FEDERAL MINISTRY OF HEALTH
NIGERIA

# NATIONAL CLINICAL SERVICE PROTOCOL for OBSTETRIC AND NEONATAL CARE

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COMPASS Community Participation for Action in the Social Sector NIGERIA

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## FOREWORD

The tragedy of maternal and neonatal deaths lies in the fact that most of the causes of these deaths are preventable. These deaths can be prevented through deliberate interventions that target women and children through skilled attendants. The development of a National Clinical Service Protocol for Obstetric Care is in line with our vision of zero tolerance to women dying from pregnancy-related causes. This protocol is significant in the sense that it contains information for all categories of doctors and nurse/midwives at different levels of care.

The document is invaluable to these groups of health care providers who render obstetric and neonatal care at the various health care levels. It contains detailed, practical instructions on management of common conditions that are encountered in obstetric and immediate neonatal care while identifying the limitations and scope of services that could be offered at the different health care levels. The inclusion of recent advances in obstetric care makes it indispensable for care providers that may not have had access to such information.

It is my sincere hope that with the proper implementation and utilisation of this document at the various levels of service delivery, there will be a significant reduction in our maternal and neonatal mortality ratio and Nigeria will be on course to achieving one of the health related millemium development goals (MDGs) by 2015.

**Professor Eyitayo Lambo**
**Honourable Minister,**
**Federal Minister of Health,**
**Abuja.**

## ACKNOWLEDGEMENT

As Nigeria strives towards achieving the goals of the millennium declarations and in particular the reduction of maternal and perinatal morbidity and mortality, a key strategy is capacity building of the healthcare workforce. The Federal Ministry of Health in partnership with Community Participation for Action in the Social Sector (COMPASS) Project developed the National Clinical Service Protocol for Obstetric Care.

The contribution of our colleagues who are either representatives of development agencies, academic institutions, government and non-governmental organizations, whose commitment and support contributed immensely in facilitating the process of developing this protocol is acknowledged and appreciated.

The technical and financial support of COMPASS in the development of this document was invaluable. The effort and hard work of staff in the Safemotherhood branch, Reproductive Health Division of the Department of Community Development and Population Activities (CDPA) have made this a reality. Despite some challenges encountered during the development process, the true commitment of members of the Technical Working Committee contriubuted to the successful outcome of the development of the document and most importantly a quality ouput of international standard.

I wish to also thank all the reviewers of the Protocol and the service providers that field-tested the document.

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**Director,**
**Department of Community Development and Population Activities**
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## SECTION ONE: GENERAL CARE PRINCIPLES

This section of the protocol includes the general principles of infection prevention, basic principles of common procedures, operative care principles, referral procedure, the rights of patients and the role of husband/family/community in pre-conception, antenatal, intrapartum and postpartum care.

### 1.0 INFECTION PREVENTION

The primary objective of infection prevention is to assist service providers and clinic managers in understanding the basic principles of preventing infection and disease transmission. This becomes critical in reducing hospital transfer of infections e.g. Human Immunodeficiency Virus (HIV), Hepatitis B, Hepatitis C, etc.

### 1.1.0 HANDWASHING:

Handwashing may be the single most important procedure for preventing infection. For indications and types of hand washing, see the box below.

**Indications for handwashing:**

- Examining a patient (before and after each patient)
- Before putting on sterile/ examination gloves
- After removing gloves
- After any situation that may make hands to be contaminated

**Types of handwashing:**

- Plain soap with running water – routine
- Alcohol handscrub
- Surgical handscrub.

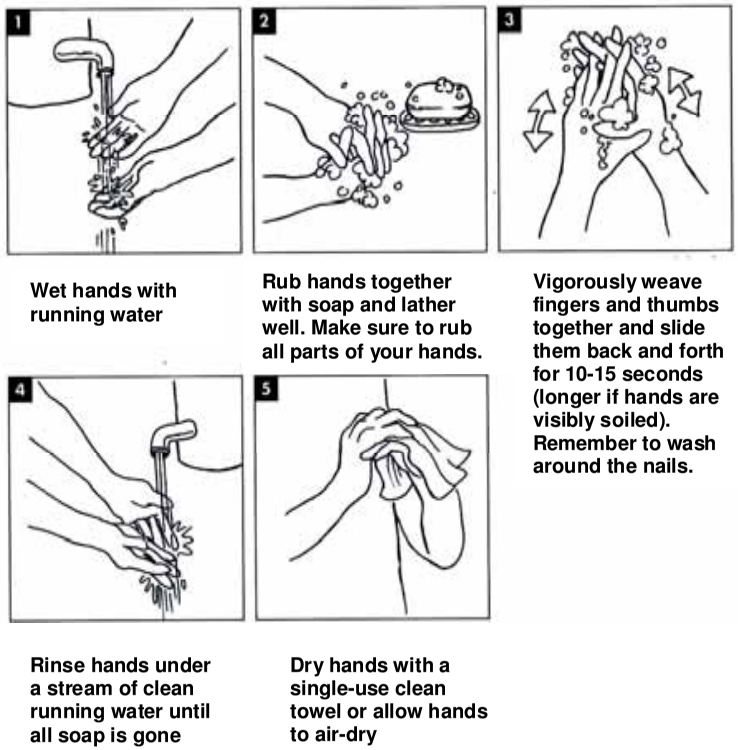
### 1.1.1 STEPS FOR ROUTINE HANDWASHING (Figure 1)

- Remove all jewellery;
- Wet hands with running water;

- Rub hands together with soap and lather well. Make sure you rub all parts of your hands;
- Vigorously weave fingers and thumbs together and slide them back and forth for 30 seconds or longer if hands are visibly soiled. Remember to wash around the nails;
- Rinse hands under a stream of clean running water until all soap is gone;
- Dry hands with a single-use clean towel or allow hands to air-dry.

**Note:** Hands should be washed first on arrival at work, in-between attending to patients, and as the last thing when leaving the health facility.

**Figure 1: Steps for hand washing**






**Note:** After you have washed your hands in preparation for a clinical procedure, **do not touch any** unclean surfaces before touching the patient, clean instruments or other items, or putting on gloves.

**Remember:**

- Use soap or detergent when washing hands; water alone does not effectively remove protein, oils, grease, and dirt;
- Keep bar soap on a soap rack or in a dish that allows for drainage. Leaving soap in a pool of water will lead to increased growth of micro-organisms;
- Avoid dipping or washing hands in a basin containing standing water, even if an antiseptic solution (such as Dettol or Savlon) is added. Micro-organisms and soil will not be washed away, and the water can easily become contaminated from repeated use;
- Use small bars of soap, if available, or cut large ones into smaller pieces to reduce the likelihood of contamination or use liquid soap.

**To clean hands when running water is not available, use either:**

- A bucket with a tap that can be turned off to lather hands and turned on again for rinsing;
- A bucket and pitcher, with one person pouring the water over the other's hands and allowing it to drain into the bucket;
- Alcohol handscrub, which does not require water.

### 1.1.2 STEPS FOR ALCOHOL HANDSCRUB

- **Prepare an alcohol handscrub solution following these steps:**
  - Add:
    - 2 ml of either glycerine, propylene glycol, or sorbitol to
    - 100 ml of 60-90% alcohol
- Apply 3-5 ml of alcohol or an alcohol handscrub solution;

- Rub hands together until they are dry.

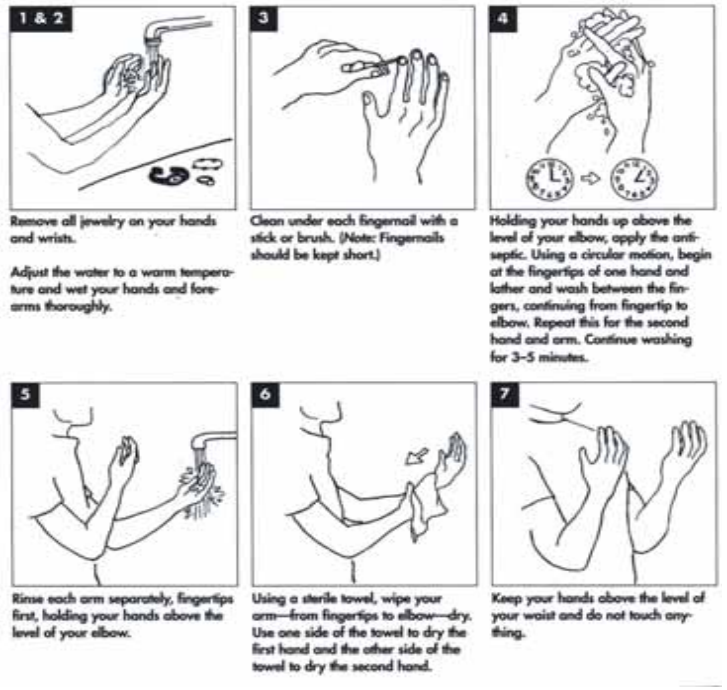
**Note:** An alcohol handscrub does not remove soil or organic material such as blood. Therefore, an alcohol handscrub should not be used when hands are visibly soiled**.**

### 1.1.3 STEPS FOR SURGICAL HANDSCRUB

- Remove all jewellery;
- Wet hands and forearms thoroughly with water;
- Clean finger nails thoroughly (if necessary with a brush);
- Hold your hands up above the level of your elbows;
- Apply soap or antiseptic;
- Using a circular motion, begin at the finger tips of one hand, lather and wash between fingers, continuing from finger tips to elbows. Repeat for the second hand and arm for 3 – 5 minutes;
- Vigorously weave fingers and thumbs together and slide them back and forth for 10 – 15 seconds or for longer if hands are visibly soiled. Remember to wash around the nails;
- Rinse each arm separately until all soap is gone, finger tips first, holding your hands above the level of your elbow;
- Using a sterile towel, wipe your arms dry from finger tips to elbow. Use one side of the towel to dry the first hand and the other side to dry the second hand;
- Keep your hands above the level of your elbows and do not touch anything.



**Figure 2: Steps of Surgical Handscrub**




**Note:** Recent studies have shown that using a brush to scrub hands during surgical handscrub provides no greater reduction in the number of microorganisms on the hands than scrubbing with antiseptic alone. Surgical handscrub may be performed using either a soft brush or sponge or an antiseptic alone. Avoid using a hard brush, which is not necessary and may irritate the skin.

**Alternatives to Surgical Handscrub**

- It is best to use an antiseptic for surgical handscrub. However, using soap, followed by an alcohol handscrub, is an acceptable alternative to the use of an antiseptic when:
  - staff members are allergic to the available antiseptic solutions
  - antiseptics are not available

**Performing surgical handscrub when antiseptics are not available for use:**

- Perform a surgical handscrub with soap and running water in a manner similar to that described under 1.1.3 **(Page 4);**
- Apply 3-5 ml of alcohol or an alcohol handscrub solution;
- Rub hands together until they are dry.

### Important points to Remember about handwashing

- Handwashing is one of the most effective ways to reduce the risk of infections;
- Washing for 3-5 minutes allows adequate time to remove, inhibit, or kill as many microorganisms as possible;
- Your hands – more than any other parts of your arms - must be as clean as possible. Therefore, it is important to hold your hands above the level of your elbow to allow the water to flow from your hands (the area of least contamination) to your forearms (the area of most contamination). Otherwise, water may splash onto the unscrubbed portions of your arms and run down over the scrubbed portions, which would contaminate them;
- Dry your hands first, and then your forearms, to reduce the possibility of contaminating your hands;
- Warm water makes antiseptic or soap work more effectively, while very hot water removes more of the protective oils from the skin; therefore, washing with very hot water should be avoided;
- Ideally, surgical handscrub should be performed before every surgical procedure. However, to prevent skin irritation from too-frequent hand scrubbing in very busy (high-volume) settings, use 3–5 ml of an alcohol handscrub solution between patients, rubbing your hands together until the alcohol dries up. Then scrub every hour or after every four patients (whichever comes first);
- An alcohol handscrub does **not** remove soil or organic material such as blood;



- If gloves are torn or punctured, or if there is blood or other body fluids on the hands after gloves are removed, a surgical handscrub should be performed.

### 1.1.4 SURGICAL ATTIRE

Ensure the use of proper surgical attire. This includes the use of the following: masks, transparent eye covers (goggles), caps, foot wears and gloves. Gloves are the most commonly used surgical attire. The steps for wearing and removing gloves are as described in **Figures 3 and 4** respectively.

**Figure 3: Steps for Putting on Gloves**

1. Prepare a large, clean, dry area for opening the package of gloves. If the gloves have been processed and are not wrapped in a package, lay them on a sterile or high-level disinfected surface. Either (a) open the outer glove package and then perform a surgical hand scrub, or (b) perform a surgical hand scrub and then ask someone to open the package for you. Dry your hands completely.
2. Open the inner glove wrapper, exposing the cuffed gloves with the palms up.
3. Pick up the first glove by the cuff, touching only the inside portion of the cuff (the side that will be touching your skin when the glove is on).
4. While holding the cuff, slip your other hand into the glove (pointing the fingers of the glove toward the floor will keep the fingers open). Be careful not to touch anything, and hold the gloves above waist level. (Note: if the first glove is not fitted correctly, wait to make any adjustment until the second glove is on. Then use the sterile or high level disinfected fingers of one glove to adjust the sterile or high level disinfected portion of the other glove).
5. Pick up the second glove by sliding the fingers of the gloved hand under the cuff of the second glove. Be careful not to contaminate the gloved hand with the ungloved hand as the second glove is being put on.
6. Put the second glove on the ungloved hand by maintaining a steady pull through the cuff.
7. Adjust the position of the gloved fingers until the gloves fit comfortably.

**Figure 4: Steps for Removing Gloves**

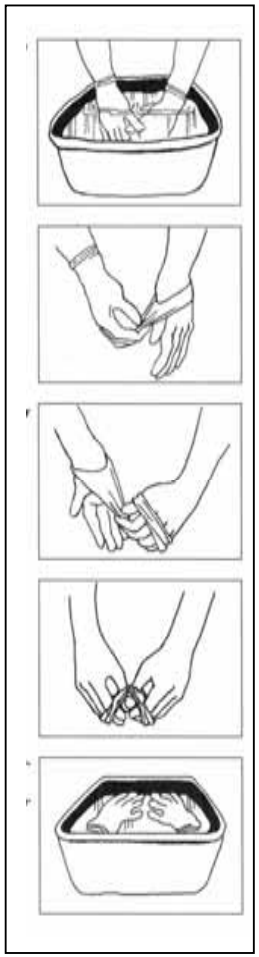
1. Rinse gloved hands in a basin of decontamination solution to remove blood or other body fluids.

2. Grasp one of the gloves near the cuff and pull it part of the way off. The glove will turn inside out. It is important to keep the first glove partially on your hand before removing the second glove to protect you from touching the outside surface of either glove with your bare hands.

3. Leaving the first glove over your fingers, grasp the second glove near the cuff and pull it part of the way off. The glove will turn inside out. It is important to keep the second glove partially on your hand to protect you from touching the outside surface of the first glove with your bare hand.

4. Pull off the two gloves at the same time, being careful to touch only the inside surfaces of the gloves with your bare hands.

5. If the gloves are disposable or are not intact, dispose of them properly. If they are to be processed for reuse, place them in a container of decontamination solution. Wash your hands immediately after the gloves are removed, since the gloves may contain invisible holes or tears, leaving you at risk of exposure to contaminated blood and other body fluids.





**Tips on Removing Gloves**

- As you remove the gloves, avoid allowing the outside surface of the gloves to come in contact with your skin, because the outer surface will have been contaminated with blood or other body fluids;

- Avoid letting the gloves snap, as this may cause contaminants to splash into your eyes or mouth or onto your skin or other people in the area;

- Remove used gloves before touching anything. Countertops or tabletops, faucets, pens and pencils are frequently contaminated because health care workers touch them while wearing used gloves.

**Double Gloving**

- Several recent studies have shown that double gloving – wearing two pairs of surgical gloves – during major surgical procedures reduces the risk of service provider's hands being contaminated with blood and other body fluids;

- Where cost and availability are **not** major obstacles, facilities may consider the benefits of double gloving for procedures in which there is an increased likelihood that the gloves will tear or be punctured. In addition, reuse of disposable (single-use) surgical gloves is not recommended.

## Minimal Attire for Common Obstetric Care Procedures

The basic glove and gown requirements for common obstetric procedures are as outlined in **Table 1.**

**Table 1: Glove and gown requirements for common obstetric procedures**

| Procedure | Preferred Gloves[a] | Alternative Gloves[b] | Gown |
|---|---|---|---|
| Blood drawing, starting IV infusion | Exam[c] | High-level disinfected surgical[d] | None |
| Pelvic examination | Exam | High-level disinfected surgical | None |
| Manual vacuum aspiration, dilatation and curettage, colpotomy, culdocentesis | High-level disinfected surgical | Sterile surgical | None |
| Laparotomy and intra-abdominal procedures, artificial rupture of membranes, normal delivery, instrumental delivery, episiotomy, repair of cervical or perineal tears, craniotomy, craniocentesis, bimanual compression of uterus, manual removal of placenta, correcting uterine inversion. | High-level disinfected surgical | Sterile surgical | Clean, high-level disinfected or sterile |
| Handling and cleaning instruments | Utility[e] | Exam or surgical | None |
| Handling contaminated waste | Utility | Exam or surgical | None |
| Cleaning blood or body fluid spills | Utility | Exam or surgical | None |

[a] Gloves and gowns are not required to be worn to check blood pressure or temperature, or to give injections.
[b] Alternative gloves are more expensive and require more preparation than preferred gloves. Exam gloves are single-use disposable latex gloves.
[c] If gloves are reusable, they should be decontaminated, cleaned and either sterilized or high-level disinfected before use.
[d] Surgical gloves are latex gloves that are sized to fit the hand.
[e] Utility gloves are thick household gloves.



## 1.1.5 STEPS FOR PROCESSING INSTRUMENTS AND STORAGE

To prevent transmission of infections via instruments, steps of instruments processing which include decontamination, cleaning, and sterilization or high-level disinfection must be properly carried out as outlined below.

**Step 1: Decontamination**

- Prepare a 0.5% chlorine solution by adding 6 parts water to 1 part of liquid bleach (JIK);

### MAKING CHLORINE SOLUTION FROM LIQUID BLEACH

Use the following formula to prepare chlorine solution

$$\left( \frac{\text{\% chlorine in liquid bleach}}{\text{\% chlorine desired}} \right) - 1 = \text{number parts water needed per part of bleach}$$

Example: to make 0.5% chlorine solution from bleach with 3.5% active chlorine

$$\left( \frac{3.5\%}{0.5\%} \right) - 1 = 7 - 1 = 6$$

**Thus, add 6 parts water to 1 part liquid bleach**

- Soak used instruments and other items in 0.5% chlorine solution for 10 minutes;
- Do not leave instruments in chlorine solution for long period. A 10-minute time period is sufficient for decontamination;
- Decontaminate large surfaces such as examination and operating tables, laboratory bench tops and other equipment that may have come in contact with blood or other body fluids with a suitable disinfectant.

**Step 2: Cleaning**

- Wear thick utility gloves before cleaning instruments;
- Clean instruments with detergent and water to remove blood, tissue and particulate matter;
- Clean instruments with brush where necessary;
- Rinse all instruments with clean water.

**Step 3: Sterilization or High-level Disinfection**

To be effective, both sterilization and high-level disinfection (HLD) must be preceded by decontamination, careful cleaning, and thorough rinsing. When sterilization of instruments is not possible, HLD is the only acceptable alternative.

**3a. Sterilization:**

- Sterilize all items that come in contact with blood or tissues beneath the skin to destroy all microorganisms (bacteria, viruses, fungi, and parasites) including bacterial endospores, from instruments and other items;
- Open or unlock all jointed instruments, such as ring forceps, before sterilization.

**i) Steam Sterilization:**

- Ensure that the sterilizer is working perfectly;
- Sterilize instruments either unwrapped or wrapped;
- Use two layers of paper wrap or two layers of cotton fabric (do not use canvas) if items are to be wrapped before steam sterilization;
- Arrange the unwrapped items or wrapped packs to allow for free circulation of steam;



- Steam items at $121^0$C and 106 Kpa (Steam 30 minutes for wrapped, 20 minutes for unwrapped items);

  **Note:** Do not begin timing until the steam sterilizer reaches the desired temperature and pressure.

- Allow unwrapped items or wrapped packs to dry before removing them from the steam sterilizer. Allow items to cool before storage or use.

**ii) Dry Heat Sterilization**

- Wrap items (if necessary) in foil or double-layered cotton fabric before dry-heat sterilization;
- Sterilize items at $170^0$C for 60 minutes, or $160^0$C for 120 minutes. Do not begin timing until the oven reaches the desired temperature;

  **Note:** Dry heat can render sharp instruments and needles blunt. These items should not be sterilized at temperatures higher than $160^0$C.

- Allow items to cool before they are removed from the oven.

**iii) Chemical Sterilization**

- Open or unlock jointed instruments such as ring forceps;
- Cover all items with correct dilution of 2% glutaraldehyde solution (cidex) for 10 hours or 0.5% chlorine solution for 20 minutes. Do not use sporicidin for sterilization;
- Do not add to or remove items from the chemical solution once timing has begun;
- Rinse items with sterile water after soaking in the chemical solution;
- Air-dry before use or storage.

### 3b. High-level Disinfection (HLD)

**If sterilization is not available, high-level disinfection is the only acceptable alternative for preparing instruments and other reusable items. High-level disinfection (HLD) is effective in eliminating all microorganisms except some bacterial endospores. There are two methods of HLD: boiling and chemical HLD.**

#### i. Steps for HLD by Boiling

- Decontaminate and clean all instruments and other items to be high-level disinfected;
- Open all hinged instruments and other items and disassemble those with sliding or multiple parts. Place all bowls and containers upright, not upside-down, and fill with water;
- Submerge completely all instruments and other items in the water in the pot or boiler;
- Cover the pot or close the lid on the boiler and bring the water to a gentle, rolling boil;
- Start timing when the water comes to a rolling boil for 20 minutes. Use a timer or make sure to record the time that boiling begins;
- Do not add or remove any additional water, instruments, or other items once the water starts boiling;
- Lower the heat to keep the water at a gentle, rolling boil; too vigorous a boil will cause the water to evaporate and may damage the instruments and other items if they bounce around the container and hit the sidewalls and other instruments or items. The lower heat also saves fuel/electricity;
- Remove the instruments and other items using dry, high-level disinfected pickups (lifters, cheatle forceps) after 20 minutes;



- Place the instruments and other items on a high-level disinfected tray or in a high-level disinfected container, away from insects and dust and in a low-traffic area;
- Allow to air-dry before use or storage. Never leave boiled instruments and other items in water that has stopped boiling; they can become contaminated as the water cools down.

#### ii. Steps for HLD Using Chemicals

- Decontaminate and clean all instruments and other items to be high-level disinfected. Water from wet instruments and other items dilutes the chemical solution, thereby reducing its effectiveness.
- Prepare *a glutaraldehyde solution* by following the manufacturer's instructions or use a solution that was previously prepared, as long as it is clear (not cloudy) and has not expired. (Most commercially available glutaraldehyde solutions can be used for at least two weeks after preparation; follow the manufacturer's instructions. Ideally, an indicator strip should be used each time the solution is to be used to determine if the solution is still effective.) After preparing the solution, put it in a clean container with a lid. Mark the container with the date the solution was prepared and the date it expires.

  **Note:** When using a chlorine solution, fresh solution should be made each day (or sooner, if the solution becomes cloudy). Put the solution in a clean container with a lid. Chlorine is not for use on laparoscopic equipment.

- Open all hinged instruments and other items and disassemble those with sliding or multiple parts; the solution must contact all surfaces in order for HLD to be achieved;

- Completely submerge all instruments and other items in the solution; all parts of the instruments and other items should be under the surface of the solution;

- Place any bowls and containers upright, not upside-down, and fill with the solution;

- Cover the container, and allow the instruments and other items to soak for 20 minutes;

- Do not add or remove any instruments or other items to or from the solution once timing has begun;

- Remove the instruments and other items from the solution using dry, high-level disinfected pickups (lifters, cheatle forceps);

- Rinse thoroughly with boiled water to remove the residue that chemical sterilants leave on instruments and other items; this residue is toxic to skin and tissues.

- *Storage:* Place the instruments and other items on a high-level disinfected tray or in a high-level disinfected container and allow to air-dry before use or storage. Use instruments and other items immediately or keep in a covered, dry, high-level disinfected container and use within one week.

**Storage of Processed Equipment and Instruments**

Proper storage of HLD or sterilized items is as important as the HLD or sterilization process itself.

- Store only dry items;

- Store processed items in an enclosed cabinet if possible;

- Do not store pick-up forceps in a bottle filled with antiseptic solution (microorganisms will multiply in the standing solution even if an antiseptic has been added);



- HLD or sterilize pick-up forceps each day and store them dry in a high-level disinfected or sterile bottle;

Wrapped items must be considered **contaminated** when:

- The package is torn or damaged
- The wrapping is wet
- The expiration date is exceeded

Wrapped items can be used for up to one week. Wrapped items sealed in plastic can be used for up to one month.

- Store all unwrapped items in a covered sterile or HLD container (for up to one week), or they must be used immediately.

### 1.1.6 HANDLING SHARP INSTRUMENTS AND NEEDLES

- Use each needle and syringe only once;

- Do not leave sharp instruments and needles in places other than safe zones;

- Inform other health workers before passing sharp instruments to them;

- Do not disassemble needle and syringe after use;

- Do not recap, bend or break needles prior to disposing;

- Dispose needles and syringes in a puncture-proof container;

- Dispose contaminated sharp objects which can cause infections in the health care facility and the community;

- Make hypodermic needles and other sharps unusable by incinerating them. If an industrial incinerator that will destroy hypodermic needles and other sharps is not available, reduce the risk of infections by decontaminating sharps before disposal;

- Bury them in a pit to make it difficult for others to scavenge them.

### 1.1.7 WASTE DISPOSAL

To properly handle waste items, use the following steps:

- Wear utility gloves;
- Dispose of all sharp items in puncture-resistant containers;
- Carefully pour liquid waste down a utility drain or flushable toilet or latrine;
- Wash hands, gloves and containers after disposal of infectious waste;
- Transport contaminated wastes (including biological waste) to disposal sites in covered containers;
- Burn or bury contaminated waste (including biological waste) rather than use community waste collection because of the likelihood of the waste being deposited into a community dump site.

**Sharps-disposal container:** A puncture-resistant container for disposal of used needles and other sharp objects. A sharps-disposal container may be made out of a heavy cardboard box, an empty plastic jug or a metal container.



## 1.2 BASIC PRINCIPLES FOR COMMON PROCEDURES

### 1.2.1 INTRAVENOUS (IV) INFUSION

Obstetric care may require intravenous infusions. It is important to use intravenous fluids appropriately and to be aware of the principles governing their administration.

**Before giving any IV infusion:**

- Check that the seal of the infusion bottle or bag is not broken;
- Check the expiry date;
- Check that the solution is clear and free from visible particles.

**Starting IV infusion**

- Gather and prepare all supplies (missing supplies can disrupt a procedure);
- Explain the procedure and the need for it to the woman and obtain her consent;
- Position the hand properly, and identify a vein away from the joints;
- Wash hands with soap and water, and wear gloves;
- Start an IV infusion using a large bore (size 16 or largest gauge available) cannula or needle;
- Infuse IV fluids (Normal saline or Ringers lactate) at a rate appropriate for the woman's condition;
- Maintain an intake/output chart;
- If a peripheral vein cannot be cannulated, perform a venous cut-down.

## 1.2.2 BLOOD TRANSFUSION

The appropriate use of blood or blood products could significantly reduce maternal morbidity and mortality.

- Consider the risks of transfusion against the risks of not transfusing before prescribing blood or blood products for a woman;

- Reduce the risks associated with transfusion by:
  - effective blood donor selection, deferral and exclusion
  - screening for transfusion–transmissible infections in the blood donor population (e.g. HIV/AIDS and Hepatitis)
  - high quality blood grouping, compatibility testing, component separation and storage, and transportation of blood products
  - appropriate clinical use of blood and blood products

**Giving a Blood Transfusion**

The blood should be checked for confirmed compatibility, name and number on blood bag, etc. There is the need for a trained person to monitor a woman receiving blood transfusion, and to immediately respond to transfusion reaction. A woman receiving blood should be monitored at the following stages:

- Before starting the transfusion;
- At the onset of the transfusion;
- 15 minutes after starting the transfusion;
- At least every hour during the transfusion;
- At 4 hourly intervals after completing the transfusion;
- Record the following information on the woman's chart;
  - general appearance
  - temperature
  - pulse (rate, rhythm and volume)
  - blood pressure



  - respiration
  - fluid balance (oral and IV fluid intake, urinary output)

- In addition, record:
  - the time the transfusion is started
  - the time transfusion is completed
  - volume and type of all products transfused
  - any adverse effects

**Responding to a transfusion reaction**

One of the problems of blood transfusion is transfusion reaction which could be immediate, delayed or life-threatening. Transfusion reaction may range from a minor skin rash to anaphylactic shock. Once a transfusion reaction is detected:

- Stop the transfusion and keep the IV line open with IV fluids (Normal saline or Ringers lactate); give a maintenance fluid volume of at least 500 ml 8 hourly until the patient's condition stabilizes;
- Monitor urine output;
- Make an initial assessment of the acute transfusion reaction and seek advice when necessary;
- Give promethazine, 25 mg IV, IM or orally and observe if the reaction is minor;
- Contact blood bank or send blood specimen for compatibility re-testing.

**Management of anaphylactic shock from mismatched blood transfusion:**

- Give adrenaline 1:1000 solution, 0.1 subcutaneously **or** 0.1 ml in 10 ml Normal saline or Ringers lactate IV slowly over 10 minutes;
- Give promethazine, 10 mg IV;
- Give hydrocortisone, 1 g IV every 2 hours as needed;

- Give aminophylline, 250 mg in 10 ml Normal saline or Ringers lactate IV slowly if bronchospasm occurs;
- Monitor vital signs, fluid intake and urinary output;
- Transfer to referral centre where necessary, as soon as patient is stable.

### 1.2.3 USE OF ANTIBIOTICS

Infection can occur during pregnancy, labour, delivery and the postpartum period. Antibiotics can be used for prophylactic or therapeutic reasons.

**Prophylactic antibiotics**

- Give before the start of a procedure to prevent infection when you suspect or there is the risk of infection.

**Therapeutic antibiotics**

- Give when the patient is diagnosed as having an infection.

### 1.2.4 USE OF ANAESTHESIA AND ANALGESIA

**Lignocaine**

Lignocaine preparations are usually 2% or 1% and require dilution before use (see box below). For most obstetric procedures, the preparation is diluted to 0.5%, which gives the maximum effect with the least toxicity.

**Preparation of lignocaine 0.5% solution**

**Combine:**
- Lignocaine 2%, one part;
- Normal saline or sterile distilled water, three parts (do not use glucose solution as it increases the risk of infection)

**or**
- Lignocaine 1%, one part;
- Normal saline or sterile distilled water, one part



**Adrenaline**

Adrenaline causes local vasoconstriction. Its use with lignocaine has the following advantages:

- Less blood loss;
- Longer effect of anaesthetic (usually one to two hours);
- Less risk of toxicity because of slower absorption into the general circulation

If the **procedure requires a small surface to be anaesthetized or requires less than 40 ml of lignocaine**, adrenaline is not necessary. For larger surfaces, however, especially when more than 40 ml is needed, adrenaline is required to reduce the absorption rate and thereby reduce toxicity.

