thrombosis	PPH	Postpartum Hemorrhage
EDD	Expected date of Delivery	PROM	Premature Rupture of Membranes
FBS	Fasting Blood Sugar	Rh	Rhesus
FHR	Fetal Heart Rate	RMC	Respectful Maternity Care
FP	Family planning	ROM	Rupture of Membranes
FPD	Feto Pelvic Disproportion	RR	Respiratory Rate
GA	Gestational Age	SFH	Symphysis Fundal Height
HAART	Highly Active Anti Retroviral Treatment	STD	Sexually Transmitted Diseases
HBsAg	Hepatitis B Surface Antigen	STI	Sexually Transmitted Infection
hCG	Human Chorionic Gonadotrophin	TB	Tuberculosis
Hct	Hematocrit	UTI	Urinary Tract Infection
Hgb	Hemoglobin	VDRL	Venereal Disease Research Laboratory
HIV	Human Immunodeficiency Virus	WBC	White Blood Cell
IM	Intramuscular	WHO	World Health Organization
ITN	Insecticide Treated Net		
IU	International Unit		
IUD	Intrauterine device		

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# RESPECTFUL MATERNITY CARE

## INTRODUCTION

Respectful Maternity Care (RMC) refers to care organized for and provided to all women in a manner that maintains their dignity, privacy and confidentiality, ensures freedom from harm and mistreatment, and enables informed choice and continuous support during pregnancy, labour and childbirth, and postnatal period.

RMC is an attitude that permeates each word, action, thought, and non-verbal communication involved in the care of women during pregnancy, childbirth, and the postnatal period. Provision of RMC is in accordance with a human rights-based approach to reduce maternal and neonatal mortality and morbidity. See [table 1](#) below for categories of disrespect and abuse with recommended standard of care.

**Table 1.** Categories of disrespect and abuse with recommended standard of care.

Category of disrespect & abuse	Example for D&A	Recommended standard of care
<b>Physical abuse</b>	<ul style="list-style-type: none"> <li>Slapping, pinching, pushing, beating</li> </ul>	<ul style="list-style-type: none"> <li>Staff should conduct procedures devoid of physical harm.</li> <li>Clients should be protected from emotional, physical and sexual abuse.</li> </ul>
<b>Non-consented care</b>	<ul style="list-style-type: none"> <li>Doing procedure and /or providing medication without verbal or oral consent.</li> </ul>	<ul style="list-style-type: none"> <li>Staff should take time to explain: procedures, diagnosis, progress, results and options.</li> <li>Information should be given in an open and friendly manner and be encouraged to ask questions.</li> </ul>
<b>Non-confidential care</b>	<ul style="list-style-type: none"> <li>Lack of privacy (laboring in public or disclosure of patient information)</li> </ul>	<ul style="list-style-type: none"> <li>Women should never be exposed unnecessarily during examinations.</li> <li>Staff should actively protect women's privacy and confidentiality.</li> <li>Staff should not discuss or disclose client information to non-health care staff.</li> </ul>
<b>Non-dignified care (including verbal abuse)</b>	<ul style="list-style-type: none"> <li>Intentional humiliation, rough treatment, shouting, blaming, laughing at patient</li> <li>Not introducing self, not calling patient by name.</li> </ul>	<ul style="list-style-type: none"> <li>Staff should be polite and use appropriate language, gestures in communicating with clients.</li> <li>Curtains and screens should be used and clients should be covered with linen when examined.</li> </ul>

Category of disrespect & abuse	Example for D&A	Recommended standard of care
<b>Discrimination based on attributes</b>	<ul style="list-style-type: none"> <li>• Discrimination based on age, ethnicity, religion and finance</li> </ul>	<ul style="list-style-type: none"> <li>• Staff should provide all the required services to all clients equally.</li> </ul>
<b>Abandonment or denial of care</b>	<ul style="list-style-type: none"> <li>• Women left alone during labor and birth</li> <li>• Failure to provide monitoring and intervene when needed</li> </ul>	<ul style="list-style-type: none"> <li>• On arrival at facility every pregnant woman in labor should be evaluated by skilled person immediately</li> <li>• Every woman in labor should be attended, followed, delivered or referred if necessary.</li> </ul>
<b>Detention in facilities</b>	<ul style="list-style-type: none"> <li>• Detention of patient/family in health facility after delivery usually due to failure to pay.</li> </ul>	<ul style="list-style-type: none"> <li>• Patient/ families should not be detained in health facility after delivery due to payment related reasons.</li> </ul>

## POTENTIAL CONTRIBUTORS TO DISRESPECT AND ABUSE

- Service delivery related:
  - Lack of standards, leadership and supervision.
  - Lack of accountability mechanisms at health facility.
  - Lack of appropriate drugs, supply and equipment.
- Provider related:
  - Discriminatory behaviour against certain sub-groups of women based on ethnicity, age, infectious disease status (e.g. HIV), financial and educational status of woman.
  - Provider demotivation related to weak health systems (e.g. shortages of human resources & professional development opportunities).
  - Provider status (e.g. behavioral, physical and emotional status).

## EFFECTIVE COMMUNICATION AND SUPPORTIVE CARE FOR RMC

### Have effective communication:

- Speak in a calm quiet manner.
- Be sensitive to any cultural or religious considerations and respect her views.
- Ask the woman whom she would like to be present (accompany).
- Listen to what the woman and her family have to say and encourage them to ask and express their concerns; try not to interrupt.
- Use supportive nonverbal communications such as nodding and smiling.

- Answer the woman's questions directly in a calm and understandable manner.
- If a woman must undergo a procedure; explain to her the nature of the procedure and its risks and help to reduce her anxiety.
- Ask the woman to repeat back to you the key points to ensure her understanding.

### **Provide supportive care**

- A woman should be made to feel as comfortable as possible when receiving care.
- Respect the woman's choices and preferences including birthing position, companionship during maternity care, procedures and treatment.
- Emotional and psychological support for patients (or family members) with undesirable outcome (e.g. still birth).
- Provide adequate pain management options.

## **ORGANIZATIONAL CONSIDERATIONS**

### **Staffing:**

- There should be adequate number of competent and trained staff with appropriate skills mix (health work force), working in multidisciplinary teams that are able to provide respectful and continuous care to all women.
- There should be regular practice-based training on RMC provision to enable effective delivery of RMC services that meet the social, cultural and linguistic needs of women and orientation of new staff.

### **Supply:**

- Health education materials in written or pictorial format, accessible and available in the languages of the communities served by the health care facility.
- A standard informed consent form.
- Information (written or pictorial such as leaflets) for the woman and her companion.
- Essential medicines for maternal and new-born health care that is available in sufficient quantities at all times.

### **Equipment:**

Basic and adequate equipment for maternal and new-born health care that is available in sufficient quantities at all times in the health facility.

### **Infrastructure:**

The facility should ensure the presence of enhanced physical environment including:-

- Rooming-in to allow women and their babies to remain together.
- Clean, appropriately illuminated and well ventilated maternity service area that maintains privacy, and are adequately equipped and maintained.

- Continuous energy supply in the labor, childbirth and neonatal areas.
- Clean and accessible bathrooms for use by pregnant women, laboring and postnatal mothers.
- Safe drinking water and a hand hygiene station with soap or alcohol-based hand rubs.
- Curtains, screens, partitions and sufficient bed capacity.
- Facilities for labor companions, including physical private space for the woman and her companion.

#### **Supervision and monitoring:**

- Regular supportive supervision by labor ward/facility leaders.
- Staff meetings to review RMC practices.
- Easily accessible mechanism (e.g. a suggestion box) for service users and providers to submit complaints and suggestions to management.
- Establishment of accountability mechanisms to prevent mistreatment or violations.
- Establishment of informed consent procedures.

#### **Strengthening referral linkage:**

*Good-quality supervision, communication and transport linkage between facilities needs to be established to ensure that referral pathways are efficient.*

# RAPID INITIAL ASSESSMENT AND MANAGING EMERGENCIES

## DEFINITION

*Rapid initial assessment and emergency management* means immediate identification and recognition of specific problems for taking quick action to save the life of the patient during arrival to the facility.

## Implementing a rapid initial assessment scheme:

All staff at the health facility should perform a Quick Check of a woman who presents with an emergency condition.

## QUICK CHECK

- Look at the woman:
  - Did someone carry her into the health institution? (possible sign of shock)
  - Is there blood on her clothing or on the floor beneath her? (sign of bleeding in pregnancy)
  - Is she grunting or bearing down? (possible signs of advanced labor)
- Ask the woman or her companion whether she has or has recently had:
  - Vaginal bleeding
  - Severe headache / blurred vision
  - Convulsion or loss of consciousness
  - Difficulty breathing
  - Fever
  - Severe abdominal pain
  - Labor pain
- If the woman has or recently had ANY of the above danger signs, or signs and symptoms of advanced labor, immediately:
  - Call for help
  - Focus on the woman
  - Do not leave the woman alone

## RAPID INITIAL ASSESSMENT

Refer to [table 2](#) below for approach in rapid initial assessment for selected danger signs.

**Table 2.** Rapid initial assessment principles for selected danger signs.

Assess	Danger signs	Consider
Airway and breathing	<p><b>LOOK FOR:</b></p> <ul style="list-style-type: none"> <li>• Cyanosis</li> <li>• Respiratory distress</li> </ul> <p><b>EXAMINE:</b></p> <ul style="list-style-type: none"> <li>• Skin: pallor</li> <li>• Lungs: wheezing or rales</li> </ul>	<ul style="list-style-type: none"> <li>• Severe anemia</li> <li>• Heart failure</li> <li>• Pneumonia</li> <li>• Asthma</li> </ul>
Circulation (signs of shock)	<p><b>EXAMINE:</b></p> <ul style="list-style-type: none"> <li>• Skin: cold</li> <li>• Pulse: fast (110 or more) and weak</li> <li>• Blood pressure: low (systolic less than 90 mm Hg)</li> </ul>	<ul style="list-style-type: none"> <li>• Shock</li> </ul>
Vaginal bleeding (early or late pregnancy or after child birth)	<p><b>ASK IF:</b></p> <ul style="list-style-type: none"> <li>• Pregnant, length of gestation</li> <li>• Recently given birth</li> <li>• Placenta delivered</li> </ul> <p><b>EXAMINE:</b></p> <ul style="list-style-type: none"> <li>• Vulva: amount of bleeding, placenta retained</li> <li>• Genital tract laceration</li> <li>• Uterus: atony</li> <li>• Bladder: full</li> </ul> <p><b>DO NOT DO A VAGINAL EXAM AT THIS STAGE</b></p>	<p><b>Early pregnancy:</b></p> <ul style="list-style-type: none"> <li>• Abortion</li> <li>• Ectopic pregnancy</li> <li>• Molar pregnancy</li> </ul> <p><b>Late pregnancy:</b></p> <ul style="list-style-type: none"> <li>• Abruption placentae</li> <li>• Placenta previa</li> <li>• Ruptured uterus</li> </ul> <p><b>After delivery:</b></p> <ul style="list-style-type: none"> <li>• Atonic uterus</li> <li>• Tears of cervix and vagina</li> <li>• Retained placenta</li> <li>• Inverted uterus</li> </ul>
Unconscious or convulsing	<p><b>ASK IF:</b></p> <ul style="list-style-type: none"> <li>• Pregnant</li> <li>• Length of gestation</li> </ul> <p><b>EXAMINE:</b></p> <ul style="list-style-type: none"> <li>• Blood pressure: high</li> <li>• Temperature: 38°C or more</li> </ul>	<ul style="list-style-type: none"> <li>• Eclampsia</li> <li>• Malaria</li> <li>• Epilepsy</li> <li>• Tetanus</li> </ul>



Assess	Danger signs	Consider
Fever	<p>ASK IF:</p> <ul style="list-style-type: none"> <li>• Weak, lethargic</li> <li>• Frequent, painful urination</li> </ul> <p>EXAMINE:</p> <ul style="list-style-type: none"> <li>• Temperature: 38°C or more</li> <li>• Unconscious</li> <li>• Neck: stiffness</li> <li>• Lungs: shallow breathing, consolidation</li> <li>• Abdomen: severe tenderness</li> <li>• Vulva: purulent discharge</li> <li>• Breasts: tender</li> </ul>	<ul style="list-style-type: none"> <li>• Urinary tract infection</li> <li>• Malaria</li> <li>• Metritis</li> <li>• Pelvic abscess</li> <li>• Peritonitis</li> <li>• Mastitis</li> <li>• Complications of abortion</li> <li>• Pneumonia</li> </ul>
Abdominal pain	<p>ASK IF:</p> <ul style="list-style-type: none"> <li>• Pregnant, length of gestation</li> </ul> <p>EXAMINE:</p> <ul style="list-style-type: none"> <li>• Blood pressure: low (systolic less than 90 mm Hg)</li> <li>• Pulse: fast (110 or more)</li> <li>• Temperature: 38°C or more</li> <li>• Abdomen/Uterus: tender</li> </ul>	<ul style="list-style-type: none"> <li>• Ovarian cyst/torsion</li> <li>• Appendicitis</li> <li>• Ectopic pregnancy</li> <li>• Possible term or preterm labor</li> <li>• Amnionitis</li> <li>• Abruptio placentae</li> <li>• Ruptured uterus</li> </ul>

## EMERGENCY MANAGEMENT PRINCIPLES

### Preventing emergencies

- Careful planning
- Following clinical guidelines / protocols
- Close monitoring of the woman

### Responding to an emergency

Clinical team members should know their roles and their function. In addition they should know:

- Clinical situations and their diagnosis and treatments.
- Drugs and their use, administration and side effects.
- Emergency equipments: how each function and how to use.

## Initial management

In managing an emergency:

- Call for help.
- Do not leave the woman unattended.
- Have one person go for help and have another person gather emergency equipment and supplies (e.g. oxygen cylinder, emergency kit).
- If the woman is unconscious, assess the airway, breathing and circulation.
- If shock is suspected, immediately begin treatment. Even if signs of shock are not present, keep shock in mind as you evaluate the woman further because her status may worsen rapidly.
- Position the woman lying down on her left side with her feet elevated.
- Loosen tight clothing.
- Perform a quick examination including vital signs and skin color.
- Estimate the amount of blood lost and assess symptoms and signs.
- Talk to the woman and help her to stay calm. Ask what happened and what symptoms she is experiencing.

## MANAGING A PATIENT IN “SHOCK”

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### INTRODUCTION

Shock is characterized by failure of the circulatory system to maintain adequate perfusion of vital organs. Suspect or anticipate shock if at least one of the following is present:

- Bleeding in early pregnancy
- Bleeding in late pregnancy or labor
- Bleeding after childbirth
- Infection (e.g. unsafe or septic abortion, amnionitis, metritis, pyelonephritis)
- Trauma (e.g. injury to uterus or bowel during abortion, ruptured uterus, tears of genital tract).

### DIAGNOSIS

Diagnose shock if the following symptoms and signs are present:

- Fast, weak pulse (110 per minute or more)
- Low blood pressure (systolic less than 90 mmHg)
- Other symptoms and signs of shock include:
  - Pallor (inner eyelid, palms or around mouth)
  - Cold and clammy skin

- Rapid breathing (30 breaths per minute or more)
- Anxiousness, confusion or unconsciousness
- Decreased urine output (less than 30 ml per hour).

## MANAGEMENT

- CALL FOR HELP. Urgently mobilize all available personnel.
- Assess the airway, breathing and circulation.
- Turn the woman onto her side to minimize the risk of aspiration.
- Start an IV infusion (two if possible) using a large-bore (16-gauge or largest available) cannula or needle.
- Collect blood for haemoglobin and bedside clotting test just before infusion of fluids.
  - Rapidly infuse IV fluids (normal saline or Ringer’s lactate) initially at the rate of 1 L in 15–20 minutes.
  - Give at least 2 L of the fluids in the first hour. This is over and above fluid replacement for ongoing losses.

**NOTE: A more rapid rate of infusion is required in the management of shock resulting from bleeding. Aim to replace 2–3 times the estimated blood loss.**

- Give oxygen at 6–8 L per minute by mask or nasal cannula.
- Elevate the legs to increase return of blood to the heart (if possible, raise the foot end of the bed) and keep the woman warm.
- Monitor vital signs (every 15 minutes) and blood loss.
- Catheterize the bladder and monitor fluid intake and urine output.

## Determining and managing the cause of shock

Determine the cause of shock after the woman is stabilized.

1. If heavy bleeding is suspected as a cause of shock:
  - Take steps simultaneously to stop bleeding (e.g. oxytocics, uterine massage, NASG, bimanual compression, aortic compression).
  - Reassess the woman’s condition for signs of improvement.
  - Consider referral for further management.
2. If infection is suspected as the cause of shock:
  - Give the woman a loading combination of antibiotics to cover aerobic and anaerobic infections:
    - Ampicillin 2 g IV PLUS Gentamicin 5 mg/kg body weight IV PLUS metronidazole 500 mg IV.
  - Refer urgently.

**NOTE: Continue antibiotic administration until she reaches the hospital.**

3. If trauma is suspected as the cause of shock, refer for surgical intervention.

#### Reassessment:

- Reassess the woman's response to the IV fluids within 30 minutes to determine if her condition is improving. Signs of improvement include:
  - Stabilizing pulse (rate of 90 per minute or less).
  - Increasing blood pressure (systolic 100 mm Hg or more).
  - Improving mental status (less confusion or anxiety).
  - Increasing urine output (30 mL per hour or more).
- If the woman's condition improves:
  - Adjust the rate of infusion of IV fluids to 1 L in 6 hours.
  - Continue management for the underlying cause of shock.
  - If the woman's condition fails to improve or stabilize, urgent referral.

#### Further management:

- Continue to infuse IV fluids, adjusting the rate of infusion to 1 L in 6 hours and maintain oxygen at 6–8 L per minute.
- Closely monitor the woman's condition.
- Perform laboratory tests including hematocrit, blood group and Rh, and consider referral / consultation for transfusion if needed.

## MANAGING A PATIENT WITH DIFFICULTY IN BREATHING

---

### GENERAL MANAGEMENT:

- Make a rapid evaluation of the general condition of the woman including vital signs.
- Turn the woman on her left side.
- Start IV infusion.
- Give oxygen at 4–6 L per minute by mask or nasal cannula.
- Obtain haemoglobin.

### DIAGNOSIS

Refer to [table 3](#) below for diagnostic approach of a woman who presents with difficulty of breathing.

**Table 3.** Diagnostic approach of a patient with difficulty in breathing.

Symptoms and signs typically present	Symptoms and signs sometimes present	Probable diagnosis
<ul style="list-style-type: none"> <li>• Difficulty in breathing</li> <li>• Pallor of conjunctiva, tongue, nail beds and/or palms</li> <li>• Haemoglobin 7g /dL or less</li> <li>• Hematocrit 20% or less</li> </ul>	<ul style="list-style-type: none"> <li>• Lethargy and fatigue</li> <li>• Flat or concave nails</li> </ul>	<ul style="list-style-type: none"> <li>• Severe anemia</li> </ul>
<ul style="list-style-type: none"> <li>• Symptoms and signs of severe anemia</li> </ul>	<ul style="list-style-type: none"> <li>• Oedema</li> <li>• Cough</li> <li>• Rales</li> <li>• Swelling of legs</li> <li>• Enlarged liver</li> <li>• Prominent neck veins</li> </ul>	<ul style="list-style-type: none"> <li>• Heart failure due to anemia</li> </ul>
<ul style="list-style-type: none"> <li>• Difficulty in breathing</li> <li>• Diastolic murmur and/or</li> <li>• Harsh systolic murmur with palpable thrill</li> </ul>	<ul style="list-style-type: none"> <li>• Irregular heart beat</li> <li>• Enlarged heart</li> <li>• Rales</li> <li>• Cyanosis (blueness)</li> <li>• Cough</li> <li>• Swelling of legs</li> <li>• Enlarged liver</li> <li>• Prominent neck veins</li> </ul>	<ul style="list-style-type: none"> <li>• Heart failure due to heart disease</li> </ul>
<ul style="list-style-type: none"> <li>• Difficulty in breathing</li> <li>• Fever</li> <li>• Cough with expectoration</li> <li>• Chest pain</li> </ul>	<ul style="list-style-type: none"> <li>• Congested throat Rapid breathing</li> <li>• Rhonchi / rales</li> </ul>	<ul style="list-style-type: none"> <li>• Pneumonia</li> </ul>
<ul style="list-style-type: none"> <li>• Difficulty in breathing</li> <li>• Wheezing</li> </ul>	<ul style="list-style-type: none"> <li>• Cough with expectoration</li> <li>• Rhonchi / rales</li> </ul>	<ul style="list-style-type: none"> <li>• Bronchial asthma</li> </ul>
<ul style="list-style-type: none"> <li>• Difficulty in breathing</li> <li>• Hypertension</li> <li>• Proteinuria</li> </ul>	<ul style="list-style-type: none"> <li>• Rales</li> <li>• Frothy cough</li> </ul>	<ul style="list-style-type: none"> <li>• Pulmonary oedema associated with pre-eclampsia</li> </ul>

<sup>a</sup> Withhold fluids and give frusemide 40 mg IV once.

### **SPECIFIC MANAGEMENT**

For specific management of each condition refer to appropriate sections in this document and other relevant national protocols.

## PRECONCEPTION CARE

### DEFINITION

Preconception care is the provision of biomedical, behavioral and social health interventions to women and couples before conception occurs to increase the chance of having good obstetric outcome.

### OBJECTIVE

- Management of long-term health conditions that affect pregnancy and fetal outcomes.
- Assistance in ceasing risky behaviors that affect pregnancy and fetal outcomes.
- Promoting healthy behaviors.

### INTERVENTIONS

Pre-conception care comprises a range of interventions aimed at identifying and modifying medical, behavioral and social risks during reproductive years.

#### Reproductive planning

- Reproductive planning helps to prevent unintended pregnancy, age-related infertility and fetal teratogen exposure. It may also improve health and pregnancy outcomes.
- Offer appropriate contraception advice for those not desiring pregnancy or until chronic medical conditions are stabilized.

#### Screening for modifiable risk factors

- Take a thorough history, assessing historical and ongoing risks that may affect future pregnancies.
- Reproductive history may provide important clues about future pregnancy risks.
  - Poor obstetric outcome (early neonatal death, still birth and birth defects, particularly neural tube defects)
  - History of previous gestational diabetes mellitus
  - Previous history of preterm birth
  - Previous history of small for gestational age baby
- Assessment of pre-existing medical conditions (hypertension, diabetes, epilepsy, renal disease, autoimmune conditions, cardiac and other conditions).

## Management of medical conditions and medications

There are specific medical conditions associated with adverse pregnancy outcomes if untreated or treated poorly.

### A. *Stabilization or referral to hospital for stabilization of chronic medical conditions prior to conception*

- *Hypertension* should be controlled.
- *Diabetes mellitus*: For women with type 1 or type 2 diabetes, good glycemic control should be achieved before conception.
- *Asthma*: Poorly controlled asthma tends to worsen during pregnancy.
- *Thromboembolism*: Women with a history of thromboembolism have an increased risk of recurrence during pregnancy.
- *Hypothyroidism*: Women with hypothyroidism require increased doses of thyroxine early and throughout pregnancy; this is especially important during the first trimester.
- *Autoimmune disease*: Patients should be counseled that the best time to attempt conception is during periods of inactive disease.
- Medical conditions which are contraindications to pregnancy (e.g. *primary pulmonary hypertension*).

### B. *Review medications, over-the-counter preparations and vitamins*

Any medication with teratogenic potential should be stopped and replaced, or referred to hospital as appropriate. Some of the known teratogenic medications include:-

- Angiotensin-converting enzyme inhibitors and angiotensin II receptor antagonists.
- *Isotretinoin (Accutane)*: used for therapy of a variety of skin conditions.
- Anticonvulsant therapy particularly *hydantoin* or *valproic acid*.
- Vitamin A supplements.

## Immunizations and infectious diseases

- Screening for sexually transmissible infections (STIs) where indicated.
- Discuss with the patient about TORCH infections (e.g. *syphilis*) including methods to reduce exposure and transmission.
- Screen for *hepatitis B* and *C* and advice on vaccination if *hepatitis B* test is negative.
- Vaccination for diphtheria and tetanus.
- Avoid conceiving for at least 28 days after receiving any live attenuated vaccinations such as the *measles, mumps* and *rubella* (MMR) vaccine.

## Supplementations

### *Folic Acid:*

- All women, from the moment they begin trying to conceive until 12 weeks of gestation, are recommended to take a folic acid supplement (400 µg folic acid daily).

- Women who have had a foetus diagnosed as affected by a neural tube defect or have given birth to a baby with a neural tube defect should take high-dose supplementation (5 mg folic acid daily); and be advised to increase their food intake of folate.

**Iron:**

- Women with iron deficiency identified by blood tests should take oral supplement with at least 60 mg of elemental iron daily.

**Lifestyle and Behaviors:**

- **Caffeine:** limit coffee intake
- **Smoking, alcohol and illicit drugs:** abstinence is advised in the preconception period and during pregnancy.
- **Weight control:**
  - Overweight (BMI 25–29.9 kg/m<sup>2</sup>) and obese (BMI >30 kg/m<sup>2</sup>) women should be advised to lose 5–10 % of their body weight prior to conception.
  - Underweight women should be provided dietary advice and advice on behavior techniques to help them achieve a target weight range.
- **Exercise:** Moderate-intensity physical activity is recommended (for 150 minutes per week or 30 minutes per day on most days).

**Psychosocial aspects:**

- Screen for domestic violence.
- Screen for mental health conditions.
- Treat, link to appropriate care or refer identified conditions as required.

**NOTE: Women should also receive cervical cancer screening and breast examination during preconception care.**



## ANTENATAL CARE

### DEFINITION

ANC is defined as the complex of interventions that a pregnant woman and adolescent girl receive from skilled health care professionals in order to ensure the best health conditions for both mother and baby during pregnancy.

### PURPOSE

ANC reduces maternal and perinatal morbidity and mortality through:

- Screening, diagnosis and management of the risk factors and pregnancy-related complications.
- Identification of women and girls at increased risk of developing complications.
- Provides an important opportunity to prevent and manage concurrent diseases through integrated service delivery.
- Ensuring referral to an appropriate level of care.

### COMPONENTS

- Health promotion and disease prevention
- Screening, diagnosis and management or referral for disease
- Birth planning and complication readiness.

### ANC CONTACTS

Antenatal care models with a minimum of eight contacts are recommended. The first contact is scheduled to take place in the first trimester (up to 12 weeks of gestation), two contacts scheduled in the second trimester (at 20 and 26 weeks of gestation) and five contacts scheduled in the third trimester (at 30, 34, 36, 38 and 40 weeks). The details are described below in [Annex 1](#).

During each ANC contact, gather and interpret information (History, P/E, Investigations), classify the type of care (basic versus specialized), develop care plan, implement care plan (take action) and evaluate care plan.

### THE FIRST ANTENATAL CONTACT

#### Confirmation of pregnancy and gestational age

Confirmation of pregnancy, complete assessment of gestational age (LNMP, EDD and Gestational age) are made at the first antenatal visit.

- Last menstrual period is valid if the woman is sure of her dates and reliable (three consecutive menses and no use of hormonal contraceptives)
- Ultrasound scan for gestational age estimation for women who are unsure of dates with SFH measurement less than 24 weeks.

### History taking

Take a full and relevant history including current pregnancy, previous pregnancies (any complications and outcomes), medical conditions (including psychiatric problems, and previous operations), intimate partner violence, familial and genetic disorders, allergies, use of medications, use of substances (alcohol, tobacco and other substances), family and social circumstances.

### Physical examination

Do a general examination including weight, height, heart rate, colour of mucous membranes/conjunctivae, blood pressure, check for oedema, and palpation for lymph nodes. Do a systemic examination including teeth and gums, breasts, thyroid, and heart and lung examination.

Examine the abdomen including inspection and palpation of the pregnant uterus; measurement of the symphysis-fundal height (SFH), presentation of the fetus (third trimester) and auscultation of the fetal heart beat (after 20 weeks)

### Investigations

- Determine the essential screening investigations (Hemoglobin, HIV test, urine analysis, blood group, VDRL, HBsAg) (see [annex 1](#)). Hemoglobin is preferably determined with hemoglobinometer or complete blood count (when available).
- Ultrasound scan before 24 weeks of gestation
- Indirect coomb's test for Rh negative women.
- Urine test
  - Urine strip test and microscopy (albumin, sugar, ketone, WBC etc.)
  - Urine midstream gram stain to diagnose asymptomatic bacteriuria (ASB)

### Advice and counseling:

Certain essential information should be provided to all pregnant women. This includes:

- ***Danger signs and symptoms of pregnancy:*** Severe headache, blurring of vision, abdominal pain (not discomfort), leakage of liquor from the vagina, vaginal bleeding and decreased fetal movements. A woman that experiences any of these symptoms should come to health facility immediately.
- ***Self-care in pregnancy:*** Diet and exercise, personal hygiene and breast care, avoid unnecessary use of medications, limit use of caffeine, avoid substance use (alcohol, tobacco and recreational drugs)

- **Birth preparedness and complication readiness (delivery plan):** At the end of her ANC contact, all pregnant women should be given a provisional delivery plan: The expected date of delivery, the expected place of delivery, the expected mode of delivery, a transport plan for emergency or delivery (including important contact numbers) and the practice of home delivery should be discouraged.
- **Institutional delivery:** Advise the patient about the importance of institutional delivery
- **Maternity waiting home:** If mothers are leaving far from the delivery centre, they will be admitted to maternity waiting home which is located near or within health centers in their final weeks of pregnancy to bridge the geographical gap in obstetric care.
- **Newborn/infant care:** Plans for infant feeding and techniques, details of follow up care, immunization and where this can be obtained.
- **Family planning:** Counsel on future pregnancies and use of postpartum contraception.

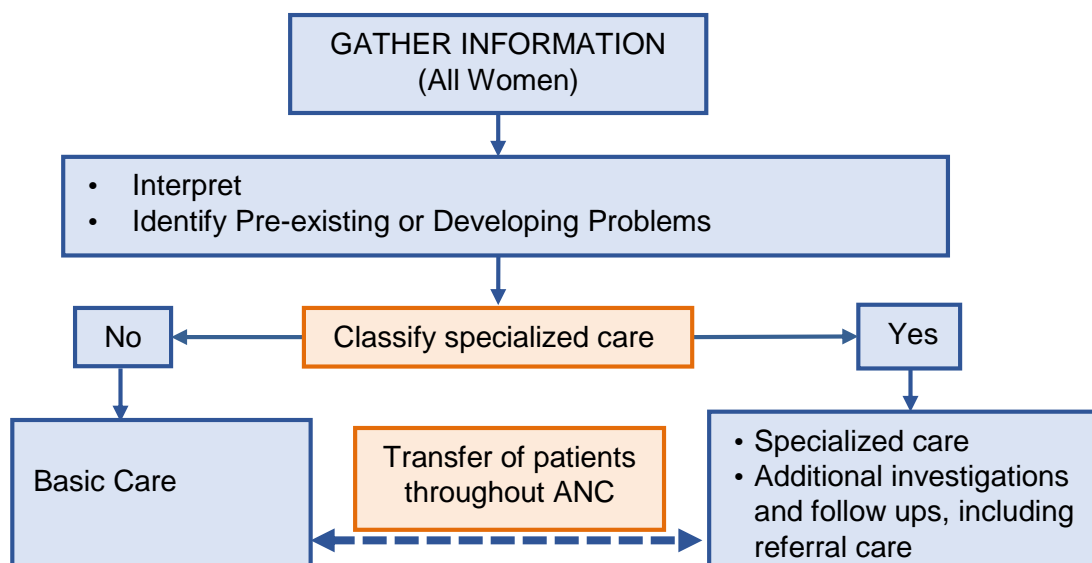
### Assessment and planning

The final assessment is interpreting the gathered information. It involves making diagnosis and evaluating for presence of any risk factors and classifying the type of care. The final assessment includes

- Risk factor identified (a list of risk factors is provided in [annex 2](#) below)
- The best estimate of gestational age
- A plan for management or appropriate referral for any problems.

Use the ANC classifying form in the FMOH integrated pregnancy, labour, delivery, newborn and postnatal care card for more detail information to gather detailed information during first visit ([annex 2](#) and [annex 3](#)).

**NOTE:** If any ONE or more of the above risk factors are identified, the woman is eligible for specialized antenatal care (require closer follow up or referral to higher facility). Those classified under basic care needs a minimum of eight contacts while those having pre-existing or newly developed problems will be followed in a specialized care setting. Refer to [figure 1](#) below for the classification algorithm.



**Figure 1. ANC classification diagram.**

## **SUBSEQUENT ANTENATAL VISITS**

Content of subsequent antenatal visits are

- Ask about general well-being, fetal movements, danger symptoms and any problems.
- Check the blood pressure, heart rate, weight and color of the mucous membranes and conjunctivae.
- Measure the symphysis-fundal height (SFH) and compare with previous measurements.
- Palpate the presenting part after 34 weeks of gestation
- One step screening using 75 gm glucose at 24 to 28 wks, if the woman is high risk for diabetes. If test result is abnormal refer for further evaluation and management.
- Repeat investigations
  - Repeat HIV counseling and testing during third trimester preferably between 28 to 36 weeks for those tested negative at the initial visit
  - Repeat blood tests: Hgb at 32 and 38 weeks.
  - Repeat urine test at 26 to 34 weeks
- Repeat information for danger signs pregnancy, and review delivery and transport plans, as well as feeding and contraception choices.
- Document the detail contact schedule, risk identification, list of intervention at each contact.

## **MEDICATIONS AND VACCINES**

- *Td vaccination* - two doses, on the first visit and four weeks after the initial dose (regardless of the gestational age of her first contact)
- *Iron and folic acid supplements:* daily oral iron and folic acid supplementation with 30 mg to 60 mg of elemental iron and 400 µg (0.4 mg) of folic acid
- *Daily calcium supplementation:* 1.5–2.0 g oral elemental calcium starting from 14 weeks of gestation
- If there is asymptomatic bacteriuria give amoxicillin 500 mg PO TID for seven days.
- *Preventive antihelminthic treatment-* Preventive chemotherapy (deworming), using single-dose albendazole (400 mg) or mebendazole (500 mg) is recommended after the first trimester
- If indirect coomb's test is negative, administer anti-D immunoglobulin at 28 weeks and immediately after delivery after cord blood check-up.

## PHYSIOLOGICAL SYMPTOMS IN PREGNANCY

Nausea and vomiting, heartburn, leg cramps, low back and pelvic pain, constipation, varicose veins and edema are common during pregnancy. Refer to the following box for options of available interventions.

### WOMAN-HELD CASE NOTES

#### Intervention for common physiological symptoms based on a woman's preferences and available options.

**Nausea and vomiting** – *Ginger, chamomile, vitamin B6 are recommended for the relief of nausea in early pregnancy.*

**Heartburn**– *Advice on diet and lifestyle (avoidance of large, fatty meals and alcohol, cessation of smoking, and raising the head of the bed to sleep) is recommended to prevent and relieve heartburn in pregnancy. Antacid preparations can be used depending on the women's symptoms.*

**Leg cramps** – *Magnesium, calcium or non-pharmacological treatment options can be used for the relief of leg cramps in pregnancy.*

**Low back and pelvic pain** – *Regular exercise throughout pregnancy, treatment options such as physiotherapy, support belts can be used.*

**Constipation**– *dietary modification, high fibre diet, regular bowel habit and adequate fluid intake.*

**Varicose veins and oedema**– *Non-pharmacological options, such as compression stockings, leg elevation and water immersion.*

It is recommended that each pregnant woman carries her own case notes during pregnancy to improve continuity, quality of care and her pregnancy experience.

This standardized document is the principal record of the pregnancy and it must be completed at each antenatal clinic visit and retained by the mother until delivery, after which it will be kept at the place of confinement or final referral.

Record of attendance, risk factors / results of special investigations, appointment date and information on danger signs of pregnancy are components of Woman-held case notes.

## **LINKAGE AND REFERRAL**

### **Antepartum referral**

Pregnant women who are eligible for referral to higher facilities for specialized antenatal care and closer follow up or hospital delivery during antepartum period include those with:

#### ***Obstetric history:***

- Previous stillbirth/ previous neonatal death
- Previous low birth weight baby
- Previous fetal macrosomia (> 4kg)
- Previous pregnancy admission for hypertension or pre-eclampsia/eclampsia
- Previous caesarean section/ previous myomectomy
- Previous cone biopsy / previous cervical cerclage

#### ***Current pregnancy:***

- Diagnosed or suspected multiple pregnancy
- Age <16 years/ Age  $\geq$  35 years
- Rhesus isoimmunization in previous or current pregnancy
- Pregnancy beyond 41 weeks
- Vaginal bleeding
- Pelvic mass
- Systolic blood pressure  $\geq$  140 mmHg and/or diastolic pressure  $\geq$  90 mmHg

#### ***General medical conditions:***

- Diabetes mellitus, cardiac disease, kidney disease, epilepsy, asthma on medication, active tuberculosis, known substance abuse including alcohol, any severe medical condition
- HBsAg positive.

### **Intrapartum referral**

#### ***Risk factors requiring hospital delivery:***

- High risk of postpartum hemorrhage
- Severe anemia and anemia not responding to iron tablets
- Large or small for date uterus
- Breech or transverse lie
- Extensive vulvar warts that may obstruct vaginal delivery
- Abnormal glucose screening (GTT or random blood sugar)
- Reduced fetal movements after 28 weeks
- Further risk factors that arise during antenatal care

**Annex 1. Contact schedule, risk identification, list of interventions at each contact.**

Contents of Care		Eight schedule of ANC contacts (weeks of gestation)								
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	
		12	20	26	30	34	36	38	40	
History	Date of contact									
	Gestational age									
	Present Pregnancy History (complaint)									
	Past Pregnancy History									
	Medical History and Surgical History									
	Mental Health									
	Family/Social History									
Physical Examination	General Appearance									
	Blood pressure									
	Weight									
	Pallor									
	Breast									
	Chest									
	Abdominal examination	Fundal height (wks)								
		Fetal heart beat								
		Presentation								
	Pelvic assessment (as required/indicated)									
Investigations	Ultrasound (up to 24 weeks of gestation)									
	Hemoglobin									
	Blood group, RH									
	RPR/VDRL									
	HIV (PITC)									
	HBsAg									
	Urine test									
	Screening for active TB <i>for HIV positives</i>									
	Indirect coomb's test <i>for RH negatives</i>									
	75 gm oral glucose test ( <i>for those at risk</i> )									



Contents of Care		Eight schedule of ANC contacts (weeks of gestation)							
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>
		12	20	26	30	34	36	38	40
<b>Date of contact</b>									
Medications & vaccines	Preventive anti-helminthic treatment								
	Malaria prevention with ITN, and early diagnosis and treatment								
	Td vaccination								
	Anti-D immunoglobulin at 28 weeks ( <i>for those unsensitised RH negatives</i> )								
	Iron and folic acid supplements								
	Daily calcium supplementation								
	Nutrition/healthy eating								
Advice and counselling	PMTCT counselling and testing								
	Family planning counselling								
	Breast feeding counselling								
	Hygiene								
	Avoidance of harmful traditional practices								
	Reduce caffeine intake								
	Gender based violence specially IPV								
	Birth Preparedness and Complication Readiness plan								
	<b>Assessment</b> ( <i>diagnosis, danger signs identified</i> )								
	<b>Action taken</b>								
<b>Next Appointment</b>									
<b>Name and Signature</b>									

**Annex 2. ANC INFORMATION GATHERING AND CLASSIFYING FORM.**

Date: _____ ANC Reg. No: _____ Medical Record Number (MRN): _____		
Name of Client: _____ Name of Facility: _____		
Woreda: _____ Kebele: _____ House No: _____ Age (Years): _____		
LMP: _____ / _____ / _____ EDD: _____ / _____ / _____		
Gravida: _____ Para: _____ Number of children alive: _____ Marital Status: _____		
<b>INSTRUCTIONS</b> to Fill Classifying form: Answer all of the following questions by placing a cross mark in the corresponding box.		
<b>OBSTETRIC HISTORY</b>	<b>No</b>	<b>Yes</b>
1. Previous stillbirth or neonatal loss?	<input type="checkbox"/>	<input type="checkbox"/>
2. History of 3 or more consecutive spontaneous abortions?	<input type="checkbox"/>	<input type="checkbox"/>
3. Birth weight of last baby > 4000g	<input type="checkbox"/>	<input type="checkbox"/>
4. Last pregnancy: hospital admission for hypertension or pre-eclampsia/eclampsia?	<input type="checkbox"/>	<input type="checkbox"/>
5. Previous surgery on reproductive tract? (Myomectomy, removal of septum, fistula repair, cone biopsy, CS, repaired uterine rupture, cervical cerclage)	<input type="checkbox"/>	<input type="checkbox"/>
<b>CURRENT PREGNANCY</b>	<b>No</b>	<b>Yes</b>
6. Diagnosed or suspected multiple pregnancy?	<input type="checkbox"/>	<input type="checkbox"/>
7. Age less than 16 years?	<input type="checkbox"/>	<input type="checkbox"/>
8. Age more than 35 years?	<input type="checkbox"/>	<input type="checkbox"/>
9. Isoimmunization Rh (-) in current or in previous pregnancy	<input type="checkbox"/>	<input type="checkbox"/>
10. Vaginal bleeding	<input type="checkbox"/>	<input type="checkbox"/>
11. Pelvic mass	<input type="checkbox"/>	<input type="checkbox"/>
12. Systolic blood pressure $\geq$ 140 mmHg and/or diastolic pressure $\geq$ 90 mmHg,	<input type="checkbox"/>	<input type="checkbox"/>
<b>GENERAL MEDICAL</b>	<b>No</b>	<b>Yes</b>
13. Diabetes mellitus	<input type="checkbox"/>	<input type="checkbox"/>
14. Renal disease	<input type="checkbox"/>	<input type="checkbox"/>
15. Cardiac disease	<input type="checkbox"/>	<input type="checkbox"/>
16. Chronic Hypertension	<input type="checkbox"/>	<input type="checkbox"/>
17. Known 'substance' abuse (including heavy alcohol drinking, Smoking)	<input type="checkbox"/>	<input type="checkbox"/>
18. Any other severe medical disease or condition TB, HIV, Ca, DVT...	<input type="checkbox"/>	<input type="checkbox"/>
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 mode and requires closer follow up or referral to specialty care. If she needs more frequent ANC visits use and attach additional recording sheets.		

**Annex 3. Initial physical evaluation plus promotive and preventive care.**

General examination	Gynecologic examination	Counseling / testing, HIV + care and follow up
General Appearance _____		Danger signs in pregnancy and delivery <input type="checkbox"/> Y <input type="checkbox"/> N
Pallor <input type="checkbox"/> Y <input type="checkbox"/> N	Vulvar ulcer <input type="checkbox"/> Y <input type="checkbox"/> N	Birth preparedness advised <input type="checkbox"/> Y <input type="checkbox"/> N
Jaundice <input type="checkbox"/> Y <input type="checkbox"/> N	Pelvic mass <input type="checkbox"/> Y <input type="checkbox"/> N	<b>MOTHER</b> HIV test accepted <input type="checkbox"/> Y <input type="checkbox"/> N
Chest abnormality <input type="checkbox"/> Y <input type="checkbox"/> N	Uterine size wks. _____	HIV test result _____
Heart abnormality <input type="checkbox"/> Y <input type="checkbox"/> N	Cervical Lesion <input type="checkbox"/> Y <input type="checkbox"/> N	HIV test result received with post-test counseling <input type="checkbox"/> Y <input type="checkbox"/> N
		Counseled on Infant <input type="checkbox"/> Y <input type="checkbox"/> N
		Referred for care, treatment and support <input type="checkbox"/> Y <input type="checkbox"/> N
		<b>PARTNER</b> HIV test <input type="checkbox"/> Y <input type="checkbox"/> N
		Partner test result _____

## BLEEDING IN EARLY PREGNANCY

### DEFINITION

Bleeding in early pregnancy is vaginal bleeding which occurs during the first 28 weeks of pregnancy.

### CAUSES

- Abortion
- Ectopic pregnancy
- Molar pregnancy
- Local causes

### ABORTION

---

#### DEFINITION

Abortion is termination of pregnancy before viability (less than gestational age of 28 weeks or a weight of fetus less than 1000 grams).

#### CLASSIFICATION

##### 1. Based on gestational age:

- 1<sup>st</sup> trimester abortion (less than or equal to 12 weeks of gestation)
- 2<sup>nd</sup> trimester abortion (12 to 28 weeks of gestation)

##### 2. Based on causes:

- **Spontaneous abortion:** is when miscarriage occurs by itself, without any external aid.
- **Induced abortion:** is medical or surgical termination of pregnancy before the time of fetal viability.
  - **Safe abortion:** is defined as a procedure performed by a person having necessary skills and in an environment which fulfils the minimum medical standards.
  - **Unsafe abortion:** is defined as a procedure performed either by persons lacking necessary skills or in an environment lacking the minimum medical standards or both.

### 3. Based on clinical stage:

- **Threatened abortion** (pregnancy may continue)
- **Inevitable abortion** (pregnancy will not continue and will proceed to incomplete/complete abortion)
- **Incomplete abortion** (products of conception are partially expelled)
- **Complete abortion** (products of conception are completely expelled)
- **Missed abortion** (fetal death without expulsion of the fetal parts)

**NOTE: Septic abortion is any type of abortion complicated by infection.**

## DIAGNOSIS

### Symptoms and signs:

- Symptoms and signs typically present are shown below in [table 4](#).

### Investigations:

- Hematocrit
- Blood group and Rh
- Depending up on the condition the following investigations may be done:-
  - Urine hCG test
  - Ultrasound

## MANAGEMENT

The type of management depends on the type of abortion, gestational age and clinical condition. It can be observation, uterine evacuation (medical abortion or MVA) or referral. The diagnosis and management approach for abortion is summarized below in [table 4](#).

**Table 4.** Summary of approach for diagnosis and management of abortion.

Symptoms and signs typically present	Symptoms and signs sometimes present	Probable diagnosis	Management
<ul style="list-style-type: none"> <li>• Light bleeding</li> <li>• Closed cervix</li> <li>• Uterus corresponds to dates</li> </ul>	<ul style="list-style-type: none"> <li>○ Cramping / lower abdominal pain</li> <li>○ Uterus softer than normal</li> </ul>	<b>Threatened abortion</b>	<ul style="list-style-type: none"> <li>✓ Advise to avoid strenuous activity &amp; sexual intercourse</li> <li>✓ Bed rest is not necessary</li> <li>✓ If bleeding stops, follow at ANC</li> <li>✓ If bleeding continues or aggravates, manage/ refer</li> </ul>
<ul style="list-style-type: none"> <li>• Heavy bleeding</li> <li>• Dilated cervix</li> <li>• Uterus corresponds to dates</li> </ul>	<ul style="list-style-type: none"> <li>○ Cramping / lower abdominal pain</li> <li>○ Tender uterus</li> <li>○ No expulsion of products of conception</li> <li>○ Leakage of liquor</li> </ul>	<b>Inevitable abortion</b>	<ul style="list-style-type: none"> <li>✓ If bleeding occurs in pregnancy less than 12 weeks perform MVA or MA (if <math>\leq 9</math> weeks)</li> <li>✓ If bleeding occurs in pregnancy greater than 12 weeks: secure IV line (normal saline or Ringer 's lactate) and refer</li> </ul>
<ul style="list-style-type: none"> <li>• Heavy bleeding</li> <li>• Dilated cervix</li> <li>• Uterus smaller than dates</li> </ul>	<ul style="list-style-type: none"> <li>○ Cramping / lower abdominal pain</li> <li>○ Partial expulsion of products of conception</li> </ul>	<b>Incomplete abortion</b>	<ul style="list-style-type: none"> <li>✓ If bleeding occurs in pregnancy less than 12 weeks, evacuate the uterus with MVA or MA (if <math>\leq 9</math> weeks)</li> <li>✓ If bleeding occurs in pregnancy greater than 12 weeks: secure IV line (normal saline or Ringer 's lactate) and refer</li> </ul>
<ul style="list-style-type: none"> <li>• Light bleeding</li> <li>• Closed cervix</li> <li>• Uterus smaller than dates</li> <li>• Uterus softer than normal</li> </ul>	<ul style="list-style-type: none"> <li>○ Light cramping / lower abdominal pain</li> <li>○ History of expulsion of products of conception</li> </ul>	<b>Complete abortion</b>	<ul style="list-style-type: none"> <li>✓ Evacuation of the uterus is usually not necessary</li> <li>✓ Observe for heavy bleeding</li> <li>✓ Reassure the woman</li> <li>✓ Ensure follow-up of the woman after treatment</li> <li>✓ Counsel on family planning</li> <li>✓ Do ultrasound for confirmation (if available)</li> </ul>
<ul style="list-style-type: none"> <li>• Pregnancy symptoms absent</li> <li>• Uterine size smaller than dates</li> </ul>	<ul style="list-style-type: none"> <li>○ Brownish vaginal discharge</li> <li>○ Cervix closed</li> </ul>	<b>Missed abortion</b>	<ul style="list-style-type: none"> <li>✓ Confirm diagnosis with ultrasound</li> <li>✓ If less than 12 weeks MVA or MA (if <math>\leq 9</math> weeks)</li> <li>✓ If more than 12 weeks refer</li> </ul>
<p><b>a. Light bleeding:</b> takes longer than 5 minutes for a clean pad or cloth to be soaked.</p> <p><b>b. Heavy bleeding:</b> takes less than 5 minutes for a clean pad or cloth to be soaked.</p>			

## MEDICAL ABORTION

Medical abortion (MA) is termination of pregnancy using drugs (Mifepristone and Misoprostol). See [table 5](#) below for the regimens / doses of medical management as outpatient.

**Table 5.** Medical management regimens for abortions  $\leq 9$  weeks of gestation.

Safe Abortion Care (SAC)	Incomplete Abortion	Missed Abortion
<ul style="list-style-type: none"> <li>Mifepristone 200 mg PO day one</li> </ul> <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> <li>Misoprostol 800 µg vaginal/ buccal/ sublingual 36 to 48 hours later</li> </ul>	<ul style="list-style-type: none"> <li>Misoprostol 600 mcg PO</li> </ul> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> <li>Misoprostol 400 mcg buccal /sublingual</li> </ul>	<ul style="list-style-type: none"> <li>Misoprostol 600 mcg buccal/ sublingual (may be repeated every 3 hours for two additional doses)</li> </ul> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> <li>Misoprostol 800 mcg vaginally</li> </ul>

## POST ABORTION CARE

- **Post abortion family planning:**
  - All clients with post abortion and safe abortion care should be counselled on all contraception options before, during and after the procedure as part of abortion care.
  - IUCD can be used immediately after both medical (after confirmation of complete expulsion) and surgical abortion but infections and severe anemia should be ruled out.
  - Hormonal contraception (implants, injectable and pills) can be used immediately after the procedure.
  - Condoms can be used immediately.
- Rh-immunoglobulin (Anti-D) should be administered to all Rh-negative un-sensitized women within 72 hours.
- Identify any other reproductive health service that the woman might need. For example, some women may need:
  - Treatment for sexually transmitted infections
  - Cervical cancer screening
  - A tetanus prophylaxis or tetanus booster

## COMPLICATIONS

Diagnosis (sign and symptoms) and management of complications related to abortion is shown below in [table 6](#).

**Table 6.** Diagnosis and management of complications related to abortion.

Symptoms and Signs	Complication	Management
<ul style="list-style-type: none"> <li>• Chills or sweats (rigors)</li> <li>• Fever</li> <li>• Foul smelling vaginal discharge</li> <li>• Rebound tenderness</li> <li>• Tender uterus</li> <li>• Abdominal/ uterine tenderness</li> <li>• Slightly low blood pressure</li> </ul>	<b>Sepsis</b>	Antibiotics* as soon as possible before attempting manual vacuum aspiration  *continue antibiotics until the woman is fever-free for 48 hours.
<ul style="list-style-type: none"> <li>• Fast weak pulse (110 or more)</li> <li>• Hypotension (systolic &lt; 90 mmHg)</li> <li>• Pallor of the conjunctiva and buccal mucosa or palms</li> <li>• Sweating</li> <li>• Fast breathing (30 or more breaths per minute)</li> <li>• Anxiousness, confusion or unconsciousness</li> </ul>	<b>Shock</b>	Refer <a href="#">management of shock</a> on page -8.
<ul style="list-style-type: none"> <li>• Nausea / vomiting</li> <li>• Shoulder pain</li> <li>• Fever</li> <li>• Abdominal pain, cramping</li> <li>• Distended abdomen</li> <li>• Decreased bowel sounds</li> <li>• Tense and hard abdomen</li> <li>• Rebound tenderness</li> <li>• Observation of bowel content, omental fat per vagina</li> </ul>	<b>Intra-abdominal injury</b>	Refer urgently.



## ECTOPIC PREGNANCY

---

### DEFINITION

An ectopic pregnancy is implantation of a fertilized ovum outside the uterine cavity.

### RISK FACTORS

- History of STI / PID
- History of ectopic pregnancy
- Prior tubal surgery
- History of infertility

### DIAGNOSIS

- **Symptoms and signs**
  - Amenorrhea
  - Vaginal bleeding
  - Abdominal / pelvic pain
  - Fainting
  - Signs and symptoms of shock
  - Abdominal tenderness / rebound tenderness
  - Closed cervix
  - Uterus slightly larger than normal
  - Tender adnexal mass
  - Cervical motion tenderness
- **Imaging** (ultrasound)

### MANAGEMENT

- Open IV line/s and manage if there is shock.
- Refer urgently.

## MOLAR PREGNANCY

---

### DEFINITION

Molar pregnancy is an abnormal proliferation of chorionic villi.

## **CLASSIFICATION**

- Complete mole
- Partial mole

## **DIAGNOSIS**

- **Signs and symptoms:**
  - Nausea / vomiting
  - Vaginal bleeding
  - Partial expulsion of products of conception, which resemble grapes (vesicles)
  - Cramping / lower abdominal pain
  - Uterus larger than dates
  - Uterus softer than normal
  - No evidence of a fetus (complete mole)
  - Hyperthyroidism
  - Preeclampsia before 20 weeks of gestation
- **Investigation:**
  - CBC
  - Blood group and Rh
  - Serum  $\beta$ -hCG (preferably) otherwise urine hCG
  - Ultrasound

## **MANAGEMENT**

- Open an IV line and refer.

# HYPEREMESIS GRAVIDARUM

## DEFINITION

Hyperemesis Gravidarum (HG) is severe form of nausea and vomiting during pregnancy resulting in dehydration and weight loss.

## RISK FACTORS

- Multiple pregnancy
- Previous history
- Family history
- Young age
- Primigravity
- Molar pregnancy

## DIAGNOSIS

### Signs and symptoms:

- Severe nausea and vomiting
- *Dehydration*: Loss of skin elasticity, sunken eyeballs, dry mucus membranes and lips
- Vital sign derangement
- Confusion
- Fainting
- Weight loss (more than 5%)
- Symptom and signs of complications

**NOTE:** *The diagnosis of hyperemesis is considered in the presence of severe nausea and vomiting after exclusion of other causes of nausea and vomiting during pregnancy.*

### Investigations:

- Urinalysis
- Stool exam
- CBC
- RBS
- Pelvic ultrasound

## DIFFERENTIAL DIAGNOSIS (DDX)

- Peptic ulcer disease

- Pyelonephritis
- Gastroenteritis
- Hepato-biliary diseases (hepatitis, cholecystitis)
- Diabetic ketoacidosis

## **MANAGEMENT**

### **Mild to moderate cases**

- Ketonuria +2 or less
- Diagnosis confirmed
- Signs of dehydration

#### ***IV fluids / medications***

- Infuse the first litre over 1-2 hours then 1000mls over 4 hours (2 Bags over 5 to 6 hrs), followed by further assessment, including urine ketone testing.
- Discharge the patient from outpatient care if improved within 24 hours with PO medications and dietary advice.

#### **Or**

- Refer the woman if:-
  - Ketonuria above +2
  - Persistent vomiting / failed OPD management

#### ***PO Medications***

- Vitamin B6 (pyridoxine):- 10 – 25 mg PO BID-QID and Meclizine 25 mg PO TID, **or**
- Metoclopramide:- 5 - 10 mg PO TID, **or**
- Promethazine:- 12.5 - 25 mg PO TID to QID, **or**
- Chlorpromazine 12.5 mg IM BID

#### ***Dietary Advice:***

- Avoid full or empty stomach.
- Restriction of coffee, and spicy, odorous, fatty, acidic and overly sweet foods.
- Advise on taking Ginger containing preparations.
- Preferably take protein rich, salty, low fat, bland and dry snacks/meals (e.g. nuts, pretzels (derek kita, dabo kolo)).
- Encourage fluid intake (better tolerated if cold, clear, and carbonated or sour).
- Advise on taking peppermint containing products (candy, chewing gum) as it can reduce postprandial nausea.

- Advise not to take drugs that may cause nausea and vomiting, e.g. iron supplement should be temporarily discontinued.
- Counsel on avoiding of environmental triggers: - stuffy rooms, strong odors (e.g. perfume, chemicals, food, and smoke), heat, humidity, noise, and visual or physical motion (e.g. flickering lights, driving) should be avoided.

**NOTE:** Severe cases (weight loss > 5%, ketonuria above +2, persistent vomiting) of hyperemesis gravidarum need inpatient treatment and should be referred to a hospital.

## COMPLICATIONS

### *Maternal*

- Esophageal tear or rupture
- Peripheral neuropathy due to B6 and B12 deficiency
- Wernicke's encephalopathy
- Liver and renal failure

### *Fetal*

- Preterm delivery
- Stillbirth
- Miscarriage
- Fetal growth restriction
- Fetal death

## ANTEPARTUM HEMORRHAGE (APH)

### DEFINITION

Ante-partum haemorrhage (APH) is vaginal bleeding from the 28th week of gestation till the fetus (last fetus in case of multiple pregnancy) is delivered.

### CLASSIFICATION (CAUSES)

#### *Placental causes*

- Abruptio placentae
- Placenta previa
- Rare causes: vasa previa and other placental abnormalities

#### *Non-Placental causes*

- Heavy show
- Uterine rupture / dehiscence
- Local lesions of the cervix, vagina and vulva
- Systemic bleeding disorders
- Indeterminate: causes of bleeding not identified even after delivery and examining the placenta.

## PLACENTAL ABRUPTION

---

### DEFINITION

Placental abruption (also called abruptio placentae) is a separation of the normally implanted placenta before delivery of the fetus.

### RISK FACTORS

Previous history of abruptio placentae, hypertension, multiparity, maternal age greater than 35 years, multiple pregnancy, PROM, distorted uterine cavity, abnormal placenta, low socio-economic status, smoking, trauma (e.g. domestic violence, ECV), polyhydramnios, short cord, amniocentesis and others.