The best concentration of adrenaline is 1 in 200,000 (5 mcg/ml.). This gives maximum local effect with the least risk of toxicity from the adrenaline itself (**Table 2**).

**Note:** It is critical to measure adrenaline carefully and accurately using a syringe such as a BCG or insulin syringe. Strict infection prevention practices must be observed while mixtures are prepared.

**Table 2: Formulae for preparing 0.5% lignocaine solution containing 1:200 000 adrenaline**

| Desired Amount of Local Anaesthetic Needed | Normal Saline Lignocaine 2% | Normal Saline / Lignocaine 1% | Adrenaline 1:1000 |
|---|---|---|---|
| 20 ml | 15 ml/5ml | 10 ml/10ml | 0.1 ml |
| 40 ml | 30 ml/10 ml | 20 ml/20ml | 0.2 ml |
| 100 ml | 75 ml/25 ml | 50 ml/50 ml | 0.5 ml |
| 200 ml | 150 ml/50 ml | 100 ml/100 ml | 1.0 ml |

## PREVENTION OF COMPLICATIONS

All local anaesthetic drugs are potentially toxic. However, major complications from local anaesthesia are extremely rare (**Table 4**). The best way to avoid complications is to prevent them:

- Avoid using concentrations of lignocaine stronger than 0.5%;

- If **more than 40 ml of the anaesthetic solution is to be used**, add adrenaline to delay dispersion. Procedures that may require more than 40 ml or 0.5% lignocaine are Caesarean section or repair of extensive perineal tears;

- Use the lowest effective dose;

- Observe the maximum safe dose. For an adult, this is 4 mg/kg body weight of lignocaine without adrenaline and 7 mg/kg body weight of lignocaine with adrenaline. The anaesthetic effect should last for at least two hours. Doses can be repeated if needed after two hours (**Table 3);**

**Table 3: Maximum safe doses of local anaesthetic drugs**

| Drug | Maximum Dose (mg/kg of body weight) | Maximum Dose for 60 kg Adult (mg) |
|---|---|---|
| Lignocaine | 4 | 240 |
| Lignocaine + adrenaline 1:200,000 (5 mcg/ml) | 7 | 420 |

- Inject slowly;

- Avoid accidental injection into a vessel. There are three ways of doing this:

  - moving needle technique (preferred for tissue infiltration): the needle is constantly in motion while injecting; this makes it impossible for a substantial amount of solution to enter a vessel;

  - plunger withdrawal technique (preferred for nerve block when considerable amounts are injected into one site): the syringe plunger is withdrawn before injecting: if blood appears, the needle is repositioned and attempted again;

  - syringe withdrawal technique: the needle is inserted and the anaesthetic is injected as the syringe is being withdrawn.



**To avoid lignocaine toxicity:**

- Use dilute solution
- Add adrenaline when more than 40 ml will be used;
- Use lowest effective dose;
- Observe maximum dose;
- Avoid IV injection.

## DIAGNOSIS OF LIGNOCAINE ALLERGY AND TOXICITY

**Table 4: Symptoms and signs of lignocaine allergy and toxicity**

| Allergy | Mild Toxicity | Severe Toxicity | Life-threatening Toxicity (very rare) |
|---|---|---|---|
| • Shock<br>• Redness of skin<br>• Skin rash/hives<br>• Bronchospasm<br>• Vomiting<br>• Serum sickness | • Numbness of lips and tongue<br>• Metallic taste in mouth<br>• Dizziness/light headedness<br>• Ringing in ears<br>• Blurred vision | • Sleepiness<br>• Disorientation<br>• Muscle twitching and shivering<br>• Slurred speech | • Tonic-clonic convulsions<br>• Respiratory depression or arrest<br>• Cardiac depression or arrest |

## MANAGEMENT OF LIGNOCAINE ALLERGY

- Give adrenaline 1:1000, 0.5 ml IV and repeat every 10 minutes if necessary;

- In acute situation, give hydrocortisone, 100 mg IV every hour;

- To prevent recurrence, give diphenhydramine, 50 mg IM or IV slowly, then 50 mg by mouth every six hours;

- Treat bronchospasm with aminophylline, 250 mg in Normal saline 10 ml IV slowly;

- Laryngeal oedema may require immediate tracheostomy;

- For shock, begin standard shock management (page 182)

- Severe or recurrent signs may require corticosteroids (e.g. hydrocortisone 2 mg/kg body weight IV every four hours until the condition improves). In chronic situations, give prednisone, 5 mg or prednisolone, 10 mg by mouth every six hours until the condition improves.

## MANAGEMENT OF LIGNOCAINE TOXICITY

Symptoms and signs of toxicity (**Table 4**) should alert the practitioner to immediately stop injecting and prepare to treat severe and life-threatening side effect. If **symptoms and signs of mild toxicity are observed**, wait a few minutes to see if the symptoms subside, check vital signs, talk to the woman and then continue the procedure, if possible.

### Convulsions

- Turn the woman to her left side, insert an airway and aspirate secretions;

- Give oxygen at 6-8 litres per minute by mask or by nasal cannula;

- Give diazepam, 1-5 mg IV in 1 mg increments. Repeat if convulsions recur.

  **Note:** The use of diazepam to treat convulsions may cause resspiratory depression.

### Respiratory Arrest

- If the woman is not breathing, assist ventilation using an Ambu bag and mask or via endotracheal tube; give oxygen at 4-6 litres per minute.

### Cardiac Arrest

- Hyperventilate with oxygen;

- Perform cardiac massage;

- Give adrenaline 1:10,000, 0.5 ml IV.



### Adrenaline Toxicity

- Systemic adrenaline toxicity results from excessive amounts or inadvertent IV administration and results in:

  - restlessness
  - sweating
  - hypertension
  - cerebral haemorrhage
  - rapid heart rate (tachycardia)
  - ventricular fibrillation

- Local adrenaline toxicity occurs when the concentration is excessive, and results in ischaemia at the infiltration site with poor healing.

## GENERAL PRINCIPLES FOR ANAESTHESIA AND ANALGESIA

- The keys to pain management and comfort of the woman are:

  - supportive attention from staff before, during and after a procedure (helps reduce anxiety and lessen pain);

  - a provider who is comfortable working with women who are awake and who is trained to use instruments gently;

  - the selection of an appropriate type and level of pain medication

- Tips for performing procedures on women who are awake include:

  - explain each step of the procedure before performing it

  - use adequate premedication in cases expected to last longer than 30 minutes

  - give analgesics or sedatives at an appropriate time before the procedure (30 minutes before for IM and 60 minutes before for oral medication) so that maximum relief will be provided during the procedure

  - use dilute solution in adequate amounts

- check the level of anaesthesia by pinching the area with forceps. If the woman feels the pinch, wait two minutes and then retest
- wait a few seconds after performing each step or task for the woman to prepare for the next one
- move slowly, without jerky or quick motions
- handle tissue gently and avoid undue retraction, pulling or pressure
- use instruments with confidence
- avoid saying things like “this won’t hurt” when, in fact, it will hurt; or “I’m almost finished” when you are not
- talk with the woman throughout the procedure

- The need for supplemental analgesic or sedative medication (by mouth, IM or IV) will depend on:
  - the emotional state of the woman
  - the procedure to be performed
  - the anticipated length of the procedure
  - the skill of the provider and the assistance of the staff

**Analgesia during labour**

The perception of pain varies greatly with women’s emotional status. Pain relief may be required in labour and after operative procedures. Supportive care provides reassurance and reduces the pain perception.

- Encourage use of breathing techniques and other methods that will reduce pain during labour;



- Give analgesics such as pethidine, 1 mg/kg body weight (but not more than 100 mg), when the above measures are unsatisfactory.

**Barbiturates and sedatives should not be used to relieve anxiety in labour. If pethidine is given to the mother, the baby may suffer from respiratory depression.**

## 1.3 OPERATIVE CARE PRINCIPLES

The safety and comfort of the woman is the primary focus of the health care provider during any procedure.

### 1.3.1 PRE-OPERATIVE CARE

**Preparing the operating theatre**

- Ensure that:
  - the operating theatre is clean (it should be cleaned after every procedure)
  - necessary supplies and equipment are available, including drugs (adrenaline, hydrocortisone) and full oxygen cylinders
  - emergency equipment is available and in working order
  - there is adequate supply of theatre dress for the anticipated members of the surgical team
  - clean linens are available
  - sterile supplies (gloves, gauze, instruments) are available and not expired

**Preparing for a surgical procedure**

- Explain the procedure and its purpose to the woman. If the woman is unconscious, explain the procedure to her family;
- Obtain and document informed consent for the procedure;
- Assist the woman and her family to prepare emotionally and psychologically for the procedure;
- Review the woman's medical history:
  - check for any possible allergies
  - ensure that the woman has received the complete anti-tetanus regimen and give one dose of tetanus vaccine if necessary
- Send a blood sample for haemoglobin, screening, grouping and cross matching;



- Order blood for possible transfusion.

**Positioning of the patient for surgery**

- Place the woman in a position appropriate for the procedure to allow:
  - optimal exposure of the operative site
  - access for the anaesthetist
  - access for the nurse to take vital signs and monitor IV drugs and infusions
  - safety of the woman by preventing injuries and maintaining circulation
  - maintenance of the woman's dignity and modesty

**Surgical Handscrub**

Refer to Surgical handscrub **(Section 1.1.3)**

**Preparing the Incision Site**

- Prepare the skin with an antiseptic (e.g. chlorhexidine) as follows:
  - apply antiseptic solutions 3 times to the incision site using a high-level disinfected or sterile ring forceps and cotton or gauze swab. If the swab is held with a gloved hand, do not contaminate the glove by touching un-prepared skin
  - begin at the proposed incision site and work outward in a circular motion away from the incision site
  - at the edge of the sterile field, discard the swab
- Never go back to the middle of the prepared area with the same swab. Keep your arms and elbows high and surgical dress away from the surgical field;
- Drape the woman immediately after the area is prepared to avoid contamination:

- if the drape has a window, place the window directly over the incision site first
- unfold the drape away from the incision site to avoid contamination

### 1.3.2 INTRA-OPERATIVE CARE

**Making the incision**

- Make the incision only as large as necessary for the procedure;
- Make the incision with great care and proceed one layer at a time.

**Handling tissue**

- Handle tissue gently;
- When using clamps, close the clamp with only **one** click;
- Use appropriate type and size of suture for the tissue.

**Haemostasis**

- Ensure haemostasis throughout the procedure;
- Keep blood loss to a minimum.

**Monitoring of patient**

- Monitor the woman's condition regularly throughout the procedure including vital signs (blood pressure, pulse, respiratory rate), level of consciousness, and blood loss;
- Record the findings;
- Maintain adequate hydration throughout the surgery.

**Managing Pain**

- Maintain adequate pain management throughout the procedure. Pain management includes:



  - emotional support and encouragement
  - local anaesthesia
  - regional anaesthesia (spinal, epidural)
  - general anaesthesia

**Instruments and Sharp Objects**

- Count instruments, sharps and sponges at the beginning and before closure of the abdominal cavity;
- Use safe zones when handling and passing instruments and sharps.

**Wound Dressing**

The dressing is a protective barrier against infection while healing takes place:

- Cover the surgical wound with a sterile dressing.

### 1.3.3 POST-OPERATIVE CARE

**Initial Care**

- Place the woman in the recovery position:
  - position the woman on her side with her head slightly extended to ensure a clear airway
  - place the upper arm in front of the body for easy access to check blood pressure
  - place legs so that they are flexed with the upper leg slightly more flexed than the lower to maintain balance
- Assess the woman's condition immediately after the procedure:
  - monitor vital signs every 15 minutes during the first hour and if stable, then every 30 minutes for the next hour
  - assess the level of consciousness every 15 minutes until the woman is conscious
- Ensure a clear airway and adequate ventilation;

- Transfuse if necessary.

**If vital signs become unstable or if the haemoglobin level continues to fall despite transfusion, quickly return to the operating theatre because bleeding may be the cause.**

**Analgesia**

- Give analgesics for adequate post-operative pain control;
- Avoid over-sedation.

**Antibiotics**

- Give appropriate antibiotics to control infection.

**Dressing, wound care and suture removal**

- Maintain sterility during these procedures;
- Keep the dressing on the wound for the first day of the surgery;
- Reinforce the dressing if blood or fluid is leaking through the initial dressing or if dressing is loose;
- Remove dressing and inspect wound if bleeding increases, then replace with another sterile dressing;
- Change the dressing using sterile technique when the need arises;
- Remove skin sutures at the appropriate time after surgery;
- Discharge the woman if the wound is clean, dry, and without evidence of infection and/or haematoma.

**Gastro-intestinal function**

Gastrointestinal function normally returns rapidly for obstetric patients (within 12 hours after surgery):



- Continue IV fluids until bowel sounds return or are heard;
- Give oral fluids when the bowel sounds are heard or the woman passes gas per rectum;
- Graduate oral intake to solid food as patient tolerates;
- Monitor blood electrolytes if the woman remains on IV fluids for more than 48 hours;
- Ensure that the woman is eating regular diet before discharge from hospital.

**Bladder care**

A urethral catheter may be required for some procedures. Early catheter removal reduces the risk of infection and encourages the woman to walk:

- Remove the catheter 8 hours after surgery or after the first postoperative night if the urine is clear;
- Leave catheter in place if urine is blood stained until it is clear;
- Leave catheter for a longer time if there was:
  - uterine rupture
  - prolonged or obstructed labour
  - massive perineal oedema
  - puerperal sepsis with pelvic peritonitis
  - bladder damage and repair

**Ambulation**

- Encourage early ambulation (within 24 hours) as this:
  - enhances circulation (to reduce risk of deep venous thrombosis)
  - encourages deep breathing
  - stimulates return of normal gastrointestinal function.

## 1.4 REFERRAL PROCEDURE

In Nigeria, limited access to obstetric services is a major contributory factor to an unacceptably high maternal and infant mortality and low contraceptive use. It is therefore imperative that an effective and efficient referral system on reproductive health be established to link all levels of health services. These referral issues will contribute substantially to achieve this objective.

### 1.4.1 ADVANTAGES OF REFERRAL

**Advantages to the patients:**

- Increases the patient's chances of receiving better care;
- Decreases the overall cost of medical services;
- Increases patient satisfaction;
- Decreases morbidity and mortality rates.

**Advantages to the Health System:**

- Allows cross-fertilization of ideas between health care providers e.g. a health provider benefits from the experience of how a more skilled health provider manages a particular client referred;
- Instils confidence in the health care system i.e. both providers and clients are assured of access to care;
- Allows for good record keeping and easier availability of data;
- Allows for the tracking of disease conditions e.g. disease outbreaks or epidemics;
- Facilitates better planning with health data and also resource allocation.



**Advantages to the Provider:**

- Creates better interaction between providers;
- Enhances transfer of knowledge between providers;
- Offers better job satisfaction to providers e.g. the referring provider is delighted that his/her patient has been taken care of;
- Allows the patients to have better confidence in the providers.

### 1.4.2 CONSTRAINTS OF REFERRAL

- Patient and the community may think that the referring provider is incompetent;
- Patients sometimes do not go to the next point of referral, and therefore may not complete the process of health care;
- May create the impression in the patient that the case is very serious;
- Patient may find the provider and environment at the referral centre strange.

### 1.4.3 PROCESS OF REFERRAL

The process of referral involves step-by-step information on how a provider sends a patient to the next level of care for further management. The essence of the process is to enable the provider to know when to refer, where to refer, how to refer and to be able to give the accurate information needed to the clients and their relations.

**At what Point to refer:**

- Health care provider should identify his/her limit during the management of any given case in accordance with the provision of the standards of practice. Subsequently, every provider must refer a patient at the right time and to the appropriate level of care.

**Where to refer to:**

- Health care provider should identify the levels of referral within the National Health Care System (figure 5). This is from community level through to tertiary institutions and Specialist Hospitals. Given circumstances in your community, accredited private hospital networks may also serve as referral or receiving point.

**Accessibility/Location:**

- Health care provider should be aware of his/her environment which should include infrastructure, services and expertise available, and accessibility of the service delivery point to the patients;

- Display charted map of all facilities within the LGA and that of neighbouring LGAs, state or country.

**How to refer:**

- Health care provider should give appropriately filled form describing patient's bio-data, situation at contact with service delivery point, services already rendered and reasons for referral;

- Inform the patient on the need for him/her to return with the appropriate portion (duly completed) of the two-way referral form;

- Make provision for transport and someone to accompany the patient in dire emergencies.

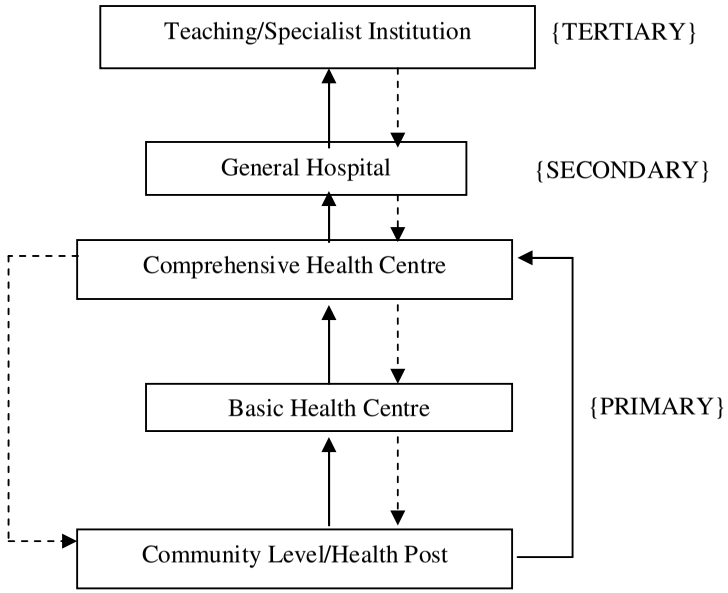
**What to expect:**

- Health care provider should provide information on what the patient should expect at the point of referral. This may include types and number of examinations/investigations to be carried out, that there may be need for admission or surgery, or the need for blood donation/transfusion and the likely cost of drugs that may be prescribed;

- Prepare patients for their obligations at the referral centre. If the patient's condition is so bad that he/she cannot comprehend, as much information as possible should be given to the relation(s).



**Figure 5: Referral Linkage for obstetric and neonatal care in Public and Private Health facilities**




**Note:** Referrals for patients from one level of care to another are shown by the straight arrows, which point upwards and demonstrate the expected pattern of referrals. Communities and Health Posts are expected to refer up to the Comprehensive Health Centre within the LGA or most appropriate CHC. Broken arrows pointing downwards depict feedback from the care provider at the referral centre to the care provider who initially referred the patient.

### 1.4.4 THE INDICATIONS FOR REFERRAL

The conditions and services that require referral are as outlined in Table 5.

**Table 5:Indications for Referral of Patients**

| SOURCE OF REFERRAL | PROBLEM/INDICATION | REFERRAL CENTRE |
|---|---|---|
| **Community Level** | • Premarital counseling<br>• High Risk cases<br>• Essential Care<br>• Tetanus Toxoid Immunisation<br>• Vitamin A Supplementation<br>• Complications during labour/delivery<br>• Postpartum problems<br>• Postpartum contraception (prescriptive method) | • Health Post<br>• Basic Health Centre<br>• Comprehensive Health Centre |
| **Health Post (Public and Private)** | Same as for Community | • Basic Health Centre<br>• Comprehensive Health Centre |
| **Basic Health Centre (Public and Private)** | • High Risk Cases<br>• Complications in Pregnancy<br>• Problems during labour and puerperium<br>• Postpartum Sterilization | • Comprehensive Health Centre<br>• General Hospital |
| **Comprehensive Health Centre (Public and Private)** | Same as for Basic Health Centre | • General Hospital<br>• Teaching/Specialist Hospital |
| **General Hospital (Public and Private)** | Same as for Comprehensive Health Centre<br><br>Complications in Pregnancy, Labour and Puerperium | Teaching/Specialist Hospital |
| **Specialist Hospital (Public and Private)** | Complications in Pregnancy, Labour and Puerperium | Teaching Hospital |



## 1.5 THE RIGHTS OF PATIENTS

The improvement of maternal and newborn health is determined by the recognition that safe motherhood and birth are fundamental human rights. Motherhood and childhood are therefore entitled to special care and assistance that would address these rights.

Policy makers, health care providers, and communities play pivotal roles in ensuring that services are organized in ways that would address the rights of the patients, thus contributing to continuous quality improvement of maternal and neonatal health services.

The health provider must endeavor to respect the rights of the mothers seeking maternity services by providing them with relevant information concerning their health. Such rights include:

**Information**

- Mothers have a right to timely, accurate, and appropriate information related to their reproductive health needs such as the need for antenatal care, basic components of focussed ANC, birth preparedness and emergency readiness;

- Mothers have the right to VCT for HIV/AIDS and PMTCT and all other information relevant to their well being.

**Access to Services**

- Mothers have the right of access to services which include those that are not limited or impeded by cost, hours of service, location, physical or social barriers.

**Informed Choice**

- Mothers have the right to guidance and support based upon access to full understanding of all necessary information for them to make voluntary and informed decision about their healthcare.

**Safe Services**

- Mothers deserve assurance for safe services that are delivered by skilled maternal health providers in accordance with standard guidelines.

**Privacy and Confidentiality**

- Mothers' privacy and confidentiality must be maintained at the facility during counselling, physical examination, clinical procedures and in the handling of their personal information and medical records.

**Dignity, comfort and expression of opinion**

- Mothers must be treated with respect and their opinion must be considered.

**Continuity of Care**

- Mothers have the right to continuity of services and supplies, follow-up and referral necessary to maintain their health.



## 1.6 THE ROLE OF HUSBAND/FAMILY/COMMUNITY IN PRE-CONCEPTION/ANTENATAL/INTRAPARTUM/POSTPARTUM CARE

Husbands are key decision makers in maternal and newborn care-seeking behaviour. They should understand the needs, risks and danger signs of pregnancy, child birth and postpartum periods to support the women. The role of men as husbands, fathers and partners in providing the required support is defined by the interplay of cultural aspects of pregnancy, child birth and postpartum care.

Family members, community leaders and other influential persons in the community can play the role of positive agents for supporting women and newborn health needs and decision making. Depending on the context, family members such as mothers-in-law, have strong culturally sanctioned power for decision making and care, for example, the diet of pregnant women, work load and household responsibility and the use of emergency services. They also assist in facilitating access to health facilities and use of these services. The community plays a significant role in reducing the associated delays in receiving skilled care. The role of the husband, family and community in preconception, antenatal, intrapartum and postpartum care are as outlined on pages 44-47.

**Table 6(a): The Role of Husband/Family/Community in Pre-conception/Pre-pregnancy Care**

| Husband | Family | Community |
|---|---|---|
| ▪ Plans with wife to initiate a pregnancy<br>▪ Supports and values the wife's use of pre-conception care | ▪ Supports genetic counseling<br>▪ Supports couple to plan pregnancy<br>▪ Encourages voluntary HIV screening | ▪ Supports provision of services for genetic counseling and HIV screening |



**Table 6(b): The Role of Husband/Family/Community in Antenatal Care**

| Husband | Family | Community |
|---|---|---|
| ▪ Supports the wife's use of antenatal services<br>▪ Makes birth plan with wife, family and the health care provider<br>▪ Assists wife to reach a skilled provider and knows how to reach the provider<br>▪ Identifies transportation systems for use during emergencies<br>▪ Takes responsibility for blood donation for wife<br>▪ Provides emotional support<br>▪ Provides funds for antenatal services | ▪ Advocates for skilled health care for pregnant woman<br>▪ Supports and values the woman's use of antenatal care, adjusts responsibilities to allow attendance<br>▪ Makes plan with woman for normal birth and complications<br>▪ Identifies a skilled provider for childbirth and the means to reach the provider<br>▪ Recognizes danger signs and facilitates prompt visit to health facility<br>▪ Assists with funds during emergencies | ▪ Supports the use of antenatal care services<br>▪ Supports special treatment for women during pregnancy<br>▪ Recognizes danger signs and facilitates prompt visit to health facility<br>▪ Provides functional transport infrastructure for women to reach care when needed<br>▪ Promotes a functional blood donor system.<br>▪ Provides community financial plan for obstetric emergencies<br>▪ Conducts dialogue with care providers to ensure quality of care<br>▪ Educates its members on the special needs of pregnant women<br>▪ Supports the health care facility that serves the community |

**Table 6(c): The Role of Husband/Family/Community in Intrapartum Care**

| Husband | Family | Community |
|---|---|---|
| ▪ Assists wife in choosing provider and place of birth<br>▪ Recognizes normal labour and encourages wife to visit health facility<br>▪ Identifies and provides means of transport for use by wife<br>▪ Recognizes danger signals and facilitates decision making for emergency care<br>▪ Provides funds for delivery and emergency services<br>▪ Purchases necessary drugs or supplies | ▪ Recognizes normal labour and encourages visit to health facility<br>▪ Supports woman in reaching place and provider of choice<br>▪ Supports provider and woman in reaching referral site if needed<br>▪ Recognizes danger signs and facilitates decision making for Emergency Obstetric Care (EOC)<br>▪ Discusses with and supports woman's birth plans<br>▪ Knows how to access community emergency fund<br>▪ Identifies transportation systems, and where to go in case of emergency<br>▪ Arranges for persons to provide supportive care to the family<br>▪ Identifies someone to stay with the woman during labour and childbirth | ▪ Advocates and facilitates birth preparedness<br>▪ Supports and values use of skilled provider at childbirth<br>▪ Ensures that woman is not alone during labour and childbirth<br>▪ Supports woman in reaching place and provider of her choice<br>▪ Recognizes danger signs and facilitates decision making on EOC<br>▪ Ensures and prioritizes the provision of transportation for pregnant women in labour and during obstetric emergencies<br>▪ Dispels misconceptions and harmful practices that could prevent birth preparedness and provision of EOC |



**Table 6(d): The Role of Husband/Family/Community in Postpartum Care**

| Husband | Family | Community |
|---|---|---|
| ▪ Encourages wife to seek postpartum care at 1 and 6 weeks after delivery<br>▪ Provides money and transport to enable wife seek care<br>▪ Recognizes danger signs and assists wife to seek prompt care<br>▪ Purchases drugs or supplies needed for normal or emergency post partum care<br>▪ Identifies transportation systems to be used in emergencies<br>▪ Supports wife to initiate and continue breastfeeding<br>▪ Provides adequate nutritious diet for the wife during the postpartum period | ▪ Supports the woman's use of postpartum care and adjusts responsibilities to allow her attendance<br>▪ Supports woman to initiate and continue breastfeeding<br>▪ Recognizes complication sign and assists woman to seek care at the health facility<br>▪ Identifies transportation systems to be used in emergencies<br>▪ Supports the health provider | ▪ Supports and values women's use of postpartum and neonatal care<br>▪ Supports and values use of skilled provider during postpartum period<br>▪ Supports appropriate and healthy norms for women and newborns during the postpartum period<br>▪ Ensures that woman is not alone during postpartum period<br>▪ Recognizes danger signs and supports woman to seek prompt care<br>▪ Supports timely transportation of woman and newborn to referral site if needed<br>▪ Supports the facility that serves the community<br>▪ Dispels misconceptions and harmful practices to postpartum and neonatal care |

## SECTION TWO: ANTE-NATAL CARE

### 2.0 INTRODUCTION

Ante-natal care (ANC) is the supervision, advice and intervention given to a pregnant woman by a health care provider during which a relationship of trust and confidentiality is established between them.

Ante-natal care should focus on ensuring, supporting, and maintaining maternal and fetal well-being throughout pregnancy and childbirth. The focused ANC which is an evidenced-based, client centered, goal-directed care provided by a skilled health provider is now recommended. Ante-natal care entails a number of interactions, activities and procedures which will be covered in this section.

**The goals of focused ANC are:**

- **Early detection and treatment of problems and complications**
- **Prevention of disease and complications**
- **Birth preparedness and complication readiness**
- **Health promotion**

### 2.1 HEALTH EDUCATION

The aim of health education during ante-natal care will be to inform, educate and counsel the woman with health messages that are appropriate to individual needs, gestational age, and most prevalent health issues. The following should be covered during health talks amongst others:-

**Nutrition**

- Advise client on adequate nutritious diet (proteins, carbohydrates, fats, vitamins and micro-nutrients) from locally available sources;

- Dispel myths and taboos about useful food items;

- Discourage smoking, alcohol consumption and harmful substances which may interfere with the utilization of useful nutrients, fetal growth and development.

**Drugs**

- Ensure compliance;

- Avoid use of drugs not prescribed.

**Hygiene**

- Advise on personal hygiene;

- Keep environment clean.

**Rest and Exercise**

- Emphasize the need for adequate rest and exercise during pregnancy.

**Breast Feeding**

- Teach on care of the breast as follows:

  - pulling the nipple after oiling in cases of flat or retracted nipples
  - need to seek medical attention where nipples are persistently inverted

- Ensure mother knows that:

  - breast milk is the best food for the baby
  - exclusive breastfeeding from birth up to 6 months and on demand has advantages
  - complimentary feeding can be introduced from 6 months using locally sourced food items

- Dispel myths about colostrum;

- Teach and demonstrate:

  - proper positioning and attachment of the baby on the breast



  - signs of good attachment
  - how to wind baby after each feed
  - advise her on the need to allow baby feed and remove his mouth from the breast

- Encourage mother to allow baby to feed well before disengaging his mouth from the breast;

- Mention the advantages of breastfeeding for the baby:

  - a complete meal
  - contains all the nutrient the baby needs to grow
  - contains antibodies that gives immunity to the baby
  - reduces risk of respiratory tract infections, gastro-intestinal tract irritations e.g. diarrhoea
  - reduces the skin reaction caused by foreign elements in artificial feeds
  - helps in the baby's intellectual growth
  - is readily available at all times for the baby

- Mention the advantages of breastfeeding for the mother:

  - reduces the risk of postpartum haemorrhage
  - encourages bonding
  - provides contraception (Lactational amenorrhoea)

**Danger signs**

- Ensure that the woman, husband and family know the danger signs in pregnancy, which indicate a need to implement the complication readiness plan. The danger signs are:

  - vaginal bleeding
  - difficulty in breathing
  - fever
  - severe abdominal pain
  - severe headache/blurred vision
  - convulsions/loss of consciousness
  - labour pains before 37 weeks
  - swollen/puffy face
  - liquor drainage before onset of labour
  - abnormal weight pattern (excessive or inadequate)

**Signs of Labour**

- Ensure that she knows the signs of labor, which indicate a need to contact the skilled provider and enact the birth preparedness plan. These are:
  - regular, progressively painful uterine contractions
  - lower back pain radiating from uterine fundus
  - blood stained show
  - breaking of the bag of water (rupture of membranes)

**Prevention of Malaria in Pregnancy**

Malaria is endemic in Nigeria and is one of the major causes of maternal deaths.

- Inform mothers of the preventive measures which are:
  - personal protection (wear cloth that do not expose her body to mosquito)
  - clean environment
  - use of door and window nets
  - use of insecticide–treated nets (ITNs) or mosquito repellent creams
  - intermittent preventive treatment (IPT)

**Sexually Transmitted Infections (STIs)**

These are infections that are transmitted through sexual intercourse e.g. gonorrhea, syphilis, chlamydia, HIV/AIDS etc. These infections can affect both the mother and the fetus.

Management of these infections at the Primary Health Care level is based essentially on the syndromic approach to STI diagnosis and treatment. The syndromic approach works through the use of flow charts which have been prepared using signs and symptoms of the patient **(as described in the FMOH Syndromic Management Chart ).**

**Voluntary Counseling and Testing (VCT)**

This is a process by which an individual undergoes confidential counseling to enable him/her make informed choice about his/her HIV status and take appropriate action.



- Inform mothers that:
  - mother-to-child transmission of HIV could occur during pregnancy, delivery or breastfeeding.
  - prevention of mother-to-child transmission can be achieved by:
    - use of antiretroviral drugs
    - elective abdominal delivery (Caesarean section)
    - infant feeding options

## 2.2 IMMUNISATIONS

- Give Tetanus Toxoid injection during the antenatal period to pregnant mothers to protect them and their babies against tetanus as shown in the table below:

**Table 7: Tetanus Toxoid Immunisation Schedule**

| Vaccine | Dosage | Time of Administration | Site | Method of Administration | Duration of Protection |
|---|---|---|---|---|---|
| TT- 1 | 0.5 ml | At first contact or as early as possible | Deltoid | Deep subcutaneous | None |
| TT – 2 | 0.5 ml | At least four weeks after TT-1 | Deltoid | Deep subcutaneous | 3 years |
| TT – 3 | 0.5 ml | At least six months after TT-2 or during subsequent pregnancy | Deltoid | Deep subcutaneous | 5 years |
| TT – 4 | 0.5 ml | At least one year after TT-3 or during subsequent pregnancy | Deltoid | Deep subcutaneous | 10 years |
| TT – 5 | 0.5ml | At least one year after TT-4 or during subsequent pregnancy | Deltoid | Deep subcutaneous | For life |

**Note:** The baby also needs immunisation after birth to protect against the endemic childhood killer diseases, including tetanus. Refer to Table 15 **(page 310)** on childhood immunisation.



## 2.3 BIRTH PREPAREDNESS AND COMPLICATION READINESS

It is the process of planning for safe delivery and anticipating the actions needed in case of emergencies. If a woman is well prepared for normal childbirth and possible complications, she is more likely to receive the skilled and timely care she needs to protect her overall health and possibly save her life and that of her baby.

- Discuss with the mother the elements of birth plan:

**Skilled Provider**

- assist the woman in making arrangements for a skilled provider to attend the birth; this person should be trained in supporting normal labour/childbirth and managing complications if they arise
- make sure the woman knows how to contact the skilled provider or health care facility at the appropriate time.

**Place for Delivery**

- assist the woman in making arrangements for place of birth (whether at the district hospital, health center, community health post)

- depending on her individual needs, you may need to recommend a specific level of health care facility as the place for delivery, or simply support the woman in giving birth where she chooses.

**Transportation**

- make sure she knows the available transportation systems within her locality and that she has made specific arrangements for:

  - transportation to the place of delivery
  - emergency transportation to an appropriate health care facility if danger signs arise.

**Funds**

- ensure she has personal savings or other funds that she can access when needed to pay for care during normal birth and emergency care

– if relevant, discuss emergency funds that are available through the family, community and/or health facility.

**Decision-Making**

– ask who makes decisions in the family
– ask who else can make decisions if that person is not present.

**Support**

– assist the woman in deciding and making arrangements for necessary support, including:

  - companion of her choice to stay with her during labour and childbirth, and accompany her to a referral centre if need be
  - someone to care for her house and children during her absence.

**Blood Donor**

– ensure that the woman has identified an appropriate blood donor and that this person will be accessible in case of emergency.

**Items Needed for a Clean Safe Birth and for the Newborn**

- Make sure the woman has gathered necessary items for a clean and safe birth.

  – for the birth: perineal pads/cloths, soap, clean bed cloths, placenta receptacle, new, unused razor blade, waterproof/plastic cover, cord ties, etc.
  – for the newborn: blankets, diapers, clothes, etc.

- Advise her that the items should be kept together for easy retrieval when needed.

**Note:** Items needed depend on the individual requirements of the intended place of birth.



## 2.4 MANAGING PREGNANCY USING FOCUSED ANTENATAL CARE

Focused antenatal care is evidence-based, client-centered, goal-directed care provided by skilled health providers with emphasis on quality rather than frequency of visits. This model separates pregnant women into two groups for management using the classifying form on the next page.

## CLASSIFYING FORM FOR FOCUSED ANTENATAL CARE

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

Name of patient _____ Clinic record number ☐☐☐☐☐☐
Address: _____Telephone _____

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

| **OBSTETRIC HISTORY** | No | Yes |
|---|---|---|
| 1. Previous stillbirth or neonatal loss? | ☐ | ☐ |
| 2. History of 3 or more consecutive spontaneous abortions? | ☐ | ☐ |
| 3. Birthweight of last baby < 2500g? | ☐ | ☐ |
| 4. Birthweight of last baby > 4000g? | ☐ | ☐ |
| 5. Last pregnancy hospital admission for hypertension or | ☐ | ☐ |
| 6. Pre-eclampsia/eclampsia? | ☐ | ☐ |
| 7. Previous surgery on reproductive tract? (Myomectomy, removal of septum, cone biopsy, classical CS, cervical cerclage)? | ☐ | ☐ |

| **CURRENT PREGNANCY** | No | Yes |
|---|---|---|
| 1. Diagnosed or suspected multiple pregnancy? | ☐ | ☐ |
| 2. Age less than 16 years? | ☐ | ☐ |
| 3. Age more than 40 years? | ☐ | ☐ |
| 4. Isoimmunisation Rh(-) in current or in previous pregnancy? | ☐ | ☐ |
| 5. Vaginal bleeding? | ☐ | ☐ |
| 6. Pelvic mass? | ☐ | ☐ |
| 7. Diastolic blood pressure 90 mmHg or more at booking? | ☐ | ☐ |

| **GENERAL MEDICAL** | No | Yes |
|---|---|---|
| 1. Insulin-dependent diabetes mellitus? | ☐ | ☐ |
| 2. Renal disease? | ☐ | ☐ |
| 3. Cardiac disease? | ☐ | ☐ |
| 4. Known 'substance' abuse (including heavy alcohol drinking)? | ☐ | ☐ |
| 5. Any other severe medical disease or condition? | ☐ | ☐ |

Please specify _____
_____

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

Is the woman eligible? (Circle) NO YES
If No, she is referred to _____
Date _____ Name _____ Signature _____(Staff responsible for ANC)



## 2.4.1 BASIC COMPONENT (NORMAL PREGNANCY)

In the basic component of the focused antenatal care, four visits are recommended.

**First Visit – within 12 weeks**

- This entails history taking, clinical examination and investigations.

**(a) Obtain information on:**

- Personal history (the following information have been found to be useful):
  - name
  - age (date of birth)
  - address and telephone number
  - marital status
  - tobacco use (smoking or chewing habit) or use of other harmful substances
  - housing: type, number of rooms, number of occupants
  - sanitary conditions: type of toilet, source of water
  - electricity or source of heating and lighting
  - available cooking facilities
  - literacy
  - educational level: primary, secondary, tertiary
  - economic resources: employment
  - type of work and position of patient and husband
- Medical history:
  - specific diseases and conditions
    - tuberculosis, heart diseases, chronic renal diseases, epilepsy, diabetes mellitus
    - STIs
    - HIV status, if known
    - other specific conditions depending on prevalence in study site (for example, hepatitis, malaria, sickle cell trait)
    - other diseases, past or chronic; allergy (-ies)
    - operations other than Caesarean section
    - blood transfusions

- Rhesus (D) antibodies
- current use of medicines – specify
- period(s) of infertility: when? Duration, cause(s)

- Obstetric history:
  - number of previous pregnancies
  - date (month, year) and outcome of each event (live birth, stillbirth, abortion, ectopic, hydatidiform mole). Specify (validate) preterm births and type of abortion, if applicable
  - birth weight (if known)
  - sex
  - periods of exclusive breastfeeding: When? For how long?
  - special maternal complications and events in previous pregnancies; specify which pregnancy (-ies), validate by records (if possible):
    - recurrent early abortion
    - induced abortion and any associated complications
    - thrombosis, embolus
    - hypertension, pre-eclampsia or eclampsia
    - placental abruption
    - placenta praevia
    - breech presentation or transverse lie/shoulder presentation
    - obstructed labour, including dystocia
    - third-degree tears
    - third stage excessive bleeding
    - puerperal sepsis
    - gestational diabetes

  - obstetric operations:
    - Caesarean section (indication, if known)
    - forceps or vacuum extraction
    - manual / instrumental help in vaginal breech delivery
    - manual removal of placenta

  - special perinatal (fetal, newborn) complications and events in previous pregnancies; specify which pregnancy (ies), validate by records (if possible):
    - twins or higher order multiples
    - low birth weight: <2500g
    - intrauterine growth restriction (if validated), accuracy of recall and other relevant information)
    - rhesus-antibody sensitization (erythroblastosis, hydrops)
    - malformed or chromosomally abnormal child



    - macrosomic (≥4000g) newborn
    - resuscitation or other treatment of newborn
    - perinatal, neonatal or infant death (also: later death)
    - history of present pregnancy
    - date of last menstrual period (LMP); certainty of dates (by regularity, accuracy of recall and other relevant information)
    - habits: smoking/chewing tobacco, alcohol, drugs (frequency and quantity)
    - any unexpected event (pain, vaginal bleeding, others: specify)
    - history of malaria attacks.

**Manage complaints, if any**

**(b) Clinical Examination**

- Examine for pallor, jaundice and oedema;
- Take the height, weight and blood pressure (BP);
- Determine fundal height, lie, presentation and fetal heart sound.

**Pelvic examination should be postponed until the second visit if necessary.**

**(c) Investigations and Treatment**

- Perform relevant investigations which include:
  - urinalysis (multiple dipstick)
  - Hb or PCV estimation
  - genotype
  - blood group and rhesus factor
  - VDRL test (rapid syphilis test)
  - HIV after counseling and informed consent
  - ultrasound scan
  - other appropriate investigations as indicated by patient's history and examination

- Give routine drugs (ferrous sulphate, 200 mg thrice daily, folic acid, 5 mg daily)

- Recommend actions that should be taken in case of emergencies
- Give first dose of Tetanus Toxoid
- Give date for next visit.

**This also applies to all women at first booking regardless of gestational age.**

**Second Visit - at 26 weeks gestation**

- Record and manage complaints if any;
- Examine for pallor, jaundice, oedema;
- Measure the blood pressure;
- Determine fundal height, lie, presentation, fetal heart;
- Give routine drugs;
- Give first dose of 3 tablets of Sulpadoxine Pyrimethamine (SP - each tablet contains sulphadoxine, 500 mg and pyrimethamine, 25 mg);
- Conduct urinalysis;
- Recommend actions that should be taken in case of emergency;
- Give date for next visit.

**Third Visit - at 32 weeks gestation**

- Manage complaints if any;
- Examine for pallor, jaundice and oedema;
- Measure the blood pressure;



- Determine the fundal height, lie, presentation and listen to the fetal heart sounds;
- Give routine drugs: ferrous (Fe), folic acid and 2nd dose SP;
- Check Hb/PCV;
- Instruct for delivery/plan for birth;
- Discuss lactation and contraception;
- Repeat ultrasound scan
- Give date for the next visit.

**Fourth Visit - visit at 36 to 38 weeks gestation**

- Record and manage complaints, if any;
- Examine for pallor, jaundice and oedema;
- Measure the blood pressure
- Determine the fundal height, lie, presentation and listen to fetal heart sounds;
- Give routine drugs, Fe, Folic acid and 3rd dose SP if HIV positive;
- Conduct a clinical pelvic assessment where indicated
- Perform obstetric manouvres like external cephalic version if indicated (at secondary and tertiary levels only);
- Give next appointment;
- If not delivered by the end of 41 weeks (state date and write it in the ANC card), advise patient to report back and take a decision on delivery;
- Record all information in the ANC card.

**Note: Unscheduled visits can be made when there are complaints or danger signs.**

**DISORDERS OF PREGNANCY**

**Those that do not qualify for the basic component of the focused ante-natal, should be seen at a more frequent interval or referred to a higher level of care depending on the condition. These will include Pregnancy Induced Hypertension (PIH), pre-eclampsia, multiple pregnancy, ante-partum haemorrhage, diabetes mellitus in pregnancy, rhesus negative mother, sickle cell disease in pregnancy, etc.**



## 2.5 ABORTION

Abortion is termination of pregnancy before fetal viability (less than 28 weeks of gestation). However, the WHO definition as regards fetal viability is a gestation age of 24 weeks or fetal weight of 500g and above. Abortion is one of the common gynaecological emergencies and can be spontaneous or induced.

### 2.5.1 THREATENED ABORTION

There is minimal vaginal bleeding with or without lower abdominal pains and the cervical os is closed. The pregnancy may or may not continue.

**Assessment/Identification of the Problem**

- Take a history of:
  - present pregnancy (LMP and estimated weeks of pregnancy)
  - vaginal bleeding (onset, amount, nature)
  - pain in lower abdomen
  - fever, trauma
  - nature of menstrual cycle
  - previous miscarriage (time and nature)
  - use of contraceptives
- Conduct a general examination – check for:
  - pallor
  - vital signs (blood pressure, pulse, temperature)
- Conduct an abdominal examination, checking for:
  - size of uterus
  - tenderness or pain
- Perform a pelvic examination to:
  - assess vaginal bleeding
  - check status of cervical os (it is closed in threatened abortion)

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for PCV or Hb estimation;
- Examine urine for protein and sugar.

**Secondary and Tertiary Health Care Levels**

- Take blood for PCV or Hb estimation;
- Perform urinalysis for protein and sugar;
- Request ultrasound scan to confirm fetal viability;
- Group and cross-match blood.

**Note:** Further investigations will depend upon the suspected cause.

**Treatment**

**Primary Health Care Level**

- Advise the woman to avoid strenuous activity and sexual intercourse;
- If bleeding stops, follow-up at antenatal clinic;
- If bleeding persists, refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Advise the woman to avoid strenuous activity and sexual intercourse;
- Admit the patient if bleeding persists or is heavy;



- Treat the cause when identified;
- Follow-up in antenatal clinic if bleeding stops and pregnancy continues;
- If it becomes inevitable abortion, manage as in protocol for inevitable abortion (see below).

## 2.5.2 INEVITABLE ABORTION

In inevitable abortion, vaginal bleeding is associated with lower abdominal pains and cervical dilatation. The pregnancy will not continue.

**Assessment/Identification of the Problem**

- Take a history of:
  - present pregnancy (LMP and estimated weeks of gestation)
  - vaginal bleeding (onset, amount, nature)
  - lower abdominal pains
  - fever
  - trauma
- Conduct a general examination:
  - check for signs of shock (cold clammy extremities, low BP, high pulse rate)
  - assess degree of pallor
  - check vital signs
- Conduct an abdominal examination:
  - feel for uterine contractions
  - check size of uterus
- Perform a pelvic examination:
  - assess vaginal bleeding
  - check status of cervical os (dilated in inevitable abortion)

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for PCV or Hb estimation;
- Examine urine for protein and sugar.

**Secondary and Tertiary Health Care Levels**

- Take blood for PCV or Hb estimation;
- Examine urine for protein and sugar;
- Group and cross-match blood;
- Detrmine Rhesus antigen status.

**Treatment**

**Primary Health Care Level**

- Start an intravenous line using a wide-bore cannula and Normal saline, or 5% dextrose saline;
- Refer to secondary or tertiary health care level.

**Secondary and Tertiary Health Care Levels**

- Maintain an intravenous line;
- If pregnancy is less than 12 weeks, arrange for evacuation (**see MVA, Section 6, pages 423- 427);**
- If pregnancy is greater than 12 weeks, await spontaneous expulsion or infuse 40 units oxytocin in a litre of Normal saline or Ringers lactate at 40 drops per minute to help achieve expulsion;
- Give haematinics (ferrous sulphate and folic acid) or transfuse with blood depending upon the level of PCV;



- Give prophylactic antibiotics (Ampiclox, 500 mg 6 hourly and metronidazole, 400 mg 8 hourly) for 5 days;
- Counsel the patient for family planning.

### 2.5.3 INCOMPLETE ABORTION

Incomplete abortion occurs when part or all of the products of conception are retained. It is a common gynaecological emergency.

**Assessment/Identification of the Problem**

- Take a history of:
  - duration of pregnancy (LMP estimated weeks of gestation)
  - vaginal bleeding (whether it started spontaneously or was induced by drugs or instrumentation; amount of blood loss; nature of products expelled)
  - lower abdominal pain (whether continuous or intermittent)
  - associated complications (any associated fever/chills, fainting, dizziness)
- Conduct a general examination:
  - check vital signs for signs of shock
  - check for pallor
- Conduct an abdominal examination to:
  - check for tenderness
  - check the size of the uterus
  - feel for uterine contractions
- Perform a pelvic examination:
  - assess the vaginal bleeding (severity, passage of clots or products)
  - check status of cervical os dilatation, tears or products of conception protruding from the os.

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood sample for PCV or Hb estimation;
- Examine urine for protein and sugar.

**Secondary and Tertiary Health Care Levels**

- Take blood sample for urgent PCV or Hb estimation;
- Examine urine for protein and sugar;
- Take blood for grouping and cross-matching;
- Conduct an pelvic ultrasound scan for confirmation in doubtful cases.

**Treatment**

**Primary Health Care Level**

- Start an intravenous line using a wide-bore cannula with Normal saline;
- Give ergometrine, 0.5 mg IM or oxytocin 10 IU IV (if hypertensive) and analgesics (paracetamol tablets, 1,000 mg 8 hourly);
- Refer to a secondary or tertiary health care level.

**Secondary and Tertiary Health Care Levels.**

- Maintain an intravenous line;
- If pregnancy is less than 12 weeks, arrange for evacuation **(see MVA, Section 6, pages 423 - 427);**
- If pregnancy is greater than 12 weeks, infuse 40 units Syntocinon (oxytocin) in 1 litre of Normal saline or Ringers lactate at 40 drops per minute and await spontaneous expulsion;



- Conduct an evacuation of the uterus and send specimen for histology;
- Give haematinics, (ferrous sulphate and folic acid) or transfuse with blood depending upon the level of PCV;
- Counsel patient for family planning.

## 2.5.4 SEPTIC ABORTION

Septic abortion occurs when the products of conception become infected, thus producing generalized infection of the uterus. It is a common complication of unsafe abortion.

**Assessment/Identification of the Problem**

- Take a history of:
  - present pregnancy (LMP and estimated weeks of gestation)
  - vaginal bleeding (the severity)
  - presence of offensive vaginal discharge
  - presence of fever, chills, headaches
  - lower abdominal pain
  - any medication taken, whether prescribed or unprescribed
  - any form of intervention, by whom and when?
- Conduct a general examination to:
  - check the patient's general appearance
  - check for level of conciousness
  - take vital signs (BP, pulse rate, temperature, respiratory rate)
- Perform a vaginal examination and note:
  - offensive vaginal discharge
  - evidence of vaginal injuries or cervical laceration
  - evidence of uterine perforation
  - evidence of pelvic collection
  - presence of cervical excitation tenderness

**Management**

**Investigations**

**Primary Health Care Level**

- Take a blood sample for PCV or Hb estimation;
- Examine urine for protein and sugar.

**Secondary and Tertiary Health Care Levels**

- Take blood sample for:
  - FBC including platelet count
  - grouping and cross-matching of 2 units of blood
  - culture and sensitivity
- Examine urine for protein and sugar;
- Take a high vaginal swab (HVS) and endocervical swab (ECS) for microscopy, culture and sensitivity (m/c/s);
- Conduct ultrasound scan to confirm retained products.

**Treatment**

**Primary Health Care Level**

- Start an intravenous line using a wide-bore cannula and Normal saline;
- Give ergometrine, 0.5 mg IM if indicated and analgesics (paracetamol tablets, 1000 mg 8 hourly);
- Refer to secondary or tertiary health care level.

**Secondary and Tertiary Health Care Levels**

- Maintain an intravenous line;
- Give appropriate antibiotics;



- If pregnancy is less than 12 weeks, arrange for evacuation **(see MVA, Section 6, pages 423 - 427);**
- If pregnancy is greater than 12 weeks, infuse 40 units Syntocinon, (oxytocin) in 1 litre of normal-saline or Ringers lactate at 40 drops per minute and wait for spontaneous expulsion;
- Evacuate the uterus, if necessary and send specimen for histology;
- Transfuse with blood depending upon the PCV;
- Give haematinics (ferrous sulphate and folic acid);
- If temperature does not settlte in 48 hours, perform a vaginal examination to exclude pelvic collection;
- If there is pelvic collection, perform colpotomy **(Section 6, pages 430)** or laparotomy to drain the collection;
- Involve the general surgeons if bowel injury is suspected;
- Counsel the patient for family planning.

## 2.5.5 MISSED ABORTION

In missed abortion, the fetus has died in utero before age of viability but has not been expelled. If it is retained for a long time bleeding disorders may result.

**Assessment/Identification of the Problem**

- Take a history of:
  - present pregnancy (LMP and estimated weeks of gestation)
  - cessation of fetal movements
  - vaginal bleeding (complains of chronic but light vaginal bleeding)
  - lower abdominal pain
  - regression of symptoms of pregnancy

- Conduct a general examination:

  - check the general appearance of the patient
  - check the vital signs

- Conduct an abdominal examination noting:

  - abdominal tenderness
  - the size of uterus, whether smaller than gestational age

- Perform vaginal examination and note:

  - any abnormal vaginal discharge or bleeding
  - cervical dilatation if any.

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood sample for PCV or Hb estimation;

- Examine urine for protein and sugar;

- Refer to secondary or tertiary health care level.

**Secondary and Tertiary Health Care Levels**

- Take blood samples for:
  - FBC including platelet count
  - grouping and cross-matching of 2 units of blood
  - bedside clotting time
  - clotting profile

- Examine urine for protein and sugar;

- Perform a pelvic ultrasound scan for confirmation of missed abortion;



**Treatment**

**Primary Health Care Level**

If the patient is bleeding:

- Start an intravenous line using a wide-bore cannula and infuse Normal saline;

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels.**

- Maintain an intravenous line;

- If pregnancy is less than 12 weeks, arrange for evacuation **(see MVA, Section 6, pages 423 - 427);**

- If pregnancy is greater than 12 weeks:

  - ripen the cervix with prostaglandins/misoprostol or Foleys catheter
  - infuse 40 units Syntocinon (oxytocin) in 1 litre of Normal saline or Ringers lactate at 40 drops per minute and await spontaneous expulsion;

- Evacuate the uterus, if necessary;

- Transfuse with blood depending on the PCV;

- Give haematinics (ferrous sulphate and folic acid);

- Counsel patient for family planning.

## 2.5.6 POST-ABORTION CARE (PAC)

Post-abortion care consists of a series of medical and related interventions designed to manage the complications of spontaneous and induced abortions.

It consists of emergency treatment of complications, family planning counseling, referral to other reproductive services and community/service provider partnership.

**Assessment/Identification of the Problem**

- Take a history to establish the abortion e.g. amenorrhoea, positive pregnancy test, ultrasound scan;
- Check vital signs (blood pressure, temperature, respiratory rate and pulse rate);
- Palpate the abdomen for tenderness and size of the uterus;
- Perform a pelvic examination to establish trauma to the cervix or vagina and presence of cervical excitation tenderness or products of conception.

**Management**

**Investigations**

**Primary Health Care Level**

- Conduct the following investigations
  - PCV or Hb estimation
  - urinalysis for protein and sugar

**Secondary and Tertiary Health Care Levels**

- In addition to above take:
  - blood specimen for FBC
  - high vaginal swab for m/c/s
  - endocervical swab for m/c/s

**Treatment**

**Primary Health Care Level**

- Give tetanus toxoid where indicated;
- Set up an IV infusion fluid if necessary;



- Resuscitate the patient and treat shock;
- Give antibiotics and analgesics;
- Give ergometrine, 0.5 mg IM stat;
- Refer if abortion is incomplete, inevitable, or septic after resuscitation and commencement of antibiotics.

**Secondary and Tertiary Health Care Levels**

- Provide appropriate treatment;
- Treat complications of abortion;
- Provide counseling as follows:
  - practise abstinence where appropriate
  - use reversible contraceptive methods if married and if she wants more children
  - encourage to have a long-acting or permanent method of contraception if she has completed her family
  - refer for other services i.e. cervical cancer screening

## 2.6 ECTOPIC PREGNANCY

An ectopic pregnancy is one in which implantation of the fertilized ovum is outside the uterine cavity. The fallopian tube is the most common site of ectopic gestation and the ruptured type is the most frequently encountered. Symptoms and signs depend on whether or not the gestational sac has ruptured (see table below)

**Table 8. Clinical Features of Ruptured and Unruptured Ectopic Pregnancies**

| Unruptured Ectopic | Ruptured Ectopic |
|---|---|
| ▪ There may be no symptoms<br>▪ Amenorrhoea (usually < 10 weeks)<br>▪ Lower abdominal pain<br>▪ Irregular spotting/bleeding | ▪ Amenorrhoea<br>▪ Lower abdominal pain<br>▪ Abnormal bleeding PV<br>▪ Collapse or syncope<br>▪ Fast weak pulse<br>▪ Hypotension, pallor<br>▪ Abdominal distension and tenderness |

**Assessment/Identification of the Problem (Ruptured Ectopic)**

- Check for signs of shock:
  - feeble pulse
  - excessive sweating
  - cold and clammy extremities
  - air hunger
  - fast breathing

- Obtain a history of:
  - last menstrual period and estimated weeks of gestation
  - onset and nature of bleeding
  - onset and nature of abdominal pain
  - subfertility
  - syncope or fainting
  - shoulder-tip pain



- Check vital signs (blood pressure, pulse rate, respiratory rate and temperature);

- Check for pallor;

- Examine the abdomen for distension and tenderness;

- Perform an abdominal paracentesis;

- Perform a pelvic examination to:

  – check pouch of Douglas for bogginess
  – check for adnexal mass

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to secondary or tertiary health care level.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – PCV
  – electrolytes and urea
  – urinalysis (protein, sugar and ketones)

- Group and cross-match 2 - 4 units of blood;

- Conduct a pelvic ultrasound scan.

**Treatment**

**Primary Health Care Level**

- Explain the problem to the patient and her husband/partner;

- Set up an IV infusion with Normal saline or Ringers lactate solution using a wide bore cannula or needle;

- Monitor vital signs;
- Refer to a higher level of care;
- Ensure patient is accompanied by a health care provider.

**Secondary and Tertiary Health Care Levels**

- Admit patient;
- Reassure the relatives;
- Resuscitate urgently:
  - continue intravenous infusion with Normal saline or Ringers lactate solution
  - keep the patient warm to prevent heat loss
  - continue to monitor vital signs
  - give oxygen by face mask or nasal tube
  - transfuse with blood as appropriate
  - consider autotransfusion if rupture is less than 24 hours
- Prepare and perform laparotomy - salpingectomy **(Section 6, pages 477 - 478);**
- Send specimen for histology;
- Counsel the patient on discharge on her condition and the choice of family planning method (avoid IUD);
- Arrange for follow up and take appropriate action depending on the histology report.

**Unruptured ectopic pregnancy that fulfills the criteria for medical treatment can be given methotrexate injection at a secondary or tertiary level of care.**



## 2.7 MOLAR PREGNANCY

This is an abnormal pregnancy characterized by an abnormal proliferation of chorionic villi.

**Assessment/Identification of the Problem**

- Ask for the following:
  - excessive symptoms of pregnancy (nausea, vomiting)
  - vaginal bleeding
  - period of amenorrhea (LMP)
  - passage of vesicles (grape-like tissue)
  - lower abdominal pain
- Check for pallor;
- Take pulse rate, respiratory rate and BP;
- Palpate for uterine size (usually larger than date)
- Listen to fetal heart activity (usually absent);
- Perform a vaginal examination and note the following:
  - bleeding/vesicles
  - cervical dilatation
  - ovarian mass
  - uterine size

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Take blood for the following:
  - complete blood count
  - blood urea and electrolytes

- baseline serum βhCG level or urinary pregnancy test in dilution
- group and cross-match 2 units of blood

- Perform pelvic ultrasound scan;
- Conduct a chest X-ray;
- Conduct a bedside clotting time and laboratory clotting profile if available.

**Treatment**

**Primary Health Care Level**

- Reassure patient;
- If bleeding, set up an IV line and infuse Normal saline or Ringers lactate solution and add 40 units of Syntocinon in 500 ml of infusion;
- Monitor vital signs, and;
- Refer to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Admit the patient;
- Reassure the relatives;
- Resuscitate urgently;
  - continue intravenous infusion with Normal saline or Ringers lactate solution
  - continue to monitor vital signs
- Add Syntocinon (oxytocin), 40 IU in 500 ml of IV fluids;
- Conduct suction evacuation. **Do not use metal curettes;**
- Transfuse with blood as appropriate.



**Subsequent Management**

- Recommend a hormonal contraceptive for at least one year to prevent pregnancy if βhCG level returns to normal. Counsel for tubal ligation, if she has completed her family;
- Recommend a non-hormonal contraceptive if βhCG level has not returned to normal;
- Follow-up with weekly serum βhCG level estimation or urinary pregnancy test in dilution, until βhCG level is normal and then continue 8 - 12 weekly follow up for 1 - 2 years;
- If patient develops signs of persistent trophoblastic disease, treat with chemotherapy.

**Signs of persistent trophoblastic disease are:**

- **Rising or plateauing of serum βhCG level**
- **Positive urinary pregnancy test 6 weeks after evacuation;**
- **Persistent vaginal bleeding.**

## 2.8 MALARIA IN PREGNANCY

Malaria is a public health problem in several countries. It is endemic in Nigeria and is a major cause of maternal and perinatal morbidity and mortality. It is a febrile condition caused by plasmodium parasites.

**Assessment/Identification of the Problem**

- Take a history of present complaints e.g. presence/duration of fever, headaches, body aches, rigors, nausea/vomiting, yellowness of the eye (jaundice), loss of appetite;

- Note history of drugs intake/allergies;

- Take a history of present pregnancy e.g. gestational age, fetal movement and uterine contractions;

- Ask for symptoms of other infection e.g. chest pain, foul-smelling watery vaginal discharge, tender/painful uterus or abdomen, frequency/urgency or pain during urinating or anaemia;

- Conduct a physical examination as follows:

  – check if patient is ill-looking, pale, lethargic, weak and tired
  – assess patient for degree of pyrexia, and abdominal tenderness
  – check vital signs (temperature, pulse, blood pressure, and respiration)
  – palpate the abdomen noting fundal height, lie, presentation; check for fetal heart activity and uterine contractions (exclude pre-term labour)

- Distinguish between complicated and uncomplicated malaria as shown in the box below.



| UNCOMPLICATED MALARIA | COMPLICATED MALARIA |
|---|---|
| ▪ Fever<br>▪ Shivering/chills/rigors<br>▪ Headaches<br>▪ Muscles/joint pains<br>▪ Nausea/vomiting<br>▪ False labour pains<br>▪ Mild anaemia | Signs of uncomplicated malaria PLUS one or more of the following:<br>▪ Dizziness<br>▪ Breathlessness/difficult breathing<br>▪ Drowsiness<br>▪ Coma<br>▪ Fits, jaundice, severe dehydration<br>▪ Severe anaemia<br>▪ Pulmonary oedema |

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for Hb, PCV, and malaria parasites;

- Check urine for glucose, protein and acetone.