## CLASSIFICATION

*Table 7.* Classification of Abruption placenta

<i>Clinical presentation</i>	<i>Mild (Grade 1)</i>	<i>Moderate (Grade 2)</i>	<i>Severe (Grade 3)</i>
Amount of blood	<400 mL	400-1000mL	>1000mL
Uterine irritability (pain/tenderness)	Normal / slightly increased	Increased	Tetanic, reactive, board like, tender on palpation
Fetal condition	Normal	Abnormal / rarely death	Fetal distress or death common
Shock	Absent	Mild, postural hypotension	Severe and always present

## DIAGNOSIS

The clinical presentation of abruption placenta mainly depends on the extent of placental separation, rate of separation and flow of blood through the cervix (concealed/ revealed).

- Vaginal bleeding: menstrual-like (dark), totally concealed or the amount is less than the degree of the shock
- Abdominal pain/ (uterine) tenderness
- NRFHRP or absent fetal heart beat
- Coagulation defect: frank bleeding (epistaxis, ecchymosis, petechiae)

## INVESTIGATIONS:

- CBC (HCT, platelet count)
- Blood group and Rh
- Bedside clotting test
- Ultrasound (if available): fetal assessment and for exclusion of placenta previa

## TREATMENT:

- Start an IV infusion and do Hgb, blood group & Rh
- If preterm, Dexamethasone 6mg IV stat
- Refer urgently accompanied by a health provider.

**If the patient is in shock, follow [management of shock](#) AND REFER.**

## COMPLICATIONS

- Hemorrhagic shock (acute kidney injury, congestive heart failure)
- DIC
- Utero-placental insufficiency that may lead to IUGR, fetal distress or IUFD
- PPH

## PLACENTA PREVIA

---

### DEFINITION

Placenta previa is defined as the presence of placental tissue over or adjacent to the cervical os.

### CLASSIFICATIONS

**Placenta previa:** Internal cervical os is covered partially or completely by placenta.

**Low lying:** Placenta lies within 2 cm of the cervical os but doesn't cover it.

### RISK FACTORS

- Scarred uterus: previous uterine surgery (CS, myomectomy), uterine curettage
- Previous history of placenta previa
- Large placenta: Multiple pregnancy, diabetes, smoking, syphilis, Rh incompatibility
- High parity and advanced maternal age

### DIAGNOSIS

- Vaginal bleeding: bright red, painless and recurrent
- Ultrasound (if available) for placental localization and fetal wellbeing assessment

### TREATMENT

- Start an IV infusion and do Hgb, blood group & Rh
- If preterm, Dexamethasone 6mg IV stat
- Refer urgently accompanied by health care provider.

**If the patient is in shock, follow [management of shock](#) AND REFER**

**NOTE:** *Do not do vaginal examination.*

### COMPLICATIONS

- PPH
- Hemorrhagic shock
- Fetal distress or IUFD



# MULTIPLE PREGNANCY

## DEFINITION

Multiple pregnancy is development of more than one fetus in a pregnant uterus at the same time.

## CLASSIFICATION

- Based on number of fetuses:
  - Twins (two fetuses)
  - Triplets (three fetuses)
  - Other higher order multiple pregnancies (more than three fetuses).
- Based on zygosity:
  - Monozygotic, dizygotic, etc.

## RISK FACTORS

- Family history of multiple pregnancy particularly on the maternal side
- Previous history of multiple pregnancy
- History of ovulation induction or in vitro fertilization
- Age greater than 35 years

## DIAGNOSIS

### History:

- Excessive vomiting
- Leg swelling
- Abdomen bigger than previous pregnancies in a parous woman
- Excess maternal weight gain
- Breathlessness, easy fatigability, palpitation during later months of pregnancy
- Exaggerated fetal movements (kicks)

### Physical examination:

- Fundal height is large for date
- Palpation of more than two fetal poles
- Two fetal heart beats heard at the same time by two health providers & differing in rate by at least 10 beats per minute.

### Ultrasonography:

- Prenatal ultrasound is important in the early diagnosis of a multiple gestation and determining placentation (chorionicity).

### MANAGEMENT

- As soon as a diagnosis of multiple pregnancy is made or suspected and if not in labor **REFER** to a hospital for complete evaluation.
- **Mode of Delivery (if in labor)**
  - **First baby (Twin –A) vertex presentation:**
    - Allow labor to progress as a single vertex presentation and monitor progress of labor using a partograph.
  - **NOTE:** Refer early if twin B does not deliver within 30 minutes of delivery of twin A (do not do total breech extraction).
  - **First baby (Twin A) Non-vertex presentation:**
    - Open IV line and refer urgently to a hospital for cesarean delivery.

### COMPLICATIONS

- **Maternal:**
  - Hyperemesis gravidarum
  - Spontaneous abortion
  - Anemia
  - Pregnancy-induced hypertension/ pre-eclampsia
  - Polyhydramnios
  - Retained placenta
  - Post-partum hemorrhage
- **Placental / fetal complications:**
  - Placenta previa
  - Abruptio placentae
  - Placental insufficiency
  - Preterm delivery
  - Low birth weight
  - Malpresentation
  - Cord prolapse
  - Congenital anomalies
  - Conjoined twins
  - Interlocking of twins
  - Twin to twin transfusion syndrome (TTTS)
  - Delayed delivery of the second twin

# PREMATURE / PRE-LABOR RUPTURE OF MEMBRANES (PROM)

## DEFINITION

Premature / pre-labor rupture of fetal membranes is rupture of membranes (ROM) before the onset of labor.

Prolonged PROM is rupture of membranes of > 12 hours duration.

## CLASSIFICATION

- **Term PROM:** is rupture of membranes at or after 37 completed weeks of gestation.
- **Preterm PROM:** is rupture of membranes before 37 completed weeks of gestation.

## RISK FACTORS

- *Mechanical factors:* multifetal gestation, polyhydramnios, pulmonary diseases, cervical conization/ LEEP/ cerclage.
- *Urogenital infections:* UTI, cervicitis, GBS, bacterial vaginosis.
- Previous history of PROM or preterm labor.
- Second trimester and third trimester bleeding (e.g. abruptio placenta).
- *Other risk factors:* low socioeconomic status, nutritional deficiencies, low BMI, smoking and connective tissue disorders.

## DIAGNOSIS

### History:

- A sudden "gush" or intermittent or continuous leaking of clear or pale-yellow fluid from the vagina before the onset of labor.
- Duration of leakage
- In addition ask for symptoms of chorioamnionitis and other complications:-
  - Fever
  - Fetal movement
  - Prolapsed cord
  - Abdominal pain
  - Offensive vaginal discharge

### Physical examination:

- Vital signs: mainly check for fever and tachycardia.

**Abdominal examination:** Common findings include:-

- Abdominal tenderness
- Fundal height may be less than the GA
- Mal-presentations and abnormal lie
- Fetal tachycardia

**Pelvic examination:-**

**NOTE: Avoid digital pelvic examination in all cases of preterm PROM.**

- *Inspection of the external genitalia:* leakage of liquor per vaginum, and note the amount, color and odor.

**Speculum examination:-**

- Perform a sterile speculum examination using sterile gloves and speculum.
- Observation of amniotic fluid coming out of the cervical canal and/ or presence of prolapsed cord.
- If active leakage is not visible apply slight fundal pressure or use Valsalva maneuver or let her cough to provoke leakage of amniotic fluid from the cervix.
- Pooling in the vaginal fornix needs further evaluation as the collection may be due to excessive vaginal discharge or urine.
- Presence of meconium, vernix caseosa or lanugo hair in the fluid pooling indicates PROM and presence of uriniferous smell suggests urinary incontinence.
- Inspect for cervical dilatation (open or closed)

**Pad test:-**

- Can be helpful when there is no pooling & no visible leakage from cervix.
- Place a vaginal pad over the vulva and encourage moving around.
- Examine the pad an hour later visually and by smelling (odour).
- Wetting with no urine and no vaginal discharge (vaginitis) may suggest PROM.

### **Investigations**

- Ultrasound examination
- CBC
- Urinalysis

### **MANAGEMENT**

Management of PROM depends on the gestational age (term or preterm), presence of chorioamnionitis (maternal fever, tachycardia, uterine tenderness, offensive vaginal discharge and fetal tachycardia) or other complications of PROM, and presence of other obstetric risk conditions.

## Term PROM

- Cephalic presentation, no complications of PROM and no other obstetric risk (APH, previous caesarean, multiple pregnancy, or hypertension) without labor:
  - Admit to the labor ward.
  - Monitor maternal vital signs every hour.
  - Monitor fetal heart beat every 30 minutes.
  - If labor does not start within 8 hours after rupture of membranes – **Refer after administering initial dose of antibiotics** (Ampicillin 2 gram IV).
  - If there is chorioamnionitis or other complications of PROM, or other obstetric risk factors: refer as soon as possible after initiating IV antibiotics:-
    - Ampicillin 2 g IV, **OR**
    - Ampicillin 2 g IV PLUS Gentamicin 5 mg/kg body weight IV if there is chorioamnionitis.
- If labor has already ensued but no evidence of infections:
  - Admit to labor ward.
  - Manage as per standard labor management protocols.
  - If the membrane rupture has exceeded 8 hours, cover with broad spectrum antibiotic (2gm IV Ampicillin QID till delivery).

## Preterm PROM

- Ascertain gestational age and assess for complications.
- If chorioamnionitis is present provide initial dose of antibiotics (Ampicillin 2gm IV and Erythromycin 250 mg P.O).
- **Refer immediately.**

## COMPLICATIONS

**Maternal:** Chorioamnionitis, abruptio placentae, retained placenta and hemorrhage, maternal sepsis, and higher risk for cesarean delivery.

**Fetal and Neonatal:** Infection, umbilical cord compression as a result of oligohydramnios, frank or occult umbilical cord prolapse, fetal death, preterm birth and associated complications (RDS, NEC, IVH, etc), neonatal infections, long-term sequelae such as cerebral palsy, pulmonary hypoplasia and restriction deformities.

# NORMAL LABOR AND DELIVERY

## DEFINITION

**Labor** is a process of regular uterine contractions resulting in progressive cervical effacement and dilatation which ends in the delivery of the fetus, placenta and membranes.

**Normal labor and delivery:** Labour is considered normal when the following conditions are fulfilled:

- Laboring mother without any apparent risk (e.g. pre-eclampsia, previous scar, etc.)
- Labor should start spontaneously
- Labor should start at term
- Vertex presentation
- Spontaneous vertex delivery with minimal assistance
- Normal duration for all stages of labor and
- Good neonatal and maternal outcome

**False labor:** False labor is irregular uterine contractions prior to actual labor pains resembling those of normal labor. Signs of false labour are:-

- Mild pain and irregular contractions
- There is no blood-stained mucous discharge (show)
- No progressive cervical dilatation observed on follow up

## STAGES OF LABOR

### First stage of labor:

The period between onset of regular uterine contractions and full cervical dilatation. It is subdivided into two phases: -

**Latent phase:** The phase of labor between the onset of regular uterine contraction to 5 cm of cervical dilatation (often slow & unpredictable rate of cervical dilatation).

**Active phase:** The phase of labor after 5 cm of cervical dilatation to full cervical dilatation (more rapid rate of cervical dilatation)

### Second stage of labor:

The stage of labor from full cervical dilatation to delivery of the last fetus (often associated with involuntary urge to push due to expulsive uterine contractions).

### Third stage of labor:

The stage of labor from delivery of the last fetus to the delivery of the placenta & membranes.

## **DIAGNOSTIC CRITERIA OF TRUE LABOR**

Regular, rhythmic uterine contractions ( $\geq 2$  contractions in 10 minutes) with one or more of the following conditions:

- Rupture of the membranes
- Cervical effacement of  $\geq 80\%$
- Cervical dilatation of 4 centimeters
- Bloody show (if fetal membranes are ruptured or if digital vaginal examination was done within the past 48 hours, show shouldn't be used as diagnostic criteria).

**NOTE:** Always rule out false labor to avoid unnecessary intervention.

## **ADMISSION CRITERIA**

- All women with diagnosis of labour (latent and active) should be admitted.
- Mothers with certain risk factors should be referred as per the guidance provided under [linkage and referral](#) (page 54 below).

## **ADMISSION PROCEDURE**

- Warm and friendly acceptance.
- Immediate assessment of maternal and fetal conditions to check for signs of imminent delivery.
- Review ANC record and revise her birth preparedness plan (e.g. PFP).
- Appropriate history and physical examination (including vaginal examination).
- Perform laboratory investigations which are not determined during ANC (e.g. blood group and Rh, urine analysis, VDRL, HBsAg and HIV test).
- If urine analysis and hemoglobin / hematocrit are not determined within the past two weeks, repeat the test.
- If serology for HIV is positive refer to section [on intrapartum care of HIV positive pregnant women for PMTCT](#) (page 126).
- Inform and regularly update client and attendants about her condition and the status of labor.
- Provide loose fitting gown (if possible).
- Revise her postpartum contraception plan, counsel and prepare accordingly. However, if the client is in active labor postpone the counseling to the immediate postpartum period.

## MANAGEMENT DURING FIRST STAGE OF LABOR

### LATENT PHASE OF FIRST STAGE OF LABOR (LFSOL)

If the client is in LFSOL and fulfils admission criteria, admit and follow using the “latent phase follow-up chart” below ([table 8](#)).

During the latent phase follow:

- Uterine contraction, FHR and PR every 1 hour
- BP every 4 hours (if indicated more frequently)
- Cervical condition every 4 hours but should also be done after spontaneous rupture of membranes, in the presence of abnormal FHR or before giving analgesia.

**Table 8.** Latent phase of first stage of labor follow up chart.

Name _____ Age _____ MRN _____											
Admission diagnosis _____						Status of membranes _____					
If ruptured duration in hours _____				Admission date _____				Time _____			
Date	Time	BP	PR	RR	T <sup>0</sup>	FHR	Uterine contractions	Cervical dilatation & effacement	Colour of liquor	Remark	Sign.

### ACTIVE PHASE OF FIRST STAGE OF LABOR

All observations and findings should be recorded on the partograph ([figure 2](#)) if the client presents with cervical dilatation of  $\geq 5$  cm.

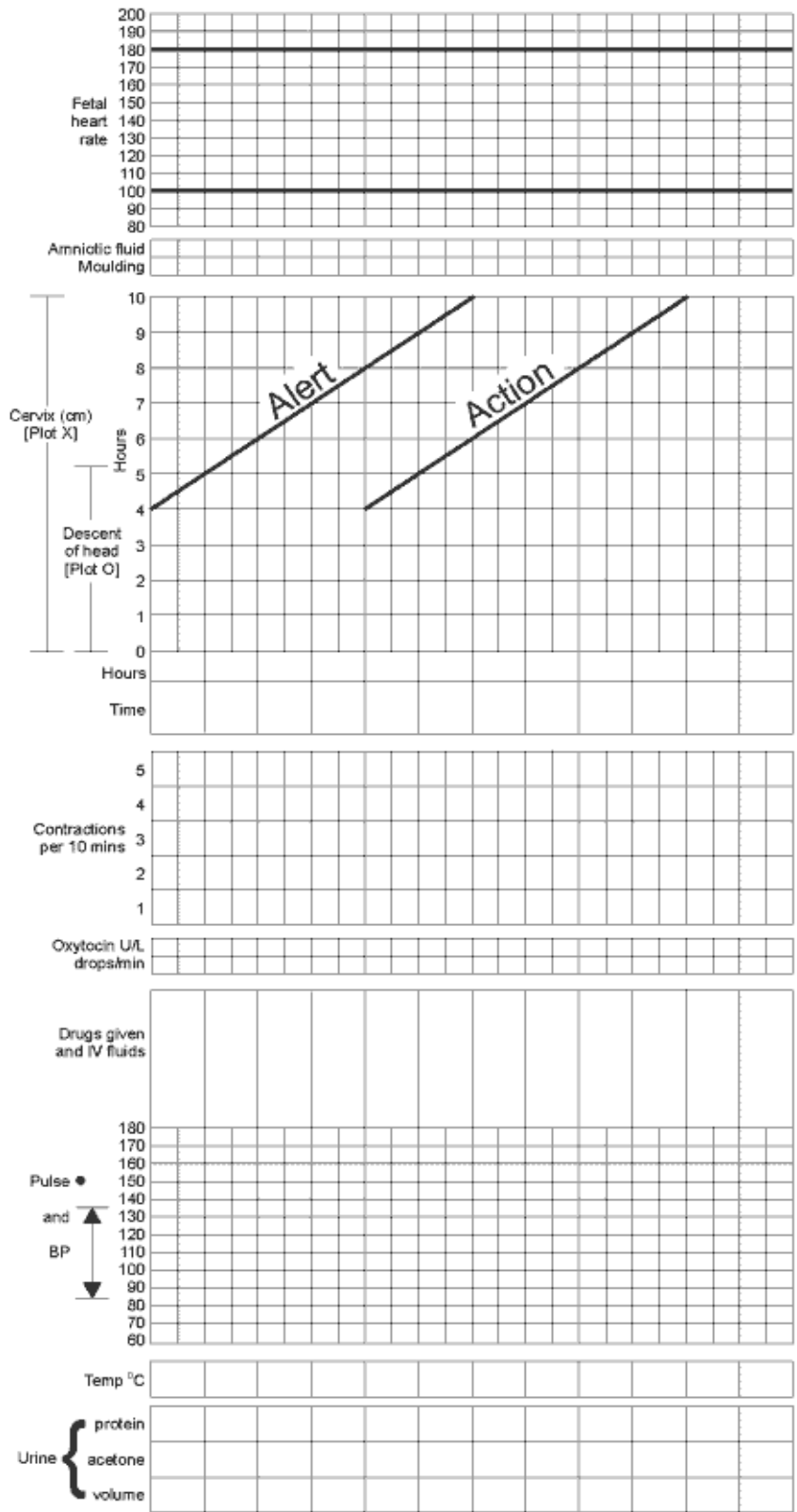
**NOTE:** *Partograph is started by plotting the cervical dilatation on the alert line.*

#### Parts of the partograph

- Identification
- Fetal condition
- Labor progress
- Maternal condition



Name \_\_\_\_\_ Gravida \_\_\_\_\_ Para \_\_\_\_\_ Hospital number \_\_\_\_\_  
 Date of admission \_\_\_\_\_ Time of admission \_\_\_\_\_ Ruptured membranes \_\_\_\_\_ hours \_\_\_\_\_



**Figure 2.** Partograph

## VAGINAL EXAMINATION DURING LABOR FOLLOW UP

**Vaginal examination** is done to evaluate cervical dilatation, station, fetal position, fetal presentation, pelvic adequacy, status of liquor, molding and caput. The frequency of vaginal examination is every 4 hours but can be repeated:-

- After spontaneous rupture of membranes
- When there is abnormal FHR (NRFHR), and
- If symptoms are suggesting for second stage of labor (to confirm the diagnosis).

### 1. MONITORING FETAL CONDITION:

#### FHR:

- Use Pinnard fetoscope or Doppler fetoscope device
- Count the FHR immediately after contraction for 1 min, every 30 min for low risk pregnancy and every 15 min for high-risk pregnancy.
- Continuous electronic FHR monitoring is preferred to monitor high-risk pregnancies.
- Normal FHR for a term fetus is 120-160 BPM. If FHR is <120 or >160, manage as non-reassuring fetal heart rate (NRFHR).

**Grading of meconium:** assess the status of liquor for meconium or blood

- Clear liquor
- Grade I - Good volume of liquor, lightly meconium stained
- Grade II - Reasonable volume with a heavy suspension of meconium
- Grade III - Thick meconium / particulate matter which is undiluted

**NOTE:** *A newly appearing meconium is an alarming sign.*

#### Grading of molding:

- No molding - The cranial bones are separate along the suture lines
- Grade I- Fetal cranial bones are touching each other along the suture lines
- Grade II- Fetal cranial bones are overlapping but can be separated
- Grade III- Fetal cranial bones are overlapping & are not separable

### 2. MONITORING PROGRESS OF LABOR

#### Uterine contraction:

- Frequency (uterine contractions per 10 min), duration and intensity of each contraction are determined by palpation every 30 minutes.



## Urine

- Monitor urine output
- Test urine for ketone and protein

## Maternal position

- Avoid supine position.
- The mother should not be confined to bed unless contraindicated (e.g. sedated patient, for frequent monitoring, high head and ruptured membranes).
- She can assume any position comfortable to her (left lateral, right lateral, sitting) irrespective of the stage of labor.

## Nutrition - Oral intake

- In general, encourage oral intake of liquid diet (tea, juice) but not hard foods.
- Consider non-particulate fluid diet as a source of water and energy for those mothers staying longer before delivery (e.g. small sips of sweetened tea or water).

## Companionship in labor

- Encourage the partner to accompany the spouse who is in labor.
- Partner support and education should start during antenatal care and continue throughout child birth.

## Pain management

- All available pain management options should be informed to the client. Provision of pain relief should be individualized based on availability, preference and request.
- Options of pain relief in labor can be non-pharmacologic or pharmacologic.
- Non pharmacologic pain management options include continuous emotional support, massaging (back rubbing) and hot compress (back).
- Pharmacological options include opioids such as pethidine, diamorphine and fentanyl.
- Whenever opioids are used during labor (>4 cm), all preparations should be made to treat neonatal respiratory depression. This includes preparation of ventilation, oxygenation, gentle stimulation and judicious use of the opioid antagonist naloxone.

## PHARMACOLOGICAL PAIN MANAGEMENT

*Opioids alone (pethidine, diamorphine and fentanyl are options)*

*Pethidine injection: 50 mg IM initially. Assess after ½ hr and if not adequate and side effects not troublesome, repeat 50 mg. Onset of action is within 10 - 20 min and lasts for 2-4 hours.*

*Pethidine injection: 25- 50 mg IV, onset of action immediately and effect lasts for 1.5 -2 hrs. Repeat doses every 1-2 hours depending on the level of sedation. Always check respiratory depressant effect of pethidine on the mother as well as the neonate.*

## MANAGEMENT DURING SECOND STAGE

### MATERNAL CARE AND WELLBEING EVALUATION

- BP monitoring: every 1 hour (if indicated more frequently)
- PR, temp. and RR: every 30 minutes
- Evaluate general condition: fatigue and state of hydration
- Evaluate for the presence of the urge to push and /or effort
- She can attain any position until the presenting part is visible or delivery is imminent
- The woman should be encouraged to empty her bladder before delivery

### FETAL STATUS MONITORING

- FHR - Every 15 min for low-risk pregnancy
- FHR- Every 5 min for high-risk pregnancy (or if available, using continuous FHR monitoring)
- Evaluate the status of liquor (progress of meconium staining) during pelvic examination

### LABOR PROGRESS EVALUATION

- Evaluate the degree of descent and or station every 1 hour
- Look for extent of caput and degree of molding

### PREPARATION FOR DELIVERY

- Notify the labor ward staff that delivery is imminent.
- Take the woman to the delivery room (if it is a separate room).
- Make sure all equipment for delivery and newborn care (e.g. well-equipped, pre-warmed neonatal corner) are available.
- The birth attendant should wash hands and wear complete personal protection equipment (gloves, gown, apron, mask, cap and eye protection).

- Sterile draping in such a way that only the immediate area around the vulva is exposed.
- Perineal care: clean the vulva and perineum with antiseptics / tap water (downward and away from the introitus). Wipe feces downwards. Avoid routine vaginal cleansing.

## ASSISTANCE OF SPONTANEOUS DELIVERY

**Goal:** Reduction of maternal trauma, prevention of fetal injury and initial support of the newborn.

### Perineal protection (hands on birth)

Perform perineal guard support during childbirth ([figure 4](#)) to reduce perineal trauma & facilitation of birth.



**Figure 4.** Perineal Support

### Delivery of the Head

- Support the perineum to prevent rapid delivery and to assist extension of the head.
- Check for presence of cord around the neck and disentangle from the head or if tight, clamp at two sites to cut the cord.
- After delivery of the head, wipe the mouth and nose (routine suctioning of oropharynx is not recommended).

### Episiotomy:

- Routine performance of episiotomy should be avoided and individualization is important.
- Indications for episiotomy:
  - imminent perineal tear
  - perineal resistance for fetal head descent (tight perineum)
  - presence of fetal / maternal indication for expedited delivery

- Timing of episiotomy: when the presenting part distends the vulva 2-3cms (unless early delivery is indicated)
- Type: Medio-lateral episiotomy is recommended

**NOTE:** *Analgesia / anaesthesia should be given before episiotomy is performed and during repair.*

### **Delivery of the rest of the body**

- After delivery of the head, allow restitution.
- Hold on both sides of the head and gently pull the head downwards to deliver the anterior shoulder.
- Deliver the posterior shoulder by pulling upwards after the delivery of the anterior shoulder.
- The rest of the body usually follows easily. Support the baby's body with both hands and place the baby on the mother's abdomen.
- Dry the newborn's body with clean and dry towel. Remove the wet towel and wrap the newborn with a dry towel.
- Record the time, APGAR score and sex of the baby.
- Inform the mother.

### **Cord Clamping**

- Delay cord clamping for 1-3 minutes after delivery or until cord pulsation is absent (either of the two which comes first).
- Clamp the cord immediately in the following conditions: preterm baby, low birth weight, neonatal asphyxia, Rh isoimmunized pregnancy or HIV.
- Clamp the cord 4-5 cm away from the umbilicus.
- Take cord blood if indicated.

## LINKAGE AND REFERRAL

### MOTHERS WHO ARE NOT ELIGIBLE TO LABOR IN HEALTH CENTER

- Previous caesarean section scar or myomectomy scar
- Age <16 years
- < 37 wks of gestation
- Suspected intrauterine growth restriction
- Suspected fetal macrosomia
- Multiple pregnancy
- Antepartum hemorrhage
- Rh isoimmunization (*indirect Coomb's test positive*)
- Malpresentation
- Preeclampsia and other hypertension disorders
- Severe anemia
- Pelvic mass
- Extensive vulvar warts that may obstruct vaginal delivery
- Prolonged premature rupture of the membranes
- General medical conditions: diabetes mellitus, cardiac disease, kidney disease, epilepsy, asthma on medication and active tuberculosis

### MOTHERS ELIGIBLE FOR REFERRAL DURING LABOR

- Suspected chorioamnionitis or offensive liquor
- Prolonged labor
- FHB < 120 and > 160, if delivery is not imminent
- Meconium-stained liquor
  - Grade 1 in latent and early active first stage of labor
  - All thick meconium (grade  $\geq 2$ ) (if delivery is not imminent)
- Cord prolapse / presentation (if delivery is not imminent)
- Failed vacuum delivery
- Cephalopelvic disproportion
- Obstructed labor



## THIRD STAGE OF LABOR

### DEFINITION

Third stage of labor is the time interval from the delivery of the last fetus up to the expulsion of the placenta.

During this stage, there is a significant risk of hemorrhage. In Ethiopia, nearly half of the total number of maternal deaths is contributed by hemorrhage which can be largely prevented.

Therefore, all mothers require close monitoring and routine prevention of postpartum hemorrhage (PPH) through active management of third stage of labor (AMTSL).

### ACTIVE MANAGEMENT OF THIRD STAGE OF LABOR (AMTSL)

AMTSL refers to a sequence of clinical actions taken by a skilled birth attendant to facilitate the delivery of the placenta, by promoting uterine contraction and placental expulsion. Every woman who delivered vaginally in the health facility should be managed with AMTSL.

### COMPONENTS OF AMTSL

1. Administer uterotonic medication within one minute of the birth of the last baby.

#### Drugs used for AMTSL:

**Oxytocin:** the preferred drug for AMTSL and 1<sup>st</sup> line drug for PPH caused by uterine atony.

**Ergometrine:** the 2<sup>nd</sup> line drug for PPH though associated with more serious adverse events. Ergometrine is contraindicated in hypertensive women and in those with cardiac problems.

**Misoprostol:** is cheap and stable at room temperature.

**NOTE:** Uterotonics require proper storage:

- *Oxytocin:* 2 - 8° C, protect from freezing
- *Ergometrine:* 2 - 8° C, and protect from light and freezing.
- *Misoprostol:* room temperature, in a closed container.

#### Use of uterotonic agents:

- Within one minute of the delivery of the baby, palpate the abdomen to rule out the presence of an additional fetus(s).
- Within one minute of the delivery of the baby, give uterotonic medication.
- Give oxytocin 10 IU IM injected deep into the thigh muscles. It is effective 2-3 minutes after injection. It has minimal side effects and can be used in all mothers.

- If oxytocin is not available, administer other uterotonic agents (within one minute of delivery):
  - Carbetocin 100 micrograms IV or IM, or
  - Ergometrine 0.2 mg IM, or
  - Misoprostol 600 mcg oral

## 2. Controlled cord traction

- a. Clamp the cord close to the perineum within 1-3 minutes after delivery or after cord pulsation stops (either of the two whichever comes first). Early cord clamping (< 1 min) is recommended if the neonate is asphyxiated and needs resuscitation.
- b. Place the other hand just above the woman's pubic bone and stabilize the uterus by applying counter-pressure during controlled cord traction.
- c. Keep slight tension on the cord and wait for strong uterine contraction.
- d. With strong uterine contraction, gently pull downward on the cord to deliver the placenta. Continue to apply counter-pressure to the uterus.
- e. If the placenta does not descend, wait until the uterus contracts and repeat the controlled cord traction with the next contraction.
- f. As the placenta delivers, hold the placenta in two hands and gently turn it until the membranes are twisted. Slowly pull to complete the delivery.
- g. If the placenta remains undelivered for 30 minutes after delivery of the fetus, manage as retained placenta (see [management of retained placenta](#), page 73).
- h. Inspect both the placenta and fetal membranes for completeness.

## 3. Verification of uterine tone and uterine massage if the uterus is not well contracted.

- a. Immediately check for contraction and if the uterus is soft, massage the fundus of the uterus until the uterus is well contracted.
- b. Assess uterine tone every 15 minutes for the first 2 hours after delivery. If the uterus is atonic, massage the uterus.
- c. Teach the woman how to assess uterine tone and massage her own uterus.
- d. Estimate and record blood loss.