**Secondary and Tertiary Health Care Levels**

- As at the primary health care level. In addition:

  – take specimen for genotype
  – perform an ultrasound scan for fetal wellbeing

**Treatment**

**Primary Health Care Level**

- Tepid sponge, fan, and expose the patient;

- Give an antipyretic, e.g. paracetamol, 1000 mg (2 tablets) thrice daily for 3 days;

- Determine whether malaria is uncomplicated or severe, as noted in the box above;

- If uncomplicated malaria, treat with any of the following treatment regimens;

(i) **Give chloroquine tablets as follows**:

| DAY ONE | DAY TWO | DAY THREE |
|---|---|---|
| 600 mg | 600 mg | 300 mg |
| 4 tablets | 4 tablets | 2 tablets |

**Some people react to chloroquine therefore add antihistamine to each dose of chloroquine e.g. Piriton, 4 mg tablet.**

**Or**

(ii) **Sulphadoxine-pyrimethamine (SP) 3 tablets stat**

**Or**

(iii) Use the regimen in Table 9 (a) below:

**Table 9 (a): New regimen for managing mild malaria in pregnancy**

| Medicine | Trade name | 1st Trimester | 2nd Trimester | 3rd Trimester |
|---|---|---|---|---|
| Quinine diyhydrosulp-hate | Quinine tablets (300 mg) | 20 mg/kg loading dose then 10 mg/kg 8 hourly x 7 days | 20 mg/kg loading dose then 10 mg/kg 8 hourly x 7 days | 20 mg/kg loading dose then 10 mg/kg 8 hourly x 7 days |
| Artemether (20 mg) – lumefantrine (120 mg) | Coartem | Not applicable | 4 tabs twice daily for 3 days | 4 tabs twice daily for 3 days |
| Other Artemisinine-based combination treatment can be used. | | Not applicable | | |

- If pruritis arises as a side effect, give the following:
  - chlorpherinamine (Piriton) tablets, 4 mg twice daily for 3 days



or
  - promethazine (Phenergan) tablets, 25 mg twice daily for 3 days
  - vitamin C tablets, 200 mg three times daily for 3 days

- Encourage patient to take plenty of fluids and fruits;
- Advise patient to:
  - complete course of drugs
  - continue on her routine ante-natal drugs
  - return if no improvement in 48 hours, and refer to the next level of care
  - use ITNs and other preventive measures
- Diagnose and treat anaemia if present **(Section 2, pages 89 - 92);**
- If there are uterine contractions, **refer** immediately;
- If it is complicated malaria, give first dose of anti-malarial (quinine or Coartem) and refer immediately to the next level of care;
- If the woman's condition does not improve or worsens within 48 hours of starting treatment and/or other symptoms appear, **refer** immediately.

**Secondary and Tertiary Health Care Levels**

- If uncomplicated malaria, treat as in PHC level;
- Correct dehydration with IV infusions;
- Correct hypoglycaemia with 50% dextrose (1 ml/kg) into infusion;
- If malaria is severe or complicated, use the regimen in Table 9(b) on the next page;
- If anaemia is present, treat appropriately;

**Note:** Pregnant women with severe malaria are particularly prone to hypoglycaemia, pulmonary oedema, anaemia and coma.

- Monitor blood glucose levels for hypoglycaemia every hour while the woman is receiving quinine.

**Table 9(b): New regimen for managing severe malaria in pregnancy**

| Medicine | Trade name | 1st Trimester | 2nd Trimester | 3rd Trimester |
|---|---|---|---|---|
| IV/IM Quinine diyhydrosul-phate | Quinine | 20 mg/kg loading dose in 500 ml 5% Dextrose saline, then 10 mg/kg 8 hourly until the patient can tolerate orally; Then continue with oral quinine, 10 mg/kg 8 hourly to complete a 7 day therapy. | 20 mg/kg loading dose in 500 ml 5% Dextrose saline, then 10 mg/kg 8 hourly until the patient can tolerate orally; Then continue with oral quinine, 10 mg/kg 8 hourly to complete a 7 day therapy. | 20 mg/kg loading dose in 500 ml 5% Dextrose saline, then 10 mg/kg 8 hourly until the patient can tolerate orally; Then continue with oral quinine, 10 mg/kg 8 hourly to complete a 7 day therapy. |
| IM Artemether | Paluther | Not applicable | 3.2 mg/kg first day then 1.6 mg/kg daily for a minimum of 3 days and then oral therapy to complete a 7-day course | 3.2 mg/kg first day then 1.6 mg/kg daily for a minimum of 3 days and then oral therapy to complete a 7-day course |
| IV/IM Artesunate | Artesunate | Not applicable | 2.4 mg/kg followed by 1.2 mg/kg at 12 and 24 hours then 1.2 mg/kg daily for 6 days | 2.4 mg/kg followed by 1.2 mg/kg at 12 and 24 hours then 1.2 mg/kg daily for 6 days |



## 2.9 ANAEMIA IN PREGNANCY

Anaemia is defined as a reduction in the haemoglobin level below 10 g/dl or PCV less than 30% resulting in low oxygen carrying capacity of the blood.

**Assessment/Identification of the Problem**

- Take a history of :
  - nutritional intake
  - tiredness
  - breathlessness
  - swelling of the feet
  - sickle cell disease
  - dizziness and palpitations
  - bleeding per vaginam or rectum
  - passage of worms
- Ascertain the date of LMP to determine gestational age;
- Inquire about any care so far received in this pregnancy and regular use of routine ante-natal drugs;
- Conduct a physical examination and check the following:
  - the conjunctiva, tongue, lips/palm, nail beds and soles of feet for pallor
  - oedema (pedal, facial, or generalised)
  - fever and jaundice
  - raised jugular venous pressure
  - third heart sound and haemic murmur
  - breathlessness, enlarged spleen and liver
- Conduct abdominal examination for:
  - uterine size and its compatibility to gestational age
- Auscultate for fetal heart activity in advanced pregnancy.

**Management**

**Investigations**

**Primary Health Care Level**

- Conduct the following investigations:
  - blood for PCV or Hb estimation, malaria parasites and genotype
  - stool for ova and parasites
  - urinalysis

**Secondary and Tertiary Health Care Levels**

- As in PHC level and in addition, conduct the following investigations:
  - FBC
  - bone marrow aspirate if applicable
  - serum ferritin estimation
  - urine for microscopy culture and sensitivity

**Treatment**

**Primary Health Care Level**

- Based on information gathered and haemoglobin level, decide on level of anaemia and manage as appropriate.

**Mild/moderate anaemia (Hb between 7.0 g/dl and 9.9 g/dl)**

- Reassure the patient and explain the need for compliance to drug therapy and dietary advice;
- Give haematinics e.g. ferrous sulphate tablets, 200 mg three times daily and folic acid 5 mg daily;
- Give anti-malaria treatment if not given in past month according to IPT regimen;
- Give vitamin C tablets, 200 mg three times daily to aid absorption of iron;
- De-worm intestinal parasites where necessary with albendazole (Zentel), 2 tablets once;



- Treat all infections/diseases identified (e.g. urinary tract infections, pulmonary tuberculosis, etc);
- Encourage dietary intake of iron-rich foods e.g. meat, liver, plantain, green vegetables;
- Counsel the patient on the following:
  - prevention of malaria/prophylactic anti-malarial
  - regular use of haematinics
  - regular PCV or Hb estimation
  - maintenance of personal and environmental hygiene.
- Review birth plan so as to deliver in a facility with blood transfusion services;
- Re-check Hb level after 2 weeks:
  - if Hb has not increased by 1 g (PCV by 3%) or continues to decrease, **refer** to secondary or tertiary health care level
- If anaemia is severe (ie. Hb is less than 7 g/dl or PCV less than 20%) regardless of gestational age, **refer** to a secondary/tertiary health care level;
- If **signs of heart failure are present**, this is an emergency, **refer** to a higher level of health care;
- If woman falls into labour, **refer** to secondary/tertiary health care level.

**Secondary and Tertiary Health Care Levels**

- Assess level of anaemia; If Hb is above 7 g/dl or PCV more than 20%, treat as in PHC level;
- If Hb is below 7 g/dl or PCV of less than 20%, manage as severe anaemia.

**Management of Severe Anaemia**

- Treat identified causes (where worm infestation is noted, give antihelmintic e.g. albendazole, 2 tablets once);

- Give oxygen if indicated;

- Transfuse as necessary:

  – use packed cells and transfuse slowly
  – maintain strict observation of vital signs (temperature, pulse, respiratory rate and BP) before, during, and after transfusion
  – give frusemide, 40 mg IV with each unit of packed cells
  – respond quickly to transfusion reaction which may range from skin rash to anaphylactic shock **(see Section 1, page 21-22)**

- Give ferrous sulphate tablets, 200 mg three times daily and folic acid, 5 mg daily, vitamin C tablets, 200 mg three times daily, and continue for three months postpartum;

- Monitor reticulocyte count;

- Provide information, education and communication (IEC) on the following:

  – foods rich in iron and the need to take iron supplements
  – side effects of iron preparations
  – the need to take iron drugs after meals with fruit juice to enhance absorption

- Counsel the patient for family planning

**Note.** Avoid sedation in anaemic patients to avoid undue lethargy.



## 2.10 SICKLE CELL DISEASE IN PREGNANCY

Sickle cell disease (SCD) refers to sickling disorders in which the sickling gene present results in the production of abnormal haemoglobin. The effects of sickle cell anaemia on pregnancy include abortion, preterm labour, fetal distress, IUFD and increased perinatal mortality. The crises in SCD are more frequent in pregnancy and there is increased risk of maternal morbidity and mortality especially in the last four weeks of pregnancy, during labour and in the first week of puerperium.

**Possible causes of sickle cell crisis include:**

- **Infection e.g malaria, bronchitis, pneumonia**
- **Stress of any kind**
- **Malnutrition**
- **Dehydration**
- **Injury**
- **Adverse weather conditions such as harmattan, wet/cold season**

**Assessment/Identification of the Problem**

- Take a history of:

  - present pregnancy and duration (amenorrhoea)
  - previous pregnancies, complications and outcome
  - family history of similar conditions
  - previous episodes of crisis and types of crisis
  - predisposing factors to the crisis
  - previous or on going medication
  - previous admissions and or blood transfusions;

- Examine for:

  - pallor
  - jaundice
  - oedema
  - dehydration

- Check for:

- vital signs (pulse rate, blood pressure, temperature and respiratory rate)

- Examine the chest for:
  - signs of infection

- Conduct abdominal examination for:
  - organ enlargement
  - uterine size relative to gestational age
  - fetal heart activity

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for:
  - FBC, blood group, and rhesus factor
  - sickling test and genotype
  - malaria parasite

- Check urine for protein, sugar and acetone;

- Check stool for ova and parasites.

**Secondary and Tertiary Health Care Levels**

- In addition to investigations at the PHC level, do the following:
  - Hb electrophoresis
  - blood group and rhesus factor
  - glucose 6 phosphate dehydrogenase (G6PD) enzyme assay
  - liver function tests
  - VDRL test
  - Hepatitis B surface antigen
  - Hepatitis C antigen screening
  - urinalysis and m/c/s;
  - abdomino-pelvic ultrasound scan to assess gestational age, fetal wellbeing and maternal spleen and liver.



**Treatment**

**Primary Health Care Level**

- Folic acid supplementation ( 5 mg daily);
- Malaria prophylaxis (Proguanil, 200 mg daily);
- Counsel the patient on how to avoid crisis;
- Refer the patient to a higher level of care for ANC and delivery.

**Secondary and Tertiary Health Care Levels**

- Admit and determine the extent of the crisis;
- Identify the possible cause of the crisis and treat as appropriate;
- Rehydrate with 5% dextrose saline;
- Give antibiotics where indicated;
- Give antimalarials;
- Give analgesic as necessary;
- Transfuse blood if haemoglobin is less than 6 g/dl with packed cells;
- When stable, maintain on prophylactic antimalarials and folic acid 5 mg daily.

## 2.11 URINARY TRACT INFECTION IN PREGNANCY

Urinary tract infection (UTI) is the most common bacterial infection that complicates pregnancy. In normal pregnancy, profound changes occur in the renal system. These anatomical and physiological changes influence the occurrence, progress and outcome of urinary tract infections.

**Significant (true) Bacteriuria** is defined as more than 100,000 bacteria of the same species per millilitre of urine, present in two consecutive urine specimens. A single supra-pubic aspirate yielding the same results carries the same significance. Symptoms include dysuria and increased frequency of micturition (**Symptomatic Bacteriuria**).

**Asymptomatic (covert) Bacteriuria** is when true bacteriuria is present without subjective evidence of urinary tract infection such as dysuria, urgency and frequency.

**Assessment/Identification of the Problem**

- Take a history and ask specifically for:
  - painful micturition (dysuria)
  - frequency of micturition
  - pain in the lower abdomen or suprapubic discomfort
  - loin pain
  - pus in the urine (pyuria)
  - blood in the urine (haematuria)
  - history of acute infection(s) prior to the index pregnancy
  - excessive thirst (polydypsia)
  - past obstetric history of macrosomic babies
  - history of unexplained intrauterine death
  - history of sickle cell disease
- Ascertain the LMP to determine the gestational age;
- Enquire about the care so far received in this pregnancy and regular use of routine drugs;



- Conduct a general physical examination and check the following:
  - pallor or jaundice
  - fever
- Conduct an abdominal examination for:
  - suprapubic tenderness
  - renal angle tenderness
  - uterine size and its compatibility with gestational age
- Auscultate for fetal heart activity in advanced pregnancy.

**Management**

**Investigations**

**Primary Health Care Level**

- Conduct the following investigations:
  - urinalysis – microscopy, and for sugar and protein
  - PCV

**Secondary and Tertiary Health Care Levels**

- In addition to those above, take urine specimen for m/c/s;
- Take a High Vaginal Swab (HVS) and Endocervical Swab (ECS) if there is associated mucopurulent cervicitis.

**Treatment**

**Primary Health Care Level**

**Note:** The choice of drug is based on the sensitivity of the isolated organism(s) and such drugs must not be contraindicated in pregnancy, therefore **refer** the patient to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Start the patient on any of the following drugs:
  - Nitrofurantoin, 100 mg, 8 hourly for 10 days
  - short-acting Sulfonamides
  - Ampicillin, 500 mg 6 hourly for 10 days, or Amoxicillin, 500 mg 8 hourly for 10 days
  - Erythromycin, 500 mg 8 hourly for 7 days
- Review the microscopy, culture and sensitivity results and treat as appropriate.

**Trimethoprim, a constituent of cotrimoxazole (Septrin) which is used extensively, is not recommended in pregnancy since it is a folic acid antagonist. Its use in the last trimester may also cause neonatal jaundice.**

**Follow-up**

- Obtain urine cultures one week after therapy is discontinued and then at regular intervals throughout the pregnancy. This obviates the need for continuous antibiotic therapy from the time of diagnosis until delivery.



## 2.12 INFECTIVE HEPATITIS IN PREGNANCY

Infective hepatitis is caused by a virus carried in the blood or faeces of an infected person. It can manifest as jaundice - a yellow discoloration of the skin and mucus membranes due to excessive bile pigments in the blood. Infective hepatitis is a common cause of jaundice in our environment. Jaundice is a sign of pathology in the liver, excessive haemolysis or obstruction to the biliary system. The health provider should determine the cause of the jaundice before instituting the appropriate management. The effects of infective hepatitis on pregnancy include abortion, premature labour, intrauterine growth restriction (IUGR) and increased fetal and maternal mortality.

**Assessment/Identification of the Problem**

- Take detailed history of:
  - contact with a person with jaundice and duration of contact (incubation period of infective hepatitis is 21-35 days and that of viral hepatitis 90-120 days)
  - complaints of fever, nausea, loss of appetite, general malaise, muscle/joint pains, diarrhoea, dark urine and pale stool
  - abdominal pains, uterine contractions and or bleeding per vaginam
  - LMP to estimate gestational age
- Examine patient for:
  - pallor;
  - presence of discoloration of skin and mucus membranes (jaundice)
  - temperature, pulse rate and respiratory rate
- Examine the abdomen for tenderness, liver enlargement, uterine size, and fetal parts;
- Auscultate for fetal heart sounds.

**Management**

**Investigations**

**Primary Health Care Level**

- **Refer** patient to next level of health care

**Secondary and Tertiary Health Care Levels**

- Take blood for the following:
  - full blood count (FBC)
  - blood film for malaria parasites
  - blood culture
  - hepatitis antigen
  - liver function test
  - urea and electrolytes
  - sickling test/genotype
  - Glucose 6 phosphate dehydrogenase (G6PD) enzyme assay
- Examine urine for protein, bile, acetone and ketone bodies;
- Conduct ultrasound scan for fetal wellbeing.

**Treatment**

**Primary Health Care Level**

- **Refer** to the next level of health care.

**Secondary and Tertiary Health Care Levels**

- Admit patient for bed rest, supportive therapy and close observation;
- Manage in conjunction with a physician;
- Maintain a low protein and high carbohydrate diet;
- **AVOID** giving drugs excreted by the liver e.g. chlorpromazine, barbiturates;
- Give vitamin supplements;



- If necessary, give prednisolone tablets, 40 mg daily and tail off after about a week;

## 2.13 HYPEREMESIS GRAVIDARUM

Hyperemesis gravidarum is excessive vomiting, particularly during the first 3 months of pregnancy and it can be a life-threatening condition. It is usually a diagnosis of exclusion (other causes of vomiting should be excluded before considering hyperemesis gravidarum).

**Assessment/Identification of the Problem**

- Take a history of the present condition;
  - onset of vomiting, frequency, amount and content
- Assess the level of hydration;
  - general appearance, whether weak, anxious looking, sunken eyes, cold and clammy extremities
  - dry mouth, coated or furred tongue
  - diminished or loss of skin turgor
  - acetone-smell breath
- Check the vital signs (temperature, pulse rate, respiratory rate and BP);
- Record the weight of the patient;
- Examine the abdomen for uterine size.

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for PCV, malaria parasites;
- Perform urinalysis (protein, sugar and ketones).

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV or Hb estimation
  - malaria parasites
  - liver function tests
  - urea and electrolytes
  - urinalysis and urine m/c/s
- Perform pelvic ultrasound scan for fetal wellbeing, and to exclude multiple and molar pregnancies.

**Treatment**

**Primary Health Care Level**

- Give emotional support to patient and family;
- Advice on small but frequent non-oily meals;
- Encourage liberal oral fluid intake;
- Advise to rise up from bed slowly on waking up;
- Give promethazine (Phenergan) tablets, 25 mg twice daily;
- Refer immediately if condition is unsatisfactory.

**Secondary and Tertiary Health Care Levels**

- In addition to the above:
  - inform patient and relatives about the danger of excessive fluid loss from the body
  - give IV infusion of 4.3% glucose in 0.18% saline, 3-4 litres in 24 hours, if dehydrated.
  - monitor intake and output of fluid
  - give parenteral anti-emetic drug e.g. promethazine (Phenergan) 25 mg, or cyclizine, 500 mg twice daily, or navidoxine (Ancoloxin), 1 tablet twice daily, or metoclopromide (Plasil), 10 mg two to three times daily
  - encourage gradual intake of semi-solid food
  - encourage bed rest
  - give Vitamin B complex as supplement in the infusion



## 2.14 ANTEPARTUM HAEMORRHAGE

This is bleeding from the genital tract after 28 weeks of gestation but before the delivery of the baby. It is a major cause of maternal mortality. It could be classified into abruptio placenta, placenta praevia and incidental haemorrhage.

### 2.14.1 ABRUPTIO PLACENTA

Abruptio placenta refers to premature separation of a normally situated placenta leading to bleeding occurring after 28 weeks of pregnancy and before delivery.

**Blood loss from abruptio placenta may be revealed, concealed or mixed (revealed and concealed). Therefore visible blood loss cannot be relied on as a guide to severity of the haemorrhage and the concealed type can be most severe and dangerous.**

**Assessment/Identification of the Problem**

- Take a careful history noting the LMP, complaint of headache, nausea, vomiting, upper abdominal pain and visual disturbances;
- Pay attention to medical history, particularly history of pregnancy induced hypertension;
- Elicit information about trauma e.g. domestic violence, road traffic accident. External cephalic version injudiciously performed may result in placental separation;
- Conduct a physical examination and observe the following:
  - signs of anxiety and/or shock
  - pallor
  - oedema of the face, fingers and pre-tibial area of lower limbs (due to pre-eclampsia)
  - blood pressure, pulse and respiratory rates
  - temperature (may be raised if there is infection)

- Conduct an abdominal examination noting:

  – enlargement of the uterus in excess of gestation
  – tenderness, rigidity/guarding
  – consistency of the uterus
  – difficulty in palpating fetal parts
  – fetal heart sounds.

**Management**

**Investigations**

**Primary Health Care Level**

- Refer immediately to a higher level of health care;

- Patient should be accompanied by a health care provider.

**Secondary and Tertiary Health Care Levels**

- Take blood for the following:

  – full blood count (FBC)
  – bedside clotting time
  – urea and electrolytes
  – coagulation profile

- Group and cross-match 2-4 units of blood (preferably fresh whole blood);

- Conduct an ultrasound scan to localise the placenta.

**Treatment**

**Primary Health Care Level**

- Reassure the patient and her relatives;

- Treat as an **acute obstetric emergency** by setting up an intravenous infusion with Ringers lactate solution or Normal saline using a wide bore cannula or needle;



- **Refer** to a higher level of health care immediately.

**Secondary and Tertiary Health Care Levels**

- Follow the guidelines under abruptio placenta on **Section 3 pages 216-218**

## 2.14.2 PLACENTA PRAEVIA

In this condition, the placenta is wholly or partially implanted in the lower uterine segment. Bleeding is caused by placental separation as the lower uterine segment grows and stretches. It places the mother and fetus at high risk and constitutes an obstetric emergency. Placenta praevia could be classified into **major** or **minor**.

**Assessment/Identification of the Problem**

- Ask for a history of spontaneous, painless vaginal bleeding;

- Ask for LMP and determine the gestational age;

- Ask for history of an earlier bleeding in pregnancy;

**Note:** Bleeding per vaginam is the only sign and it is painless. The uterus is not tender or tense but fetal head remains unengaged. There may be malpresentation and the lie may be unstable.

- Quickly assess the amount of blood loss;

- Check for signs of shock:

  - pulse rate and volume
  - respiratory rate
  - blood pressure
  - pallor

- Examine abdomen to determine lie of the fetus, and fetal heart sounds.

**No vaginal or rectal examination should be performed and no enema or suppository should be given.**

**Management**

**Investigations**

**Primary Health Care Level**

- This is an **emergency, refer** immediately for expert care, after ensuring stability of mother and fetus.

**Secondary and Tertiary Health Care Levels**

- Take blood for PCV;
- Group and cross-match 2-4 units of blood;
- Conduct an ultrasound scan to localize placenta and assess fetal well being.

**Treatment**

**Primary Health Care Level**

- Set up an IV infusion with Normal saline or Ringers lactate using a wide bore cannula or needle;
- Give oxygen by face mask or nasal tube;
- **Refer** immediately to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Actual treatment by the expert depends on:
  - the amount of bleeding
  - the condition of the mother and fetus
  - the location of the placenta
  - the stage of the pregnancy



- If bleeding is heavy and continuous, arrange for Caesarean delivery irrespective of fetal maturity **(refer to the guidelines on pages 218 - 223);**
- If bleeding is light or if it has stopped and the fetus is alive but premature, consider expectant management until delivery or heavy bleeding occurs:
  - keep the patient in the hospital on bed rest until delivery
  - correct anaemia with haematinics or blood transfusion where necessary
  - ensure that blood (grouped and cross-matched) is available for transfusion when required
  - if bleeding recurs, decide on the management after weighing benefits and risks for the patient and fetus of further expectant mangement versus delivery
  - if delivery is imminent, give IM dexamethazone, 16 mg stat and 8 mg 12 hours later to prevent respiratory distress syndrome (if the gestational age is less than 34 weeks).

## 2.15 HYPERTENSIVE DISORDERS OF PREGNANCY

Hypertension is blood pressure (BP) $\geq$ 140/90 mmHg. However if systolic BP rises by 30 mmHg or diastolic BP rises by 15 mmHg, it also indicates elevated BP even if the absolute values have not reached 140/90 mmHg. Hypertensive disorders of pregnancy encompass pregnancy induced hypertension (PIH), pre-eclampsia (PE) and chronic hypertension. **Pregnancy induced hypertension** refers to hypertension that develops in the second half of pregnancy (>20 weeks) in a previously normotensive woman. **Pre-eclampsia** occurs when proteinuria develops in a woman with pregnancy induced hypertension. If the elevated blood pressure antedates the pregnancy it is termed **chronic hypertension.**

### PREGNANCY INDUCED HYPERTENSION/PRE-ECLAMPSIA

**Those at risk of PIH/PE include:**

- **Young mothers (teenagers)**
- **Primigravidae**
- **Past history of PIH**
- **Positive family history of hypertension**
- **Multiple pregnancy**
- **Molar pregnancy**
- **Diabetes mellitus**
- **Renal disease**

**Assessment /Identification of the Problem**

- Obtain a history of:
  - high blood pressure before this pregnancy or in previous pregnancies
  - dizziness or blurred vision – if yes, for how long?
  - sudden excessive weight gain as evidenced by – oedema of the face, hands, feet, sacrum or vulva and tightness of wedding rings
  - nausea, vomiting, epigastric pain and headache
  - home remedies given to the patient
  - fetal movements



- Conduct a physical examination to:
  - determine if patient is fully conscious, restless, confused or convulsing
  - check for pallor, jaundice, oedema, (periorbital, finger, pedal, sacral or vulva)
  - check vital signs (pulse rate, respiratory rate, temperature and compare BP with the baseline blood pressure obtained at booking)
  - Palpate the abdomen and auscultate for fetal heart sounds
- Conduct a full vaginal examination noting the following:
  - signs of labour (show, liquor amnii)
  - cervical dilatation if in labour
  - adequacy of the pelvis

**Management**

**Investigations**

**Primary Health Care Level**

- Conduct urinalysis for protein, glucose and acetone;
- Check PCV or Hb.

**Secondary and Tertiary Health Care Levels**

- In addition to the above take blood for the following:
  - full blood count including platelets
  - urea and electrolytes
  - serum uric acid and creatinine
  - liver function test
  - clotting profile
- Perform an abdomino-pelvic ultrasound scan.

**Treatment**

**General Principles of Management of PIH/PE**

- **Health education to the woman and her relatives about the nature of her problem, and the need for continued antenatal care**
- **Solicit support from the relatives to assist her in sustaining the pregnancy**
- **Manage the pregnancy for as long as possible to ensure the baby's maturity and survival without jeopardizing the health of the mother.**

**Primary Health Care Level**

**For mild PIH/PE (B/P not more than 140/90 mmHg)**

- Provide information to the patient, husband and relatives on her condition;
- Advise her to rest for at least 2 hours during the day and to sleep at least 8 hours at night;
- Monitor blood pressure and fetal heart rate at each visit;
- Advise patient to lie on her left side;
- Give oral diazepam, 5–10 mg once or twice daily or phenobarbitone, 30-60 mg at night to ensure adequate rest and sleep;
- Teach the mother the use of the fetal kick chart to monitor fetal well being;
- **If blood pressure increases above 140/90 mm Hg and or there is a significant rise in proteinuria (++ or +++),** refer immediately with complete medical report.



**Secondary and Tertiary Health Care Levels**

**Gestational age less than 37 weeks**

- For mild PIH, manage as above, and in addition:
  - manage as an out-patient
  - monitor blood pressure, urine (for proteinuria), reflexes and fetal condition
  - counsel the patient and her family for danger signals of severe pre-eclampsia or eclampsia
  - encourage additional periods of rest
  - encourage the woman to eat a normal diet (salt restriction should be discouraged)
- If **follow up as an out-patient is not possible**, admit the woman to the hospital:
  - provide a normal diet (salt restriction should be discouraged)
  - monitor blood pressure (twice daily) and urine for proteinuria (daily)
  - do not give anticonvulsants, antihypertensives, sedatives or tranquillizers unless blood pressure or urinary protein level increases
  - do not give diuretics; diuretics are harmful and only indicated for use in pre-eclampsia with pulmonary oedema or congestive heart failure
- If **diastolic blood pressure decreases to normal** levels or her **condition remains stable,** send the woman home:
  - advise her to rest and to watch out for significant leg swelling or symptoms of severe pre- eclampsia
  - see her twice weekly to monitor blood pressure, urine (for proteinuria) and fetal condition and to assess for symptoms and signs of pre- eclampsia
  - if **diastolic blood pressure rises** again, readmit her
  - if the **signs remain unchanged**, keep the woman in the hospital. Continue the same management and monitor fetal growth by symphysio-fundal height
  - if there are **signs of growth restriction**, consider early delivery. If not, continue hospitalization until term
- If **urinary protein level increases**, manage as severe pre-eclampsia.

**Note**: Symptoms and signs of pre-eclampsia do not completely disappear until pregnancy ends.

**Gestational age more than 37 completed weeks**

- If there are **signs of fetal compromise** (e.g decreased amniotic fluid, growth restriction), assess the cervix and expedite delivery;

- If the **cervix is favourable** (soft, effaced, partly dilated), rupture the membranes with amnion hook or Kochers clamp and induce labour using oxytocin **(Section 6, pages 380-382);**

- If the **cervix is unfavourable** (firm, un-effaced, closed), ripen the cervix using prostaglandins **(Section 6, pages 384-385)** or Foleys catheter **(Section 6, pages 385-386)** or deliver by Caesarean section **(Section 6, pages 402-410.**

**Management of Moderate to Severe P.I.H. (BP > 140/90 mmHg)**

- Explain the condition to the patient, husband and relatives;

- Admit and put on complete bed rest;

- Advise patient to lie on her left side;

- Give antihypertensives (alpha methyldopa tablets, 500 mg stat, then 250 mg 6 hourly rising to a maximum dose of 750 mg, 6 hourly and/or nifedipine (Adalat) tablets, 20 mg daily to a maximum of 20 mg twice daily or labetolol tablets, 200 mg twice daily);

- If diastolic blood pressure is 110 mmHg or more give IV hydrallazine (Apresoline), 10 mg slowly over 10 minutes and repeat as required with close monitoring of the blood pressure;

- If hydrallazine is not available, give labetolol or nifedipine:

  - for labetolol, 10 mg IV. If response to labetolol is inadequate (diastolic BP remains above 110 mmHg) after 10 minutes give labetolol, 20 mg IV
  - Increase the dose to 40 mg and then 80 mg if satisfactory response is not obtained after 10 minutes of each dose



  - for nifedipine, put 5 mg under the tongue
  - if response to nifedipine is inadequate (diastolic BP remains above 110 mmHg) after 10 minutes, give additional 5 mg under the tongue

- Continue monitoring vital signs (temperature, pulse, blood pressure and fetal heart rate);

- If the patient convulses, manage as an eclamptic **(Section 3, pages 234 - 238);**

- If gestational age is less than 37 weeks, manage expectantly but expedite delivery if her condition deteriorates;

- If gestational age is more than 37 weeks, expedite delivery.

**ANTEPARTUM ECLAMPSIA**

Eclampsia is the occurence of convulsions in a woman with pregnancy induced hypertension (PIH) or pre-eclampsia (PE). It could occur in the antepartum, intrapartum and postpartum period. It is an **obstetric emergency** and therefore needs immediate resuscitation and management. Expedite delivery **(Section 3, pages 234 - 238)** after resuscitation respective of gestational age.

## 2.16 SEXUALLY TRANSMITTED INFECTIONS (STIs) IN PREGNANCY

Sexually transmitted infections (STIs) are infections that are transmitted through sexual intercourse. Common STIs, include gonorrhoea, syphilis, herpes, chlamydia, trichomoniasis, genital warts and HIV. Sexually transmitted infections can be contracted before pregnancy, at the time of conception or during pregnancy. The effects of STIs in pregnancy include abortion, congenital abnormalities, IUGR, PROM, prematurity and neonatal infections.

**Assessment/Identification of the Problem**

- Review the patient's record;
- Take detailed history on the following:
  - period of amenorrhoea to estimate gestational age previous pregnancies, complications and outcome
  - vaginal/generalized itching
  - abnormal vaginal discharge
  - painful micturition
  - lower abdominal pain
  - previous pelvic infections
  - fever or chills
  - partner/husband's health, contact information
  - previous blood transfusion
- Conduct general examination for the following:
  - pallor
  - oedema
  - generalized rashes/lumps or thrush
  - significant loss of weight (cachexia)
- Check for:
  - temperature
  - pulse rate
  - blood pressure



- Perform an abdominal examination:
  - assess uterine size compared to gestational age
  - check for organomegaly and enlarged nodes
  - auscultate for fetal heart sounds
- Perform a vaginal examination noting:
  - vaginal discharge
  - rashes, warts or ulcers

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Take blood for:
  - FBC
  - blood group and Rhesus factor
  - HIV test after counseling
  - malaria parasites
  - erythrocyte sedimentation rate (ESR)
  - sickling test
  - VDRL test
- Take urine for:
  - protein, sugar and acetone
  - microscopy, culture and sensitivity
- Take an HVS and ECS (with caution) for m/c/s

**Treatment**

**Primary Health Care Level**

- Instruct mother to:
  - avoid intercourse while on treatment or to use condom
  - contact partner to get treatment
  - explain that condition can be cured (except HIV) if there is full compliance with drug use and instructions

- treat as shown in STIs syndromic management flow chart BUT avoid drugs that are harmful to the fetus

**Secondary and Tertiary Health Care Levels**

- Conduct further detailed investigations to determine the specific causative agent and treat appropriately;

- Conduct a follow up, which is mandatory.



## 2.17 HIV IN PREGNANCY

The pregnant HIV-positive woman is likely to infect her baby in utero, during birth or at breastfeeding. Universal precautions should be observed by health workers during examinations, investigations, at birth and in the puerperium while attending to HIV women. With intervention, the risk of mother-to-child transmission of HIV can be reduced.

**Assessment/Identification of the Problem**

- Take a detailed history including:

  - occupation
  - marital status and sexual partner(s)
  - symptoms of other STIs in recent past e.g. suspicious vaginal discharge
  - previous HIV testing of the patient and partner
  - cigarette smoking, alcohol consumption and intravenous drugs use
  - chronic cough, skin lesions, oral thrush
  - LMP to estimate gestational age

- Examine the patient for:

  - pallor
  - signs of other sexually transmitted infections (lymphadenopathy, skin rashes, oral thrush

- Take the weight and height of the patient;

- Conduct an abdominal examination, noting the following:

  - uterine size relative to age of pregnancy
  - lie and presentation of the fetus
  - fetal heart rate

## USE OF ANTI-RETROVIRAL DRUGS IN PREGNANCY

In addition to the general criteria for initiation of antiretroviral therapy (ART), HIV infection in pregnancy constitutes an indication for ART use in order to reduce the chances of mother-to-child transmission irrespective of the WHO criteria for therapy or viral load. The WHO Staging system for HIV infection and Disease in Adults and Adolescents is given in Table 10 below:

**Table 10: WHO Staging System for HIV Infection and Disease in Adults and Adolescents**

| WHO Clinical Stage | Clinical Features |
|---|---|
| **I**<br>*Asymptomatic, normal activity*<br>**Performance Scale = 1** | - Asymptomatic<br>- Generalised lymphadenopathy |
| **II**<br>*Symptomatic, normal activity*<br>**Performance Scale = 2** | - Weight loss of less than 10% of body weight<br>- Minor mucocutaneous manifestations (seborrhoeic dermatitis, prurigo, fungal nail infections, recurrent oral ulcerations, angular cheilitis)<br>- Herpes zoster within the last 5 years<br>- Recurrent upper respiratory tract infections (i. e. bacterial sinusitis) |
| **III**<br>*Bed-ridden less than 50% of the day during the past month*<br>**Performance Scale = 3** | - Weight loss of more than 10% of body weight<br>- Unexplained chronic diarrhoea lasting for more than 1 month<br>- Unexplained prolonged fever (intermittent or constant) lasting for more than 1 month<br>- Oral candidiasis (thrush)<br>- Oral hairy leukoplakia<br>- Pulmonary tuberculosis<br>- Severe bacterial infections (ie, pneumonia, pyomyositis) |
| **IV**<br>*Bedridden more than 50% of the day during the last month*<br>**Performance Scale = 4** | HIV wasting syndrome<br>- Pneumocystis carinii pneumonia<br>- Toxoplasmosis of the brain<br>- Cryptosporidiosis with diarrhoea lasting more than 1 month<br>- Cryptococcosis, extrapulmonary<br>- Cytomegalovirus (CMV) disease of an organ other than liver, spleen or lymph node (e.g. retinitis)<br>- Herpes simplex virus (HSV) infection, muco-cutaneous (lasting for more than 1 month) or visceral<br>- Progressive multi-focal leukoencephalopathy (PML)<br>- Any disseminated endemic mycosis<br>- Candidiasis of the oesophagus, trachea, bronchi<br>- Atypical mycobacteriosis, disseminated or pulmonary<br>- Non-typhoid salmonella septicaemia<br>- Extra-pulmonary tuberculosis<br>- Lymphoma<br>- Kaposi's sarcoma (KS)<br>- HIV encephalopathy |



The WHO criteria for initiation of ART in all adult patients in general are stated in the Table 11 below**:**

**Table 11: WHO Criteria for ART**

| | **CD4 cell count available** | **CD4 cell count NOT available** |
|---|---|---|
| **WHO Disease Stage** | **IV**<br>Irrespective of CD4 count | **IV**<br>Irrespective of total lymphocyte count (TLC) |
| | **III** plus<br>CD4 count <350/mm$^3$ | **III**<br>Irrespective of TLC |
| | **I** or **II, plus**<br>CD4 count ≤200/mm$^3$ | **II, plus**<br>TLC ≤1200/mm$^3$ |

**Note:** A TLC of ≤ 1200/mm$^3$ does not predict a CD4 cell count of 200/ul in asymptomatic patients, as such TLC of ≤1200/mm$^3$ may not be used as criterion for the initiation of therapy in asymptomatic patients (WHO Stage 1 disease).

The time of commencement and choice of ART in HIV positive pregnant women depends on the individual clinical scenario (Table 12 ), and where possible, ART should be provided in consultation with an experienced physician. The minimum pre-treatment evaluation steps before initiation of ART in pregnancy are:

- taking a complete history along with physical examination
- checking baseline laboratory parameters (FBC/ESR, LFT, E&U, serum lipids and CD4 count)
- classifying the patient clinically and immunologically

- ensuring availability of supportive measures (nutritional, psychosocial)
- developing patient-specific therapy adherence strategy

All patients placed on ART should be monitored clinically, biochemically and immunologically at periodic intervals.

The recommendations for the use of antiretroviral drugs to prevent vertical transmission of HIV infection from mother-to-child are given in the table below:

**Table 12: Recommendations for ART in pregnancy for different clinical settings**

| **Clinical Setting** | **1st line ARV Drug Regimen** | **2nd line ARV Drug Regimen** | **Comments** |
|---|---|---|---|
| **I:** Pregnant HIV positive woman who meets the WHO criteria for ART | Zidovudine (ZDV) + Lamivudine (3TC) + Nevirapine (NVP) | Stavudine (d4T) + 3TC + NVP | d4T therapy may be associated with some risk of lactic acidosis in very ill patients; therefore anion gap should be monitored. [Anion gap = $(Na^+ + K^+) - (Cl^- + HCO_3^-) > 20$]. |
| **II: P**regnant HIV positive woman who does not meet the criteria for ART | **1. HAART: ZDV+3TC+** Efervirenz (EFV) **OR** **2. ZDV+3TC+NVP** may be considered after the 14 weeks | Where **HAART** is not available: 1. **ZDV 300 mg 12 hourly** from 28 weeks, continue in labour + **single dose NVP** at onset of labour **OR** 2. **ZDV** from 28 weeks of gestation or as soon as possible thereafter; continue in labour **OR** 3. **Nevirapine 200** mg to mother in labour | Watch out for anaemia before commencement of ZDV and during use of the drug. |
| **III**: Pregnant HIV positive woman on ART | Continue ART | Continue ART | Treatment in the 1st trimester should include NVP but exclude EFV. |



| | | | |
|---|---|---|---|
| **IV:** Pregnant HIV positive woman diagnosed or seen in labour for the first time | I. **NVP single dose stat** **OR** 2. **ZDV 600 mg + 3TC** in labour and for one week postpartum | | |
| **V:** Pregnant HIV positive woman who presents after delivery | Refer to the adult ARV clinic | | Baby should have ARV prophylaxis |
| **VI: P**regnant HIV positive woman co-infected with active Tuberculosis | EFV containing regimen may be instituted after 1ST trimester **(ZDV+3TC+EFV or d4T+3TC+EFV).** | Ritonavir boosted Saquinavir containing regimen is an alternative especially in the first trimester. **(ZDV+3TC+SQV/r or d4T+3TC+SQV/r)** | |
| **VII:** HIV-infected pregnant women with indications for starting ARV treatment but treatment is not yet available | All efforts should be made to ensure that all women needing ARV treatment have access to it. | | |
| **VIII:** For breast feeding mothers, ART could be continued during the period of breast feeding and discontinued after cessation of breast feeding. | | | |
| **Post Exposure Prophylaxis for the Infant** | **Single dose NVP 2 mg/kg within 72 hours and ZDV 4 mg/Kg twice daily for one week** | **NVP 2 mg/kg stat within 72 hrs for infants where ZDV is not available** | All babies born to HIV positive mothers are exposed & must receive post-exposure prophylaxis |

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for:
  - HIV testing after voluntary counseling
  - PCV and Hb estimation
- Check urine for protein, sugar and acetone.

**Secondary and Tertiary Health Care Levels**

In addition to above, take blood for:

- confirmatory HIV test (Western blot)
- CD4 cell count
- full blood count
- liver function test
- lipid profile
- urea and electrolytes
- VDRL test
- blood group and genotype

- Collect urine for m/c/s if indicated;
- Perform ultrasound scan to assess fetal viability.

**Treatment**

**Primary Health Care Level**

- Provide health education talk about HIV to all mothers at first visit giving information about risk of transmission, behavior that put people at risk, myths and misconceptions and factors that influence the risk of transmission;
- Counsel on partner notification and testing;
- Provide information on PMTCT;



- Counsel on infant feeding options;
- Prepare a birth plan with the patient;
- Enquire about ARV treatment and ensure that the woman complies;
- Advise on additional care during pregnancy, delivery and postpartum;
- Advise on correct and consistent use of condoms;
- Provide emotional support;
- Advise on regular antenatal attendance;
- Provide intermittent preventive treatment (IPT) for malaria (at least 3 doses of SP at ANC visits after quickening, but no more frequently than monthly).

**Secondary and Tertiary Health Care Levels**

- In addition to above:
  - start patient on antiretroviral drugs as shown in Table below

**Table 13: Anti-retroviral drugs for prevention of MTCT of HIV**

| Drug | When to give | Dose | Frequency | Comment |
|---|---|---|---|---|
| ZIDOVUDINE<br>1 tablet = 300 mg | From 36 weeks till onset of labour.<br><br>From onset of labour to delivery | 300 mg<br><br>300 mg | Every 12 hrs<br><br>Every 3 hrs | After delivery, give baby Zidovudine Syrup for six weeks. |
| OR<br>NEVIRAPINE<br>1 tablet = 200 mg<br>Oral solution 50 mg / 5 ml for baby | For woman as early as possible in labour<br><br>For newborn: Give within 72hrs of birth before discharge. | 200 mg<br><br>2 mg/kg<br><br>(2kg baby :0.4 ml<br>(3 kg baby :0.6 ml | Once only<br><br>Once only | If she vomits within five hours, repeat dose. |

## 2.18 MANAGEMENT OF TUBERCULOSIS IN PREGNANCY

Tuberculosis is a communicable disease caused by *Mycobacterium tuberculosis.* It is a chronic disease of public health importance especially with the emergence of HIV/AIDS in Nigeria.

**Assessment/Identification of the Problem**

- Take a good history and ask for the following:
  - cough (nature, duration, sputum production with amount, colour, haemoptysis)
  - dyspnoea
  - night sweats
  - weight loss
  - social and occupational history, housing conditions
  - contact with persons having chronic cough
  - immunisations
  - use of medications and anti-TB drugs
- Conduct a physical examination:
  - general physical examination to look for pallor, dyspnoea, lymph node enlargement, hair colour, weight, etc
  - check for apical flattening, crepitations, amphoric breath sounds, etc
  - abdominal organ enlargement

**Management**

**Investigations**

**Primary Health Care Level**

- Conduct the following investigations:
  - sputum microscopy
  - FBC

**Secondary and Tertiary Health Care Levels**

- In addition to investigations above, take blood for:



  - urea and electrolytes
  - HIV test, after counseling
- Perform a chest X-ray where indicated (shield the abdomen).

**Treatment**

**Primary Health Care Level**

- Reassure;
- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Admit and manage in conjunction with a chest physician;
- Give anti-tuberculous drugs that are safe in pregnancy (see box on the next page);
- If HIV status is known, manage accordingly;
- Give high protein diet.

## TREATMENT OF TUBERCULOSIS

The directly observed treatment strategy (DOTs) is now employed. Patients are placed on 8 months treatment divided into intensive and continuation phases.

**INTENSIVE PHASE (FOR PATIENTS > 55kg) - 2 MONTHS**

| | |
|---|---|
| Isoniazid (INH) | 400 mg daily |
| Rifampicin | 600 mg daily |
| Ethambutol | 1200 mg daily |
| Pyrazinamide | 1600 mg daily |
| Pyridoxine | 50 mg daily |

**CONTINUATION PHASE (6 months)**

| | |
|---|---|
| Isoniazid | 300 mg daily |
| Ethambutol | 800 mg daily |
| Pyridoxine | 50 mg daily |

**Postpartum Care**

- Give baby INH-resistant BCG stat if available
- Also give baby INH prophylaxis for 6 weeks



## 2.19 DIABETES MELLITUS IN PREGNANCY

This is an endocrine disorder characterised by higher than normal plasma glucose level. A fasting blood glucose level of 8.0 mmol/l or 2-hour level of 11.0 mmol/l after an oral glucose tolerance test is diagnostic of diabetes mellitus in pregnancy. Diabetes mellitus adversely affects pregnancy and the pregnancy adversely affects control of the disease.

**Effects of Diabetes on Pregnancy include:**

- Abortion
- Polyhydramnios
- Intrauterine growth restriction
- Macrosomia (large babies, 4000 g and above)
- Congenital abnormalities
- Neonatal complications (e.g. respiratory distress syndrome, hypoglycaemia)
- High maternal mortality
- High perinatal mortality

**Assessment/Identification of the Problem**

- Take a careful history noting the following:
  - history of polydypsia (excessive thirst) and polyuria ( increased frequency of micturition)
  - family history of diabetes mellitus especially in first degree relatives
  - medical history, including drugs
  - past obstetric history of macrosomic babies and unexplained intrauterine fetal death
- Examine the patient noting:
  - obesity (maternal weight of 90 kg and above)
  - excessive weight gain in pregnancy (20% above booking weight)
- Examine the abdomen noting:
  - uterine size
  - polyhydramnios

- fetal lie and presentation
- fetal heart rate

**Management**

**Investigations**

**Primary Health Care Level**

- Conduct the following investigations:

  - urine for glucose and protein
  - blood for glucose test (fasting and 2-hour postprandial)
  - PCV or Hb estimation
  - refer for further diagnostic tests

**Secondary and Tertiary Health Care Levels**

- Collect urine for microscopy, culture and sensitivity

- In addition to investigations in PHC, take blood for:

  - fasting blood sugar
  - 2-hour postprandial blood sugar
  - full blood count
  - urea and electrolytes
  - glycosylated Hb
  - oral glucose tolerance test (OGTT) if indicated (see below)

**Indications for OGTT**

- Family history of diabetes in first degree relative
- Glycosuria on 2 occasions
- Obesity or excessive weight gain
- Previous large babies (macrosomia)
- Previous unexplained still birth
- Polyhydramnios
- Previous unexplained intrauterine death
- Previous congenital abnormalities



**Treatment**

**Primary Health Care Level**

- Counsel patient, husband and relatives about the disease, diet and drug use;

- Educate the patient on increased risk of hypoglycaemic attack in the first trimester and treat it with "glucogan kit" or cube of sugar;

- Discuss hygiene and prevention of infection;

- Refer patient for expert care.

**Secondary and Tertiary Health Care Levels**

**Note: Diabetic pregnant women require careful, expert (obstetrician, physician and dietician) care to achieve glycaemic control during pregnancy, labour and puerperium, for that reduces most of the complications.**

- Admit for stabilization if necessary;

- Conduct close medical monitoring; refer for detailed retinal examination early in pregnancy by an ophthalmologist;

- Institute diet, weight control and exercise;

- Conduct regular (weekly) glucose profile and re-stabilisation. Maintain preprandial blood sugar concentration between 4 and 6 mmol/l throughout pregnancy;

- Institute insulin therapy where necessary;

- Monitor fetal well being using:

  - serial ultrasound scans
  - electronic fetal monitoring

- Take a decision on mode of delivery **(Section 3, pages 239 - 240)**

- Request the paediatrician to be present at the delivery;
- Plan for postpartum care;
- Counsel patient on family planning.

**Avoid oral hypoglycaemic drugs during pregnancy because of their teratogenic effects.**



## 2.20 CARDIAC DISEASE IN PREGNANCY

Cardiac disease is a significant indirect cause of maternal mortality, and is associated with spontaneous abortion, intrauterine growth restriction and intrauterine death. Haemodilution which occurs in pregnancy increases the strain on the heart with increased risk of heart failure. The condition can deteriorate as the pregnancy advances and during labour.

**Assessment/Identification of the Problem**

- Ask for the following symptoms:
  - breathlessness (at rest, while lying down or following exertion)
  - fainting attacks (syncope)
  - chest pain
  - palpitations
  - cough
  - haemoptysis
  - heat intolerance
- Ask for history of previous pregnancies;
- Check the vital signs (pulse rate, BP, respiratory rate and temperature);
- Examine the patient for signs of heart failure, these include:
  - dyspnoea at rest
  - cyanosis
  - irregular pulse
  - triple rhythm
  - cardiac murmurs
  - elevated jugular venous pressure
  - basal crepitations
  - lateral displacement of the apex beat
  - right ventricular heave
  - ascites
  - enlarged tender liver
  - dependent oedema

**Grading of Cardiac Disease**

| | | |
|---|---|---|
| Grade | 1 | Symptom free |
| Grade | 2 | Distressed on moderate exertion |
| Grade | 3 | Distressed on slight exertion |
| Grade | 4 | Distressed at rest – cardiac failure |

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – chest X-ray noting pericardial calcification, a heart–chest ratio > 0.5 (signifies cardiomegaly), pleural effusion
  – electrocardiography, noting cardiac enlargement, myocardial infarction, pericardial effusion
  – echocardiography

**Treatment**

**Secondary and Tertiary Health Care Levels**

**For optimum results, heart disease should be diagnosed prior to pregnancy so that appropriate counseling and control of cardiac decompensation would be undertaken before pregnancy is embarked upon. Such patients should ideally be managed in a tertiary center with the cooperation of a cardiologist.**



**Grades 1 and 2 Cardiac Disease**

- Encourage the patient to attend clinic more frequently not only for routine antenatal care but to confirm that general condition is not deteriorating;

- Prevent anaemia by giving haematinics/malaria prophylaxis;

- Advise patient on:

  - need for more rest
  - avoidance of hard work
  - prevention of anaemia/infection

- Maintain surveillance for maternal and fetal well being;

- Manage as normal labour as indicated in **Section 3, pages 159 – 170.**

**Grades 3 and 4 Disease**

- Assess cardiac function;

- Admit if need be for the whole of pregnancy;

- Limit activity to decrease strain to the heart;

- Give adequate diet and avoid excessive weight gain;

- Advise on moderate salt restriction;

- Prevent anaemia by giving haematinics and malaria prophylaxis;

- Treat intercurrent infections e.g. respiratory tract infection, urinary tract infection;

- Treat the following complications:

  - arrhythmias with digitalisation
  - prophylatic antibiotics when there is suspected risk of endocarditis and premature rupture of membranes

- If in congestive cardiac failure:

  - hospitalise the patient
  - nurse in the cardiac position
  - give oxygen to assist respiration
  - digitalise as may be necessary
  - give diuretics e.g. IV frusemide 20mg
  - give aminophylline intravenously, 3-5 mg/kg (possibly) to relieve bronchospasm

- If she goes into labour, manage as in **Section 3, pages 229 – 231.**



## 2.21 THYROID DISEASE IN PREGNANCY

Derangement of thyroid function in pregnancy is not common, partly because hypersecretion and hyposecretion of thyroid homones are usually associated with infertility. Dysfunction in pregnancy could be in the form of hyperthyroidism or hypothyroidism.

### 2.21.1 HYPERTHYROIDISM

Hyperthyroid state could be due to Grave's disease, toxic nodular goitre or metastatic follicular cancer. Postpartum exacerbations may occur in Grave's disease. Neonatal morbidity and congenital malformations are more common.

**Assessment/Identification of the Problem**

- Take a history of:

  - increased appetite
  - restlessness
  - heat intolerance
  - weight loss
  - tremors

- Conduct a general examination to:

  - look for anxiety or excitability
  - check for eye signs (exophthalmus, lid-lag)
  - check vital signs (tachycardia is usually present)

- Examine the neck for thyroid gland enlargement;

- Examine the chest for murmurs;

- Conduct an abdominal examination for uterine size and fetal heart sounds.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of hyperthyroidism should be referred to a secondary or tertiary health care level.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  - FBC
  - Thyroid stimulating hormone (TSH), T3 and T4 hormonal assays

- Conduct an abdomino-pelvic ultrasound scan.

**Treatment**

**Secondary and Tertiary Health Care Levels**

- Manage jointly with a physician and paediatrician;

- Treat as appropriate using:

  - antithyroid drugs (propylthiouracil)
  - Beta blockers (propanolol)
  - iodine

## 2.21.2 HYPOTHYROIDISM

Hypothyroidism can be primary because of the failure of the gland (e.g. Hashimoto's thyroiditis) or secondary as a result of loss of pituitary TSH stimulation (e.g. ischaemic necrosis). Inadequate or lack of treatment causes spontaneous abortion, stillbirth, fetal abnormality and developmental retardation.

**Assessment/Identification of the Problem**

- Take a history of:

  - easy fatigability
  - constipation
  - cold intolerance
  - weight gain



- Conduct a clinical examination:

  - check for dry skin, pallor and edema
  - take vital signs (bradycardia is usually present)

- Examine the neck for thyroid gland enlargement (goiter);

- Examine the abdomen for uterine size and fetal heart sounds.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of hypothyroidism should be refered to a secondary or tertiary health care facility.

**Secondary and Tertiary Health Care Levels**

- Request the following investigations:

  - FBC
  - TSH, T3 and T4 hormonal assays
  - urinalysis (protein, sugar)

- Conduct an abdomino-pelvic ultrasound scan

**Treatment**

**Secondary and Tertiary Health Care Levels**

- Manage jointly with a physician;

- Treat as appropriate e.g using oral Thyroxine, 100 – 150 mcg daily.

## 2.22 ASTHMA IN PREGNANCY

Bronchial asthma is a common lung disorder characterized primarily by chronic inflammation of the airway as well as obstruction and increased airway responsiveness to various noxious stimuli. Asthma may improve, worsen or remain the same during a given pregnancy. Severe asthma may be associated with pre-term labour and low birth weight babies.

**Assessment/Identification of the Problem**

- Take a history of:
  - cough (dry or productive)
  - difficulty in breathing
  - wheezing
  - chest tightness
- Ask for trigger factors (e.g., pollen, exercises, emotion, upper respiratory tract infections or exposure to dust and fumes);
- Ask for family history of asthma;
- Conduct a physical examination including auscultation of the lungs.

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of care for investigations.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - FBC, malaria parasite, sickling test
  - chest X-ray, when indicated
  - lung function test (Peak flowmeter)

**Treatment**

**Primary Health Care Level**



**For mild cases:**

- Reassure the patient and relatives;
- Bed rest;
- If bronchospasm occurs, give bronchodilators (e.g salbutamol, 4 mg orally) every 4 hours or 250 mcg aerosol every 15 minutes for 3 doses;
- Advise patient to identify cause of irritation and take precautions (e.g pollen, dust, fumes and smoke etc.);
- If there is no response to bronchodilators, refer the patient to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Admit the patient;
- Reassure the patient and her relatives;
- Give:
  - oxygen therapy, if no response, nebulise with beta – sympathomimetic therapy
  - aminophylline IV 4 mg/kg slowly over 10–20 minutes followed by 4 mg/kg as infusion in 500 ml of 5% dextrose.
  - IV hydrocortisone, 250 mg slowly stat, follow with tablets of prednisolone, 30-60 mg daily by mouth
- Maintain on salbutamol by mouth or inhaler;
- Monitor lung function (Peak flowmeter), pulse rate and blood gases;
- Take and record fetal heart sounds.

**Prevention of asthma**

- After acute exacerbation, continue treatment with inhaled bronchodilators and inhaled corticosteroid to prevent recurrent acute episodes.

## 2.23 POLYHYDRAMNIOS

Polyhydramnios means excessive liquor greater than one litre (liquor pool > 10 cm on ultrasound). It is associated with diabetes mellitus, congenital fetal anomalies, erythroblastosis fetalis and multiple pregnancy. There are 2 types of polyhydramnios :

**Chronic polyhydramnios** - this is gradual in onset from about the 30th week of pregnancy. It is the most common type.

**Acute polyhydramnios -** This is very rare. It occurs at about 20 weeks of gestation and comes on very suddenly. The uterus reaches the xiphisternum in about 3 – 4 days. It is frequently associated with monozygotic twins or severe fetal abnormality.

**Assessment/Identification of the Problem**

- Obtain a history of:
  - gestational age
  - breathlessness/discomfort
  - any exacerbated symptoms of pregnancy e.g. indigestion, heart burn and constipation
- Conduct a physical examination:
  - check for oedema
  - check vital signs (pulse rate, respiratory rate, BP)
- Palpate the abdomen for:
  - fundal height (greater than gestational age)
  - fetal parts (may be difficult to palpate)
- Auscultate for fetal heart sounds (may be difficult)
- Perform a fluid thrill test.

**Management**

**Investigations**



**Primary Health Care Level**

- Refer suspected cases of polyhydramnios to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Take blood for blood group and PCV;
- Conduct OGTT;
- Conduct urinalysis;
- Assess fetal condition (fetal heart activity);
- Perform detailed ultrasound scan to exclude malformations.

**Treatment**

**Primary Health Care Level**

- Refer to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Admit if in acute distress;
- Reassure the patient and her relatives;
- Assess maternal condition (temperature, pulse, respiration, fluid thrill, blood pressure, oedema);
- Assess fetal condition (fetal heart sounds);
- Nurse patient in a cardiac position (supported by pillows);
- Give antacids to relieve heart burn, and nausea.

**Note:** Further management should be as per local facility protocol.

## 2.24 PREMATURE RUPTURE OF MEMBRANES (PROM)

Premature rupture of membranes (PROM) occurs when the bag of water breaks before labour begins. PROM can occur preterm (before 37 weeks of gestation) or at term.

**Assessment/Identification of Problem**

- Obtain last menstrual period (LMP) and expected date of delivery;
- Ask the patient when the membranes ruptured;
- Ask for the colour and odour of the liquor;
- Inspect the vagina and take note of colour and odour of liquor ;
- Perform a speculum examination (using sterile instrument);
- Check if cord is prolapsed, and pulsating;
- Check for vital signs (temperature, pulse rate, respiratory rate, BP);
- Check the abdomen for uterine contractions;
- Perform an abdominal palpation noting the fundal height, presentation and lie of the fetus;
- Check the fetal heart sounds.

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Take blood for FBC;
- Take urine and HVS for m/c/s;



- Send for ultrasound scan to check the growth of the fetus and amount of liquor.

**Treatment**

**Primary Health Care Levels**

- If membranes have been ruptured for more than 12 hours:
  - check and record the fetal heart rate
  - apply clean sanitary pad
  - give broad spectrum antibiotics e.g. Ampicillin or Ampiclox, 500 mg 6 hourly x 5 days
  - check and record vital signs (temperature, pulse rate, respiratory rate and BP)
- Refer patient immediately to secondary or tertiary level of health care level.

**Secondary and Tertiary Health Care Levels**

- If there are no signs of infection and pregnancy is less than 34 weeks;
  - admit the patient and manage expectantly
  - give prophylactic broad spectrum antibiotics like Ampicillin, 500 mg 6 hourly x 5 days
- Give corticosteroids and tocolytics as appropriate;
- If there are no signs of infection and pregnancy is 37 weeks or more give prophylactic Ampicillin or Ampiclox, 500 mg 6 hourly for 7 days;
- Assess the cervix:
  - if favourable (soft, thin, partly dilated) induce labour using induction protocol in **Section 6, pages 378 - 386**
  - if unfavourable (firm, thick closed), take appropriate action according to the protocol on ripening of the cervix **(Section 6, pages 384 - 386)**

## 2.25 RHESUS ISO-IMMUNISATION

A person that lacks the specific Rhesus antigen (D factor) on the red blood cells is termed Rhesus negative and an individual with the antigen is considered Rhesus positive. Rhesus sensitization (iso-immunisation) can occur in a pregnant Rhesus negative mother carrying a Rh positive fetus. In subsequent pregnancies the effect on the fetus may range from absence of symptoms through haemolytic anaemia to intrauterine fetal death. Sensitisation can be prevented by administering anti-D globulin injection to the mother within 72 hours of suspected feto-maternal transfusion as indicated in box below.