**NOTE:** - *Sustained uterine massage is not recommended as an intervention to prevent postpartum hemorrhage.*

- *Provide post-natal family planning counseling for informed choice & decisions (implement when applicable).*

# CARE FOR THE NEWBORN AT BIRTH

## ESSENTIAL NEWBORN CARE (ENC)

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### DEFINITION

Essential newborn care (ENC) is care given to all newborn infants at birth to optimize their chances of survival and wellbeing.

ENC starts before birth and extends to postnatal period.

### COMPONENTS

- Prevent hypothermia
- Observe for the first breath (spontaneous breathing)
- If there is any difficulty to establish spontaneous breathing, immediately start resuscitation
- Cord and eye care
- Provide vitamin k
- Put the baby skin to skin contact with mother
- Start exclusive breast feeding within one hour of birth.
- Measure newborn's weight
- Vaccination with BCG, HBV and polio 0

### PREPARATION FOR ENC DURING BIRTH

- Every delivery should be attended with the anticipation of need for newborn resuscitation
- Personnel should always wash hands with soap and water and use PPE
- Keep the delivery room warm
- Prepare the newborn corner / resuscitation area
  - Turn on the radiant warmer before the baby is delivered
  - Prepare functional self-inflating bag
  - Prepare functional bulb suction or suction device with catheter
  - Prepare stethoscope, clock and thermometer

### STEPS IN ESSENTIAL NEWBORN CARE (ENC)

### Step 1: Dry and stimulate

- Deliver the baby on clean, dry towel draped over the mother's abdomen.
- Immediately dry the whole body (including the head and limbs).
- Stimulate by rubbing the back or flicking the soles of the feet.
- Remove the wet towel and wrap with dry towel to keep the baby warm.
- Let the baby stay in skin to skin contact on the mother's abdomen.

### Step 2: Evaluate Breathing

- While drying and stimulating newborn check if the baby is breathing.
- Always keep the head in a slightly extended position.
- If the baby is not crying or breathing immediately cut the cord, call for help and shift to resuscitation corner (see below).
- If the baby cries or breathes well, continue routine essential newborn care.
- Do not do suction of the mouth and nose as a routine. Do it only if there is thick meconium, mucus or blood obstructing the airway.

#### **NORMAL BREATHING**

Normal breathing rate in a newborn baby is 30 to 60 breaths per minute. The baby should not have any chest in-drawing or grunting. Small babies (less than 2.5 kg at birth or born before 37 weeks gestation) may have some mild chest in-drawing and may periodically stop breathing for few seconds.

### Step 3. Cord care

- If the baby does not need resuscitation, clamp the cord within 1-3 minutes after birth or after cord pulsations are absent (whichever comes first).
- Tie the cord 2 fingers from the baby's abdomen and another tie 2 finger away from the first tie, and then cut the cord between the first and the second tie. Make sure it is tied well with no oozing of blood.
- The cord may be tied by using sterile cotton ties, elastic bands, or pre-sterilized disposable cord tie.
- Cut the cord with sterile scissors or surgical blade, under a piece of gauze in order to avoid splashing of blood.
- At every delivery, a clean separate pair of scissors or blade should be designated for this purpose.
- Apply 4% Chlorhexidine immediately after cutting the cord and then daily for 7 days.
- Check for bleeding / oozing and re-tie if necessary.

- Advise the mother not to cover the cord with the diaper or bandage as it may delay healing and introduce infection.

#### **Step 4. Keep the newborn warm (prevent hypothermia)**

- Support the mother to keep the baby warm by placing skin-to-skin contact on her chest.
- Cover the baby's body and head with pre-warmed clean cloth including hat and socks.
- Use a blanket to cover the baby and the mother.
- Keep the newborn with the mother.
- Delay bathing for at least 24 hours.

#### **Step 5. Initiate breastfeeding in the first one hour**

- Support immediate initiation of breast feeding within one hour of birth.
- Advise to breastfeed on demand day and night and no less than 8-12 times a day.
- Newborns should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health.

#### ***Early initiation of breastfeeding***

Means initiating breastfeeding within the first hour of birth, with counselling for correct positioning.

#### **Step 6. Administer eye drops / eye ointment**

- Wash hands with soap and water
- Clean from medial to lateral side
- Apply tetracycline eye ointment on both eyes over the lower conjunctiva within 1 hour of birth usually after initiating breast feeding.

#### **Step 7. Administer vitamin K**

- Give vitamin K 1 mg IM on the anterior lateral tie (for babies less than 34 weeks gestation give 0.5 mg).

#### **Step 8. Place the newborn's identification**

- Put newborn identification band on the baby preferably on the wrist and/or ankle.


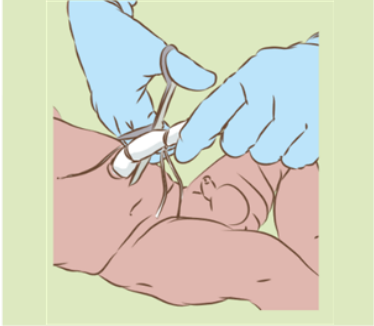




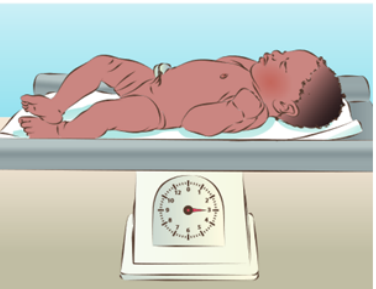
#### **Step 9. Measure newborn's weight**

- Weigh the newborn when it is stable and warm
- Place clean linen or other alternatives on the pan of the weighing scale
- Remove clothes and place the baby on the weighing scale
- Never leave the baby unattended on the scale
- Record the baby's weight in the delivery summary and inform the mother

## Step 10. Record all observations and treatment

- Record all findings and care provided for the newborn on the mother's chart and the registration book.

**NOTE:** The steps in essential new born care are summarized in [figure 5](#) below.

<p><b>Step 1:</b> Deliver baby on to mother's abdomen or into her arms</p> 		<p><b>Step 6:</b> Apply Tetracycline eye ointment</p> 
<p><b>Step 2:</b> Dry baby's body with dry towel. Wipe eyes. Wrap with another dry one and cover head</p> 	<p><b>Step 4:</b> Tie the cord two fingers from abdomen and another tie two fingers from the 1<sup>st</sup> (if no clamp). Cut the cord between the 1<sup>st</sup> and 2<sup>nd</sup> tie (clamp)</p> 	<p><b>Step 7:</b> Give Vitamin K, 1mg IM on anterior mid-thigh</p> 
<p><b>Step 3:</b> Assess breathing and color. If &lt;30 breaths per minute, blue tongue, lips or trunk or if gasping then start resuscitating</p>	<p><b>Step 5:</b> Place the baby in skin-to-skin contact and, on the breast, to initiate breastfeeding.</p>	<p><b>Step 8:</b> Place the newborn's identification bands on the wrist and ankle</p> 
<p><b>Step 9:</b> Weigh baby (if &lt;1500 gm, refer urgently)</p>		

**Note:** Delay bathing of the baby for 24 hours after birth  
Do not remove vernix  
Provide postnatal visits during at 6-24 hours, 3 days and 6 weeks  
Place the baby in skin-to-skin contact and, on the breast, to initiate breastfeeding.

**Figure 5.** Figure showing steps of Essential Newborn Care.

## NEONATAL RESUSCITATION

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Neonatal resuscitation is a lifesaving intervention for a newborn who fail to initiate and maintain spontaneous and adequate breathing at birth.

While providing essential newborn care identify babies in need of resuscitation as shown below in [table 9](#).

**Table 9. Neonatal resuscitation**

Assessment	Decision
<ul style="list-style-type: none"><li>• Baby is crying</li></ul>	<ul style="list-style-type: none"><li>• No need for resuscitation or suctioning.</li><li>• Start skin-to-skin contact and breastfeeding.</li></ul>
<ul style="list-style-type: none"><li>• Baby is not crying but his chest is rising regularly between 30 to 60 times in a minute</li></ul>	<ul style="list-style-type: none"><li>• No need for resuscitation or suctioning.</li><li>• Start skin-to-skin contact and breastfeeding.</li></ul>
<ul style="list-style-type: none"><li>• Respiratory rate below 30</li></ul>	<ul style="list-style-type: none"><li>• Start resuscitation immediately.</li></ul>
<ul style="list-style-type: none"><li>• Baby is gasping</li></ul>	<ul style="list-style-type: none"><li>• Start resuscitation immediately.</li></ul>
<ul style="list-style-type: none"><li>• Baby is not breathing</li></ul>	<ul style="list-style-type: none"><li>• Start resuscitation immediately.</li></ul>

### THE 3A, GOLDEN RULES OF RESUSCITATION

- 1. Anticipation:** Identify those newborns that are at high risk for birth asphyxia; always anticipate and prepare for resuscitation (see the risk factors in [table 10](#) below).
- 2. Adequate preparation:** Skilled providers can undertake the steps of resuscitation.
- 3. Act on time:** There should not be any delay in identifying newborns that need resuscitation and action should be taken immediately.

### PREPARATION FOR RESUSCITATION

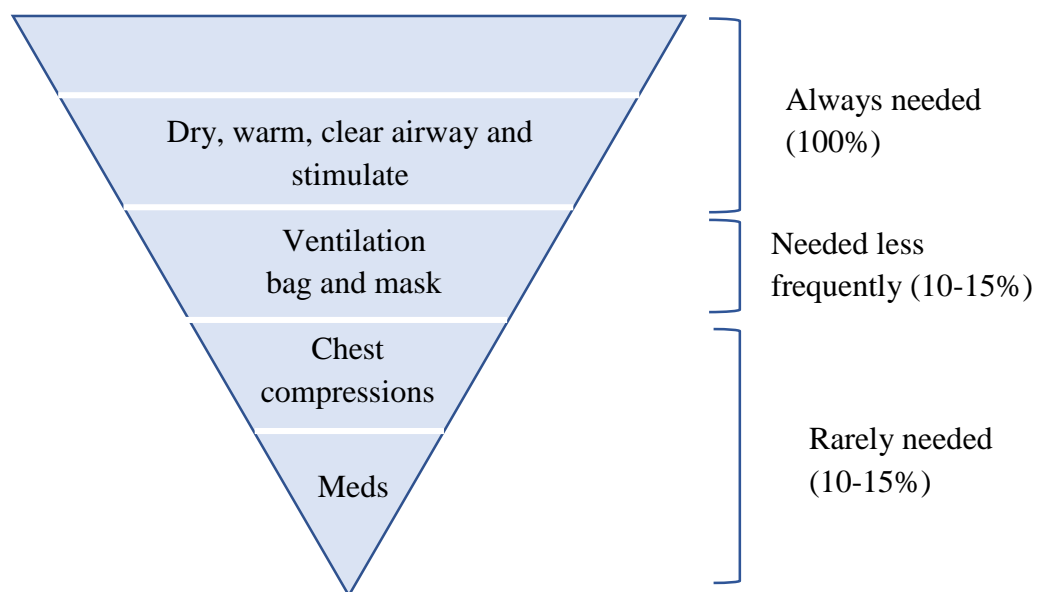
- Change your gloves
- Tie and cut the cord first
- Tell the mother that her baby is having difficulty to breath and that you are going to help
- Lightly wrap the baby in a warm dry towel or cloth
- Leave the face and upper chest free for observation
- Immediately transfer the baby to a newborn corner which is warm, clean and dry surface under an overhead heat source

**Table 10. Risk factors associated with need for resuscitation.**

Maternal risk factors before labor	Risk factors during labor
• Pre-eclampsia and eclampsia	• Foul smelling amniotic fluid
• Previous fetal or neonatal death	• Unusual vaginal bleeding before delivery
• Maternal infection (HIV, STD, Malaria)	• Prolonged rupture of membranes > 18 hours
• Multiple gestation	• Precipitate labor
• Premature rupture of membranes	• Shoulder dystocia
• Decreased fetal activity	• Prolonged labor (>24 hours)
• Post-term gestation	• Prolapsed cord
• Bleeding in second or third trimester	• Fetal bradycardia
• Maternal diabetes	• Meconium
• Age <16 or >35 years	• Narcotics administered to mother
• Anemia	• Instrumental delivery
• No prenatal care	

**BASIC STEPS IN RESUSCITATION**

The figure below (figure 6) illustrates the relationship between resuscitation procedures and the number of newly born babies who need them. At the top are the procedures needed by all newborns. At the bottom are procedures needed by very few.

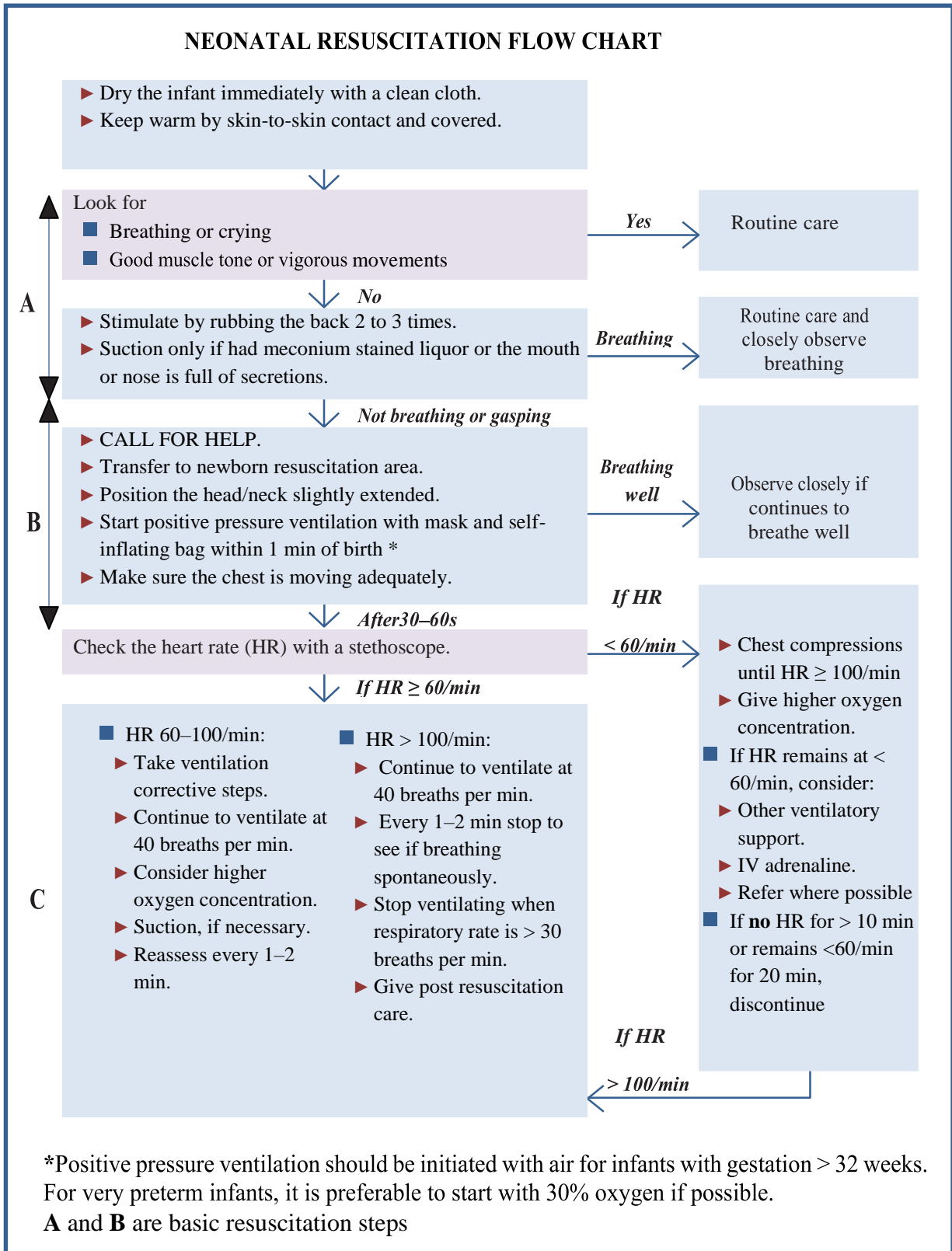


**Figure 6. Steps in resuscitation**



## NEONATAL RESUSCITATION ACTION PLAN

Neonatal resuscitation can be done using the action plan developed by WHO, the action plan is shown in the neonatal resuscitation flow chart / algorithm below (figure 7).



**Figure 7. Neonatal resuscitation flow algorithm**

## **POST RESUSCITATION CARE**

Infants who require resuscitation are at risk for deterioration after their vital signs have returned to normal.

Once adequate ventilation and circulation has been established:

- Stop ventilation
- Maintain thermal stability
- Return the baby to the mother for skin-to-skin contact as soon as possible
- Closely monitor breathing difficulties, signs of asphyxia and anticipate need for further care

## **WHEN TO STOP RESUSCITATION**

It is appropriate to consider discontinuing after effective resuscitation efforts if:

- If the baby starts breathing or crying
- If breathing is >30/min and regular
- Infant is not breathing and heart beat is not detectable beyond 10 min
- If no spontaneous breathing and heart rate remains below 60/min after 20 min of effective resuscitation

## **DOCUMENTATION AND COUNSELING**

- Document the resuscitation process and its outcome.
- Explain to the mother and / or parents about what possibly has happened to the newborn and provide grief counseling.
- Give them the dead newborn if they wish.

## BASIC POSTPARTUM / POSTNATAL CARE

### DEFINITION:

Post-natal care is care that is provided to a mother and her newborn baby/ies after delivery and within the first 42 days after child birth.

### 24 HOURS POSTNATAL CARE AND STAY

The quality of care the mother and new born receive in the first 24 hours after delivery is crucial in making sure the mother and neonate stay healthy beyond the immediate postnatal period. See [table 11](#) below for the postnatal care services that should be provided in the first 24 hours. The recommended duration of stay for mothers & new-borns in the health facility is 24 hours after delivery.

**Table 11. 24 hours postnatal care services (First 24 hours after birth).**

<p><b>A. MATERNAL CARE</b></p> <ul style="list-style-type: none"> <li>• Measure and document blood pressure (BP) every 15 min in the first 1hour. Then 2<sup>nd</sup>, 3<sup>rd</sup> &amp; 4<sup>th</sup> hours, &amp; every 4 hours until discharge.</li> <li>• Encourage ambulation.</li> <li>• Encourage voiding of urine &amp; check urination.</li> <li>• Check uterine tone &amp; presence of vaginal bleeding every 15 minutes for first 2 hours.</li> <li>• Inspect episiotomy site (if done) immediately, at two hours &amp; just before discharge.</li> <li>• Encourage early initiation of BF.</li> <li>• Counsel about family planning and provide if needed.</li> <li>• Counsel on danger symptoms / signs and respond to maternal concerns appropriately.</li> <li>• Counsel for return visit.</li> </ul>
<p><b>B. NEWBORN CARE</b></p> <ul style="list-style-type: none"> <li>• Monitor the newborn/s every 15min for the first hour and then before discharge.</li> <li>• Provide essential new born care.</li> <li>• Warm baby by keeping mother and baby together, skin to skin contact.</li> <li>• Initiate BF with in the first one hour.</li> <li>• Assess the newborn as per standards: check on breathing; movements; swelling and bruises over the presenting part; abdomen for pallor and distension; malformations; feel the tone; feel for warmth (if cold, or very warm, measure temperature); umbilical stamp; passage of meconium; weigh the baby.</li> </ul>

- Inform the mother about danger signs of new born health (failure to feed, convulsion, fast breathing, lethargy....)
- Immunization with BCG, OPV-0 and birth dose of HBV (also appropriate cord care and vitamin K as is recommended in the section on neonatal care)
- Advise on cord care.
- Counsel to delay bathing until after 24 hours.
- Counsel on appropriate clothing of the newborn for ambient temperature (one to two layers of clothes more than adults and use of hats / caps).
- Encourage communication and play with the newborn.
- Schedule return visit

### **POSTNATAL CARE (PNC) CONTACTS AFTER THE FIRST 24 HRS STAY**

At least three additional PNC contacts are recommended for all mothers and new-borns **after the first 24 hours stay** in a health facility. These contacts can take place either at a health facility or at home, depending on the specific situation.

1. First visit should be at day 3 (48-72 hours) after delivery.
2. Second visit should be between 6<sup>th</sup>- 7<sup>th</sup> day after delivery.
3. Third visit should be at 6th week.

When appropriate, the second & third visits can also be scheduled at any time (i.e., the second visit can be scheduled anytime between the 3<sup>rd</sup> day and the 7<sup>th</sup> day & the third can be between the 7<sup>th</sup> day and the 6<sup>th</sup> week.)

#### **Components of postnatal care services**

See tables ([table 12](#), [table 13](#) and [table 14](#)) below for the detailed components of each PNC visit:

**Table 12. First PNC visit at day 3 (48 -72 hours after birth)**

#### **A. CARE FOR THE MOTHER: IMMEDIATE PPC**

- Ask for any complaints & inquire the presence of excessive vaginal bleeding, fever, symptoms of anemia, headache, fatigue, breast swelling & pain, urinary complaints including incontinence, perineal pain & bowel function.
- Check vital signs & do physical examination with emphasis on relevant systems (breast, abdomen, genitourinary systems, and look for leg swelling for DVT). Advise on ambulation.
- Breastfeeding progress should be assessed at each postnatal contact.

- Counsel on appropriate disposal of soiled pads & personal hygiene.
- Counsel on post-partum nutrition.
- Counsel on danger signs
- Counsel about family planning and provide if needed.
- Counsel for return visit.
- Evaluate mother for psychological / emotional well being & when problems identified link to mental health services.

## **B. CARE FOR THE NEWBORN: IMMEDIATE PPC**

- Assessment of the newborn as per standards on breathing; swelling over the presenting part; movements; abdomen for pallor and distension; malformations; feel the tone; feel warmth (if cold, or very warm, measure temperature).
- Observe how the baby is breast feeding.
- Advise exclusive BF.
- Observe skin for pallor and jaundice.
- Immunization with BCG, OPV-0 and birth dose of HBV if not provided already.
- Advise on direct sunlight exposure.
- Counsel on danger signs (see [table 15](#) below).

**Table 13. Second PNC visit (between 6th-7th day 73 hours and 7 days after delivery).**

## **A. CARE FOR THE MOTHER: EARLY PPC**

- Assess general well-being.
- Assessment for signs of postpartum complications.
- Assess breastfeeding progress.
- Ask about presence of breast pain.
- Check if breasts are swollen, red or tender, or has sore nipples.
- Assess emotional wellbeing, what family and social support they have and their usual coping strategies for dealing with day-to-day matters (when mental health issue is identified take appropriate measure).
- All women and their families / partners should be encouraged to tell their health care provider about any changes in mood, emotional state and behavior that are outside of the woman's normal pattern.
- Counsel for return visit.

## **B. CARE FOR THE NEWBORN: EARLY PPC**

- Assessment of the newborn as per standards on breathing; movements; the presenting part for swelling and bruises; abdomen for pallor and distension; malformations; feel the tone; feel for warmth: if cold, or very warm, measure temperature; weigh the baby.
- Concerns about breastfeeding and wellbeing of baby as mother perceives it.
- Assess general condition of baby: active, feeding well and frequently.
- Observe how baby is breastfeeding.
- Observe skin for signs of pallor and jaundice.
- Immunization with BCG, birth dose of HBV and OPV-0 if not provided already.
- Advise on direct sunlight exposure.

**Table 14. Third PNC visit (6th week)**

## **A. CARE FOR THE MOTHER: LATE PNC**

- Take history and do physical examination
- Assess for signs of postpartum complications
- Counsel on appropriate nutrition, and micronutrient supplementation
- Counsel on safe sex practices
- Counsel on breastfeeding and support as needed
- Counsel on personal hygiene
- Encourage on continued use of ITN for women living in malaria endemic areas
- Routine offering of HIV testing if not already done
- Plan for revisit for immunization of the baby
- Counsel and provide FP methods if needed
- Evaluate mother for psychological wellbeing and when problems identified link to mental health services

## **B. CARE FOR THE BABY: LATE PNC**

- Identify warning signs of complications
- Routine examination of the baby
- Advise on direct sunlight exposure
- Immunization according to the national EPI program

## POST PARTUM DANGER SIGNS

Danger signs for the mother and the baby that need to be looked for during their stay in the facility and communicated to the mother before discharge are listed below in [table 15](#).

**Table 15. Postpartum danger signs for the mother and the baby.**

Mother	Baby
<ul style="list-style-type: none"><li>• Sudden and profuse blood loss</li><li>• Fainting, dizziness and palpitations</li><li>• Fever, shivering, abdominal pain, and/or offensive vaginal discharge</li><li>• Abdominal pain, calf pain, redness or swelling</li><li>• Shortness of breath or chest pain</li><li>• Excessive tiredness</li><li>• Severe headache accompanied by visual disturbances</li><li>• Urine dribbling or pain on micturition</li></ul>	<ul style="list-style-type: none"><li>• Cord red or draining pus</li><li>• Suckling poorly</li><li>• Eyes swollen, sticky or draining pus</li><li>• Cold to touch in spite of re-warming</li><li>• Hot to touch despite undressing</li><li>• Difficulty of breathing</li><li>• Lethargy</li><li>• Convulsions</li></ul>

## FAMILY PLANNING:

- All postpartum women should receive family planning education and counseling & when accepted service should be provided before discharge.
- Women should be informed about the advantages of birth spacing for at least two years before getting pregnant again and on the different family planning options.
- Women should also be given a choice between the different family planning methods at every contact (ANC, early labor & postpartum visits).

# POSTPARTUM HEMORRHAGE

## DEFINITION

Post partum hemorrhage refers to excessive bleeding following delivery (>500 ml in vaginal delivery or >1000 ml in Cesarean Delivery) or bleeding resulting in derangement of vital signs or a drop in Hct of > 10 % from the baseline.

## CLASSIFICATION

- **Primary PPH:** PPH occurring within 24 hrs
- **Secondary PPH:** PPH occurring from 24 hrs until 6 wks after delivery

## PRIMARY PPH

---

### CAUSE

#### 1. Atonic Uterus

- **Definition:** Atonic uterus is failure of the uterus to contract after delivery.
- **Diagnosis:** Hypotonic, floppy uterus and expulsion of clots when the uterus is compressed.

#### 2. Genital tract tear / laceration.

- Lacerations of the genital tract (uterus, cervix, vagina or perineum) during delivery.
- **Risk factors:** Feto-pelvic disproportion, instrumental deliveries, precipitate labor, scarred uterus, episiotomy, delivery through non-fully dilated cervix, tight perineum.
- **Diagnosis:**
  - Active vaginal bleeding with a contracted uterus.
  - Laceration detected on exploration of the genital tract.

#### 3. Retained placental tissue

- **Definition:** Failure to deliver the placenta and membranes fully (or delivered only partially) following delivery of the baby.
- **Risk factors:** Mismanagement of third stage of labor, abnormal placentation (morbidly adherent placenta, succenturiate lobe), constriction of the cervix or lower uterine segment.
- **Diagnosis:** Placental inspection (incomplete cotyledons and/or membranes), continued bleeding, ultrasound (retained echogenic tissue in the uterine cavity).



#### 4. Coagulation failure

- It is a condition in which the blood's ability to coagulate (form clots) is impaired.
- **Risk factors:**
  - **Acquired coagulopathy:** abruptio placentae, IUFD, amniotic fluid embolism, severe pre-eclampsia / eclampsia, sepsis, administration of excessive IV fluids.
  - **Systemic bleeding disorders**
- **Diagnosis:**
  - Assess for risk factors
  - Oozing from vein puncture sites
  - **Bedside coagulation (clotting and bleeding time) test:** Failure of a clot to form after 7 minutes or a soft clot that breaks down easily suggests coagulopathy.

#### 5. Acute inversion of the uterus

- **Definition:** The uterus turns inside-out partially or completely during or after delivery of the placenta.
- **Classification**
  - **First degree:** Fundus is within the uterus not extending beyond the cervix.
  - **Second degree:** The inversion extends out of the cervix and is limited to within the vagina.
  - **Third degree:** A complete inversion to the perineum.
  - **Fourth degree:** A total inversion of the uterus with the vagina.
- **Risk factors:** Mismanagement of third stage of labor, adherent placenta, short cord.
- **Diagnosis:**
  - On abdominal palpation,
    - A dimple with active vaginal bleeding, pain and shock.
    - Disproportionately small or absent uterus.
  - Soft and easily bleeding mass felt inside the vagina.
  - With the placenta detached the inverted uterus is described as cherry red mass.

#### PREVENTION

- Prevention / treatment of anemia
- Skilled birth attendance
- Active management of third stage of labor.

## MANAGEMENT

### General management

- **Call for help**, urgently mobilize all the required available personnel. This involves alerting the managing team, calling the most senior/ experienced provider and alerting the liaison team.
- Evaluate for ABC: make a rapid evaluation of the general condition of the woman including vital signs (pulse, blood pressure, respiration, temperature).
- Start an IV line and infuse fluids, establish two IV lines if necessary.
- Check if the uterus is contracted. If not, massage it to expel blood and blood clots.
- Position the patient flat.
  - Give Oxygen by mask or nasal catheter.
  - Give oxytocin 10 units IM (if not given during the 3<sup>rd</sup> stage of labor).
  - Give Tranexamic acid 1gm in 10 ml IV over 10 min within 3 hours of birth. If bleeding continues after 30 minutes or if bleeding restarts within 24 hours of completing the first dose, administer second dose of TXA 1gm IV.
  - Take blood (5 mL) for hemoglobin (Hgb) / hematocrit (Hct).
  - Catheterize the bladder.
  - Check if the placenta is expelled and examine the placenta to ascertain completeness.
  - Examine the cervix, vagina and perineum for tears.
  - Apply NASG.
  - Monitor vital signs.
  - Provide specific treatment for the identified specific cause (see below).

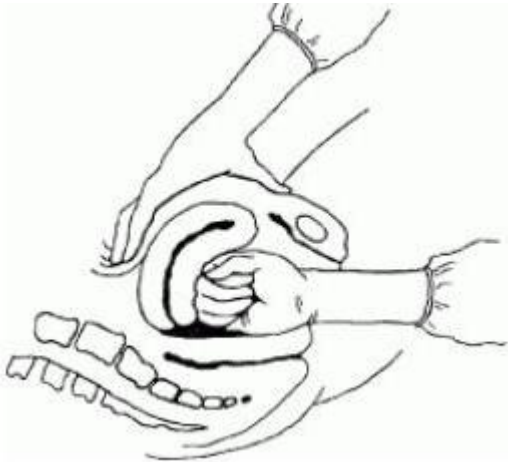
### Specific Management

#### Atonic uterus:

- Continue to massage the uterus.
- Administer oxytocin 20-40 IU/ 1 litre normal saline or Ringer's lactate solution and infuse at 60 drops/ minute.
  - Continue dose at a rate of 40 drops/ minute for at least 6 hrs **OR** (if oxytocin is not available).
  - Give misoprostol 800 mcg stat rectally, orally or sublingual.
- *If bleeding continues:*
  - Check placenta again for completeness.
  - If there are signs of retained placental tissue remove the tissue.
  - Assess clotting status using a bedside clotting test.

**NOTE: If coagulopathy is diagnosed refer urgently.**

- Perform bimanual compression of the uterus (see [figure 8](#) below), compress the aorta (see [figure 9](#) below) or apply NASG to decrease the bleeding.
- **If bleeding continues:** refer immediately accompanying the mother and continue to provide the above measures.



**Figure 8. Bimanual compression**



**Figure 9. Technique for compression of abdominal aorta**

#### **Tears of Cervix, Vagina or Perineum:**

- Repair bleeding tears and lacerations.
- Refer urgently if bleeding cannot be controlled or if it is a cervical tear that extends into the uterus or if the apex is not visualized.
- If there is no tear that accounts for the PPH, check for uterine rupture.

#### **Retained Placenta:**

- If the placenta is not expelled within 30 minutes after delivery of a baby, in the absence of hemorrhage, the woman should be observed for further 30 minutes, before manual removal placenta is attempted.

- ***Steps for manual removal of the placenta:-***

1. Review general care principles and start IV infusion (if not already done).
2. Give pethidine and diazepam IV slowly (do not mix in the same syringe).
3. Give a single dose of prophylactic antibiotic.
4. Wear sterile long sleeve gloves and perform manual removal of the placenta.

***NOTE: If the placenta does not separate from the uterine surface by gentle lateral movement of the fingertips at the line of cleavage, suspect adherent placenta, stop the procedure and urgently refer providing supportive care.***

5. Give oxytocin 20 units in 1 L IV fluid at 60 drops per minute.
6. If there is continued heavy bleeding, give ergometrine 0.2 mg IM or misoprostol.

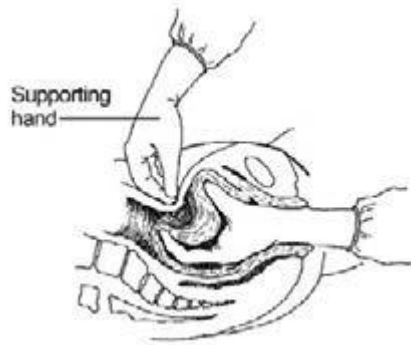
7. Examine the woman carefully and repair any tear to the cervix or vagina.

**Retained placental fragments:**

- Feel inside the uterus for placental fragments.
- Remove placental fragments by hand, gauze curettage or sponge/ ovum forceps.
- If this procedure fails (may be due to adherent placenta) and/ or bleeding continues, ***refer urgently***.

**Acute inversion of the uterus:**

- If the woman is in severe pain, give pethidine 1 mg/kg body weight (maximum of 100 mg) IM or IV slowly or give morphine 0.5 mg/ kg body weight.
- Immediate manual replacement of the uterus by applying gentle transvaginal pressure.
  - Wearing sterile gloves, grasp the inverted uterus and push it through the cervix in the direction of the umbilicus to its normal anatomic position, using the other hand to support the uterus (see [figure 10](#) below).
  - If the placenta is still attached, manually remove the placenta after correction.
- ***Refer the mother urgently if manual replacement fails.***



**Figure 10. Manual replacement of placenta**

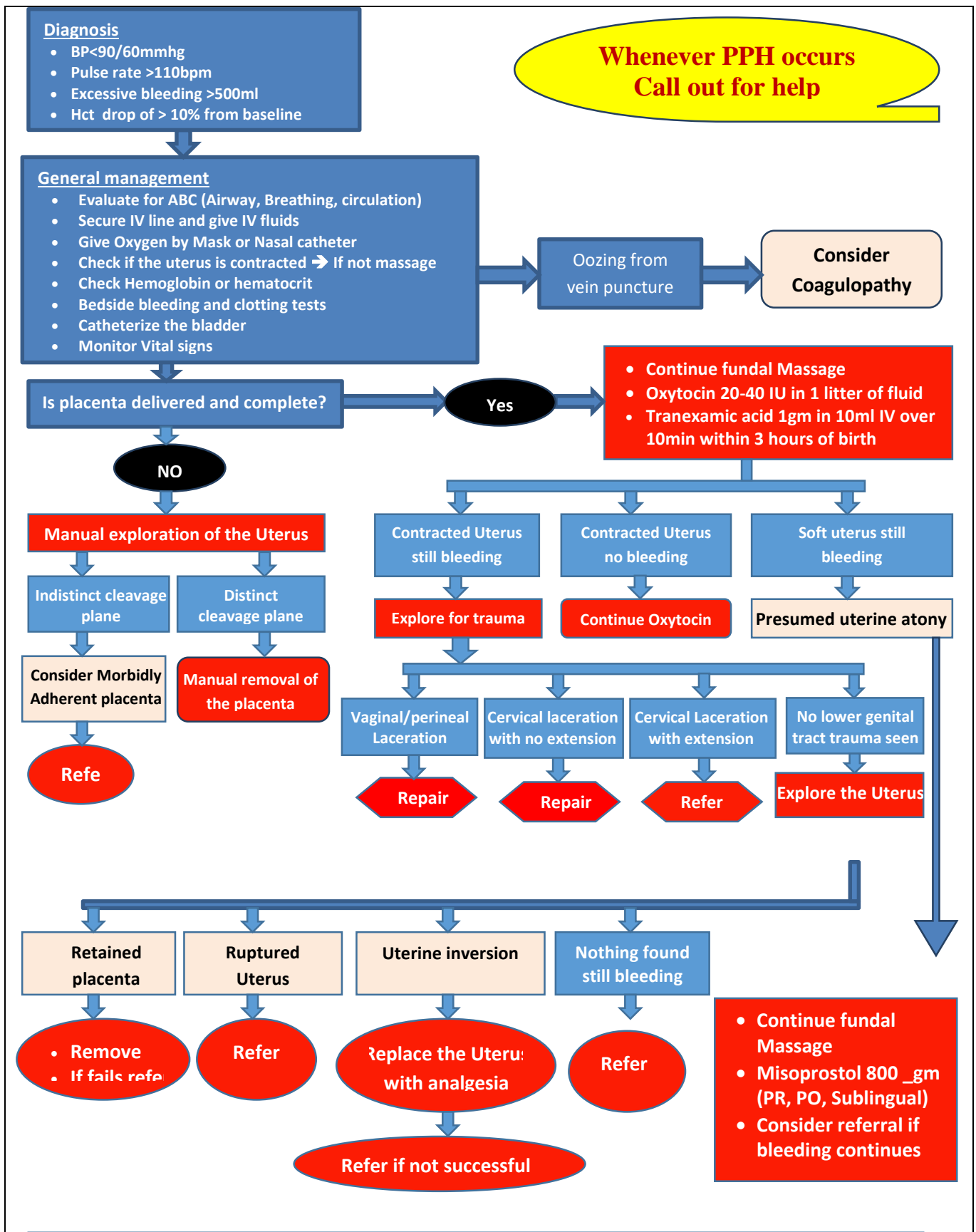
See [annex 4](#) below for management algorithm of PPH.

## MANAGEMENT OF SECONDARY PPH

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- **Resuscitate and refer.**

### Annex 4. Postpartum Hemorrhage (PPH) Management Algorithm for Health Center



**NOTE: When appropriate apply bimanual compression, aortic compression or NASG at any stage of the management.**

## PUERPERAL FEBRILE MORBIDITIES

### DEFINITION

Puerperal fever, also known as postpartum fever is defined as temperature of 38.0°C or higher during the first 10 days postpartum, exclusive of the first 24 hours.

### RISK FACTORS

- Prolonged and premature rupture of the membranes
- Prolonged labor
- Frequent vaginal examination
- Retained placental fragments or membranes
- Anemia and poor nutrition during pregnancy
- Immune compromised state
- Genital or urinary tract infection prior to delivery
- Cesarean birth
- Obesity
- Diabetes
- Indwelling urinary catheter

### DIAGNOSIS & MANAGEMENT

#### Signs and symptoms

To identify possible causes of a postpartum febrile morbidity using signs and symptoms see [table 16](#) below.

#### Investigations

- Blood film
- CBC including ESR
- Urinalysis
- Stool exam
- Abdominopelvic ultrasound when available (for retained product of conceptus & peritoneal fluid collection).

<b>Presenting symptoms &amp; sign typically present</b>	<b>Symptoms &amp; sign sometimes present</b>	<b>Probable diagnosis</b>
<ul style="list-style-type: none"> <li>• Fever / Chills</li> <li>• lower abdominal pain</li> <li>• Purulent foul-smelling lochia</li> <li>• Tender Uterus</li> </ul>	<ul style="list-style-type: none"> <li>• Light vaginal bleeding</li> </ul>	<b>Metritis</b>
<ul style="list-style-type: none"> <li>• Lower abdominal pain and distension</li> <li>• Spiking fever / Chills</li> <li>• Tender uterus</li> </ul>	<ul style="list-style-type: none"> <li>• Poor response for antibiotics</li> <li>• Swelling in adnexa or pouch of Douglas</li> </ul>	<b>Pelvic abscess</b>
<ul style="list-style-type: none"> <li>• Fever / chills</li> <li>• Lower abdominal pain</li> <li>• Absent bowel sound</li> <li>• Abdominal tenderness</li> </ul>	<ul style="list-style-type: none"> <li>• Rebound tenderness</li> <li>• Abdominal distension</li> <li>• Nausea / vomiting</li> </ul>	<b>Peritonitis</b>
<ul style="list-style-type: none"> <li>• Breast pain and tenderness</li> <li>• 3-5 days after delivery</li> </ul>	<ul style="list-style-type: none"> <li>• Hard enlarged breast</li> <li>• Both breasts affected</li> </ul>	<b>Breast engorgement</b>
<ul style="list-style-type: none"> <li>• Breast pain and tenderness</li> <li>• Reddened, wedge shaped area on breast</li> <li>• 3-4 week after delivery</li> </ul>	<ul style="list-style-type: none"> <li>• Inflammation preceded by engorgement</li> <li>• Usually one breast affected</li> </ul>	<b>Mastitis</b>
<ul style="list-style-type: none"> <li>• Firm, very tender breast</li> <li>• Overlying erythema</li> </ul>	<ul style="list-style-type: none"> <li>• Fluctuant swelling on breast</li> <li>• Draining pus</li> </ul>	<b>Breast abscess</b>
<ul style="list-style-type: none"> <li>• Fever</li> <li>• Wound with Pus discharge</li> <li>• Painful and tender wound</li> <li>• Erythema and edema beyond edge of incision</li> </ul>	<ul style="list-style-type: none"> <li>• Hardened wound</li> <li>• Purulent discharge</li> <li>• Reddened area around wound</li> </ul>	<b>Wound Abscess / Cellulites</b>
<ul style="list-style-type: none"> <li>• Spiking fever / chills</li> <li>• Dysuria</li> <li>• Increased frequency and urgency of urination</li> </ul>	<ul style="list-style-type: none"> <li>• Suprapubic or lower abdominal pain</li> </ul>	<b>Cystitis</b>
<ul style="list-style-type: none"> <li>• Spiking fever / chills</li> <li>• Dysuria</li> <li>• Increased frequency and urgency of urination, flank pain</li> </ul>	<ul style="list-style-type: none"> <li>• Costovertebral angle tenderness</li> <li>• Nausea / vomiting</li> <li>• Anorexia</li> </ul>	<b>Acute Pyelonephritis</b>
<ul style="list-style-type: none"> <li>• Fever</li> <li>• Difficulty in breathing</li> <li>• Cough with expectoration and</li> <li>• Chest pain</li> </ul>	<ul style="list-style-type: none"> <li>• Rapid breathing</li> <li>• Rhonchi/ Rales</li> </ul>	<b>Pneumonia</b>
<ul style="list-style-type: none"> <li>• Fever chills</li> <li>• Headache</li> <li>• Muscle / joint pain</li> </ul>	<ul style="list-style-type: none"> <li>• Enlarged Spleen</li> <li>• Convulsion</li> <li>• Jaundice</li> </ul>	<b>Malaria</b>

<ul style="list-style-type: none"> <li>• Coma (when severe)</li> <li>• Anemia</li> </ul>		
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**Table 16.      *Diagnosis of Puerperal Fever.***

## **TREATMENT**

Treatment protocol for breast engorgement, mastitis and metritis is as follows:

### **Metritis**

- Resuscitate as needed.
- Give the initial dose of a combination of antibiotics
  - Ampicillin 2 g IV every 6 hours; PLUS
  - Gentamicin 5 mg/kg body weight IV every 24 hours; PLUS
  - Metronidazole 500 mg IV every 8 hours.
- Refer immediately to a hospital with appropriate pre-referral care

### **Breast engorgement**

#### ***Breastfeeding woman:***

- If the ***baby is not able to suckle***, encourage the woman to express milk
- If the ***baby is able to suckle***, encourage her to breastfeed more frequently, using both breasts during each feeding. Show her how to hold the newborn and help it attach.
- Relief measures before feeding may include:
  - Apply warm compresses to the breasts just before breastfeeding, or encourage the woman to take a warm shower.
  - Support breasts with a binder or brassiere.
  - Apply cold compress to the breasts between feedings to reduce swelling and pain.
  - Give paracetamol 500 mg -1 gram or Ibuprofen 400 mg every 6-8 hours by mouth as needed.
- Follow up 3 days after initiating management to ensure response.

#### ***Not breastfeeding:***

If the woman is not breastfeeding:

- Support breasts with a binder or brassiere.
- Apply cold compresses to the breasts to reduce swelling and pain.
- Avoid massaging or applying heat to the breasts.
- Avoid stimulating the nipples.
- Give paracetamol 500 mg to 1 gram or Ibuprofen 400 mg every 6-8 hours by mouth as needed.



- Follow up 3 days after initiating management to ensure response.

### **Mastitis**

- Treat with antibiotics:
  - Cloxacillin 500 mg by mouth four times per day for 10 days
  - OR Erythromycin 500 mg by mouth three times per day for 10 days.
- Encourage the mother to:
  - Continue breastfeeding
  - Support breasts with a binder or brassiere
  - Apply cold compresses to the breasts between feedings to reduce swelling and pain.
- Give paracetamol 500 mg -1 gram or Ibuprofen 400 mg 6-8 hours orally as needed.
- Follow up 3 days after initiating management to ensure response.

### **Breast abscess:**

- Start treatment with antibiotics:
  - Cloxacillin 500 mg orally four times a day for 10 days
  - OR Erythromycin 500mg oral three times a day for 10 days.
- And refer the woman, advising her to support breasts with a binder or brassiere.

### **Infection of perineal and abdominal wounds**

- If there is superficial fluid or pus, open and drain the wound with care not to disrupt facial sutures in case of abdominal wounds.
- If there is necrotic tissue and wide area of erythema refer after appropriate general care.
- If infection is superficial and does not involve deep tissues, monitor for development of an abscess and give a combination of antibiotics:
  - Ampicillin 500 mg orally, four times a day for 5 days
  - Metronidazole 500 mg orally, three times a day for 5 days
  - Place a damp dressing in the wound and have the woman return to change the dressing every 24 hours.
- If the infection is deep it involves muscles and causes necrosis (necrotizing fasciitis), start a combination of antibiotics (below) and refer urgently to a higher facility:
  - Ampicillin 2gm IV every 6 hours
  - Gentamicin 5 mg/kg body weight IV every 24 hours
  - Metronidazole 500 mg IV every 8 hours

- For perineal wound infection open the wound, provide toileting with ample amount of saline and advice on frequent washing at home with clean water. Give oral analgesics and broad spectrum antibiotics (Amoxicillin 500 mg TID for 7 days).
- If infection involves muscles and is causing necrosis (necrotizing fasciitis), start a combination of antibiotics (above) and refer urgently.
- If the patient has pelvic abscess, peritonitis and acute pyelonephritis provide initial supportive care (hydration, analgesics/ antipyretics and a dose of Ampicillin 2 g IV every 6 hours; PLUS, Gentamicin 5 mg/kg body weight IV every 24 hours; PLUS metronidazole 500 mg IV every 8 hours) and urgently refer her to a hospital.

# PSYCHOLOGICAL MORBIDITIES DURING PUERPERIUM

## INTRODUCTION

Postpartum emotional distress is fairly common after pregnancy and ranges from mild blues, postpartum depression to psychosis. Postpartum psychosis can pose a threat to the life of the mother or baby.

## RISK FACTORS

- Previous history of depression or psychosis
- Depressive symptoms during pregnancy
- Family history of depression or psychosis
- Stress around child care
- Marital conflict
- Stressful life events in the previous 12 months
- Lack of perceived social support from family and friends for the pregnancy
- Lack of emotional and financial support from the partner
- First pregnancy

## MATERNITY BLUES / POSTPARTUM BLUES

The most common psychological disorder that occurs in the postpartum period is this condition.

### Diagnosis

- Mild and often rapid mood swings from elation to sadness
- Irritability, anxiety
- Decreased concentration
- Insomnia, tearfulness and crying spells.

Commonly postpartum women develop these features within 2-3 days of delivery. Symptoms typically peak on the 5<sup>th</sup> postpartum day and resolve within 2 weeks.

### Management

Postpartum blues typically resolve over time and with conservative management. Supportive treatment is indicated, and sufferers can be reassured that the dysphoria is transient. Advise on:

- Adequate time for sleep and rest, and continuous family support.
- The newborn should be taken care of by someone else during night time.

- Patients should be monitored for development of more severe psychiatric disturbances, including postpartum disorders.
- Care givers (family) should be counseled on significance, need for vigilance & supportive measures.
- If the symptoms don't resolve within 2 weeks, please refer to a hospital.

## **POSTPARTUM DEPRESSION**

Affects up to 30% of women and typically occurs in the early postpartum weeks or months and may persist for a year or longer.

### **Diagnosis**

In nearly all respects, postpartum depression is similar to other major and minor depressions. Symptoms must be present for most of the day, every day, for at least 2 weeks.

Symptoms include:

- Depressed mood
- Loss of interest or pleasure in most or all activities
- Insomnia or hypersomnia
- Change in appetite
- Change in weight
- Psychomotor retardation or agitation
- Low energy, poor concentration, thoughts of worthlessness or guilt, recurrent thoughts about death or suicide.

The prognosis for postpartum depression is good with early diagnosis and treatment. More than two-thirds of women recover within a year.

### **Management**

Providing a companion during labor may prevent postpartum depression. Once established, postpartum depression requires psychological counseling and practical assistance which includes:

- Providing psychological support and practical help (with the baby and through home care).
- Listening to the woman and providing encouragement and support.
- Link to mental health service providers if present in the institution but if not referral to a hospital for further psychiatric consultation and management

## **POSTPARTUM PSYCHOSIS**

Postpartum psychosis is the most severe puerperal mental disorder and typically occurs around the time of delivery (within 2 weeks). It affects less than 1% of women. The cause is unknown, although about half of the women with pre-existing psychotic illness are at highest risk, and those with prior episodes of postpartum depression.

### **Diagnosis**

Postpartum psychosis is characterized by:

- Abrupt onset of delusions or hallucinations
- Insomnia, a preoccupation with the baby
- Severe depression, anxiety
- Despair and suicidal or infanticidal impulses.

Prognosis for recovery is excellent but some of the affected women will suffer a relapse with subsequent deliveries.

### **Management**

The course of postpartum psychosis is variable and depends on the type of underlying illness. The clinical course of bipolar illness or schizoaffective disorder in puerperal women is comparable to that for non-pregnant women.

They usually require hospitalization for pharmacological treatment and long-term psychiatric care is needed.

**In the presence of the above symptoms link to mental health service providers in the institution but if not, refer to a hospital where there is a mental health unit.**

## PRETERM LABOR

### DEFINITION

Preterm labor refers to the onset of labor before 37 completed weeks of gestational age.

### CLASSIFICATION

- Early preterm: less than 34 weeks of gestation
- Late preterm:  $\geq$  34 weeks of gestation

### RISK FACTORS

- **Socio-demographic conditions:** low socioeconomic status, maternal age <18 years, unsupported / unwanted pregnancy, smoking, alcohol consumption, excess physical work / activity.
- **Medical conditions:** UTI, malaria, HIV, syphilis, bacterial vaginosis, DM, hypertension, anemia, asthma, thyroid diseases, obesity, under nutrition.
- **Gynaecologic conditions:** congenital uterine anomalies, cervical insufficiency, myoma (intramural/ submucous), uterine synechiae.
- **Obstetric conditions:** previous history, family history, multifetal gestation, short inter pregnancy interval (<6 months), polyhydramnios, fetal macrosomia, fetal malformations, poor ANC, placental abruption and early vaginal bleeding during the index pregnancy, amniocentesis, ECV, cervical procedures during pregnancy.

### DIAGNOSIS

#### History:

- Abdominal cramps and back pain
- Pelvic or lower abdominal pressure
- Changes in type and amount of vaginal discharge (mucus, bloody or leakage of watery fluid)

#### Physical examination:

- Four uterine contractions per 20 minutes or eight contractions per 60 minutes which are accompanied by one of the following:
  - Rupture of membranes
  - Cervical dilation greater than 2 cm
  - Cervical effacement exceeding 80%
  - Progressive cervical dilatation and effacement on follow up

## Investigations

- WBC with differential count
- Urine analysis
- Ultrasound

## MANAGEMENT

- **Refer urgently** after pre-referral care is provided.
- Pre-referral management includes:
  - **Dexamethasone** 6 mg IM stat (document the time given on referral paper).
  - **Tocolysis:**
    - Secure IV line and **provide Nifedipine** 20 mg PO stat (document the time given on referral paper).
    - Monitor vital signs (blood pressure and pulse rate) every 30 minutes on the way of referral. Give IV fluid if the client becomes hypotensive.

**NOTE:-** *Contraindications for tocolytics include preterm prelabor rupture of membranes (PPROM), chorioamnionitis, antepartum hemorrhage, cardiac disease, fetal death, fetal congenital abnormality not compatible with life, cervical dilatation >4 cm and effacement >80%.*

- **Antibiotics:**
  - Antibiotics should be administered for spontaneous preterm labour with unknown GBS status.
  - Administer Ampicillin 2gm IV as initial loading dose.
- **Delivery:** Attend delivery only in case of imminent delivery.
  - Attend the labor and provide essential newborn care.
  - Start Kangaroo mother / father care.
  - Immediately refer very low birth weight and very premature (<2000 gm and GA <34 weeks) neonates.
  - Make sure the neonate is transferred with the mother to hospital for better care.

## COMPLICATIONS

- **Maternal complications**
  - Increased operative delivery
- **Fetal / neonatal Complications**
  - Preterm birth and prematurity
  - Birth Injury

- Perinatal / neonatal asphyxia
- Hypothermia
- Hyperbilirubinemia
- Hypoglycemia

### **PREVENTION**

- Detect early and manage treatable risk factors (infectious and chronic medical conditions).
- Identification of pregnancy complications which can lead to premature delivery and early referral.



# MALPRESENTATION

## DEFINITION

- Malpresentations are all fetal presentations other than vertex.

## CLASSIFICATION / TYPES

- Breech
- Face
- Brow
- Shoulder
- Compound

## PREDISPOSING FACTORS

- **Maternal:**
  - Contracted pelvis
  - Pelvic tumors: uterine myoma, ovarian tumors etc.
  - Uterine anomalies: bicornuate uterus, uterine septum etc.
  - High parity
- **Fetal and placental:**
  - Prematurity
  - Fetal anomaly (e.g. hydrocephalus, anencephaly)
  - Polyhydramnios / oligohydramnios
  - Multiple pregnancy
  - Placenta previa

## DIAGNOSTIC APPROACH

- Clinical assessment (History, obstetric palpation and digital vaginal examination in labor).
- Ultrasound is mainly used to confirm clinical diagnosis and to investigate for predisposing factors.

## BREECH PRESENTATION

---

### DEFINITION

Breech presentation is when the fetal buttock and / or feet are the presenting part occupying the lower pole of the uterus.

### CLASSIFICATION

- **Frank breech:** The lower extremities extended at knee and flexed at hip.
- **Complete or flexed breech:** The lower extremities flexed both at hip and knee.
- **Footling breech /incomplete breech:** When one or both of the baby's feet lie below the breech.

See [figure 11](#) below.

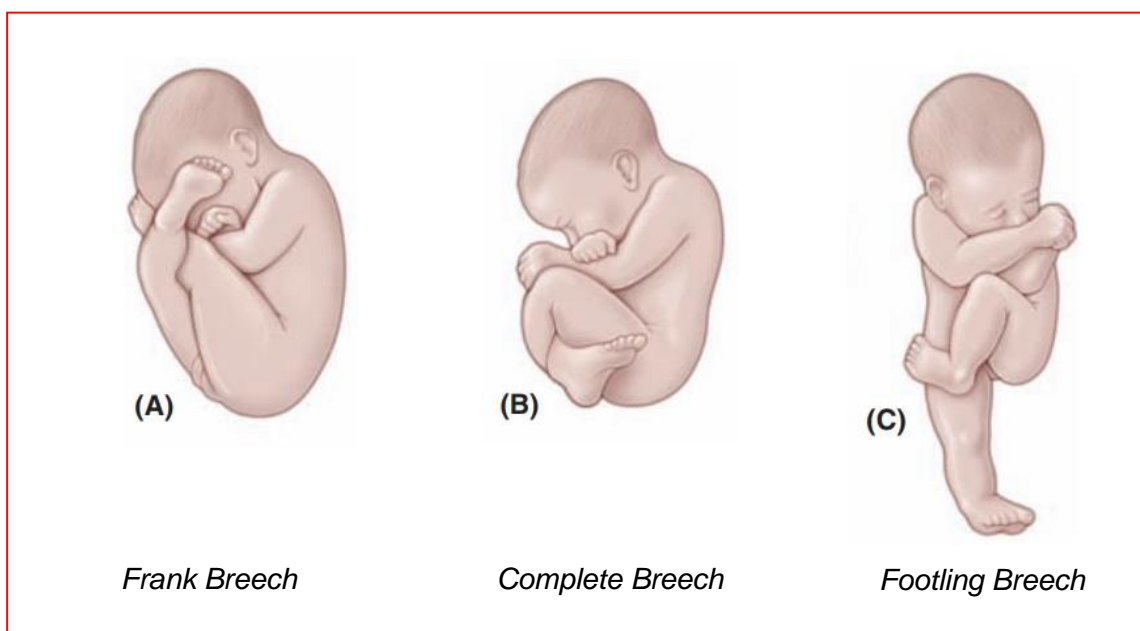


Figure 11. *Types of breech presentation.*

### DIAGNOSIS

#### Clinical assessment

- The mother may report sub costal discomfort when the head occupies the fundus rather than the lower segment.
- Identify the following predisposing factors
  - Multiparty
  - Previous history of breech presentation.
  - Preterm pregnancy
  - Contracted pelvis

- Fetal congenital anomalies
- Uterine malformation or presence of tumor previa.

### **On abdominal palpation (Leopold's maneuvers):**

- The head is felt as hard, globular and ballotable mass at the fundus and the breech will be soft and bulky at the lower pole of the uterus.
- FHB loudest just above the umbilicus (may be lower with engagement).

### **On pelvic examination**

- On vaginal examination in early labor; soft and irregular parts are felt through the cervical opening.
- Palpation of ischial tuberosities, sacrum and the feet by the sides of the buttock.
- In frank breech hard feel of the sacrum is felt and often mistaken for the head. Ischial tuberosities, anal opening and sacrum will be felt.
- To differentiate from face presentation ischial tuberosities and anal opening will be identified in straight line.
- Perform clinical pelvimetry and look for cord presentation or prolapse.

### **Ultrasound**

- To confirm clinical diagnosis.
- To estimate fetal weight, and to investigate for fetal anomalies and other predisposing factors.