**Sensitization may also occur following:**

- **Amniocentesis**
- **Abortion**
- **External cephalic version**
- **Antepartum haemorrhage**

**Assessment/Identification of the Problem**

- Take a history of:
  - previous pregnancies and the number of living children
  - cause of death of any of the children
  - previous blood transfusion
  - partner's blood group
- Conduct a clinical examination to:
  - check uterine size (compatibility with dates)
  - check fetal heart sounds

**Management**

**Investigations**

**Primary Health Care Level**

- Determine the patient's blood group;



- Refer to a secondary or tertiary health care level if patient is Rhesus negative.

**Secondary and Tertiary Health Care Levels**

- Take the patient's blood for grouping to confirm Rhesus status;
- Screen the patient's blood for Rhesus antibodies at 28 and 34 weeks;
- Take husband's blood for grouping and Rhesus factor;
- Monitor fetus closely by serial ultrasound for evidence of hydrops fetalis (skin edema, ascites, pleural effusion);
- Perform amniocentesis for spectrophotometry at optical density of 450 microns;
- Perform Kleihauer-Betke test (acid elusion test) if there is suspicion of excessive feto-maternal haemorrhage.

**Treatment**

**Secondary and Tertiary Health Care Levels**

- Manage in conjunction with the paediatrician;
- Deliver the fetus if there's evidence that hydrops fetalis is about to develop or perform intra-uterine transfusion depending upon the gestational age;
- Give IM anti-D globulin, 300 micrograms to the mother within 72 hours of delivery if she has not been sensitized.

**Note:** Remember to also give prophylactic anti-D globulin after any of the procedure that can cause sensitisation.

## 2.26 UTERINE FIBROID IN PREGNANCY

Fibroids can co-exist with pregnancy. The effects of fibroid on a pregnancy include abortion premature labour, abnormal presentation, postpartum haemorrhage. Effects of pregnancy on the fibroids include red degeneration which presents with severe abdominal pain.

**Assessment/Identification of the Problem**

- Ask for history of:
  - abdominal pains
  - lower abdominal swelling before the pregnancy
  - menorrhagia (excessive menstruation) before the pregnancy
- Examine the abdomen noting:
  - uterine size (may be greater than dates)
  - malpresentation
  - abnormal masses
  - fetal heart sounds

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Take blood for FBC and blood group;
- Conduct urinalysis for protein and sugar;
- Perform an abdominopelvic scan for localization of the fibroid nodules and fetal well-being.



**Treatment**

**Secondary and Tertiary Health Care Levels**

- Give analgesics for pain relief (e.g. piroxicam, 20 mg twice daily);
- Admit for bed rest if pre-term labour develops or she has red degeneration;
- Use tocolytics (e.g salbutamol, 4 mg three times daily), if there is suspicion of uterine contractions.

**Note:** Mode of delivery would depend upon location of the fibroid and fetal presentation.

**Avoid surgical treatment until after delivery, especially Caesarean myomectomy because of the risk of severe intraoperative haemorrhage.**

## 2.27 OVARIAN CYST IN PREGNANCY

Ovarian cyst can co-exist with a normal pregnancy. It does not often affect pregnancy but complications like torsion may occur when the uterus is becoming an abdominal organ (14–16 weeks) or in the immediate postpartum. Ovarian cyst may be asymptomatic throughout pregnancy.

**Assessment/Identification of the Problem**

- Obtain history of:
  - lower abdominal swelling before the pregnancy
  - abdominal pain (especially if sudden in onset at about 14 – 16 weeks)
- Conduct a physical examination to:
  - determine if patient is in painful distress
- Take vital signs (BP, pulse rate and temperature);
- Palpate abdomen for mass separate from uterus or uterine size greater than date. There may be tenderness;
- Conduct a pelvic examination - may reveal a mass separate from the uterus.

**Management**

**Investigations**

**Primary Health Care Level**

- Refer suspected cases of ovarian cyst in pregnancy to a higher level of health care

**Secondary and Tertiary Health Care Levels**

- Request the following investigations:
  - PCV or Hb estimation
  - blood grouping and cross-matching of 2 units of blood



  - urinalysis for protein, sugar and acetone
  - abdomino-pelvic ultrasound scan for fetal well-being and identification of the cyst

**Treatment**

**Secondary and Tertiary Health Care Levels**

- Manage conservatively by giving:
  - analgesics (paracetamol) for abdominal discomfort
- Monitor size of the cyst serially with ultrasound scan; surgery may be indicated after the first trimester if the size of the cyst is more than 5 cm.

**Emergency surgery (laparotomy) is indicated if there is acute abdomen from torsion, haemorrhage or rupture.**

## 2.28 MULTIPLE PREGNANCY

Multiple pregnancy is associated with increased risk of obstetric complications. Twin pregnancy is the commonest form of multiple pregnancies and Nigeria has the highest reported rate in the world (45 per 1000 births). Predisposing factors include ethnicity, positive family history and assisted reproduction.

**Assessment/Identification of the Problem**

- Ask for exaggerated early pregnancy symptoms like excessive vomiting;
- Ask for positive family history of twinning;
- Check for :
  - pallor, pedal oedema
  - vital signs
- Conduct abdominal examination for:
  - uterine size (larger than gestational age)
  - two or more fetal poles
  - multiple fetal parts
  - simultaneous detection of 2 different fetal heart beats

**Management**

**Investigations**

**Primary Health Care Level**

- Conduct the following investigations:
  - PCV or Hb estimation
  - urinalysis for protein and sugar

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations in addition to above:
  - blood grouping and genotype
  - blood film for malaria parasites



  - abdominal ultrasound scan to confirm number and the gestational age of the fetuses

**Treatment**

**Primary Health Care Level**

- Refer to a higher level of health care

**Secondary and Tertiary Health Care Levels**

- Give routine haematinics;
- Watch out for complications and admit if present;
- Increase frequency of visits;
- Encourage bed rest;
- For management in labour refer to **Section 3, pages 211 - 215**

## 2.29 INTRA-UTERINE FETAL DEATH

Death of the fetus after 28 weeks of gestation is referred to as intra-uterine fetal death.The main fear is the development of disseminated intravascular coagulopathy (DIC).

**Assessment/Identification of the Problem**

- Take history of:
  - absence of fetal movements
  - pregnancy "not growing"
  - vaginal bleeding
  - fever.
- Examine for pallor, jaundice and oedema;
- Take vital signs (BP, pulse, temperature);
- Examine the abdomen for:
  - uterine size
  - presentation
  - absence of fetal heart sounds
- Perform pelvic examination to assess the cervix for dilatation, position, effacement and consistency.

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Carry out the following investigations:
  - urinalysis (protein, sugar and acetone)
  - FBC
  - fasting blood sugar,



  - VDRL Test
  - bedside clotting time
  - clotting profile (PT, PTTK)
  - abdomino-pelvic scan to confirm the fetal death

**Treatment**

**Secondary and Tertiary Health Care Levels**

- Explain the situation to the patient and her relatives;
- Deliver by induction of labour if no contra-indication to vaginal delivery **(Section 6, pages 378 - 386).**

## 2.30 BREECH PRESENTATION

Breech presentation is the most common abnormal presentation in labour, with an incidence of 3% in labour. Prior to 28 weeks of gestation, approximately 25% of fetuses are in breech presentation. It is associated with increased perinatal mortality. Predisposing factors include prematurity, multiple pregnancy, uterine abnormalities, abnormal placental position, short umbilical cord and maternal pelvic abnormalities.

**Assessment/Identification of the Problem**

- Take full obstetric history paying attention to the parity and LMP;
- Examine the abdomen:
  - for fetal presentation (the soft, irregular, broad mass will be felt in the lower uterine segment)
- Auscultate for fetal heart sounds (best heard at or above the level of maternal umbilicus).

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of breech should be referred to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following inestigations:
  - PCV or Hb estimation
  - abdominal ultrasound to confirm the presentation, estimate the fetal weight and to exclude fetal anomaly
  - pelvic computerized tomography (CT) for pelvimetry



**Treatment**

**Secondary and Tertiary Health Care Levels**

- Monitor mother regularly, provided other known aetiological factors are excluded, no intervention is necessary before 37 weeks (as spontaneous version occur in most cases);
- Where the breech persists beyond 37 weeks:
  - continue antenatal care and birth preparedness
  - perform external cephalic version (ECV) if facility protocol allows for it **(Section 6, pages 376 - 377)**.
  - assess for assisted breech delivery **(Section 6, pages 395 - 401)** and perform, if indicated
  - otherwise perform elective Caesarean section **(Section 6, pages 402 - 412).**

## 2.31 UNSTABLE LIE

Unstable lie refers to a fetus which frequently changes its long axis from transverse to longitudinal to oblique. The condition may be associated with grand multiparity, polyhydramnios, placenta praevia and pelvic tumours.

**Assessment/Identification of the Problem**

- Take a full history including LMP and previous obstetric history;
- Conduct an abdominal examination noting:
  - the shape of the abdomen
  - the fetal lie and presentation

**Management**

**Investigations**

**Primary Health Care Level**

- Refer suspected cases of unstable lie to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV or Hb estimation
  - grouping and cross-matching (2 units of blood)
  - abdomino-pelvic ultrasound scan for:
    - fetal lie and presentation
    - fetal abnormalities
    - placental localization
    - pelvic tumours

**Treatment**

**Secondary and Tertiary Health Care Levels**

- Continue monitoring the patient in the antenatal clinic until 37 completed weeks;



- Warn the patient to come to hospital immediately membranes rupture or she has symptoms suggestive of onset of labour while the position is still unstable;
- Admit those who live far;
- Perform a gentle manoeuvre to correct the malpresentation whenever the patient is examined;
- Consider induction of labour after correcting fetal lie to longitudinal if the pregnancy is at term and/or there are obstetric indications/conditions for delivering the baby promptly **(Section 6, pages 378 - 386);**
- If the manoeuvre fails, conduct an elective Caesarean section **(Section 6, pages 402 - 412).**

# SECTION THREE: INTRAPARTUM CARE

## 3.0 INTRODUCTION

This is the care extended to the parturient between the onset of regular uterine contractions until the delivery of fetus, the placenta and its membranes. The period could be normal or complicated.

## 3.1 NORMAL LABOUR

Labour is the process in which the fetus, the placenta and membranes are expelled through the birth canal. The term "labour" is used after 28 weeks of pregnancy; before then it is called "abortion". In normal labour:

- the fetus should be at term and present by the vertex
- the process should commence spontaneously, progress naturally and end with the sole effort of the mother
- the time for the active phase should not exceed 12 hours
- there should be no complications to the mother or child.

### Diagnosis and confirmation of labour

- Suspect or anticipate labour if the woman has:
  - intermittent abdominal pain after 28 weeks of gestation
  - pain often associated with blood-stained mucus discharge (show)
  - watery vaginal discharge or a sudden gush of water
- Confirm the onset of labour if there is:
  - cervical effacement i.e., the progressive shortening and thinning of the cervix during labour; and
  - cervical dilatation i.e., the increase in diameter of the cervical opening measured in centimeters **(Figure 6 ).**

**Figure 6**: **Effacement and dilatation of the cervix**

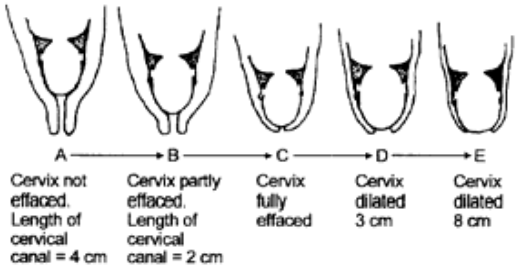



**Table 14: Diagnosis of stage and phase of labour**[a]

| Symptoms and Signs | Stage | Phase |
|---|---|---|
| • Cervix not dilated | False labour/ Not in labour | |
| • Cervix dilated less than 4 cm | First | Latent |
| • Cervix dilated 4-9 cm<br>• Rate of dilatation typically 1cm per hour or more<br>• Fetal descent begins | First | Active |
| • Cervix fully dilated (10 cm)<br>• Foetal descent continues<br>• No urge to push | Second | Early (non-expulsive) |
| • Cervix fully dilated (10 cm)<br>• Presenting part of fetus reaches pelvic floor<br>• Woman has the urge to push | Second | Late (expulsive) |

[a] The third stage of labour begins with delivery of the baby and ends with the expulsion of the placenta.



**Descent**

**Abdominal palpation**

- By abdominal palpation, assess descent in terms of fifths of fetal head palpable above the symphysis pubis **(Figure 7 A-D).**
  - a head that is entirely above the symphysis pubis is five-fifth (5/5) palpable **(Figure 7 A-B)**
  - a head that is entirely below the symphysis pubis is zero-fifth (0/5) palpable

**Vaginal examination**

- If necessary, a vaginal examination may be used to assess descent by relating the level of the fetal presenting part to the ischial spines of the maternal pelvis (**Figure 8).**

**Note: When there is a significant degree of caput or moulding, assessment by abdominal palpation using fifths of head palpable is more useful than assessment by vaginal examination.**

**Figure 7: Abdominal palpation for descent of the fetal head**

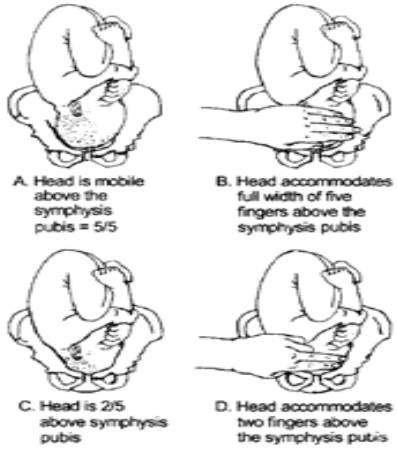
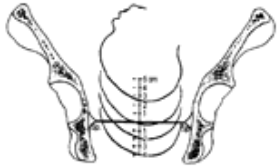


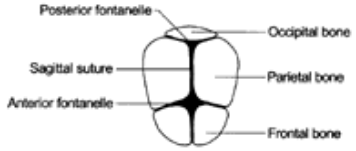
**Figure 8: Assessing descent of the fetal head by vaginal examination; 0 Station is at the level of the ischial spines (Sp)**



**Presentation and position**

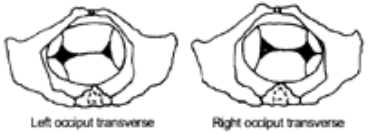
- Determine the presenting part:
  - the most common presenting part is the vertex of the fetal head. If the **vertex is not the presenting part**, manage as a malpresentation (**Section 3 pages 184-194)**
  - if the **vertex is the presenting part**, use landmarks on the fetal skull to determine the position of the fetal head in relation to the maternal pelvis **(Figure 9**)

**Figure 9: Landmarks of the fetal skull**




- Determine the position of the fetal head:
  - the fetal head normally engages in the maternal pelvis in an **occipito-transverse position**, with the fetal occiput transverse in the maternal pelvis (**Figure 10**)

**Figure 10: Occipito-transverse position**






- With descent, the fetal head rotates so that the fetal occiput is anterior in the maternal pelvis (occipito-anterior position, **Figure 11**). Failure of an **occipito-transverse position** to rotate to an occiputo-anterior position should be managed as an occipito-posterior position (**Section 3, pages 199 - 201);**

- An additional feature of a normal presentation is a **well-flexed vertex** (**Figure 12**), with the occiput lower in the vagina than the sinciput.

**Figure 11: Occipito-anterior position**

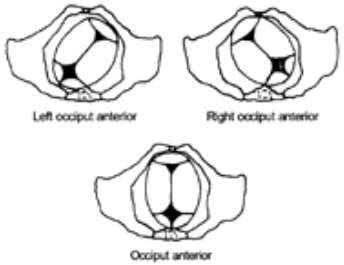
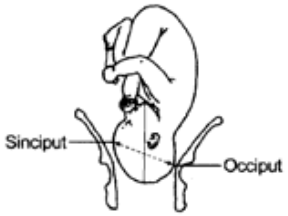



**Figure 12: Well-flexed vertex**




**Assessment of progress of labour**

Once diagnosed, assess tne progress of labour by:

- Measuring changes in cervical effacement and dilatation (**Figure 6A-E, page 160)** during the labour;

- Measuring the fetal descent during the first stage (**Figures 7 & 8, pages 161 - 162; Figure 13, page 168**);

- Assessing further fetal descent during the second stage.

Progress of the first stage of labour should be plotted on a partograph once the woman enters the active phase of labour. A sample partograph is shown in **Figure 14, page 170**. Alternatively, plot a simple graph of cervical dilatation (centimeters) on the vertical axis against time (hours) on the horizontal axis.

**Vaginal examination**

Vaginal examinations should be carried out at least once every four hours during the first stage of labour and after rupture of the membranes. Plot the findings on a partograph.

- At each vaginal examination, record the following:
  - colour of amniotic fluid
  - cervical dilatation
  - descent (can also be assessed abdominally)

- If the cervix is not dilated on first examination, it may not be possible to diagnose labour;

  - if contractions persist, re-examine the woman after four hours for cervical changes. At this stage, if there is effacement and dilatation, the woman is in labour; if there is no change, the diagnosis is false labour.

- In the second stage of labour, perform vaginal examination once every 1 hour.

**Assessment of a patient in normal labour**

- Take a good comprehensive but quick history. Ask about:

  - booking status (booked or unbooked)
  - personal data (including name, age, address, marital status, religion and occupation)
  - family history of hypertension, diabetes mellitus, psychiatric disease, multiple pregnancy
  - infectious diseases (e.g. HIV, TB, STIs)
  - non communicable diseases e.g. hypertension, diabetes mellitus, psychiatric diseases, genetic diseases such as sickle cell disease
  - previous surgery e.g. myomectomy



- Obtain past obstetric history including:

  - previous pregnancies, mode of deliveries and outcome
  - previous abortions (spontaneous or induced and gestational age)

- Obtain the present obstetric history including:

  - last menstrual period
  - vaginal bleeding
  - vaginal discharge (show and rupture of the membranes). Ask about date, time and colour if meconium stained
  - onset of labour, frequency, strength and duration of contractions

- Conduct general physical examination and check for the following:

  - temperature, respiration, pulse and blood pressure
  - height, weight
  - pallor, jaundice, oedema, varicose veins
  - state of hydration
  - psychological state, whether anxious, calm or disturbed

- Inspect the abdomen for:

  - shape, size and scars

- Palpate abdomen for:

  - fundal height and lie
  - presentation
  - engagement of the head (vertex); use fifth score **(Figure 7, page 161)**
  - signs of multiple pregnancy
  - palpate for uterine contractions (frequency, strength and duration)

- Auscultate for fetal heart rate, (normal heart rate is 120 - 160 per minute);

- Perform vaginal examination:

- inspect vulva for varicose veins, female genital cutting (FGC), episiotomy, vaginal warts, vaginal discharge and liquor
- if liquor is present check for the colour (meconium-stained, fresh or stale), odour, quantity
- check for vaginal bleeding
- determine the following:

    - position of the cervix (posterior, central or anterior)
    - consistency, (soft or hard)
    - degree of effacement **(**length, **Figure 6, page 160)**
    - dilatation

- assess the descent of the presenting part
- assess the pelvis for adequacy **(Section 6, pages 359 – 360)**

**Note:** If the pelvis is not adequate, refer to a health facility where condition can be better managed.

**Management**

**The health provider should be conscious of the fact that he/she is dealing with two lives, therefore both the mother and the fetus should be closely monitored. The management of normal labour can be conducted in the same manner at all health care levels.**

**Investigations**

- Conduct the following investigations:

    - PCV or Hb estimation
    - grouping and cross-matching (2 units of blood)
    - genotype
    - urinalysis (sugar, protein, ketones)
    - abdominal ultrasound scan

- Allay the fears of the woman about the outcome of her labour;

- Open a partograph to monitor the progress of labour.



## 3.2 USING THE PARTOGRAPH DURING LABOUR

The partograph is a pictorial chart used in monitoring progress of labour. The WHO has modified its original partograph to make it simpler and easier to use. The latent phase has been removed and plotting on the partograph begins in the active phase when the cervix is 4 cm dilated. Record the following on the partograph:

- **Patient information:** Fill out name, parity, hospital number, date and time of admission, and time of ruptured membranes or time elapsed since rupture of membranes (if rupture occurred before charting on the partograph began);

- Count and record fetal heart rate every 15 minutes;

- Record the state of the membranes and colour of amniotic fluid at every vaginal examination as follows:

    **I**: intact membranes
    **R**: ruptured membranes
    **C**: clear liquor
    **M**: meconium–stained liquor
    **B**: blood–stained liquor

- Record the progress of **moulding of the fetal head** as follows:

    – sutures apposed (+)
    – sutures overlapped and reducible (++)
    – sutures overlapped and not reducible (+++)

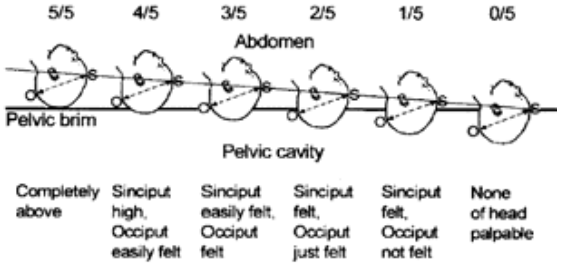
- Assess **cervical dilatation** at every vaginal examination and begin plotting on the partograph at 4 cm; mark appropriately on the partograph with a cross **(X);**

- Take note of the **Alert line:** this line starts at 4 cm of cervical dilatation to the point of expected full dilatation at the rate of 1 cm per hour;

- Take note of the **Action line:** this line is parallel and four hours to the right of the alert line;

- Assess the **descent of the fetal head** by abdominal palpation: fetal head descent refers to the part of the head (divided into five parts) palpable above the symphysis pubis; it is recorded as a circle (O) at every abdominal examination. At 0/5, the sinciput (S) is at the level of the symphysis pubis, **(Figure 7, page 161 and Figure 13 below);**

**Figure 13: Descent of the fetal head**




- **Hours:** Refers to the time in **hours elapsed** since onset of active phase of labour (observed or extrapolated);
- **Time:** Record actual time e.g. 10.00 am, 2.00 pm;
- Chart uterine **contractions** every half hour; palpate and count the number of contractions in a 10-minute time period, and their duration in seconds;

  Less than 20 seconds (weak): 

  Between 20 and 40 seconds (moderate): 

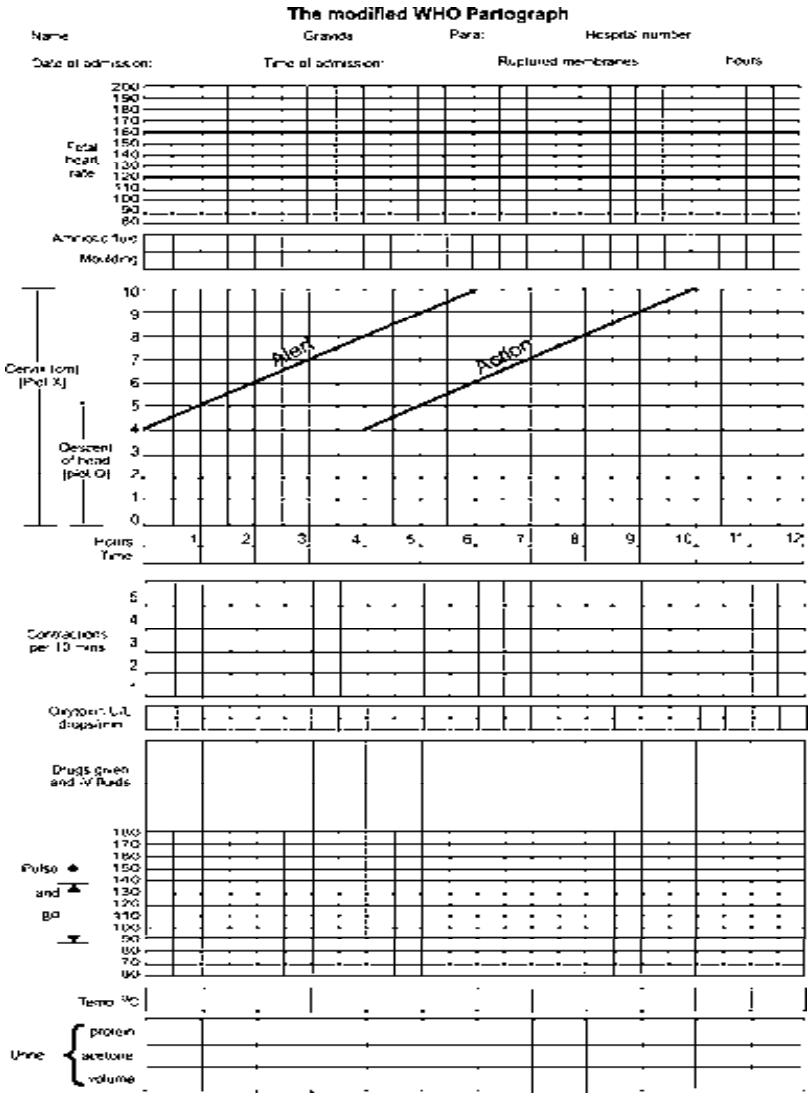
  More than 40 seconds (strong): 

- Record the amount of **oxytocin** per volume of IV fluids in drops per minute every 30 minutes when used;
- Record any additional drugs given;



- Record **pulse** every 30 minutes and mark with a dot (.);
- Record **blood pressure** every four hours and mark with arrow (↕);
- Record **temperature** every two hours;
- Measure **urinary volume, protein and acetone** and record.

**Figure 14: The modified WHO partograph**






## Sample partograph for normal labour

### Case study

- **Figure 15, page 172**: A gravida 3, para $2^{+0}$ was admitted in the latent phase of labour at 5 a.m;

  - fetal head was 4/5 palpable
  - cervix was 2 cm dilated
  - three contractions in 10 minutes, each lasting 20 seconds
  - normal maternal and fetal conditions

**Note:** Because the woman is in the latent phase of labour, this information is not plotted on the partograph.

- At 9 a.m;

  - fetal head 3/5 palpable
  - cervix was 5 cm dilated
  - four uterine contractions in 10 minutes each lasting >40 seconds

**Note:** The woman is now in the active phase of labour, this information is plotted on the partograph. Cervical dilatation is plotted on the alert line.

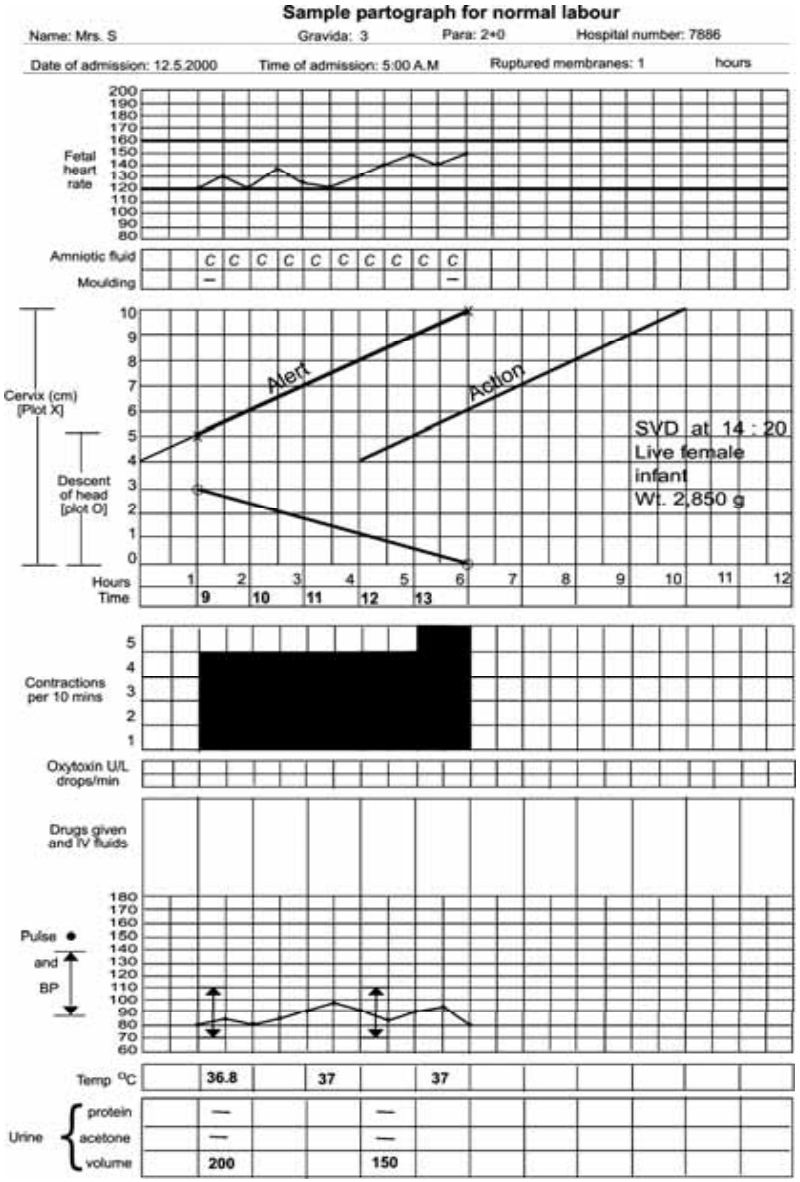
- At 11 a.m;

  - fetal head was 2/5 palpable
  - four uterine contractions in 10 minutes, each lasting 45 seconds

- At 2 p.m (14:00 Hours).

  - fetal head was now (0/5) palpable
  - cervical dilatation progressed at the rate of more than 1 cm per hour and cervix fully dilated
  - five contractions in 10 minutes each lasting 45 seconds
  - had a spontaneous vaginal delivery at 1:20 p.m (14:20 Hours)

**Figure 15: Sample partograph for normal labour**





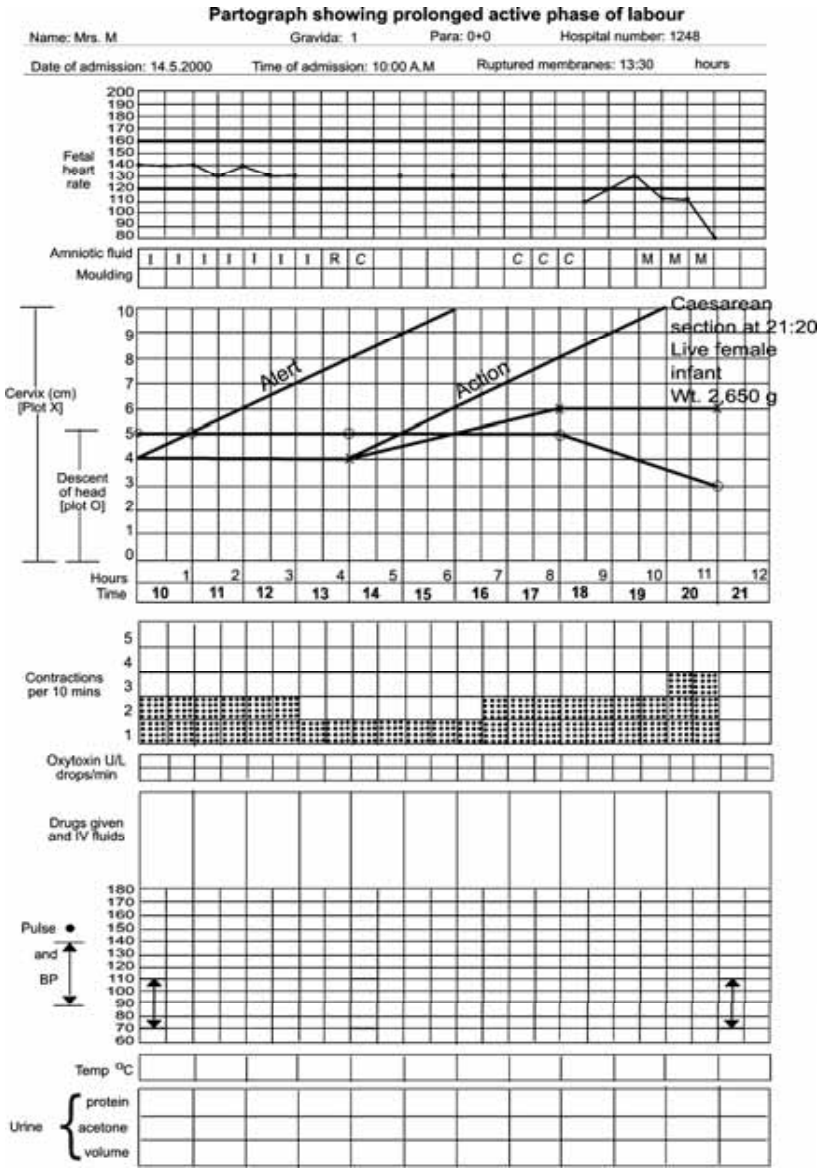

## Samples of Partograph

### Case Study

**Figure 16, page 174** is a sample partograph for **prolonged active phase** of labour. Note that the partograph was not adequately filled out and that this example demonstrates inappropriate management of prolonged labour. The diagnosis of prolonged labour was evident at 2 p.m. and labour should be have been augmented with oxytocin at that time.

- The woman was admitted in active labour at 10 am:
  - fetal head 5/5 palpable
  - cervix dilated 4 cm
  - inadequate uterine contractions (two in 10 minutes, each lasting less than 20 seconds)
- At 2 pm (14:00 Hours):
  - fetal head still 5/5 palpable
  - cervix dilated 4cm and to the right of the alert line
  - membranes have ruptured spontaneously and amniotic fluid is clear
  - inadequate uterine contractions (one in 10 minutes, lasting less than 20 seconds)
- At 6 pm (18:00 Hours):
  - fetal head still 5/5 palpable
  - cervix dilated 6 cm
  - uterine contractions still inadequate (two in 10minutes, each lasting less than 20 seconds)
- At 9 pm (21:00 Hours):
  - fetal heart rate 80 per minute
  - amniotic fluid stained with meconium
  - no further progress in labour
  - Caesarean section performed at 9:20 pm (21:20bHours) due to fetal distress

**Figure 16: Partograph showing prolonged active phase of labour**



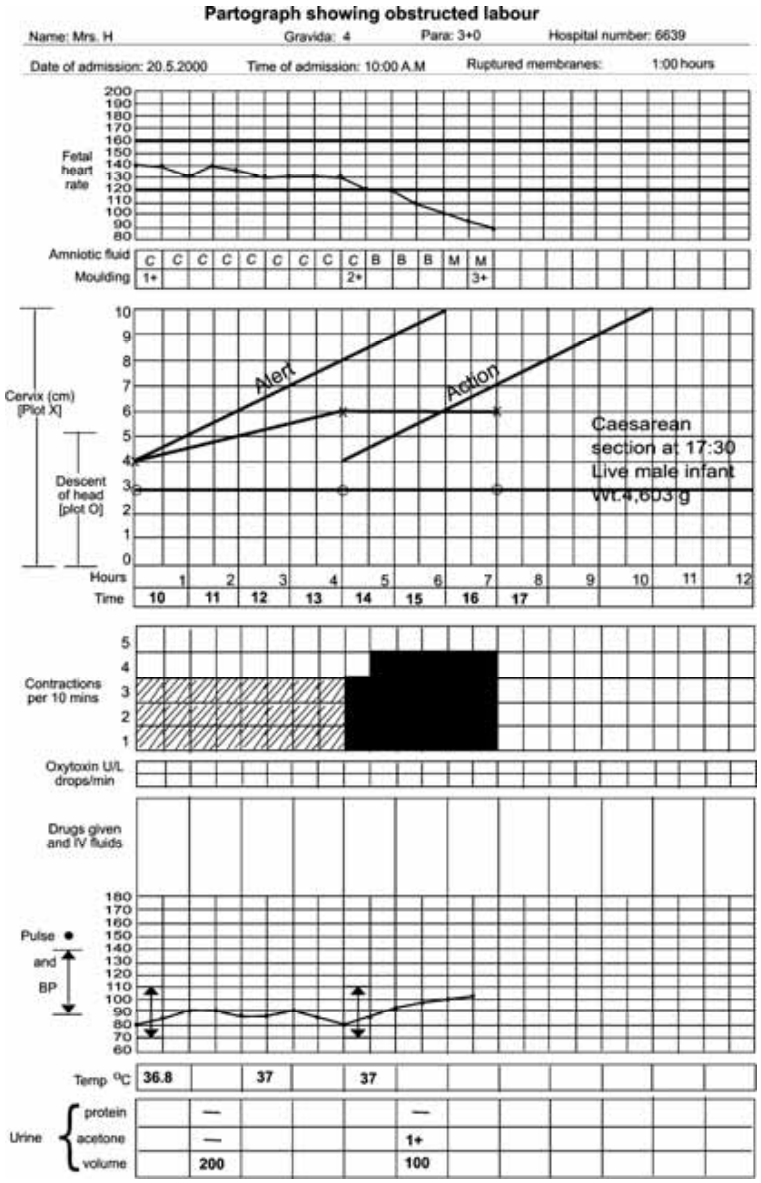



**Case Study**

**Figure 17, page 176** is a sample partograph showing **arrest of dilatation and descent** in the active phase of labour. Fetal distress and third degree moulding, together with arrest of dilatation and descent in the active phase of labour in the presence of adequate uterine contractions, indicates obstructed labour.

- The woman was admitted in active labour at 10 am:
  - fetal head 3/5 palpable
  - cervix dilated 4cm
  - three uterine contractions in 10 minutes, each lasting 20-40 seconds;
  - clear amniotic fluid draining
  - first degree moulding
- At 2 pm (14:00 Hours):
  - fetal head still 3/5 palpable
  - cervix dilated 6 cm and to the right of the alert line
  - slight improvement in uterine contractions (three in 10 minutes, each lasting 45 seconds)
  - second degree moulding
- At 5 pm (17:00 Hours):
  - fetal head still 3/5 palpable
  - cervix still dilated 6 cm
  - third degree moulding
  - fetal heart rate 92 per minute
- Caesarean section performed at 5:30 pm (17:30 Hours) due to fetal distress.

**Figure 17: Partograph showing obstructed labour**



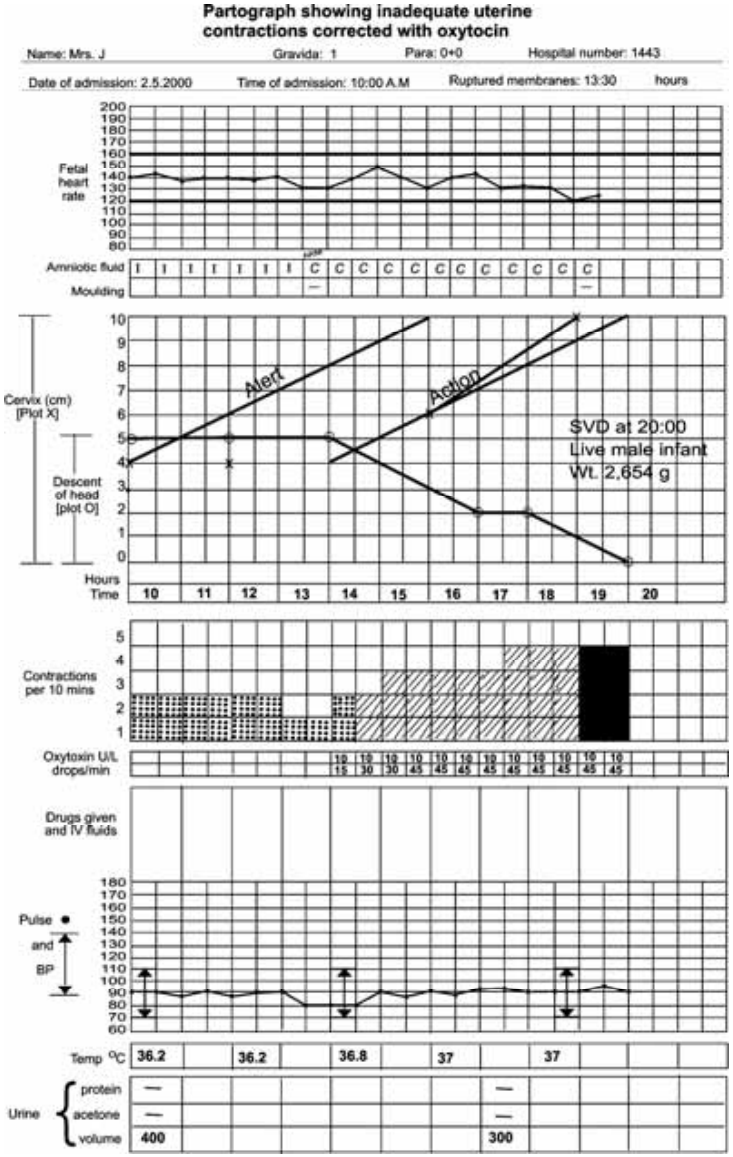



**Case Study**

**Figure 18, page 178** is a sample partograph for **poor progress of labour** due to inadequate uterine contractions corrected with oxytocin.

- The woman was admitted in active labour at 10 am;
  - fetal head 5/5 palpable
  - cervix dilated 4cm
  - two uterine contractions in 10 minutes, each lasting less than 20 seconds;
- At 12 pm:
  - fetal head still 5/5 palpable
  - cervix still dilated 4cm and to the right of the alert line
  - no improvement in uterine contractions
- At 2 pm (14:00 Hours):
  - poor progress of labour due to inefficient uterine contractions diagnosed
  - augmented labour with oxytocin 10 units in 1 litre IV fluids, at 15 drops per minute
  - escalated oxytocin until a good pattern of contractions was established
- At 7 pm (19:00 Hours):
  - fetal head was 1/5 palpable
  - cervix dilated 10 cm
  - four uterine contractions in 10 minutes, each lasting 45 seconds
- Spontaneous vaginal delivery occurred at 8:00 pm (20:00 Hours).

**Figure 18: Partograph showing inadequate uterine contractions corrected with oxytocin**






## 3.3 PROGRESS OF LABOUR

### 3.3.1 PROGRESS OF FIRST STAGE OF LABOUR

- Findings suggestive of **satisfactory progress** in the first stage of labour are:

  - regular uterine contractions of progressively increasing frequency and duration
  - rate of cervical dilatation at least 1 cm per hour during the active phase of labour (cervical dilatation on or to the left of alert line)
  - cervix well applied to the presenting part

- Findings suggestive of **unsatisfactory progress** in the first stage of labour are:

  - irregular and infrequent uterine contractions after the latent phase
  - **or** rate of cervical dilatation slower than 1 cm per hour during the active phase of labour (cervical dilatation to the right of alert line)
  - **or** cervix poorly applied to the presenting part

**Note:** Unsatisfactory progress in labour can lead to prolonged labour

### 3.3.2 PROGRESS OF SECOND STAGE OF LABOUR

- Findings suggestive of **satisfactory progress** in the second stage of labour are:

  - steady descent of fetal head through birth canal
  - onset of expulsive (pushing) phase

- Findings suggestive of **unsatisfactory progress** in the second stage of labour are:

  - lack of descent of fetal head through birth canal
  - failure of expulsion during the late (expulsive) phase

### 3.3.3 STATE OF FETAL CONDITION

- If there are fetal heart rate abnormalities (less than 120 or more than 160 beats per minute), suspect fetal distress;
- Positions or presentations in labour other than occiputo-anterior with a well-flexed vertex are considered malpositions or malpresentations;
- If unsatisfactory progress of labour or prolonged labour is suspected, manage the cause of slow progress.

### 3.3.4 STATE OF MATERNAL CONDITION

- Evaluate the patient for signs of distress:
  - if the patient's pulse is increasing, she may be dehydrated or in pain. Ensure adequate hydration via oral or IV routes and provide adequate analgesia;
  - if the patient's blood pressure decreases, suspect haemorrhage
  - if acetone is present in the patient's urine, suspect poor nutrition and give dextrose IV

### 3.3.5 MANAGEMENT OF FIRST STAGE OF LABOUR

This is the period of onset of regular rhythmic uterine contractions to complete dilatation of the cervix.

- Confirm the phase of labour, if it is latent or active phase;
- Open a partograph and record findings accordingly;
- Continuously interpret the partograph;
- Identify problems and take appropriate actions;
- Pay attention to the conditions of the mother and fetus;
- Ensure proper care of the bladder, bowel, perineum and personal hygiene;
- Give sips of nourishing fluids;



- Ensure emotional support, encouragement and reassurance;
- Ascertain progress of labour per pelvic examination every 4 hours, noting the degree of dilatation of the cervix, level of descent of the head, presence of caput/moulding;
- Assess the pelvis to ensure that it is adequate for safe vaginal delivery;
- Relieve pain during labour through exercise e. g. breathing techniques;
- Use of drugs: Give appropriate dose of pethidine hydrochloride (50–100 mg) IM if necessary;
- Inform patient and relations about progress of labour and if necessary give reasons for referral to a hospital.

**The first stage should not exceed 12 hours irrespective of parity.**

### 3.3.6 MANAGEMENT OF SECOND STAGE

This is the period from full cervical dilatation to the birth of the baby

- Check the uterine contractions for strength, duration and frequency;
- Continue to check vital signs and fetal heart rate;
- Note the client's urge to bear down or defaecate;
- Check bulging of the perineum, or pointing anus;
- Check if the fetal head is visible at the vulva;
- Note nausea, retching and vomiting which may sometimes occur at full cervical dilatation;

- Clean the vulva with antiseptic lotion;
- Confirm full cervical dilatation at vaginal examination;
- Identify the position of the patient for delivery – dorsal, squatting or left lateral;
- Encourage bearing down with each uterine contraction;
- Monitor the descent of the presenting head and the perineum;
- Perform episiotomy with the crowning of the head if necessary;
- Deliver the head and check for cord round the neck:
  - if cord is loose round the neck, slip over the head
  - if cord is tight, clamp the cord in two places and cut between clamps, and slip the clamped ends to either side of the neck;
- Support the head until it restitutes externally;
- At the delivery of the head, clean the face with a gauze and suction the baby's mouth and nose;
- Give ergometrine, 0.5 mg IM or 0.25 mg IV or Syntometrine, 1ml IM (10 international units of oxytocin plus 0.5 mg ergometrine) at the delivery of the anterior shoulder.

**Note: If the BP is above normal, give oxytocin (Syntocinon) ONLY.**

- Deliver the posterior shoulder and the rest of the body noting time of delivery;
- Double-clamp the cord and cut in between the clamps within 1 minute of delivery of the baby;
- Resuscitate the baby and assess the APGAR scores;
- Note the sex of the baby and show the mother;
- Place the baby on the mother's abdomen to encourage bonding;



- Wrap the baby and initiate breastfeeding (within 30 minutes), if appropriate;
- Hand over the baby to an attendant for further care.

**The second stage of labour should not exceed one hour.**

### 3.3.7 MANAGEMENT OF THIRD STAGE OF LABOUR

The third stage is the period following the delivery of the fetus to the complete delivery of the placenta and membranes, and control of bleeding.

**Assessment of the Patient in 3rd Stage of Labour**

- Check the bladder to determine if the bladder is full;
- Deliver the placenta and membranes using controlled cord traction (CCT):
  - apply the left palm on the suprapubic region to support the uterus pushing it upwards (this helps to prevent uterine inversion) whilst the right hand exerts a gentle but consistent traction on the cord
- Check the vital signs (BP, pulse, temperature);
- Inspect the perineum, vulva and vagina for injury;
- Palpate the uterus and ensure that it is well contracted and firm;
- Suture any laceration or episiotomy;
- Examine the placenta and membranes for completeness;
- Check blood loss and record findings in the partograph.

**The third stage of labour should not exceed 30 minutes irrespective of parity. Avoid application of fundal pressure throughout labour. Anticipate postpartum haemorrhage in patients at risk and take appropriate preventive measures.**

**COMPLICATED LABOUR**

**A labour is said to be complicated when:**

- **Baby is not presenting by vertex;**
- **When labour is induced;**
- **When patient has medical conditions e. g. hypertension, diabetes mellitus, etc;**
- **When the uterus has a scar;**
- **When there are 2 or more fetuses in the uterus.**

## 3.4.0 ABNORMAL PRESENTATIONS

### 3.4.1 BREECH PRESENTATION

Breech presentation is when the baby is presenting by the buttocks and/or the feet. There are three types of breech presentation.

**Complete (flexed)** breech presentation: Occurs when both legs are flexed at the hips and knees **(Figure 19)**

**Figure 19: Complete breech presentation**

**Frank (extended)** breech presentation: Occurs when both legs are flexed at the hips and extended at the knees **(Figure 20)**

**Figure 20: Frank breech presentation**

**Footling** breech prsentation: Occurs when a leg is extended at the hip and the knee **(Figure 21)**



**Figure 21: Footling breech presentation**

**Assessment/Identification of the Problem**

- Note the following:
  - on abdominal examination, the head is felt in the upper abdomen and the buttock in the pelvic brim;
  - on auscultation, fetal heart sounds/beats are located at the level of the umbilicus or higher
  - on vaginal examination during labour, the buttocks and/or feet are felt and passage of meconium is normal.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of breech presentation shoud be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2 units of blood)
  - urinalysis (protein, sugar and acetone)
  - ultrasound scan for placental localization, pelvic tumour and congenital malformation

**Treatment**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Set up an infusion line;
- Reassure the patient;
- Conduct an assisted breech delivery as described in **Section 6, pages 395-401.**

### 3.4.2 TRANSVERSE LIE AND SHOULDER PRESENTATION

Transverse lie and shoulder presentation occur when the baby's longitudinal axis is across that of the mother.

**Assessment/Identification of the Problem**

- Note the following:
  - on abdominal examination, neither the head nor the buttocks can be felt at the pelvic brim and the head is usually felt at the flank
  - on vaginal examination:
    - a shoulder may be felt but not always
    - an arm may prolapse
    - the elbow, arm or hand may be felt

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of transverse lie shoud be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**



- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2 units of blood)
  - urinalysis (protein, sugar and acetone)
  - ultrasound examination for placental localization, pelvic tumours and congenital malformations

**Treatment**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Set up an infusion line;
- Reassure the patient;
- if the woman is in early labour and the membranes are intact, attempt external version;
  - if external version is successful, proceed with normal childbirth
  - if external version fails or is not advisable, deliver by Caesarean section **(Section 6, pages 402-412)**
- If the patient is in advanced labour, membranes have ruptured and fetus is alive, deliver by Caesarean section;
- If cord prolapses and is pulsating and labour is not imminent perform Caesarean section **(Section 6, pages 402-412);**
- If the labour is advanced, membranes ruptured and fetus is dead, perform destructive operation **(Section 6, pages 414-415).**

**In modern practice, persistent transverse lie in labour may be delivered by Caesaerean section whether the fetus is alive or dead.**

### 3.4.3 SHOULDER DYSTOCIA

Shoulder dystocia occurs when the shoulders remain impacted in the pelvis after delivery of the fetal head. This is a **dire emergency.**

**Assessment/Identification of the Problem**

- Note the following:

  - the head is delivered
  - the shoulder is impacted

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Perform the following investigations;

  - PCV or Hb estimation
  - grouping and cross-matching (2 units of blood)
  - urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Check if fetus is alive;

- Make an adequate episiotomy to reduce soft tissue obstruction and allow space for manipulation;



- With the patient on her back, ask her to flex both thighs, bringing the knees as far up as possible towards her chest. Ask 2 assistants to push her flexed knees firmly up onto her chest;

- Wearing high-level disinfected or sterile gloves:

  - ask the assistant to get patient's buttocks to the edge of the delivery couch
  - apply firm, continous traction downwards on the fetal head to move the shoulder that is anterior under the symphysis pubis

  **Note**: Avoid excessive traction on the fetal head as this may result in brachial plexus injury.

  - have an assistant simultaneously apply suprapubic pressure downwards to assist the delivery of the shoulder

  **Note:** Do not apply fundal pressure. This will further impact the shoulder and can result in uterine rupture.

- If the shoulder still is not delivered:

  - insert a hand into the vagina along the baby's back
  - apply pressure to the shoulder that is anterior in the direction of the baby's sternum to rotate the shoulder and decrease the diameter of the shoulders
  - if needed, apply pressure to the shoulder that is posterior in the direction of the sternum

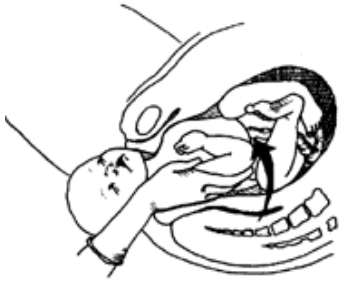
- If the shoulder still is not delivered despite the above measures:

  - insert a hand into the vagina

  - grasp the humerus of the arm that is posterior and, keeping the arm flexed at the elbow, sweep the arm across the chest. This will provide room for the shoulder that is anterior to move under the symphysis pubis **(Figure 22).**

**Figure 22: Delivery of impacted shoulder in shoulder dystocia**

**Grasping the humerus of the arm that is posterior and sweeping the arm across the chest**



- If all of the above measures fail to deliver the shoulder, other options include:
  - fracture the clavicle to decrease the width of the shoulders and free the shoulder that is anterior
  - apply traction with a hook in the axilla to extract the arm that is posterior
- If the fetus is dead, perform a destructive operation.



### 3.4.4 BROW PRESENTATION

Brow presentation is a cephalic presentation in which the head is neither fully flexed as in vertex nor completely extended as in face presentation. Brow presentation is caused by partial extension of the felt head so that the occiput is higher than the sinciput **(Figure 23).**

**Figure 23: Brow Presentation**

**Assessment/Identification of the Problem**

- On abdominal examination note that more than half of the fetal head is above the symphysis pubis and the occiput is palpable at a higher level than the sinciput;
- On vaginal examination:
  - note that the presenting part is very high
  - if the head can be reached feel for the anterior fontanelle and orbital ridges
  - when labour has progressed for sometime, note that all landmarks are likely to be obscured by the caput succedaneum

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of brow presentation should be referred to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  - PCV
  - grouping and cross-matching (2 units of blood)
  - urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Set up an infusion line;
- Reassure the patient;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- If the fetus is alive, deliver by Caesarean section (**Section 6, pages 402-412**)
- If the fetus is dead and:

  - the cervix is not fully dilated, deliver by Caesarean section **(Section 6, pages 402-412)**
  - if the cervix is fully dilated deliver by craniotomy **(Section 6, pages 414-415)**
  - if the health provider is not proficient in craniotomy, deliver by Caesarean section **(Section 6, pages 402-412)**

**Do not deliver brow presentation by vacuum extraction, outlet forceps or symphysiotomy.**

## 3.4.5 FACE PRESENTATION

Face presentation is when the head is fully extended and the face is presenting at the pelvic brim. It is caused by hyperextension of the fetal head so that neither the occiput nor the sinciput are palpable on vaginal examination. Face presentation may be mento-anterior or mento-posterior.



**Assessment/Identification of the Problem**

- Conduct an abdominal examination and note that a groove may be felt between the occiput and the back;
- Conduct a vaginal examination and note that:

  - the presenting part may be high in early labour
  - the face can be palpated while the examiner's finger enters the mouth easily and the bony jaws are felt

**Figure 24: Face Presentation**

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of face should be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – PCV
  – grouping and cross matching (2 units of blood)
  – urinalysis (protein, sugar and acetone)

**Treatment**

### (a) Mento-anterior Position

**Primary Health Care Level**

- Reassure the patient;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- If cervix is fully dilated;
  - allow labour to progress with normal childbirth
  - if there is slow progress and no signs of obstruction, augment labour with oxytocin
  - if descent is unsatisfactory, deliver by forceps **(Section 6, pages 391- 394)**)
- If the cervix is not fully dilated and there are no signs of obstruction, augment labour using oxytocin **(Section 6, pages 378 - 386)** Review progress as with vertex presentation.

### (b) Mento-posterior Position

**Primary Health Care Level**

- Reassure the patient;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- If the fetus is alive, deliver by Caesarean section (**Section 6, pages 402 - 412);**
- If the fetus is dead and:
  - the cervix is not fully dilated, deliver by Caesarean section **(Section 6, pages 402 - 412)**
  - if the cervix is fully dilated deliver by craniotomy **(Section 6, pages 414 - 415)**
  - if the health provider is not proficient in craniotomy, deliver by Caesarean section **(Section 6, pages 402 - 412)**

**Do not perform vacuum extraction for face presentation.**



## 3.4.6 CORD PRESENTATION/CORD PROLAPSE

**Cord presentation** is when the cord presents with intact membranes; usually in a transverse, oblique or breech presentations. **Cord prolapse** is when the cord descends below the presenting part following ruptured membranes; it poses a greater risk to the fetus.

**Assessment/Identification of the Problem**

- Conduct an abdominal examination;
- Conduct a vaginal examination and note the presenting part, and if the cord is presenting or prolapsing.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of cord presentation should be referred to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV
  - grouping and cross matching (2 units of blood)
  - urinalysis (protein, sugar and acetone).

**Treatment**

**Primary Health Care Level**

- Reassure the patient;
- **Refer** immediately to the next health care level;

**Secondary and Tertiary Health Care Levels**

- If the cord is pulsating and the fetus is alive:

  - diagnose stage of labour by immediate vaginal examination

- If the woman is **in the first stage of labour**, wearing high level disinfected or sterile gloves:

  - insert a hand into the vagina and push the presenting part up to decrease pressure on the cord and dislodge the presenting part from the pelvis
  - place the other hand on the abdomen in the suprapubic region to keep the presenting part out of the pelvis
  - once the presenting part is firmly held above the pelvic brim, remove the other hand from the vagina. Keep the hand on the abdomen until Caesarean section is carried out
  - if available, give Salbutamol 3-5 mg/kg IV slowly over 2 minutes to reduce contractions
  - perform immediate Caesarean section **(Section 6, pages 402 - 412)**

- If the woman is **in the second stage of labour**:

  - expedite delivery with episiotomy **(Section 6, pages 431 - 435)** and vacuum extraction **(Section 6, pages 387 - 390)** or forceps **(Section 6, pages 391-394)**
  - if presentation is breech perform breech extraction **(Section 6, page 401)**
  - prepare for the resuscitation of the new born **(Section 5, pages 307-310)**

- If the cord is not pulsating, the fetus is dead: deliver in the manner that is safest for the woman based on the proficiency of the health provider.



## 3.4.7 COMPOUND PRESENTATION

Compound presentation occurs when an arm prolapses alongside the presenting part. Both the prolapsed arm and the fetal head present in the pelvis simultaneously. Spontaneous delivery can occur only when the fetus is very small or dead and macerated. Arrested labour occurs in the expulsive stage.

**Assessment/Identification of the Problem**

- Conduct an abdominal examination;

- Conduct a vaginal examination and note the presenting part.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of compound presentation should be referred to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – PCV
  – grouping and cross-matching (2 units of blood)
  – urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Reassure the patient;

- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Replace the prolapsed arm if it is possible (this can sometimes occur):
  - Assist the woman to assume the knee-chest position **(Figure 25)**
  - Push the arm above the pelvic brim and hold it there until a contraction pushes the head into the pelvis;
- Proceed with management for normal childbirth.

**Figure 25:** Knee-chest position

- If the procedure fails or if the cord prolapses, deliver by Caesarean section **(Section 6, pages 402 - 412).**



### 3.4.8 OCCIPITO-POSTERIOR POSITION

Occipito-posterior position occurs when the fetal occiput is posterior in relation to the maternal pelvis **(see figures 26 and 27).** Spontaneous rotation to the anterior position occurs in 90% of cases. Arrested labour may occur when the head does not rotate and/or descend. Delivery may be complicated by perineal tears or extension of an episiotomy.

**Assessment/Identication of the Problem**

- Conduct an abdominal examination, and note that:
  - the lower part of the abdomen is flattened
  - fetal limbs are palpable anteriorly
  - the fetal heart sounds may be heard in the flanks

**Figure 26: Occipito-posterior presentation**

Occiput posterior

- Conduct a vaginal examination, and note that:
  - the posterior fontanelle is towards the sacrum
  - the anterior fontanelle may be easily felt if the head is deflexed

**Figure 27: Left occipito-posterior position**

Left occiput posterior

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of occipito-posterior position should be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2 units of blood)
  - urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Reassure the patient;
- **Refer** immediately to the next level of health care.

**Secondary and Tertiary Health Care Levels**

- If the membranes are intact, rupture the membranes with an amnion hook or a Kochers clamp;
- If the cervix is not fully dilated and there are no signs of obstruction, augment labour with oxytocin **(Section 6, pages 378 - 386);**
- If the cervix is not fully dilated and there are signs of obstruction, perform a Caesarean section **(Section 6, pages 402 - 412);**
- If there are no signs of obstruction but the fetal heart rate is abnormal (less than 120 or more than 160 beats per minute) at any stage, deliver by Caesarean section **(Section 6, pages 402 – 412);**
- If there are signs of obstruction irrespective of fetal heart rate at any stage, deliver by Caesarean section; **(Section 6, pages 402 – 412);**



- If the cervix is fully dilated but there is no descent in the expulsive phase, assess for signs of obstruction:
  - augment labour with oxytocin if there are no signs of obstruction
- If the cervix is fully dilated but the fetal head is 3/5 or more above the symphysis pubis or the leading bony edge of the fetal head is above -2 station, perform Caesarean section **(Section 6, pages 402 - 412)**;
- If the cervix is fully dilated but the fetal head is between 1/5 and 2/5 above the symphysis pubis or the leading bony edge of the fetal head is between 0 station and +2 station, deliver by vacuum extraction **(Section 6, pages 387 - 390)**
  - if this fails, perform Caesarean section **(Section 6, pages 402 - 412)**
- If the cervix is fully dilated and there are signs of obstruction but the fetus is dead, perform craniotomy **(Section 6, pages 414 - 415).**

## 3.5 PROLONGED LABOUR

Prolonged labour is when a woman has been in established labour for 12 hours or more without delivery.