### **MANAGEMENT**

- Ideally, every breech birth should take place in a hospital with the ability to perform an emergency caesarean section.
- At term or in early labor, refer to Hospital.
- In case of advanced labor review for indications, ensure that all conditions for vaginal breech delivery are met.
- Refer urgently if one of the following conditions are identified in advanced labor:
  - Footling breech
  - Estimated fetal weight (clinical or ultrasound) > 3500 gm
  - Extended or deflexed neck, or
  - The presence of compounding factors such as:
    - Previous CS
    - Elderly primigravida
    - History of infertility
    - Bad obstetric history

- Intra Uterine Growth Restriction (IUGR)
- Post term pregnancy
- Any degree of contracted pelvis
- Uterine dysfunction, prolonged labor or failure to progress in labor

## VAGINAL BREECH DELIVERY

- If there is no time for referral (advanced labor or imminent delivery), the delivery can be conducted at health center.
- The most experienced provider in breech delivery should attend the delivery.
- The mother has to be counseled for the relative risk of perinatal mortality and morbidity compared with vertex presentation and ensuring availability of emergency set up.

### First stage of labor

*First stage of labor* is monitored using partograph with close fetal monitoring as in cephalic presentation.

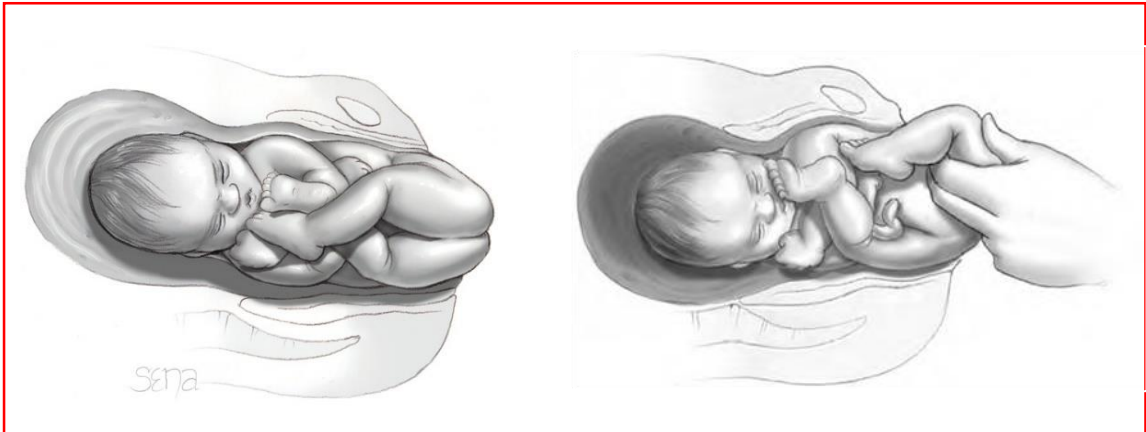
- Secure IV line
- Consider analgesics as labor pain management
- Immediate vaginal examination at rupture of membranes to rule out cord prolapse
- Avoid ARM
- Meconium is common with breech labors and presence of meconium alone is not considered as a sign of fetal asphyxia.
- The mother should be instructed not to push until the cervix is fully dilated.

### Second stage of labor

Once the cervix is fully dilated and the buttocks have entered the vagina tell the woman to bear down with the contractions.

#### *Delivery of the buttocks and legs:*

- If indicated (e.g. tight perineum), perform an episiotomy.
- As the buttocks get delivered, gently guide the sacrum anteriorly. Wait till body is born to the level of the umbilicus (no other manipulation at this stage).
- Sweep each leg away from the midline. If the legs do not deliver spontaneously, assist delivery of one leg at a time, by lateral rotation of thighs and flexion of knees.
- Splint the median thigh of the fetus with fingers positioned parallel to the femur and exert pressure laterally so as to sweep the legs away from the mid line or (Pinard's maneuver). See [figure 12](#) below.
- Pushing behind the knee so that it bends; then grasp the ankle and deliver the foot and leg.



**Figure 12. Pinard's maneuver.**

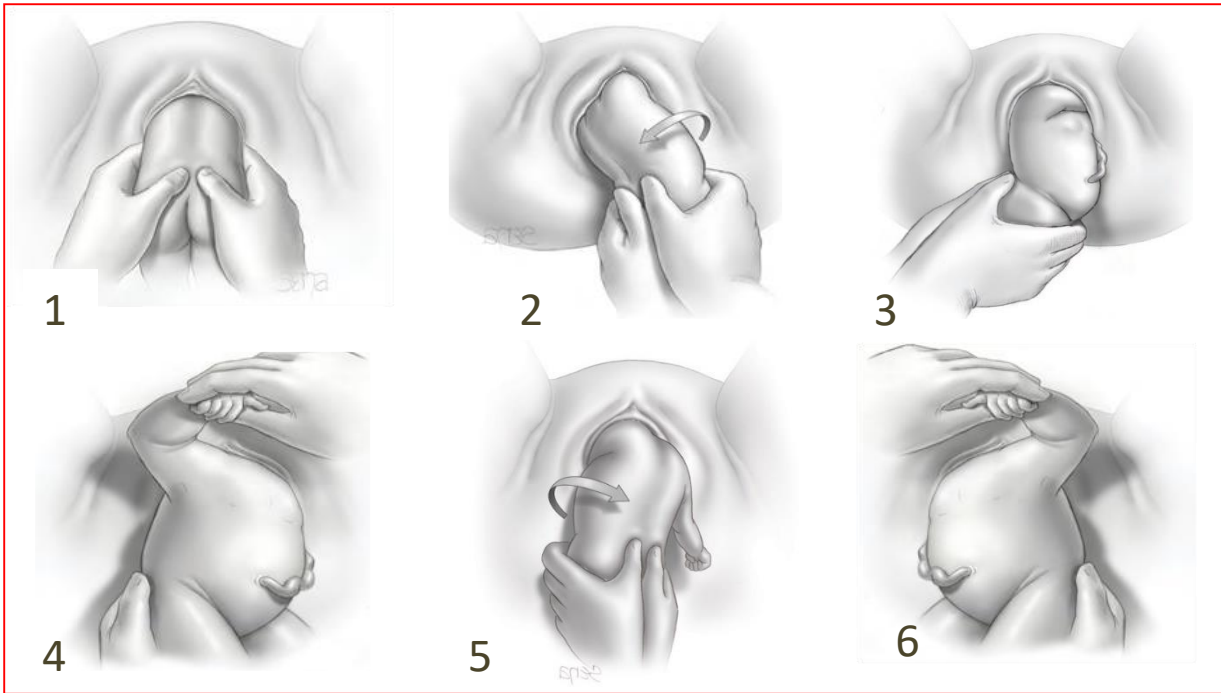
- Wait till body is born to the level of the umbilicus. Put fingers on the anterior superior iliac crests and thumbs on the sacrum to apply downward rotational traction ([figure 13](#)). Use a dry towel to wrap around the hips (not the abdomen) to help with gentle traction of the infant. Do not hold the baby by the flanks or abdomen as this may cause kidney or liver damage.



**Figure 13. Holding the baby.**

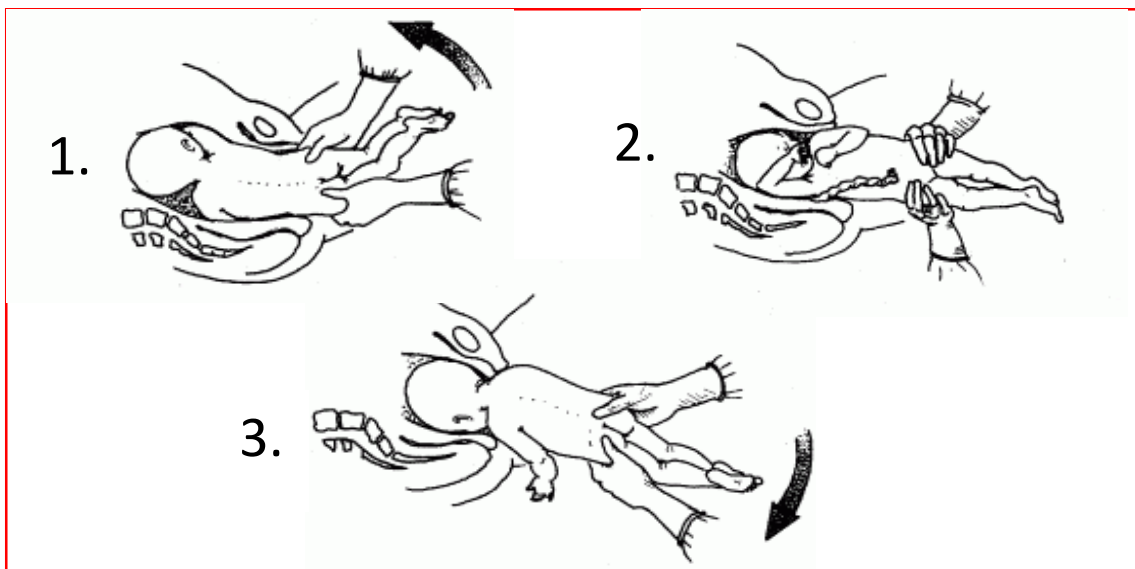
#### ***Delivery of the arms and shoulders***

- When both scapulae are visible the body is rotated 90<sup>0</sup>. Allow the arms to disengage spontaneously one by one. Only assist if necessary.
- If the arm does not spontaneously deliver, locate the humerus, place one or two fingers in the elbow and laterally sweep the arm across the chest.
- Rotate the body 180<sup>0</sup> to deliver the other arm.
- See [figure 14](#) below for the steps to follow.

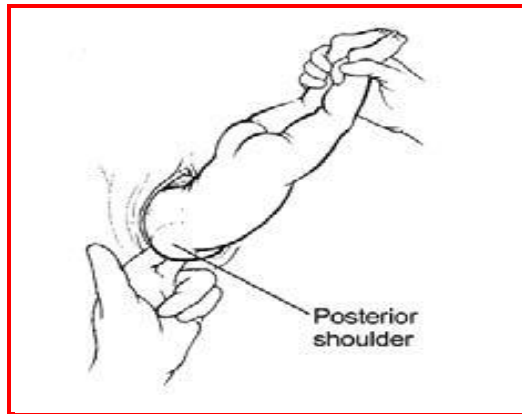


**Figure 14. Delivery of Arms and Shoulders.**

- If the arms are trapped in the birth canal, use classical method (delivering posterior shoulder) or Lovset's maneuver ([figure 15](#)).
  - **Lovset's maneuver:** Hold the fetus around the bony pelvis with thumbs across the sacrum. The fetus is turned through half a circle ( $180^{\circ}$ ) while downward traction is applied at the same time, so that the posterior arm emerges under pubic arch and then hooked. The position is restored and anterior arm is delivered in the same manner.
  - **Delivering posterior shoulder:** Hand is introduced along the curve of sacrum while the baby is pulled slightly upwards ([figure 16](#)). First post arm is delivered by applying firm pressure over the arm and pushing over the baby's face.



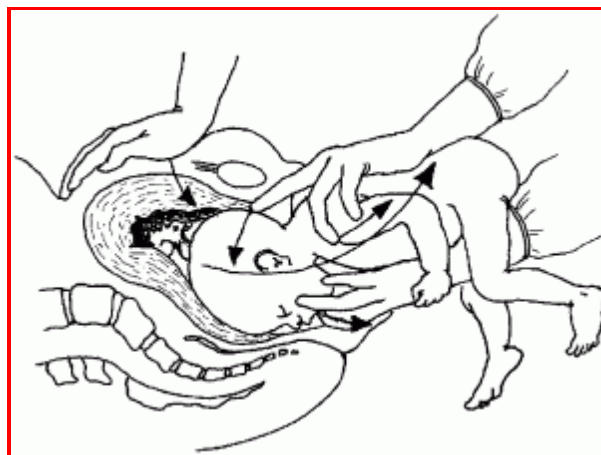
**Figure 15. Lovset's Maneuver.**



**Figure 16.** *Classical method (delivery of posterior shoulder).*

### **Delivery of the after coming Head**

- When the nape of the neck is visible, apply fundal pressure to maintain flexion and deliver the upcoming head.
- **Mauriceau Smellie Veit Maneuver (MSV):** Index and middle finger of one hand are applied over the maxilla, to flex the head, while the fetal body rests on the palm of the same hand and forearm. Fetal legs straddle the forearm. Two fingers of the other hand are hooked over the fetal neck and grasp the fetal shoulders. Apply gentle downward traction to deliver the head. See [figure 17](#) below.



**Figure 17.** **Mauriceau Smellie Veit Maneuver (MSV).**

## **COMPLICATIONS OF BREECH DELIVERY**

### **Maternal**

- Soft tissue injury

### **Fetal**

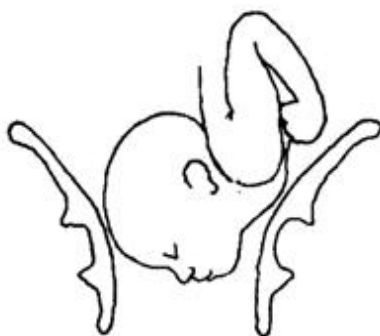
- Asphyxia
- Arrest of after coming head
- Brachial plexus injury (Erbs palsy)
- Organ damage and fracture
- Increased perinatal morbidity and mortality

## FACE PRESENTATION

---

### DEFINITION

- Hyperextension of the head with the face being the leading part ([figure 18](#)).
- Fetal chin (mentum) is used as a reference point.



**Figure 18.** Face presentation

### DIAGNOSIS

- Suggestive abdominal finding: groove may be felt between the occiput and the back (Leopold III).
- On vaginal examination:
  - Fetal chin, mouth and nose palpated.
  - The mouth with the two malar bone prominences makes a triangle (unlike in breech where the anal orifice with two trochanteric eminences is in a line).
  - Mento-anterior: chin anterior position
  - Mento-posterior: chin posterior position

### MANAGEMENT

- **Mento-anterior:** If the pelvis is grossly adequate, progress of labor is good and labor has advanced; attend labor.
- **Persistent mento-posterior:** Refer for cesarean delivery.

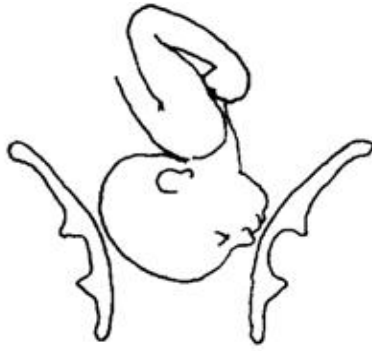
## BROW PRESENTATION

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### DEFINITION

Brow presentation occurs when there is partial extension of the fetal head making the occiput higher than the sinciput. ([Figure 19](#))





**Figure 19. Brow presentation**

### **DIAGNOSIS**

- Suggestive abdominal findings
  - Occiput felt above sinciput
- On vaginal examination
  - Anterior fontanelle and orbit are felt

### **NATURAL COURSE**

- In brow presentation, engagement is usually impossible and arrest disorder is common.

### **MANAGEMENT**

- Refer urgently

## **TRANSVERSE LIE (SHOULDER PRESENTATION)**

---

### **DEFINITION:**

*Transverse lie* is when the long axis of the fetus is perpendicular to the long axis of the uterus.

*Shoulder presentation* is when the shoulder is the presenting part in a transverse lie. See [figure 20](#) below.



**Figure 20. Transverse lie**

## DIAGNOSIS

- Abdominal findings:
  - Neither the fetal head nor the breech are felt in the upper and lower parts of the uterus.
  - The abdomen is transversely elongated than longitudinally.
  - Fundal height is less than the gestation age.
- Vaginal finding:
  - The shoulder or the prolapsed arm is felt.
- Ultrasound is helpful to confirm the diagnosis.

## MANAGEMENT

- If detected before 36 weeks of GA follow her until 36 weeks of GA for possible spontaneous rotation.
- If detected at or after 36 weeks of GA or during labor at any GA, refer immediately to hospital (CEmONC facilities).
- If it is a term pregnancy or if the woman is in labor, refer to hospital (CEmONC facilities)

*NOTE: Neglected shoulder presentation leads to obstructed labor and associated complications.*

## COMPOUND PRESENTATION

---

### DEFINITION

- Compound presentation is when fetal extremities prolapse alongside the main presenting part, usually the hand alongside the fetal head.

### DIAGNOSIS

- On vaginal examination: irregular mobile tissue / mass adjacent to the larger presenting part.

### MANAGEMENT

- Don't manipulate the extremity
- **Refer** immediately

# MALPOSITIONS

## DEFINITION

- Malpositions are abnormal positions of the vertex (other than occipito-anterior position) of the fetal head relative to the maternal pelvis.

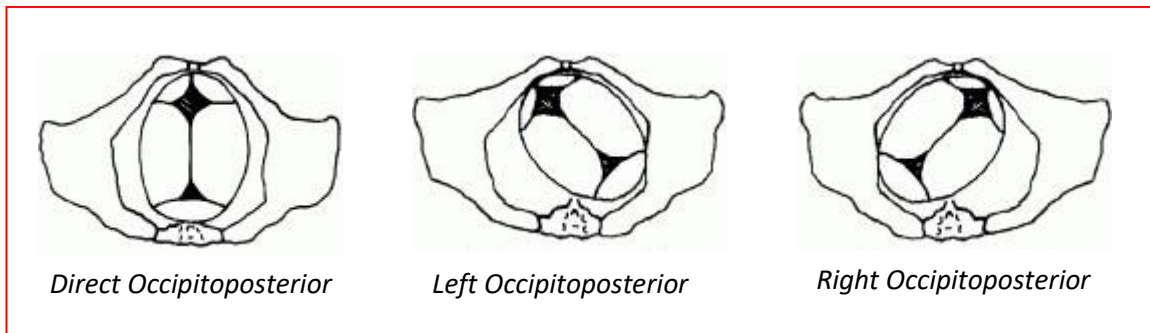
## CLASSIFICATION / TYPES

- Occiput posterior position
- Persistent occiput transverse position

## OCCIPUT POSTERIOR POSITION

### DEFINITION

When the occiput is posterior in relation to the maternal pelvis ([figure 21](#)).



**Figure 21. Types of occipito posterior positions.**

## CAUSES AND RISK FACTORS

- Nulliparity
- Inadequate power (contraction and poor pushing)
- Contracted pelvis

## DIAGNOSIS

- Suggestive abdominal findings:-
  - Flattened lower part of the abdomen
  - Anteriorly palpable fetal limbs
  - Fetal heart heard in the flank area

- On vaginal digital examination:-
  - Posterior fontanelle towards the sacrum
  - Anterior fontanelle felt anteriorly if neck is flexed

## MANAGEMENT

- If pelvis is adequate and signs of CPD or any condition that require cesarean delivery is ruled out, expect vaginal delivery with close follow up.
- If the cervix is fully dilated:-
  - Attend delivery as occiput posterior
  - Vacuum assisted delivery if indicated
- If there is poor progress of labor and /or sign of CPD, urgently **refer** to a hospital.

## PERSISTENT OCCIPUT TRANSVERSE POSITION

---

### DEFINITION

Persistent occiput transverse position is defined as an occiput transverse position that is maintained for an hour or more in the second stage of labor.

Usually, small fetuses can be delivered in occiput transverse position while others rotate anteriorly or posteriorly after the fetal head descends in to the pelvic floor.

### CLASSIFICATION

- High transverse arrest (arrest above station +2 on a -5 cm to + 5 cm scale)
- Deep transverse arrest (arrest below station +2 on a -5 cm to + 5 cm scale)

### CAUSES AND RISK FACTORS

- Inadequate power (contraction and poor pushing)
- Platypelloid and android pelvis
- Fetal head long occipitofrontal diameter

### DIAGNOSIS

- On vaginal examination:-
  - The fetal sagittal suture and fontanelles are palpable in the transverse diameter of the pelvis.
  - The fetal ears can be palpated superiorly under the symphysis and inferiorly above the sacrum / coccyx.

**NOTE:** There may be anterior or posterior asynclitism.

## MANAGEMENT

- ***Expectant management:*** If there is progress in descent and the fetal heart rate is reassuring, expectant management is the preferred option. Partial or complete rotation may still occur spontaneously.
- If there is any abnormality in the progress of labor or high transverse arrest, refer to institutions with caesarean delivery service.

# PROLONGED AND OBSTRUCTED LABOR

## PROLONGED LABOR

### DEFINITION

Prolonged labor is labor lasting more than 12 hours or an active phase of over 6 hours.

### CAUSES

- **Power:** Inadequate power due to poor or uncoordinated uterine contraction.
- **Passenger:** If fetal head is too large to pass through the mother's pelvis, or the fetal presentation is abnormal.
- **Passage:** Small maternal pelvis, abnormal shape of the pelvis, or if there is soft tissue tumor in the pelvis.

### DIAGNOSIS

- Using the partograph if cervicogram crosses the alert or action line.
- The following table ([table 17](#)) shows diagnostic criteria for prolonged labor.

### CLASSIFICATION

- See [table 17](#) below for the classification.

*Table 17. Classification of abnormal labor*

Labor Pattern	Diagnostic Criteria		Preferred Rx	Exceptional Rx
	Nulliparas	Multiparas		
<b>FIRST STAGE PROLONGATION DISORDER</b>				
Prolonged Latent (from onset of painful, regular contractions)	>20hrs	>14hrs	Bed rest	<ul style="list-style-type: none"> <li>• Oxytocin</li> <li>• C/S delivery for urgent problems</li> </ul>
Prolonged latent (confirmed true labor)	> 8hrs	>8hrs		

PROTRACTION DISORDERS			
Active phase dilatation	<1.2 cm/hr	<1.5 cm/hr	<ul style="list-style-type: none"> <li>• Expectant/ Support</li> <li>• ARM</li> <li>• Augmentation</li> <li>• C/S for CPD or contraindication for oxytocin use</li> </ul>
Descent	<1 cm/hr	<2 cm/hr	
ARREST DISORDERS			
Arrest of cervical dilatation	>2 hr	>2 hr	<ul style="list-style-type: none"> <li>• No contraindication for augmentation-Oxytocin</li> <li>• CPD- C/S</li> <li>• Contraindication for augmentation - C/S</li> </ul>
Arrest of descent	>1 hr	>1 hr	
Failure of Descent	No descent in late active stage		
SECOND STAGE DISORDERS			
Prolonged second stage	> 2 hrs	> 1 hr	<ul style="list-style-type: none"> <li>• Depends on identified cause and presence of complications</li> </ul>
	With epidural > 3.5 hrs	With epidural > 2.5 hrs	
Failure of descent	No descent in second stage		

## MANAGEMENT

- If there is no contraindication for instrumental delivery, perform vacuum delivery. Otherwise refer.

## OBSTRUCTED LABOR

### DEFINITION

Obstructed labor is failure of descent of the fetus in the birth canal for mechanical reasons in spite of good uterine contraction.

**NB: It is an outcome of neglected and mismanaged labor.**

### CAUSES:

#### *Maternal*

- Contracted pelvis / cephalopelvic disproportion (commonest)
- Soft tissue abnormalities (e.g. tumor, placenta previa, vaginal septum, tight perineum, uterine congenital anomalies)

### ***Fetal***

- Macrosomia
- Malpresentations
- Malposition
- Locked twins, conjoined twins
- Fetal anomalies e.g. hydrocephalus
- Shoulder dystocia

### **DIAGNOSIS**

The clinical findings depend on the duration, complications, cause of the obstruction and parity.

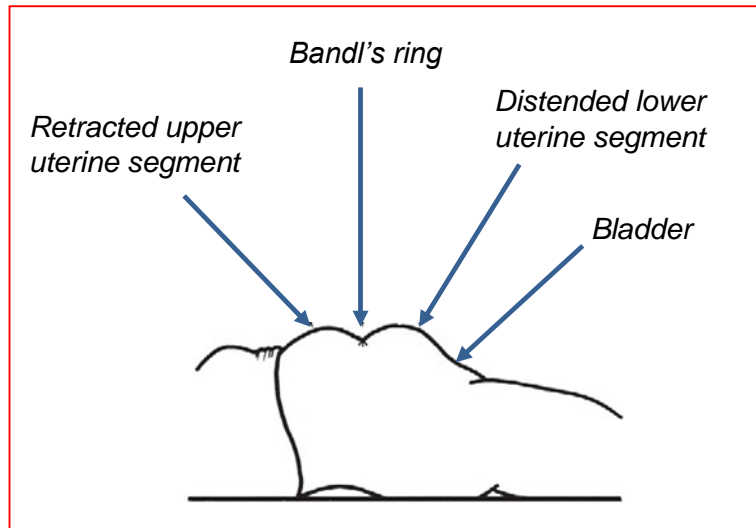
#### **History:**

- Previous history of prolonged/obstructed labor
- prolonged rupture of the membranes
- Pain full contractions
- Fever
- Previous operative deliveries (instrumental deliveries, cesarean section)
- History of pelvic injury

#### **Physical examination:**

- General condition of the patient
  - Exhausted due to severe pain and lack of sleep
  - Anxious, terrified
  - Signs of dehydration.
  - Deep and rapid respiration
- Vital sign
  - Temperature (pyrexia)
  - Pulse rate (rapid thready pulse)
  - BP (hypotension)
- Abdominal findings
  - Distention of the bowel as a result of acidosis and hypokalemia
  - Two / Three tumor abdomen ([figure 22](#))
  - Abnormal fetal heart rate (tachycardia or bradycardia)
  - No fetal heart tone if the fetus dies from anoxia





**Figure 22.** *The three tumors and ring of Bandl.*

### **Genito-urinary**

- Vaginal examination findings:-
  - Edema of lower vagina and vulva (canula sign)
  - Meconium- stained and foul-smelling discharge
  - Bleeding may be seen
  - Edema of the cervix
  - Cervix poorly applied to the head
  - Full cervical dilatation usually occurs in cephalic presentation
  - Little or no descent of the presenting part
- Fetal Status:-
  - Molding
  - Depending on the type of fetal presentation, findings may include large caput succedaneum in cephalic presentation, shoulder with or without prolapsed arm in transverse lie, brow or face in deflected neck.
  - Caput formation makes identification of the presentation and position very difficult.

### **MANAGEMENT**

- Secure IV line with ringer lactate or normal saline, infuse a liter in 15-20 minutes.
- Start with initial dose of antibiotics with anaerobic coverage (Ampicillin 2gm IV, Gentamicin 80mg IV and Metronidazole 500mg IV; or Ceftriaxone 1gm IV and Metronidazole 500mg IV).
- Catheterize bladder
- **Urgently refer**

## **COMPLICATIONS**

### **Early complications:**

- Atonic PPH, uterine rupture, peripartum infection (peritonitis, sepsis and septic shock leading to various organ failures (temporary or permanent)), tetanus, maternal death, fetal distress, fetal & neonatal infections, fetal and neonatal death.

### **Late complications:**

- Fistula (e.g. vesico-vaginal, rectovaginal) and its aftermath, vaginal stenosis & stricture, foot drop (sciatic, common peroneal nerve), infertility following postpartum PID or hysterectomy, psychological trauma due to the painful labor experience, loss of the baby and social isolation.

## UTERINE RUPTURE

### DEFINITION

**Uterine rupture:** A tear through the uterine wall above the cervical uterine junction during pregnancy and labor.

### PREDISPOSING FACTORS

- CPD, prolonged & obstructed labor
- Malpresentations and malpositions
- Grand multipara
- Previous caesarean section
- Operative delivery
- Cervical tear – may extend
- Abdominal trauma

### CLASSIFICATION

- **Complete:** Where all the three layers of the uterus are involved and there is a direct communication between the uterine and abdominal cavities.
- **Incomplete:** In incomplete uterine rupture, the peritoneum covering the uterus remains intact.

### DIAGNOSIS

#### Clinical features

- Restlessness
- Sudden cessation of uterine contraction
- Vaginal bleeding and hematuria
- Maternal tachycardia, tachypnea and hypotension
- Pallor
- Gross abdominal distention and diffuse abdominal tenderness
- Easily palpable fetal parts in the abdomen
- Absent fetal heart beat
- May complain of shoulder pain
- Loss of station

## CLINICAL FINDINGS

- The clinical findings may vary from mild and non-specific to an obvious clinical crisis and abdominal catastrophe.
- The *classic signs and symptoms of complete uterine rupture* are:
  - Sudden onset of tearing abdominal pain (sudden feeling of something giving way)
  - Cessation of uterine contractions
  - Recession of the presenting part
  - Absent fetal heart sounds
  - Easily palpable fetal parts
  - Abnormal uterine contour
  - Signs of intra-abdominal hemorrhage
  - Tender abdomen
  - Vaginal bleeding
  - Hemorrhagic shock
  - Copious bright red blood through the catheter indicate involvement of the bladder
- *Clinical finding of incomplete rupture* include:-
  - The fetus remains in the uterus and signs of shock may be delayed until after delivery
  - Rapid maternal pulse
  - Labor pain may continue
  - Fetal heart rate abnormalities: this is the most reliable warning sign.
  - Vaginal bleeding

## MANAGEMENT

- Secure double IV line with ringer or normal saline, infuse a liter in 15-20 minutes
- Intranasal oxygen
- Start with initial dose of antibiotics with anaerobic coverage (Ampicillin 2gm IV, Gentamicin 80mg IV and Metronidazole 500mg IV; or Ceftriaxone 1gm IV and Metronidazole 500 mg).
- Catheterize bladder
- **Urgently Refer**

## POST TERM PREGNANCY

### DEFINITION

Post term pregnancy is a pregnancy that advances to or beyond 42 completed weeks or 294 days of gestation from the first day of the last normal menstrual period (LNMP).

### RISK FACTORS

- Previous history of post term
- Nulliparity
- Male fetus of the current pregnancy
- Obesity
- Older maternal age
- Maternal or paternal personal history of postterm birth.

### DIAGNOSIS

The diagnosis of post term pregnancy is based on accurate gestational dating. The most common methods to determine the EDD are:

1. Knowledge of the date of the LMP.
2. Early ultrasound assessment (before 24 weeks).

**If LNMP is known and reliable, calculate the gestational age from the given date.**

- The given LNMP is said to be reliable if:
  - The date of onset of the LNMP is accurately recalled.
  - The woman had regular menstrual cycle for at least three cycles before the LNMP.
  - She was not using any form of hormonal contraceptives for at least 3 months prior to the LNMP.

**If LNMP is not known or not reliable, use**

- **History:** If date of quickening is recalled accurately, calculate the gestational age by adding 20 weeks in nullipara or 18 weeks in multipara to the weeks lapsed since the date of quickening.
- **Physical Examination:**
  - If there is a documented symphysis fundal height determination in early pregnancy before 20 weeks of gestation calculate the gestational age by adding the lapsed weeks since the date of the fundal height determination.

- If there is documented early detection of fetal heart tones, calculate the gestational age by adding the lapsed weeks since the date of the detected fetal heart tones.

***NOTE: Fetal heart tone is detected at the earliest using fetoscope at 18-20 weeks and Doppler at 10-12 weeks.***

- ***Diagnostic Tests:*** If there is a documented early positive pregnancy test, calculate the gestational age by adding six weeks to the lapsed weeks since the date of the positive pregnancy test.

***NOTE: The earliest possible time for urine pregnancy test to be positive is at 6 weeks from LNMP. If 36 weeks or more has lapsed from the early first positive urine pregnancy test, this is termed as post term pregnancy.***

## **MANAGEMENT**

- Ultrasound examination and daily fetal kick count between 40 and 41 weeks.
- Refer to hospital if not in labor by 41 weeks.

## VACUUM DELIVERY

### DEFINITION

Vacuum delivery is an assisted instrumental vaginal delivery using ventouse (vacuum extractor).

### INDICATIONS

- Prolonged second stage of labor as a result of poor maternal effort / exhaustion.
- Non reassuring fetal heart rate pattern.
- To shorten second stage in:-
  - Eclampsia
  - Cardiac and cerebrovascular diseases
  - Glaucoma
- Cord prolapse in 2<sup>nd</sup> stage.

### PREREQUISITES

- Vertex presentation
- Fully dilated cervix
- Engaged head: Station at +2 and below (+3,+4,+5)
- Ruptured membranes
- Adequate pelvis
- Position of the head must be known
- Functioning equipment
- Provider should be skilled in performing vacuum delivery.

### CONTRAINDICATIONS

- CPD
- Gestational age of  $\leq 34$  weeks
- Non vertex presentation

### PREPARATION

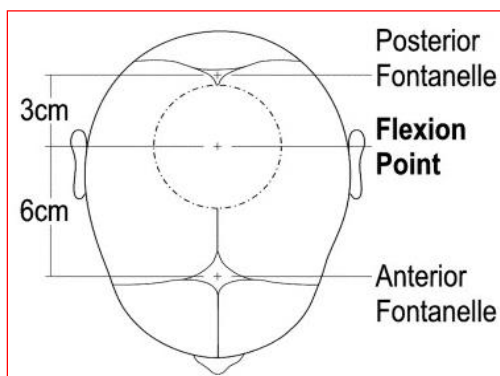
- Explain the procedure and get written consent
- Empty bladder
- Give local anesthesia if episiotomy is required.
- Assemble, check all connections and test the vacuum on a gloved hand.

- **Components of vacuum delivery apparatus:**
  - Suction cup (metallic or plastic) with different size
  - Vacuum pump (electrical or manual)
  - Traction devices (handle and connections).

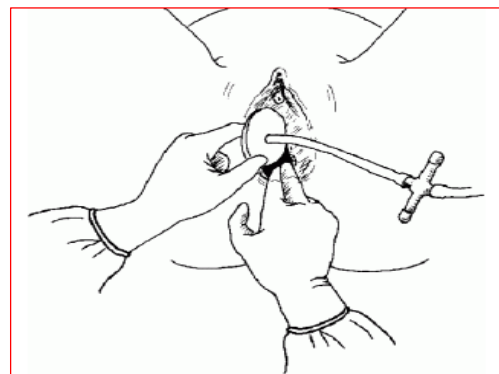
## TECHNIQUES OF VACUUM DELIVERY

### Application

- Identify the flexion point (see [figure 23](#) below).
- Spread the labia and gently insert the cup angling the device posteriorly (see [figure 24](#) below).
- Apply the appropriate size cup that can fit near to the occiput.
- The center of the cup should be 3 cm anterior to the posterior fontanel and on the sagittal suture.
- Before creating the vacuum check for correct application and ensure that there is no maternal soft tissue trapped within the rim of the cup
- If there is maternal tissue entrapment, release and reapply correctly before creating vacuum.



**Figure 23.** Flexion point.



**Figure 24.** Applying a vacuum cup.

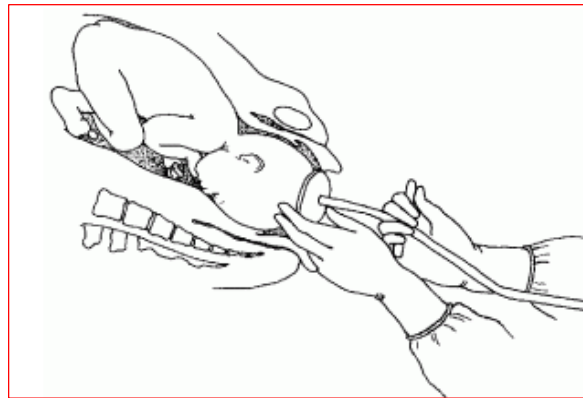
### Vacuum creation

- Create a vacuum of 0.2 kg/cm<sup>2</sup> (approximately 200 mmHg) negative pressure to maintain the cup in position.
- Recheck that maternal tissue is not entrapped.
- Gradually increase the vacuum to 0.8 kg/cm<sup>2</sup> (approximately 600 mmHg).



## Apply Traction

- Start traction with uterine contraction with a finger on the scalp next to the cup to prevent slippage / detachment and assess descent of the vertex ([figure 25](#)).
- Pull in line with the pelvic axis and perpendicular to the cup.
- Between contractions, check the fetal heart beat and cup application.
- As soon as the head is delivered, release the vacuum and proceed with the delivery of the fetus.



**Figure 25. Applying traction**

## Further care

- After delivery inspect the vagina and cervix; and repair if there is any tear or episiotomy.
- Proceed with the immediate neonatal care and examination.

## FAILED VACUUM

*Diagnosis of failed vacuum* is based on any one or more of the following conditions:-

- The head does not advance with each pull.
- The fetus is undelivered after three pulls.
- The fetus is not delivered within 30 minutes of vacuum application.
- The cup that is applied appropriately and pulled in the proper direction with maximum negative pressure slips off the head twice.

***NB: If vacuum delivery fails, immediately refer the mother for cesarean delivery.***

## COMPLICATIONS

### Fetal complications

- Localized scalp oedema (caput succedaneum or chignon)
- Scalp abrasions/lacerations
- Cephalohematoma
- Subgaleal hemorrhage
- Intracranial hemorrhage

### Maternal complications

- Tear / laceration of the vulva, perineum , vagina, and cervix

### Management of complications

- Localized scalp oedema (caput succedaneum or chignon) and simple scalp abrasions usually don't require any treatment and will subside without any treatment.
- For all other neonatal complications refer the neonate for further management.
- For genital tract tear / laceration, repair or refer accordingly (refer to [management of genital tract tear / laceration](#), page 73).

## FAMILY PLANNING

### INTRODUCTION

Family planning is defined as the ability of individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through use of contraceptive methods and the treatment of involuntary infertility.

Family planning is a key life-saving intervention for mothers and their children by which it can avert more than 42% of maternal deaths and 10% of child mortality if couples space their pregnancies more than 2 years.

### CHOOSING A METHOD OF CONTRACEPTION

Providers need to consider the following factors while counselling clients for contraceptive method choice:

- Availability of a given method
- Efficacy
- Convenience
- Safety
- Duration of action
- Reversibility and time to return of fertility
- Effect on uterine bleeding
- Frequency of side effects and complications
- Protection against sexually transmitted diseases
- Medical contraindications

### CATEGORIZATION OF FP BASED ON TIMING OF SERVICE PROVISION:

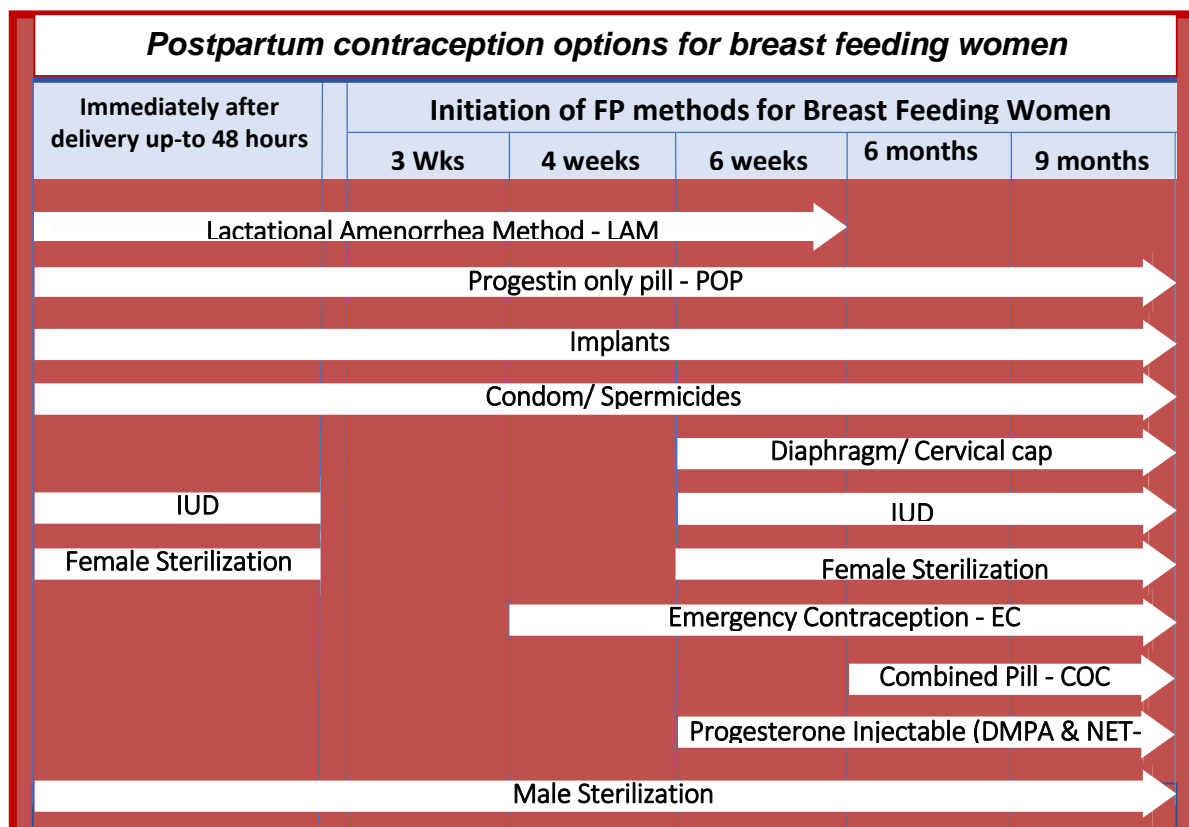
1. Interval / elective FP
2. Post abortion FP
3. Emergency contraception
4. Postpartum family planning

## POSTPARTUM FAMILY PLANNING (PPFP)

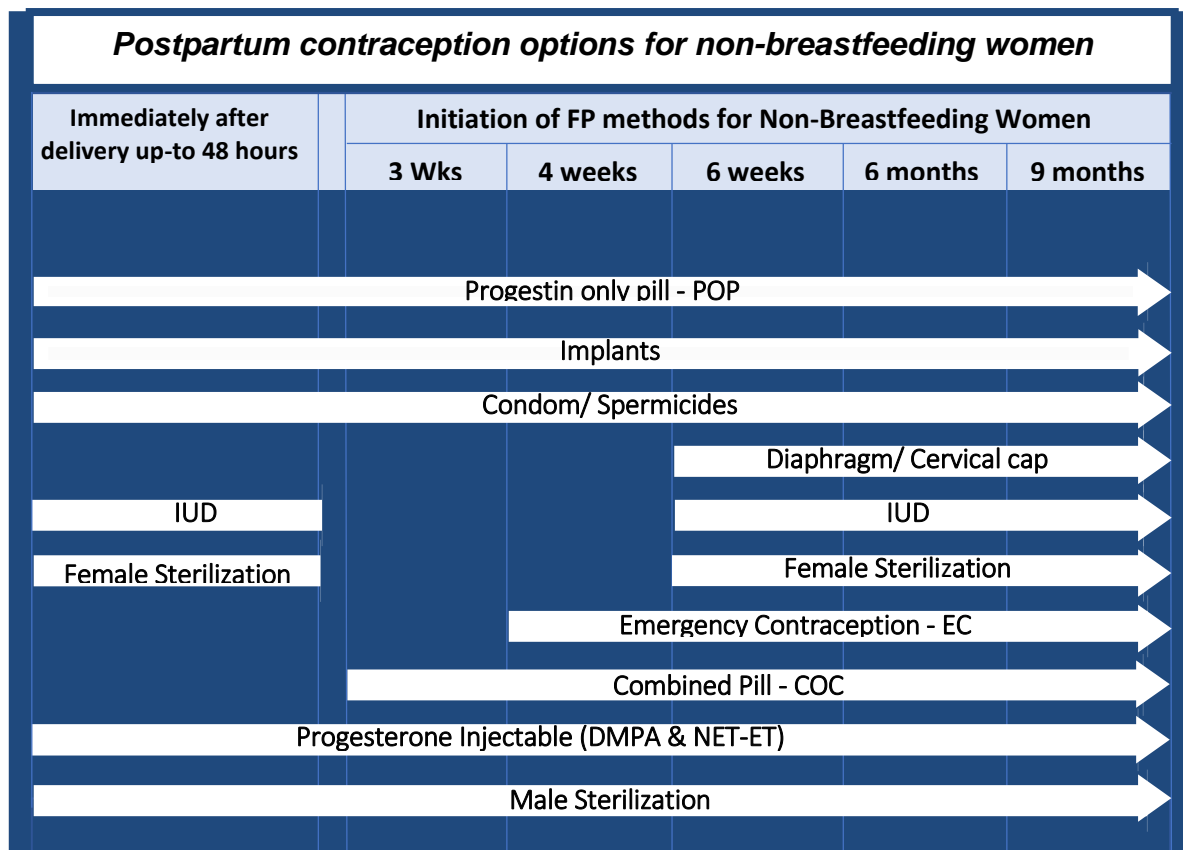
**Postpartum family planning (PPFP)** is defined as the prevention of unintended pregnancy and closely spaced pregnancies through the first 12 months following childbirth. Timing could be:

- **Post-placental**– within 10 minutes after delivery of placenta (e.g. IUD, tubal ligation during CS).
- **Immediate postpartum**- within 48 hours after delivery (e.g. IUD, bilateral tubal ligation with mini-laparotomy, vasectomy, implants).
- **Early postpartum** – 48 hours up to 6 weeks (lactational amenorrhea, condoms, implants, mini pills)
- **Extended postpartum** – 6 weeks up to one year after birth. Unique considerations for providing PPFP (IUCD, implants, tubal ligation, vasectomy, condoms, lactational amenorrhea).

Below are two diagrams ([figure 26](#) and [figure 27](#)) depicting the timing and the possible method options for breastfeeding and non-breast feeding mothers.



**Figure 26.** *Post partum contraception options for breast feeding women.*



**Figure 27.** *Post partum contraception options for non-breast feeding women.*

## COUNSELLING

Clients can be counselled during:-

- Preconception
- Antenatal
- Intrapartum but not during active labor
- Immediate post-partum
- During postpartum, immunization, under five and other visits.

During counselling the following issues need to be addressed:

- Ensure that clients have made their decision based on full, free and informed choice
- Counsel on safer sex including use of condoms for dual protection from sexually transmitted infections (STI) or HIV and pregnancy, particularly for those clients who are at risk for STI / HIV.
- Counsel clients regarding possible side effect, danger sign and complications related to the contraception

### **Postpartum Family planning:**

- Explain that she can become pregnant as early as four weeks after delivery if she is not exclusively breastfeeding.
- If couples want to have more children, advise them to wait at least for 2 years after giving live birth and at least 6 month after failed pregnancy (e.g. Abortion).
- Information on when to start a method after delivery varies depending on whether a woman is breastfeeding or not (see [figure 26](#) and [figure 27](#) above).

### **Post-abortion family planning:**

- All clients with post abortion and safe abortion should be counselled on all contraception options before, during and after the procedure as part of abortion care.
- In the post-abortion period, a woman should start using contraceptives as soon as possible.
- All short acting contraceptives (COC, Depo-Provera, Condoms etc.) can be initiated immediately after abortion.
- All long acting (IUCD / Implants) and permanent contraceptives can be initiated immediately; but, if there is a suspicion of incomplete uterine evacuation or any uterine infection IUCD insertion or female sterilization by tubal ligation should be delayed until the woman is treated.

### **Linkage and referral**

Family planning clients should be referred to other facility if:

- The chosen contraceptive method is not available in the facility e.g. permanent contraceptives.
- The contraceptive related complication is beyond the health center's capacity.

## ANEMIA DURING PREGNANCY

### DEFINITION

Anemia in pregnancy is defined as a hemoglobin concentration of less than 11 g/dL (Hematocrit of < 33%).

### CLASSIFICATION

1. *Mild* (10-10.9 g/dl)
2. *Moderate* (7-9.9 g/dl)
3. *Severe* (<7g/dl)

### COMMON CAUSES OF ANEMIA IN PREGNANCY

In Ethiopia nutritional (iron or folate) deficiency, malaria and hookworm infestation are the major causes of anemia in pregnancy. Iron deficiency is responsible for approximately 95% of the anemias during pregnancy, reflecting the increased demand for iron.

### DIAGNOSIS

The symptoms and signs may be vague and nonspecific:-

- **Symptoms:** Easy fatigability, headache, palpitations, dizziness and dyspnoea.
- **Signs:** Pallor, tachycardia, angular stomatitis, glossitis and koilonychia (spoon nails) may be present in longstanding severe anemia.

### LABORATORY FINDINGS

- Essential workup: hemoglobin / hematocrit; stool for ova and parasites; peripheral blood morphology; peripheral smear for malaria; red cell indices.
- The red cells usually are hypochromic and microcytic.

### TREATMENT

- In an established case of anemia, prompt adequate treatment is necessary.
- Mild & Moderate anemia:
  - Rule out intestinal infections (and malaria and treat accordingly)
  - Counsel on compliance with treatment
  - Reassess at subsequent antenatal visit (4-6 weeks). If anemia persists, refer to hospital.
- Severe anemia:
  - Refer immediately to hospital.

See [table 18](#) for algorithm for screening and treatment of anemia during pregnancy.

## PREVENTION

- Routine supplementation of 30-60 mg of elemental iron for all pregnant women
- Treat malaria & helminthic infections
- Advise on balanced diet

## COMPLICATIONS AND THEIR MANAGEMENT

Severe anemia may result in:

- Intrauterine growth restriction
- Preterm labor (for the management refer to section on [management of preterm labor](#), page 85).
- Congestive heart failure
- Increases risk of antepartum and puerperal infections (for the management refer to section on [management of puerperal infections](#), page 78)
- Reduced ability to tolerate blood loss during labor and delivery
- Low birth weight
- Increased maternal and perinatal, morbidity and mortality.



**Table 18. ALGORITHM FOR SCREENING AND TREATMENT OF ANEMIA DURING PREGNANCY.**

ASK, CHECK, RECORD (SYMPTOMS)	LOOK, LISTEN, FEEL (SIGN)	LABORATORY EVIDENCES	CLASSIFY	TREAT AND ADVISE
<ul style="list-style-type: none"> <li>Do you get tired easily?</li> <li>Do you feel breathless (have short of breath) during routine activities?</li> <li>Do you have palpitation, dizziness, headache</li> </ul>	<ul style="list-style-type: none"> <li>Count number of breaths in 1 minute</li> <li>Look for conjunctival pallor.</li> <li>Look for palmar pallor.</li> </ul>	<ul style="list-style-type: none"> <li>Hemoglobin* &lt;7 g/dl.</li> </ul> <p><b>AND/OR</b></p> <ul style="list-style-type: none"> <li>Symptomatic:                             <ul style="list-style-type: none"> <li>Severe palmar and conjunctival pallor</li> </ul> </li> </ul> <p><b>OR</b></p> <ul style="list-style-type: none"> <li>Any pallor with any of                             <ul style="list-style-type: none"> <li>&gt;30 breaths per minute</li> <li>Tires easily</li> <li>Breathlessness at rest</li> </ul> </li> </ul>	<p><b>Severe anemia</b></p>	<p><b>Refer immediately to hospital.</b></p>
		<ul style="list-style-type: none"> <li>Hemoglobin 7-11 g/dl.</li> </ul>	<p><b>Mild to moderate anemia</b></p>	<ul style="list-style-type: none"> <li>Rule out intestinal infections and malaria and treat accordingly.</li> <li>Give double dose of iron (1 tablet twice daily) for 3 months.</li> <li>Counsel on compliance with treatment.</li> <li>Reassess at next antenatal visit (4-6 weeks). If anemia persists, refer to hospital.</li> </ul>

\* Measure hemoglobin on first, third & eighth ANC visits.

# MANAGEMENT OF Rh-D NEGATIVE PREGNANT WOMEN

## INTRODUCTION

Rhesus isoimmunization or Rhesus D hemolytic disease of the newborn is one of the causes of Hemolytic Disease of the Newborn (HDN). The disease ranges from mild to severe, and typically occurs in some pregnancies of Rh-negative women where the fetus's father is Rh positive, leading to an Rh-positive pregnancy. During birth, the mother may be exposed to the infant's blood, and this causes the development of antibodies, which may affect the health of subsequent Rh-positive pregnancies.

## PREDISPOSING FACTORS FOR Rh SENSITIZATION

- Spontaneous abortion
- Ectopic pregnancy
- Molar pregnancy
- Induced abortion
- Intrauterine fetal death
- Invasive fetal diagnostic procedures
- External cephalic version
- Abruptio / bleeding placenta previa
- Abdominal trauma
- Vaginal bleeding of unknown origin in second or third trimester

## DIAGNOSIS:

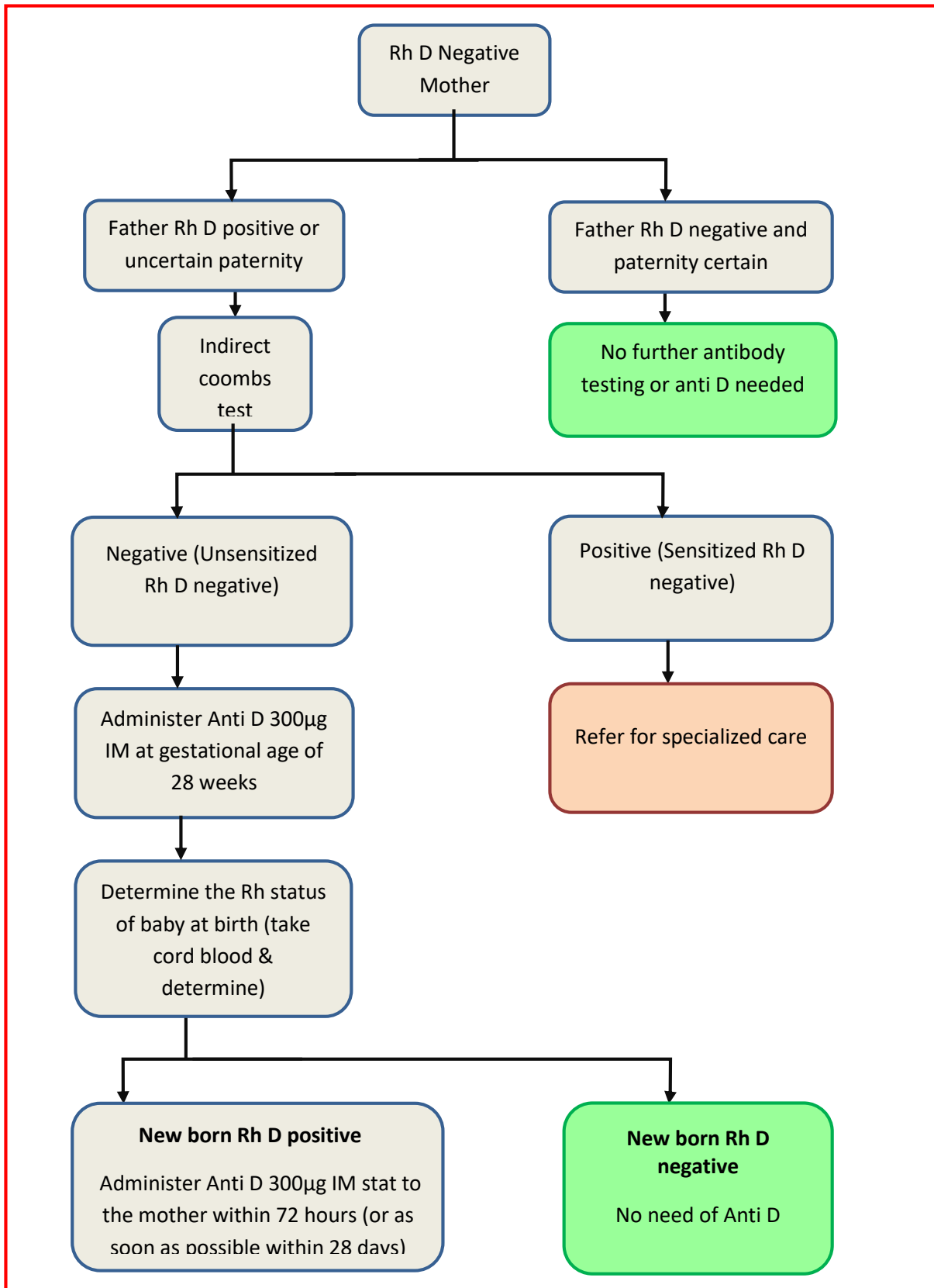
- BG and Rh
- Partner's BG and Rh
- Indirect coombs test

## MANAGEMENT

The algorithm below ([figure 28](#)) shows the approach that is used during management of mothers who are Rh negative during ANC.

**NOTE:** No isoimmunization is expected if both the mother and the father are Rh negatives.

In addition, anti-D immunoglobulin should be administered for conditions listed on [table 19](#).



**Figure 28.** Outline of the management of Rh D- negative pregnancy.

**Table 19. Events associated with feto-maternal hemorrhage and dose of Anti-D.**

<b>Event or Procedure</b>	<b>Dosage of Rh D Immune Globulin</b>
First-trimester abortion	50 µg
Ectopic pregnancy	50 µg
Molar pregnancy	50 µg
Induced second-trimester abortion	300 µg
Fetal death (>10 weeks gestation)	300 µg
Abruption / bleeding placenta previa	300 µg
Abdominal trauma	300 µg
Vaginal bleeding of unknown origin in second or third trimester	300 µg

**COMPLICATIONS:**

**Fetal / Neonatal Effects**

- Hemolytic disease of the newborn
- Fetal / neonatal anemia
- Erythroblastosis fetalis
- Hyperbilirubinemia
- Kernicterus

## HIV IN PREGNANCY

### DEFINITION

Prevention of Mother to Child Transmission (PMTCT) is the prevention of transmission of HIV virus from the mother to the fetus and child during pregnancy, childbirth and breastfeeding.

### RISK OF MTCT

The risk of mother to child transmission varies during pregnancy, labor and delivery and breastfeeding (see [table 20](#) below).

**Table 20.** Rates of HIV transmission during pregnancy, labor and delivery, and breastfeeding.

Estimated Risk of MTCT	
Timing	Transmission rate without Intervention
During pregnancy	10 - 25*
During labor and delivery	35 - 40%
Overall with breastfeeding to 6-14 months	35 - 40*

NOTE: \* Rates of transmission vary because of differences in population characteristics such as maternal CD4+ cell counts, RNA viral load, exclusivity and duration of breastfeeding

### Factors that affect the rate of MTCT

#### *Maternal Factors:-*

- High maternal viral load
- New or recently acquired maternal HIV infection
- Low CD4 count
- Advanced maternal disease
- Viral or parasitic placental infections during pregnancy, labor and childbirth
- Maternal malnutrition
- Nipple fissures, cracks, mastitis and breast abscess
- Poor ART adherence
- Active lower genital tract infections like herpes simplex

#### *Obstetric and delivery practices:-*

- Ante-partum procedures (e.g. amniocentesis, external cephalic version)
- Rupture of membrane for more than four hours
- Vaginal delivery compared to CS
- Injuries to birth canal during child birth (vaginal and cervical tears)
- Invasive childbirth procedures (e.g. episiotomy)
- The first fetus in vaginal delivery of multiple pregnancies
- Delayed infant drying and eye care
- Routine vigorous infant airway suctioning
- Instrumental deliveries (vacuum)
- Fetal birth trauma
- Internal fetal monitoring (fetal scalp electrodes/sampling)

***Infant factors:-***

- First infant in multiple birth
- Pre-maturity and low birth weight
- Longer duration of breastfeeding
- Mixed feeding during the first six months of life
- Oral diseases in child

## **DIAGNOSIS**

- All pregnant women attending maternal health services (i.e. antenatal, labour, postpartum) should be screened for HIV with serologic tests following the national PMTCT guideline (using the opt-out approach).
- If test result becomes positive: request laboratory tests (CD4 count & viral load).
- Clinical symptoms and signs of opportunistic infections should be thoroughly looked for, appropriate laboratory tests should be requested and the clinical stage of the disease assigned.
- If the test becomes negative, repeat HIV counselling and testing in the third trimester preferably 28 to 36 weeks or during labor as appropriate.
- All HIV positive pregnant or lactating women should be retested with a second specimen before initiating ART.

## **MANAGEMENT**

### **Preconception care**

Once a patient is diagnosed to be HIV positive the following should be done:

- Counsel on the diagnosis and link to trained personnel for further counselling.
- Baseline investigations including CD4 and viral load.

- Advise on contraception use with focus on avoiding unintended pregnancy; the preference is to use dual contraception with one of them being condom.
- Advise on general health including good nutrition: adequate caloric intake; consumption of iron rich foods (beans lentils, meat, liver); iron and folate for three months; iodized salt.
- Prevention of malaria: use of ITN for women living in malaria endemic areas.
- Screening & treatment for opportunistic infections & STIs.
- Initiate ART / link to PMTCT unit. ART should be initiated for all pregnant and breastfeeding HIV positive women regardless of clinical stage and CD4 cell count, and continued lifelong. Discuss on plan for pregnancy and necessary preparations.
- Provision of prophylaxis for opportunistic infections: Co-trimoxazole for stages 2, 3 and 4 HIV/AIDS, and those with CD4 count of  $\leq 350$ .
- Discuss the importance of partner involvement & screening.
- Avoid pregnancy for 6 months after recovery from any chronic infection (e.g. Tb).
- If the patient has plan for pregnancy:-
  - Counsel on the impact of HIV on pregnancy.
  - Provide accurate information on risk of MTCT.
  - Explain available methods for reduction of risk of MTCT.

**NOTE:** The above mentioned counselling also apply to pregnant mothers.

### **Antepartum care by visit and trimester of pregnancy**

In addition to the ANC, HIV positive pregnant women need special care and should have more visits. As soon as the patient has a missed period she should visit the antenatal care clinic and have pregnancy test.

- Once pregnancy is confirmed complete clinical evaluation (detailed history and physical examination) should be conducted.
- All HIV positive pregnant, laboring and lactating women should be retested at the initiation of HAART in order to ensure correct diagnosis.
- All HIV positive pregnant, laboring and lactating mothers should be initiated on HAART for life (TDF, 3TC and DTG).
- HIV positive women already on ART at time of pregnancy should continue and stay on the same regimen.
- Pregnant women with WHO clinical stages 1 and 2 can safely be initiated on ART in ANC; however, those diagnosed with advanced HIV disease at ANC (WHO stage 3 and 4) and opportunistic infections should promptly be referred to ART clinic for diagnosis and treatment of OI and initiation of ART.
- However, following which, at the discretion of the ART clinic provider, they can be transferred back to PMTCT unit for their on-going care and treatment.

- Monitoring and support for HAART adherence.
- Early ultrasound for determination of gestational age.
- Routine laboratory screening tests like in any pregnant woman (VDRL, HBsAg, CBC, Blood group and Rh, and others as needed).
- There is no need to wait for CD4 count result to initiate treatment. CD4 count is important to monitor response to treatment.
- Viral load monitoring: it is more effective to detect emergence of treatment failure.
- Advise the mother on the importance of having strict ANC follow up with updating investigations as needed.
- Discuss with the mother the risk of MTCT and the possible complications that can occur due to the HIV infection including IUGR.
- Administer vaccinations like TD.
- Nutritional supplementation like other pregnant women.
- If available, follow the fetal growth with serial US every 3-4 weeks.
- Discuss on the mode of delivery based the national PMTCT guideline. Routine CS for the prevention of MTCT is not recommended; rather individualized birth plan based on the viral load and the duration of HARRT is recommended.
- Discuss on the postpartum infant feeding plan.
- Discuss on post-partum administration of ART to the neonate for reduction of MTCT.
- Assess the patient's support system and counsel if concerns arise.

### **Intrapartum care**

- Safe delivery practices and avoiding invasive procedures whenever possible:
  - Avoid artificial rupture of membranes to shorten labour.
  - Expedite delivery whenever there is a spontaneous rupture of membranes.
  - Avoid routine episiotomy.
  - Limit use of vacuum extraction.
  - Avoid repeated vaginal examinations.
  - Treat chorioamnionitis with appropriate antibiotics.
- Provide essential newborn care (ENC). See section on [essential newborn care](#), page 57.
- **Mode of delivery:-**
  - For women on HAART, if the viral load is > 1000 copies/ml elective cesarean delivery at gestational age of 38 weeks should be considered and referred.
  - If the viral load is ≤ 1000 copies/ml; since there is no added benefit from cesarean delivery, the mother should be counselled on vaginal birth preparedness like any other pregnant women.



- In the absence of viral load, a woman adherent to HAART for at least one month is considered to have lower viral load. The route of delivery can be decided based on clinical judgment of the provider in consultation with the woman.
- The benefits and risks of different modes of delivery including vaginal delivery and referral for elective cesarean delivery should be discussed with the woman.
- When indicated for other medical or obstetric reasons, referral for cesarean delivery should be done, as for all pregnant women.
- If the mother is already started on ART it should be continued intrapartum.
- If she is a newly diagnosed HIV patient and not on ART, it should be started intrapartum and continued post-partum irrespective of the CD4 count.

### Post-partum care

- Continue initial ART for those who are initiated earlier.
- Start ART for HIV positive mothers who are breastfeeding even if it was not started before (currently recommended regimen TDF/3TC/ DTG).
- In general, exclusive breast feeding is recommended for all women. For mothers who fulfil Acceptable, Feasible, Affordable, Sustainable and Safe (AFASS) feeding, formula feeding can be considered after thorough discussion with the family.
- For those who do not fulfil AFASS feeding, breastfeeding must be exclusive for six months and complementary feeding should start at 6<sup>th</sup> month. Breastfeeding should be continued until the first year of life but not more than two years.
- Give NVP + AZT syrup for the first 6 weeks and continue NVP syrup only for the next 6 weeks for all HIV exposed infants (see [table 21](#) below for dosing).

**Table 21.** Enhanced Post-natal Prophylaxis (e-PNP) for HIV Exposed Infants

Infant age/ weight		Formulation	Dosing
0-6 weeks	<2500g	NVP 10 mg/ml + AZT 10 mg/ml	10 mg (1ml ) once daily + 10 mg (1ml ) twice daily
	>2500g	NVP 10 mg/ml + AZT 10 mg/ml	15 mg (1.5ml) once daily + 15 mg( 1.5ml) twice daily
6-12 week		NVP 10 mg/ml	20 mg (2ml) Once daily

- Counsel mothers on the importance of exposed infant follow-up, Co-trimoxazole preventive therapy (see [table 22](#) below for dosing) and early infant diagnosis.
  - DBS for DNA/PCR should be done at sixth week of life and HIV negatives should be followed as HIV Exposed Infants (HEIs).
  - DNA/PCR positive babies should be linked to pediatric ART for chronic HIV/AIDS care, treatment and follow up.

**Table 22. Dosage of Co-trimoxazole preventive therapy in infants and children**

Age	Preparation of the Co-trimoxazole suspension and tablets		
	Suspension per 5 ml 200/40 mg	Pediatric tablet 100/20mg	Single strength adult tablets (400/80 mg)
< 6 months	2.5 ml	1 tablet	½ tablet
6 months -5 years	5ml	2 tablets	½ tablet

- Do confirmatory rapid HIV antibodies test for DNA/PCR negative HEIs six weeks after the cessation of breastfeeding.
- Discharge negative babies from follow up after rapid HIV antibody test and link the positive babies to chronic pediatric HIV care, treatment and follow up.
- Give postpartum family planning counselling and provide the client with family planning methods of her choice as per the PMTCT guideline and [post-partum care](#) section of the protocol, page 65.
- Immunization and growth monitoring for the baby should be done the same way as non HIV exposed babies.
- The mother and infant should do their follow up at the MNCH clinic, where they can get integrated MNCH and HIV care.
- After discharge link the mother to ART clinic in the following scenarios:
  - If the baby is DNA/PCR positive.
  - If the baby is rapid HIV AB test positive.
  - If the mother develops any HIV/AIDS related complications of the disease or its treatment.

**NOTE: Adherence counselling and follow up is mandatory and it should be done for the mother and infant as a pair.**

## HYPERTENSIVE DISORDERS IN PREGNANCY

### DEFINITION

**Hypertension:** A systolic blood pressure of  $\geq 140$  mmHg, or diastolic blood pressure of  $\geq 90$  mmHg or both in two occasions taken 4 hours or more apart; or a single blood pressure recording of  $\geq 160/110$  mmHg.

**Proteinuria:** Two urine dipstick measurements of at least 1+ (30 mg per dL) proteinuria taken six hours apart; or at least 300 mg of protein in a 24-hour urine collection; or a urinary protein / creatinine ratio of  $\geq 0.3$ .

### CLASSIFICATION

- **Gestational hypertension:** Hypertension without proteinuria or other features of preeclampsia developing after the 20<sup>th</sup> week of pregnancy in a previously normotensive woman.
- **Preeclampsia:** A new onset of hypertension and proteinuria after 20 weeks of gestation in a previously normotensive woman.
  - *Pre-eclampsia without severe features*
  - *Pre-eclampsia with severe features:* Headache, blurred vision, oliguria ( $< 400$  ml/24 hours), epigastric or right upper quadrant pain, difficulty of breathing (pulmonary edema), low platelet count ( $< 100,000/\mu\text{l}$ ), liver enzymes elevated more than twice the upper limit of normal range, serum creatinine higher than 1.1 mg/dl or a doubling (or higher) of the baseline serum creatinine concentration in the absence of other renal disease.
- **Eclampsia:** Generalized convulsion and / or coma in a woman with preeclampsia where the convulsion or coma is not attributed to other causes.
- **Chronic hypertension:** Hypertension that antedates pregnancy or is present before the 20<sup>th</sup> week of pregnancy or persists after 12 weeks postpartum.
- **Superimposed preeclampsia:** If proteinuria or other features of pre-eclampsia develop in a patient with chronic hypertension.
  - Superimposed pre-eclampsia without severe features.
  - Superimposed pre-eclampsia with severe features.

## GESTATIONAL HYPERTENSION

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### MANAGEMENT

- Manage as an outpatient if GA is <36 weeks and if blood pressure is in mild range without the use of antihypertensive medications.
- Follow-up weekly and check for increasing blood pressure, urine (for proteinuria), severity features and fetal condition.
- If blood pressure worsens or proteinuria ensues or severity features appear, refer the patient after pre-referral management. (See [pre-referral management](#) below).
- Counsel the woman and her family on danger signs indicating severity features or eclampsia and provide advice on preparedness for hospital delivery.
- Refer at  $\geq 36$  weeks of gestation.

### PRE-ECLAMPSIA

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#### RISK FACTORS

First pregnancy, age <18 or >35 years, multiple gestation, history of hypertension, renal disease, diabetes, obesity, family history of pre-eclampsia.

#### DIAGNOSIS

Hypertension, proteinuria, severity features.

#### TREATMENT

- Preeclampsia without severity features: refer immediately but if in labor, refer after [pre-referral management](#) (shown below).
- Preeclampsia with severity features: refer urgently after the following pre-referral management:-

#### **PRE-REFERRAL MANAGEMENT OF PATIENTS WITH HYPERTENSIVE DISORDERS:**

- Open IV line.
- Loading dose of MgSo<sub>4</sub> (see [box below](#) for the dosing)
- Initial dose of antihypertensive if the systolic blood pressure is 160 mmHg or higher and/or the diastolic blood pressure is 110 mmHg or higher (see [box below](#) for the dosing).

## ECLAMPSIA

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### MANAGEMENT

- Check airway
  - Aspirate (suction) the mouth & throat as necessary & ensure open airway.
  - Place an oral airway.
- Check breathing
  - If breathing, give oxygen by mask at 6 liters per minute.
  - If not breathing, ventilate using bag and face mask.
- Check circulation
  - Set up IV line.
  - Maintain intravascular volume and replace ongoing losses.
  - Avoid fluid overload.
- Position the patient on her side (left lateral) and in Trendelenberg (head down) position to reduce risk of aspiration of secretions, vomitus or blood.
- Place an indwelling catheter.
- Check vital signs.
- Give loading dose of MgSo<sub>4</sub> (see [box below](#) for the dosing)
- Give initial dose of antihypertensive if the systolic blood pressure is 160 mmHg or higher and/or the diastolic blood pressure is 110 mmHg or higher (see [box below](#) for the dosing).
- Administer initial dose of broad-spectrum IV antibiotics.
- Refer urgently!

**NOTE:** The management approach for a pregnant woman presenting with convulsion is summarized below in [annex -5](#).

**Box:** Loading dose of magnesium sulfate

**Loading dose of magnesium sulfate for pre-eclampsia in labor, preeclampsia with severity features and eclampsia:**

- Magnesium sulfate 20% solution, 4g IV over 5 minutes.
- Follow promptly with 10 gm of 50% magnesium sulfate solution, 5 gm in each buttock as deep IM injection with 1 mL of 2% lidocaine in the same syringe.
- If convulsion recurs after 15 minutes, give 2 gm magnesium sulfate (20% solution) IV over 5 minutes.

Box: Anti hypertensives and their dosing.

**Antihypertensives:**

- **Hydralazine:**

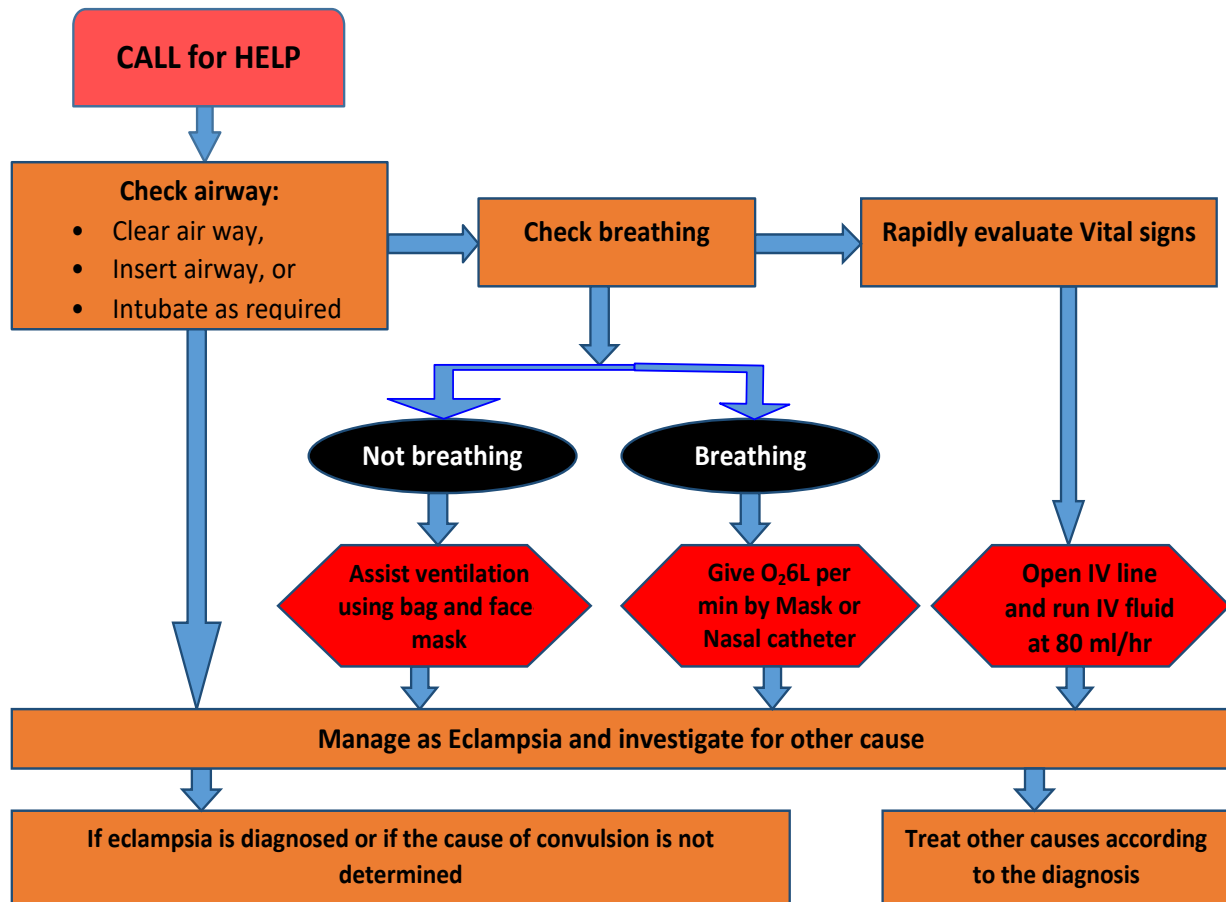
- Hydralazine is the drug of choice for acute therapy.
- Give 5 mg IV slowly every 20 minutes until blood pressure is lowered (to diastolic blood pressure <110 mmHg).
  - Repeat hourly as needed or give 12.5 mg IM every 2 hours as needed (If IV route is not possible).
  - The maximum dose is 20 mg per 24 hours.

- **Nifedipine:**

- As alternative for acute therapy.
- Administer 10 mg orally; repeat dose after 30 minutes if response is inadequate until optimal blood pressure is reached.
- The maximum total dose is 30 mg in the acute treatment setting.
- Then continue as 10-20 mg PO QID.
- For maintenance therapy give 10-20 mg PO BID.

**Annex 5. Algorithm for management of pregnant woman presenting with convulsion**

**Algorithm for management of pregnant woman presenting with convulsion**



**Give anti-hypertensive if DBP  $\geq$  110 mmHg or SBP  $\geq$  160 mmHg**

- Hydralazine 5mg IV slowly every 20 min maximum 20mg/24 hrs.

**OR**

- Labetalol
  - Oral 200 mg, repeat after one hour as needed. – The maximum dose is 1200 mg in 24 hours.
- Intravenous treatment:
  - Administer 10 mg IV.
  - If response is inadequate after 10 minutes, administer 20 mg.
  - The maximum total dose is 300 mg

**Give MgSO<sub>4</sub>**

**Loading dose**

- MgSO<sub>4</sub> 20% solution, 4gm IV over 5 min followed by 10gm of 50% MgSO<sub>4</sub> solution, 5 gm in each buttock as deep IM with 1ml of 2% Lidocaine in the same syringe .
- If convulsions recur after 15 min, give 2gm MgSO<sub>4</sub> 20% solution IV over 5min

**Maintenance dose**

- MgSO<sub>4</sub> 50% solution 5gm +1ml Lidocaine 2% IM every 4 hrs into alternative buttock for 24 hrs after delivery or the last convulsion whichever occurs last. Before repeat administration, ensure RR  $\geq$  12 per min, Patellar reflex present, Urine output  $\geq$  30ml per Hr.
- Keep antidote ready ( Calcium gluconate 1gm of 10ml of 10% solution )

- Protect the woman from injury at all times and place her on left lateral position.
- Refer urgently after giving loading dose of MgSO<sub>4</sub> and pre-referral care.

# URINARY TRACT INFECTION IN PREGNANCY

## DEFINITION

**Urinary tract infection (UTI)** is an infection that involves any part of the urinary system (kidney, ureters, bladder and urethra).

## CLASSIFICATION

- **Asymptomatic bacteriuria (ASB):** A true bacteriuria ( $>10^5$  bacteria/ml of midstream clean catch urine) in the absence of specific symptoms of acute UTI.
- **Cystitis:** Infection of the bladder.
- **Acute pyelonephritis:** An infection of the upper urinary tract, mainly of the renal pelvis, which may also involve the renal parenchyma.

## RISK FACTORS

- Glycosuria
- Catheterization
- Diabetes
- HIV/AIDS

## DIAGNOSIS

### History and physical examination:

- **Asymptomatic bacteriuria:** No symptoms and signs.
- **Cystitis**
  - Dysuria
  - Increased frequency and urgency of urination
  - Suprapubic / lower abdominal pain
- **Pyelonephritis**
  - Dysuria
  - Spiking fever / chills
  - Increased frequency and urgency of urination
  - Flank pain
  - Costovertebral angle (CVA) tenderness
  - Anorexia
  - Nausea / vomiting



### Investigation:

- A dipstick of urine specimen.
- Microscopy of urine specimen.
- On-site midstream urine Gram staining is recommended over the use of dipstick tests as the method for diagnosing ASB in pregnancy.

**NOTE:** *Urine examination requires a clean-catch mid-stream specimen to minimize the possibility of contamination.*

## MANAGEMENT

### Asymptomatic bacteriuria:

- Amoxicillin 500 mg orally three times a day for seven days; OR
- Cephalexin 250-500mg orally four times a day for seven days.

### Cystitis:

- Treat with antibiotics:-
  - Amoxicillin 500 mg orally three times a day for seven days; OR
  - Cephalexin 500 mg orally two times a day for seven to ten days.
- Repeat urine analysis after the completing the antibiotics to check that the infection has resolved.
- If the client is not responding to the treatment or develops systemic manifestations refer for further management.

### Acute pyelonephritis:

- Provide supportive care (anti-pain / antipyretics not contraindicated in pregnancy) and refer immediately.
- Pre-referral care: Before referral take the following measures:-
  - If ***shock is present or suspected***, initiate immediate treatment.
  - Start an IV infusion and infuse IV fluids at 150 mL per hour.
  - Give first dose of IV antibiotics:-
    - Ampicillin 2 g IV every six hours; PLUS
    - Gentamicin 5 mg/kg body weight IV every 24 hours.

## MALARIA IN PREGNANCY

### DEFINITION

Malaria is an infectious disease caused by protozoan parasites from the Plasmodium family which affects human Red Blood Cells that can be transmitted by the bite of the female Anopheles mosquito (the main mode of transmission). Blood contamination and mother to fetal (vertical transmission) during pregnancy are also potential modes of transmission

### CLASSIFICATION:

#### Based on severity:

- Simple (uncomplicated)
- Sever (complicated) malaria

#### Based on the etiologic agent:

- *P. falciparum*
- *P. vivax*
- *P. ovale*
- *P. malariae*
- *P. knowlesi* Malaria.

**NOTE:** *P. falciparum* and *P. vivax* malaria account for the majority of cases.

### DIAGNOSIS:

#### Clinical Manifestations

The symptoms and signs vary based on the severity of the malaria. Manifestations of severe malaria, particularly hypoglycemia, cerebral malaria, and pulmonary edema, are usually seen in non-immune population but are more common in pregnant women. See [table 23](#) below for clinical findings of uncomplicated and complicated malaria.

### INVESTIGATION:

**Parasitological diagnosis** - Laboratory diagnosis of malaria should be made through microscopic examination of thick and thin Giemsa-stained blood smears. In microscopic diagnosis the following three points should be stated clearly:

- Species of the parasite
- Stage of the parasite
- Level of parasitemia

Additional laboratory workup to identify presence of complications

- Hemoglobin/hematocrit
- Urinalysis
- Random blood sugar level

**Table 23. Clinical findings of uncomplicated and complicated malaria.**

Uncomplicated malaria:	Complicated malaria
<ul style="list-style-type: none"> <li>• Fever</li> <li>• Shivering / chills</li> <li>• Headaches</li> <li>• Muscle / joint pains</li> <li>• Nausea / vomiting</li> <li>• False labor pains</li> </ul>	Signs of uncomplicated malaria, <b>plus</b> <ul style="list-style-type: none"> <li>• Dizziness</li> <li>• Breathlessness</li> <li>• Sleepiness / drowsiness</li> <li>• Confusion/coma</li> <li>• Fits, jaundice, severe dehydration</li> </ul>

**MANAGEMENT:**

**Uncomplicated Falciparum Malaria**

*First Trimester*

- Give quinine salt (dihydrochloride or sulfate) 10 mg/kg body weight by mouth three times daily PLUS clindamycin 300 mg every six hours for seven days.
- If clindamycin is not available, treat with quinine monotherapy:
  - Quinine salt (dihydrochloride or sulfate) 10 mg/kg body weight by mouth three times daily for seven days).
- An Artemisinin-based combination therapy (ACT) can be used if quinine is not available, or if quinine plus clindamycin fails, or if adherence to seven-day treatment with quinine cannot be guaranteed. ( Artemether 80 and Lumefantrine 480 mg 1 tab twice daily for three days)

*Second and Third Trimesters*

- Treat orally based on national malaria guideline with any of the ACTs (assuming a body weight of 50 kg or more): E.g. Artemether (80 mg) PLUS Lumefantrine (480 mg) twice daily for three days;

## Uncomplicated Plasmodium Vivax, Ovale, Malariae, Knowlesi Malaria

### First Trimester

- Areas with Chloroquine-Sensitive P. vivax Parasites: Give chloroquine 10 mg/kg body weight by mouth once daily for two days followed by 5 mg/kg body weight by mouth on day three. (Usual adult dose 4, 4 & 2 tablets on days 1, 2 & 3 respectively)
- Areas with Chloroquine-Resistant P. vivax Parasites: Before considering second-line drugs for treatment failure with chloroquine, clinicians should exclude poor patient compliance and a new infection with P. falciparum. If diagnostic testing is not available, treat as for falciparum malaria. The treatment option for confirmed chloroquine resistant vivax malaria is quinine salt (dihydrochloride or sulfate) 10 mg/kg body weight by mouth three times a day for seven days.

### Second and Third Trimesters

- Areas with Chloroquine-Sensitive P. vivax Parasites: either ACT or chloroquine alone are the two treatment options
- Areas with Chloroquine-Resistant P. vivax Parasites: treat with ACT (see dose above)
- Areas of Mixed Falciparum-Vivax Malaria: In areas of mixed transmission, the proportions of malaria species and their drug sensitivity patterns vary. If microscopic diagnosis is available, specific treatment can be prescribed. Where unavailable, assume the infection is due to P. falciparum and treat accordingly.

## Complicated (Severe) Malaria

The patient with severe malaria needs **URGENT** medical attention. Cases with severe or complicated malaria **need referral** for better management to a general or specialized hospital after applying the following measures.

### Pre referral management of the patient with severe malaria:

Start immediate resuscitation measures

- Establish an IV infusion.
- Take blood while establishing an IV line for:
  - Malaria blood slide (thick and thin)
  - Hematocrit or Hgb estimation
  - WBC (total and differential count)
  - Glucose level
- Correct hypoglycemia (<2.2 mmol/l OR 40 mg/dl) if present by infusing dextrose over a period of 3-5 minutes. This can consist of any one of the following:
  - 1 ml/kg of 50% dextrose diluted with an equal volume of normal saline IV slowly over several minutes **OR**
  - 5 ml/kg of 10% dextrose by slow IV infusion **OR**

- For other strengths of dextrose calculate accordingly.
- This should be followed by intravenous infusion of 10% dextrose given slowly.
- Re-check blood glucose every 2-4 hours during the course of treatment, particularly in the pregnant or comatose patient.
- Administer Artesunate 2.4mg/Kg IV or IM stat (to be repeated after 12 hrs, 24 hours and then daily).
- When Artesunate is not available Quinine 20 mg per kg diluted in 5% dextrose over four hours. Then give maintenance dose of quinine 10 mg/kg every 8 hours.
- Transfer with appropriate pre-referral care as soon as feasible.

**NOTE: Primaquine & mefloquine are contradicted in pregnancy & breast feeding**



## REFERENCES

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1. National Mother and Baby Friendly Service Guideline. Federal Ministry of Health of Ethiopia. 2016
2. EDHS 2016. Central Statistical Agency. Federal democratic republic of Ethiopia. Addis Ababa, July 2017,
3. FMOH Ethiopia. Basic Emergency Obstetric and Newborn Care (BEmONC) Training manual. 2018.
4. FMOH Ethiopia. First trimester comprehensive abortion care manual, 2<sup>nd</sup> edition, 2018.
5. FMOH Ethiopia. National Comprehensive & Integrated Prevention of Mother-to-Child Transmission of HIV (PMTCT) Guidelines. April 2019.
6. FMOH Ethiopia. Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia. 2014.
7. Gabbe: Obstetrics: Normal and Problem Pregnancies. 5th ed. 2007.
8. Gabra A (2018) Complications of Hyperemesis Gravidarum; A Disease of Both Mother and Fetus, Review Article. Crit Care Obst Gyne. Vol.5 No.1:1
9. Gynecology management guidelines in JUSH, Jimma.
10. Ipas, Clinical Updates in Reproductive Health, 2019.
11. Management protocol on selected obstetrics topics for Health Center Federal Democratic Republic of Ethiopia Ministry of Health January, 2014.
12. Management protocol on selected obstetrics topics for Hospitals Federal Democratic Republic of Ethiopia Ministry of Health January, 2021.
13. NMS Obstetrics and Gynecology, 6th Edition.
14. Obstetrics Management Protocol for Hospitals. Federal Democratic Republic of Ethiopia, Ministry of Health January, 2020.
15. Up-to-date 21.1.
16. WHO MEC 5<sup>th</sup> Edition.
17. WHO recommendations for prevention and treatment of maternal peripartum infections. 2015.
18. WHO. Family Planning: A Global Handbook for Providers. 2018.
19. Williams Obstetrics. 24th edition, 2014.
20. World Health Organization. Clinical practice handbook for safe abortion. 2014.
21. World Health Organization. Managing complications in pregnancy and childbirth: a guide for midwives and doctors. 2nd ed. 2017.

22. World Health Organization. Prevention of mother-to-child transmission of hepatitis B virus: guidelines on antiviral prophylaxis in pregnancy. July 2020.
23. World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience. 2016.
24. World Health Organization. WHO recommendations on interventions to improve preterm birth outcomes. 2015.
25. World Health Organization. WHO recommendations on maternal health: guidelines approved by the WHO Guidelines Review Committee. Geneva: 2017.
26. World Health Organization. WHO recommendations: intrapartum care for a positive childbirth experience. 2018.
27. World Health Organization. WHO recommendations: uterotonics for the prevention of postpartum hemorrhage. 2018.