**Assessment/Identification of the Problem**

- Take a quick history, ask for age, parity, duration of labour, how long membranes have ruptured, etc;
- Conduct a quick general physical examination;
- Conduct an abdominal examination noting:
  - fundal height and lie
  - the descent of the presenting part (fifth score as shown in **Figure 7, page 161)**
  - fetal heart rate
- Conduct a vaginal examination noting:
  - cervical dilatation
  - presenting part
  - engagement
  - caput/moulding, etc.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases prolonged labour should be referred to higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2 units of blood)
  - serum urea, electrolytes and creatinine
  - urinalysis (protein, sugar and acetone)



**Treatment**

**Primary Health Care Level**

- Set up an IV infusion of Normal saline;
- Reassure the patient;
- **Refer** immediately to the next level of health care.

**Secondary and Tertiary Health Care Levels;**

- If there are no signs of cephalopelvic disproportion or obstruction and the membranes are intact, rupture the membranes with an amnion hook or a Kochers forceps;
- Assess uterine contractions:
  - if uterine contractions are inefficient (less than three contractions in 10 minutes, each lasting less than 40 seconds), suspect inadequate uterine activity and augment labour using oxytocin **(Section 6, pages 378 - 386)**
  - if contractions are efficient (three or more contractions in 10 minutes, each lasting more than 40 seconds), suspect cephalopelvic disproportion, obstruction, malposition or malpresentation and treat accordingly.

**Note:** General methods of labour support (correction of dehydration, relief of bladder distension, if present and emotional support) may improve uterine contractions and accelerate progress.

## 3.6 INADEQUATE UTERINE ACTIVITY

If uterine contractions are inefficient and cephalopelvic disproportion and obstruction have been excluded, the most probable cause of prolonged labour is inadequate uterine activity.

**Inefficient uterine contractions are less common in a multigravida than in a primigravida. Hence, every effort should be made to rule out disproportion in a multigravida before augmenting labour with oxytocin.**

### Assessment/Identification of the Problem

- Take a quick history for age, parity, address, marital status, etc;
- Conduct a general physical examination;
- Check for vital signs;
- Conduct an abdominal examination;
  - inspect the abdomen for scar
  - check the fundal height, lie, the descent of the presenting part (fifth score **as shown in Figure 7, page 161**) and fetal heart sounds
- Conduct a vaginal examination for cervical dilatation, station and note caput, moulding, etc.

### Management

### Investigations

### Primary Health Care Level

- Suspected cases of inadequate uterine activity should be referred to a higher level of health care.



### Secondary and Tertiary Health Care Levels

- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2 units of blood)
  - urinalysis (protein, sugar and acetone)

### Treatment

### Primary Health Care Level

- Set up an IV line;
- Reassure the patient;
- **Refer** immediately to the next health care level.

### Secondary and Tertiary Health Care Levels

- Rupture the membranes with an amnion hook or a Kochers forceps and augment labour using oxytocin **(Section 6, pages 378 - 386)**
- Reassess progress by vaginal examination two hours after strong contractions have been established;
- If there is no progress between examinations, deliver by Caesarean section **(Section 6, pages 402 - 412)**
- If there is progress, continue oxytocin infusion and continue monitoring progress of labour.

## 3.7 PROLONGED SECOND STAGE OF LABOUR

The second stage of labour is said to be prolonged when delivery has not been achieved 1-2 hours after full dilatation of the cervix. Continuing maternal expulsive efforts increase fetal risk by reducing the delivery of oxygen to the placenta.

### Assessment/Identification of the Problem

- Take a quick history e.g. age, parity, address, marital status, etc;

- Conduct a general physical examination;
- Conduct an abdominal examination:
  - inspect the abdomen for scar
  - check the fundal height, lie and the descent of the presenting part (fifth score **as shown in Figure 7, page 161)** and fetal heart sounds
- Conduct a vaginal examination for cervical dilatation, station and note caput, moulding, etc.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of prolonged second stage of labour should be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2 units of blood)
  - urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Set up an IV line;
- Reassure the patient;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Assess the cause of the delay and manange accordingly;



- If there is poor maternal effort due to exhaustion, rehydrate with intravenous fluids;
- If malpresentation and obvious obstruction have been excluded, augment labour with oxytocin **(Section 6, pages 378 - 386)**
- If there is no descent after augmentation:
  - if the fetal head is not more than 1/5 above the symphysis pubis or the leading bony edge of the fetal head is at station 0, deliver by vacuum extraction **(Section 6, pages 389 - 390)** or forceps **(Section 6, pages 391 - 394)**
  - if the fetal head is between 1/5 and 3/5 above the symphysis pubis or the leading bony edge of the fetal head is at station 0, deliver by vacuum extraction **(Section 6, pages 387 - 390)**
  - if vacuum fails, deliver by Caesarean section **(Section 6, pages 402 - 412)**
  - if the fetal head is more than 3/5 above the symphysis pubis or the leading bony edge of the fetal head is above –2 station, deliver by Caesarean section.

## 3.8 CEPHALOPELVIC DISPROPORTION (CPD)

Cephalopelvic disproportion occurs because the fetus is too large or the maternal pelvis is too small. If labour persists with cephalopelvic disproportion, it may become arrested or obstructed. The best test to determine if a pelvis is adequate is a trial of labour. Clinical and X-ray pelvimetry can be useful but are of limited value.

**Assessment/Identification of the Problem**

- Take a quick history e.g. age, parity, address, marital status, etc;
- Conduct a general physical examination;
- Conduct an abdominal examination:
  - inspect the abdomen for scar
  - check the fundal height, lie and the descent of the presenting part (fifth score **as shown in Figure 7, page 161)** and fetal heart sounds
  - note good uterine contractions

- Conduct a vaginal examination for cervical dilatation, station, and note:

  - Caput, moulding, etc
  - fetal head is not engaged but has already acquired 2+ or more of moulding

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases cephalopelvic disproportion should be referred to higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – PCV
  – grouping and cross-matching (2 units of blood)
  – serum urea, electrolytes and creatinine;
  – urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Set up an IV line;
- Reassure the patient;
- Pass an indwelling urethral catheter;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Resuscitate the patient;



- Pass an indwelling urethral catheter;
- If cephalopelvic disproportion is confirmed, deliver by Caesarean section **(Section 6, pages 402 - 412);**
- If the fetus is dead, deliver by craniotomy **(Section 6, pages 414 - 415)** ;
- If the health provider is not proficient in craniotomy, deliver by Caesarean section **(Section 6, pages 402 - 412).**

## 3.9 OBSTRUCTED LABOUR

Obstructed labour is when there is failure to progress in labour despite good, efficient and regular uterine contractions. Obstructed labour can cause rupture of the uterus.

**Assessment/Identication of the Problem**

- Take a quick history e.g. age, parity, address, marital status, etc;
- Conduct a general physical examination;
- Conduct an abdominal examination:

  - inspect the abdomen for scar
  - check the fundal height, lie and the descent of the presenting part **(**fifth score **as shown in Figure 7, page 161)** and fetal heart sounds

- Conduct a vaginal examination for cervical dilatation, station, and note caput, moulding, etc.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of obstructed labour shoud be referred to higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Take blood for PCV or Hb estimation;
- Group and cross match 2 units of blood;
- Check urea, electrolytes and creatinine;
- Test urine for protein, sugar and acetone.

**Treatment**

**Primary Health Care Level**

- Set up an IV line;
- Reassure the patient;
- Pass an indwelling urethral catheter.
- **Refer** immediately to the next level of health care.

**Secondary and Tertiary Health Care Levels**

- Resuscitate the patient and correct electrolyte derangement;
- Ensure a self-retaining urethral catheter is in place;
- Give appropriate antibiotics and antacids;
- If the fetus is alive but the cervix is not fully dilated, deliver by Caesarean section **(Section 6, pages 402 - 412)**
- If the fetus is dead and cervix is fully dilated and the fetal head is engaged, deliver by craniotomy **(Section 6, pages 414-415)**
- If the health provider is not proficient in craniotomy, deliver by Caesarean section **(Section 6, pages 402 - 412)**;
- Leave indwelling urethral catheter for 10-14 days.



## 3.10 MULTIPLE GESTATION

Multiple gestation is when the gravid uterus contains more than one fetus.

**Assessment/Identification of the Problem**

- Take a good history of:
  - age, parity and LMP
  - exaggerated early symptoms of pregnancy
- Conduct an abdominal examination noting the following:
  - uterine size larger than period of gestation
  - palpation of more than two fetal poles
  - auscultation of two fetal heart sounds heard at two separate points and with different rates

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of multiple gestation should be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2 units of blood)
  - serum urea, electrolytes and creatinine
  - urinalysis (protein, sugar and acetone)
  - ultrasound scan to determine number of fetuses, presentation of the leading twin, placental localization and any fetal abnormality.

**Treatment**

**Primary Health Care Level**

- Reassure the patient;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Ensure an IV Infusion is in place;
- Monitor fetuses by intermittent auscultation of the fetal heart rates. If there are fetal heart rate abnormalities (less than 120 or more than 160 beats per minute), suspect fetal distress;
- Check the presentation of the leading (first) twin:
  - if it is cephalic presentation, allow labour to progress as for a singleton cephalic presentation and monitor progress in labour using a partograph **(Section 3, page 167)**
  - if it is breech presentation, deliver by Caesarean section **(Section 6, pages 402 - 412).**
  - if a transverse lie, deliver by Caesarean section **(Section 6, pages 402 - 412)**

**Leave a clamp on the maternal end of the umbilical cord and do not attempt to deliver the placenta until the last baby is delivered.**

**Second or Additional fetus(es)**

- Immediately after the first baby is delivered:
  - palpate the abdomen to determine lie of additional baby
  - correct to longitudinal lie by external version **(Section 6, pages 376-377)**
  - check fetal heart rate(s)
- Perform a vaginal examination to determine:



  - if there is a cord presenting **(Section 3, page 195)**
  - if the membranes are intact or ruptured
  - presentation of other fetus(es)

**Cephalic Presentation**

- If the fetal head is not engaged, manoeuvre the head into the pelvis manually (hands on abdomen), if possible;
- If the membranes are intact and the fetal head is engaged, rupture the membranes with an amnion hook or a Kochers forceps;
- Check fetal heart rate between uterine contractions;
- If uterine contractions are inadequate after birth of first baby, augment labour with oxytocin **(Section 6, pages 378 -386)** using rapid escalation to produce good uterine contractions (three contractions in 10 minutes, each lasting more than 40 seconds);
- If spontaneous delivery does not occur within 30 minutes of good uterine contractions or if there are fetal heart rate abnormalities (less than 120 or more than 160 beats per minute), deliver by Caesarean section **(Section 6, pages 402 - 412)**

## 3.11 RETAINED SECOND TWIN

Retained second twin occurs when the second twin is not delivered within 30 minutes of the delivery of the first twin.

**Assessment/Identification of the Problem**

- Take a quick history of labour if patient is referred;
- Palpate for uterine contractions, lie and presentation of the fetus;
- Palpate for full bladder;
- Auscultate for fetal heart rate;

- Conduct a vaginal examination.

**Management**

**Investigations**

**Primary Health Care Level**

- Cases of retained second twin shoud be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – PCV or Hb estimation
  – grouping and cross-matching (2 units of blood)
  – serum urea, electrolytes and creatinine
  – urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Set up an IV line;
- Reassure the patient;
- **Refer** immediately to the next level of health care.

**Secondary and Tertiary Health Care Levels**

- Maintain an IV line;
- **If fetus is in longitudinal lie** and membranes are intact, rupture the membranes and allow labour to progress accordingly;
- If uterine contractions are inadequate or there is uterine inertia, augment with oxytocin **(section 6, pages 378 – 386);**
- If the fetus is in oblique or transverse lie, conduct a vaginal examination to confirm dilatation of the cervix and state of the membranes:



- if membranes are intact and cervix is fully dilated, perform external version and deliver per vaginam or perform an internal podalic version and deliver by breech extraction
- if membranes are ruptured and the presenting part is still very high, deliver by Caesarean section **(Section 6, pages 402 - 412)**
- if the fetus is presenting by the breech and is estimated to be not larger than the first twin and the cervix is not contracted, consider a breech extraction or vaginal delivery **(Section 6, pages 395 - 401)**
- if the membranes are ruptured and the fetus is in transverse lie and alive, deliver by Cesaerean section **(Section 6, pages 402 - 412)**
- if the membranes are ruptured and the fetus is in transverse lie and dead, destructive operation such as decapitation may be done, otherwise Caesarean section **(Section 6, pages 402 - 412**) may be safer.

## 3.12 INTRAPARTUM HAEMORRHAGE

Bleeding in labour could either be due to placenta praevia, abruptio placentae, ruptured uterus or incidental causes.

### 3.12.1 ABRUPTIO PLACENTA

This is bleeding per vaginam occurring after 28 weeks of gestation and before delivery of the fetus from premature separation of a normally situated placenta.

**Assessment/Identification of the Problem**

- Take a good history;
- Check for pallor;
- Check for BP, pulse, temperature and respiratory rate;
- Conduct abdominal examination to check for tenderness, rigidity, lie, descent and fetal heart rate.

**Do not attempt vaginal examination until you have ruled out placenta praevia.**

**Investigations**

**Primary Health Care Level**

- Suspected cases of abruptio placenta shoud be referred to higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - FBC
  - grouping and cross-matching (2-4 units of blood)
  - bedside clotting time
  - serum urea, electrolytes and creatinine



  - urinalysis (protein, sugar and acetone)
  - ultrasound scan for placental localization and fetal heart activity

**Treatment**

**Primary Health Care Level**

- Set up an IV line;
- Reassure the patient;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Transfuse as necessary, preferably with fresh blood **(Section 1, pages 20 - 22);**
- If **bleeding is heavy** (evident or hidden), deliver as soon as possible:
  - if the cervix is **fully dilated**, deliver by vacuum extraction **(Section 6, pages 387 - 390)**
  - if **vaginal delivery is not imminent and the fetus is alive**, deliver by Caesarean section **(Section 6, pages 402 - 412)**
  - if **the fetus is dead,** aim for vaginal delivery

**In every case of abruptio placenta, be prepared for postpartum haemorrhage.**

- If bleeding is light to moderate (the mother is not in immediate danger), the course of action depends on the fetal heart rate:
  - if **fetal heart beats are absent**, rupture the membranes with an amnion hook or a Kochers clamp **(Section 6, pages 378 - 379)**

- If **contractions are poor**, augment labour with oxytocin **(Section 6, pages 378 - 384)**
- If the **cervix is unfavourable** (firm, thick, closed), perform Caesarean section **(Section 6, pages 402 - 412)**

– if **fetal heart rate is normal** or **abnormal** (less than 120 or more than 160 beats per minute):

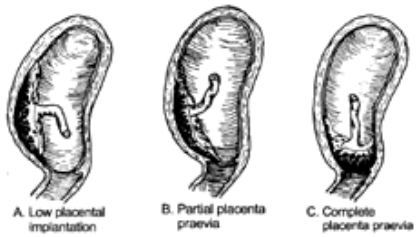
- perform rapid vaginal delivery;
- if **vaginal delivery is not possible**, deliver by immediate Caesarean section **(Section 6, pages 402 - 412)**

- Conduct active management of third stage of labour.

### 3.12.2 PLACENTA PRAEVIA

Placenta praevia is implantation of the placenta in the lower uterine segment of the uterus (at or near the cervix). Bleeding per vaginam occurs after 28 weeks of gestation (**Figure 28).**

**Figure 28: Implantation of the placenta at or near the cervix**




**Assessment/Identification of the Problem**

- Ask for a history of spontaneous, painless vaginal bleeding;
- Ask for LMP and determine the gestational age;
- Ask for history of an earlier bleeding in pregnancy;



**Note:** Bleeding per vaginam is the only sign and it is painless. The uterus is not tender or tense but fetal head remains unengaged. There may be malpresentation and the lie may be unstable.

- Quickly assess the amount of blood loss;
- Check for signs of shock:
  - pulse rate and volume
  - respiratory rate
  - blood pressure
  - pallor
- Examine the abdomen to determine the lie of the fetus, and fetal heart activity.

> **Note: Do not perform a vaginal examination unless preparations have been made for immediate Caesarean section**. A careful speculum examination may be performed to rule out other causes of bleeding such as cervicitis, trauma, cervical polyps or cervical malignancy. The presence of these, however, does not rule out placenta praevia.

**Management**

**Investigations**

**Primary Health Care Level**

- This is an **emergency, refer** immediately for expert care, after ensuring stability of the mother and the fetus by:
  - giving IV fluids through an intravenous route
  - giving oxygen

**Secondary and Tertiary Health Care Levels**

- Take blood for PCV;
- Group and cross-match 2-4 units of blood;

- Conduct an ultrasound scan to localize the placenta and assess fetal well-being.

**Treatment**

**Primary Health Care Level**

- **Refer** immediately to a higher level of health care

**Secondary and Tertiary Health Care Levels**

- Determine the following in order to decide the mode of management:

  – the amount of bleeding
  – the conditions of mother and fetus
  – the location of the placenta
  – the stage of the pregnancy

- Restore blood volume by infusing IV fluids (Normal saline or Ringers lactate)

- Assess the amount of bleeding; if **bleeding is heavy and continuous,** arrange for Caesarean section irrespective of fetal maturity **(Section 6, pages 402-412);**

- If **bleeding is light,** examine the woman and be prepared for either vaginal delivery or Caesarean section, as follows:

  – have IV infusion running and ensure that cross-matched blood is available
  – examine the woman in the operating theatre under general anaesthesia with the surgical team present
  – use a high level disinfected vaginal speculum to examine the cervix
  – If the cervix is **partly dilated and placental tissue is visible** (placenta praevia is confirmed), perform a Cesaerean section **(Section 6, pages 402 - 412)**
  – If the **cervix is not dilated,** cautiously palpate the vaginal fornices;



    - if **spongy tissue is felt** (placenta praevia is confirmed), perform a Cesaerean section **(Section 6, pages 402 - 412)**

    - if a **firm fetal head is felt** (major placenta praevia is ruled out), induce labour **(Section 6, pages 378 - 386)**

- If a **diagnosis of placenta praevia is still in doubt**, perform a cautious digital examination;

  – if **soft tissue is felt within the cervix** (placenta praevia is confirmed), perform a Cesaerean section **(Section 6, pages 402 – 412)**

  – if **membranes and fetal parts are felt** both centrally and marginally (placenta praevia is ruled out), proceed to deliver by induction **(Section 6, pages 378 - 386).**

> **Patients with placenta praevia are at high risk for postpartum haemorrhage and placenta accreta/increta, a common finding at the site of a previous Caesarean scar.**

- If **delivery is by Caesarean section** and there is **bleeding from the placental site:**

  – under-run the bleeding sites with sutures
  – infuse oxytocin 20 units in 1 litre IV fluids (Normal saline or Ringers lactate) at 60 drops per minute

- If **bleeding occurs during the postpartum period**, initiate appropriate management (**pages 262 - 272**). This may include artery ligation **(Section 6, pages 460 - 462)** or hysterectomy **(Section 6, pages 463 - 468).**

### 3.12.3 INCIDENTAL HAEMORRHAGE

This is bleeding from the genital tract or any other causes of genital tract haemorrhage apart from placenta praevia and abruptio placenta.

**Assessment/Identification of the Problem**

- Take a quick history;
- Conduct a quick physical examination: check BP, pulse, temperature and respiratory rate;
- Conduct a vaginal examination including a speculum examination:
  - check for cervical and vaginal lacerations

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Care Levels**

- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2-4 units of blood)
  - bedside clotting time
  - urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- **Refer** to a higher level of health care.



**Secondary and Tertiary Health Care Levels**

- Resuscitate the patient:
  - set up IV line and infuse Normal saline or Ringers lactate
  - give oxygen by face mask or nasally
- Identify cause(s) of bleeding and treat accordingly;
- Estimate blood loss and treat appropriately.

## 3.13 RUPTURED UTERUS

Ruptured uterus is a rent involving the uterine walls, which commonly occurs when labour is obstructed or with injudicious use of oxytocics, especially in multiparous women.

**TYPES OF RUPTURED UTERUS**

- **Partial rupture** occurs when the tear does not involve the serosa;
- **Complete rupture** occurs when the tear involves all the three layers.

**Assessment/Identification of the Problem**

- Take a quick history;
- Check for pallor and jaundice;
- Check vital signs (BP, pulse, respiration);
- Conduct an abdominal examination to confirm:
  - tenderness and
  - easily palpable fetal parts
- Auscultate for fetal heart sounds to assess viability of the fetus;
- Conduct a gentle vaginal examination.

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Care Levels**

- Conduct the following investigations:



  - PCV
  - grouping and cross-matching (2-4 units of blood)
  - serum urea and electrolytes
  - bedside clotting time
  - urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Resuscitate with IV infusion using a wide bore cannula;
- Give oxygen by face mask or nasal tube;
- **Refer** to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Resuscitate the patient:
  - set up an infusion line and put up Normal saline or Ringers lactate solution
  - give oxygen if necessary
  - insert urethral catheter and monitor urine output
- Give broad-spectrum antibiotics;
- Prepare for emergency laparotomy;
  - if the **uterus can be repaired with less operative risk** than hysterectomy would entail and the **edges of the tear are not necrotic**, repair the uterus **(Section 6, pages 455 - 459). T**his involves less time and blood loss than hysterectomy.

## 3.14 SHOCK

Shock is defined as failure of the circulatory system to maintain adequate perfusion of the vital organs. It is a life-threatening condition that requires immediate and intensive treatment.

**Shock can be as a result of:**

- Hypovolaemic or haemorrhagic shock due to placenta praevia, abruptio placenta or ruptured uterus.
- Endotoxic shock due to chorioamnionitis or septic obstructed labour.
- Inversion of the uterus.
- Amniotic fluid embolism.

**Assessment/Identification of the Problem**

- Take a quick and detailed history;
- Examine for pallor, cold clammy extremities, excessive sweating, altered sensorium;
- Record vital signs (low BP, fast weak pulse and rapid respiratory rate).

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV
  - grouping and cross-matching (2-4 units of blood)
  - serum urea, electrolytes and creatinine
  - urinalysis (protein, sugar and acetone)



**Treatment**

**Primary Health Care Level**

- Set up an IV infusion of Normal saline using a wide bore cannula or needle;
- Give oxygen with a face mask or nasal tube;
- Insert an indwelling urethral catheter;
- **Refer** to a higher level of care with a health provider to accompany the patient.

**Secondary and Tertiary Health Care Levels**

- Resuscitate the patient:
  - set up an infusion line of Normal saline using a wide bore cannula
  - if a peripheral vein cannot be cannulated, perform a venous cutdown;
  - give oxygen by face mask
  - transfuse with fresh whole blood preferably, if necessary
  - monitor vital signs quarter hourly
  - put patient in the left lateral position and ensure a patent airway
  - ensure that patient is kept warm but do not overheat
  - elevate the foot of the bed to increase return of blood to the heart
  - maintain urethral catheter and monitor fluid intake and urine output
  - assess for the cause of the shock and treat accordingly
- Reassess the patient continuously (see box below):

**Reassessment**

Continous management of the patient's condition is essential.

Signs of improvement include:

- stabilizing pulse (rate of 90 per minute or less)
- increasing blood pressure (systolic of 100 mmHg or more)

## 3.15 FETAL DISTRESS

Fetal distress is when the fetal heart rate is less than 120 beats or more than 160 beats or when the fetal heart rate is irregular plus or minus meconium stained liquor. This is a **dire emergency.**

**Assessment/Identification of the Problem**

- Examine the patient and note the following:

  - abnormal fetal heart rate
  - fresh meconium stained liquor provided presentation is not breech

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – PCV
  – grouping and cross-matching (2 units of blood)
  – serum urea and electrolytes
  – urinalysis (protein, sugar and acetone)
  – cardiotocography

**Treatment**

**Primary Health Care Level**

- Give oxygen with a face mask or nasal tube;
- Refer to a higher level of care;
- Maintain the patient in a left lateral position while on transit.



**Secondary and Tertiary Health Care Levels**

- Place the patient in the left lateral position;
- Give oxygen by face mask or nasally;
- Set up an IV infusion with Normal saline or Ringers lactate;
- Stop oxytocin if being administered;
- If the fetal heart rate becomes normal, continue the management of labour with close monitoring of the fetal heart rate;
- If the distress persists and cervix is not fully dilated, do a Caesarean section **(Section 6, pages 402 - 412)**;
- If cervix is fully dilated, expedite delivery with vacuum extractor **(Section 6, pages 387 - 390)**; or forceps **(Section 6, pages 391 - 394)**; or conduct breech extraction **(Section 6, page 401)** as appropriate;
- Involve the paediatrician at all stages of management.

## 3.16 MANAGEMENT OF ANAEMIC HEART FAILURE IN LABOUR

This refers to heart failure due to anaemia in pregnancy.

**Assessment/Identification of the Problem**

- Take a good history: ask for age, parity, gestational age, history of bleeding disorders, genotype, previous malarial attacks;
- Conduct a physical examination:

  - check for pallor, jaundice and pedal oedema
  - record BP, pulse, temperature and respiratory rate
  - conduct a cardiac examination to locate the apex beat (normal is in the $5^{th}$ left intercostal space, mid-clavicular line), heart sounds or murmurs

- Conduct an abdominal examination to rule out hepatosplenomegaly:
  - check fundal height, fetal lie, presentation and fetal heart sounds
- Conduct a vaginal examination to assess the stage of labour.

**Management**

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - FBC
  - genotype and malaria parasites
  - grouping and cross-matching (2 units of blood)
  - serum urea, electrolytes and creatinine
  - urinalysis (protein, sugar and acetone)
  - electrocardiography
  - echocardiography

**Treatment**

**Primary Health Care Level**

- **Refer** to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Nurse the patient in cardiac position;
- Limit IV fluids to decrease the risk of circulatory overload;
- Catheterize and keep strict input output chart;



- Transfuse with only packed or sedimented cells;
- Give 40 mg of IV frusemide with each unit of packed cells;
- Ensure adequate analgesia (pethidine, 50 mg-100 mg IV or IM slowly or pentazocine, 30 mg IV or IM;
- If oxytocin infusion is required, use a higher concentration at a slower rate while maintaining a fluid balance chart (e.g the concentration may be doubled if the rate of drops per minute decreased by half);
- Assist second stage with forceps **(Section 6, pages 391 - 394)** or vacuum extractor **(Section 6, pages 387 - 390)**
- Ensure active management of third stage of labour;
- Treat any identified cause of the anaemia;
- Involve the physician in the management of the patient.

**Note: Do note give ergometrine as this may cause massive return of blood to the heart which may worsen the heart failure.**

## 3.17 MANAGEMENT OF PRE-ECLAMPSIA

Pre-eclampsia is a condition occurring in the second half of pregnancy characterized by hypertension and proteinuria.

**Assessment/Identification of the Problem**

- Take a good history with emphasis on age, parity, gestational age, booking status, family history of hypertension;
- Check for pallor, jaundice and oedema;
- Check the blood pressure, pulse and temperature;
- Conduct an abdominal examination to assess the fundal height, fetal lie, presentation and fetal heart rate;
- Conduct a vaginal examination to assess the stage of labour.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases with pre-eclampsia should be referred to a higher level of health care

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - FBC
  - grouping and cross matching (2 units of blood)
  - serum urea, electrolytes and creatinine
  - urinalysis (protein, sugar and acetone)



**Treatment**

**Primary Health Care Level**

- Set up an IV infusion of 5% dextrose saline using a wide bore needle or cannula;
- Reassure the patient;
- **Refer** immediately to the next level of health care.

**Secondary and Tertiary Health Care Levels**

- Monitor blood pressure quarter-hourly;
- Give IV 10 mg hydrallazine slowly over 10 minutes if the diastolic BP is equal to or greater than 110 mmHg;
- In severe pre-eclampsia (BP of more than 160/110 mmHg), use anticonvulsant therapy (see eclampsia);
- Monitor labour with a partograph;
- If labour is progressing adequately (1 cm per hour) and fetal heart rate is normal, allow labour to continue and shorten second stage with forceps **(Section 6, pages 391 - 394)** or vacuum extraction **(Section 6, pages 387 - 390);**
- If labour is not progressing adequately or fetal heart rate is abnormal do a Caesarean section **(Section 6, pages 402 - 412);**
- Give IV oxytocin, 10 IU. Do not use ergometrine in the third stage of labour;
- Reassess the doses of antihypertensives after delivery;
- Counsel for family planning.

## 3.18 MANAGEMENT OF ECLAMPSIA IN LABOUR

Eclampsia is characterized by convulsions (fits) in women who usually but not always have signs and symptoms of pre-eclampsia.

**Assessment/Identification of the Problem**

This is an **obstetric emergency** and therefore needs immediate resuscitation and management.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of eclampsia in labour should be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – FBC
  – grouping and cross matching (2 units of blood)
  – serum urea, electrolytes, uric acid and creatinine
  – liver function test
  – bedside clotting time and clotting profile
  – urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Set up an infusion line;
- Reassure the relatives;
- Give diazepam, 10 mg IV slowly and 40 mg in 500 ml of intravenous fluids;
- Secure the airway by placing a padded spoon in the mouth;



- **Refer** immediately to the next health care level (patient should be accompanied by a health provider).

**Secondary and Tertiary Health Care Levels**

- In addition to measures taken above:

  - maintain the airway (by placing an oropharyngeal airway)
  - place patient on left lateral side to reduce risk of aspiration of secretions
  - suck mouth and nose as necessary
  - give oxygen by face mask or nasal tube
  - monitor vital signs closely
  - give antihypertensive (see below) if necessary
  - catheterize the bladder to monitor urine output and conduct urinalysis for proteinuria
  - examine the lung bases hourly to rule out pulmonary oedema.
  - conduct abdominal examination to assess the fundal height, lie, presentation and fetal heart rate
  - conduct a vaginal examination to assess the state of the cervix and stage of labour

- If diastolic BP is more than 110 mmHg, give antihypertensive drugs:

  - give hydrallazine 10 mg IV slowly over 10 minutes. Initial dose is followed by continous slow infusion of 40 mg of hydarallazine in a litre of infusion
  - if hydrallazine is not available, give labetolol, 10 mg IV
  - if response to labetolol is inadequate (diastolic blood pressure remains above 110 mmHg) after 10 minutes, give labetolol 20 mg IV. Increase the dose to 40 mg and then 80 mg if satisfactory response is not obtained after 10 minutes of each dose
  - if labetolol is not available, give nifedipine, 5 mg under the tongue
  - if response to nifedipine is inadequate (diastolic blood pressure remains above 110 mm Hg) after 10 minutes, give an additional 5 mg under the tongue

- Give magnesium sulphate if available to arrest and prevent convulsions as in the protocol on **page 237;**
- In the absence of magnesium sulphate, use the diazepam protocol for severe pre-eclampsia on **page 238.**

**Delivery**

Delivery should take place as soon as the patient's condition has stabilized. Delaying delivery to increase the fetal maturity will endanger the lives of both the woman and the fetus. In eclampsia, delivery should occur within 12 hours of the onset of convulsion, regardless of getational age.

- Assess the cervix:
  - If favourable (soft, thin, partly dilated), rupture the membranes with an amnion hook or a Kochers clamp and induce labour using oxytocin **(Section 6, pages 378-386)**
  - If unfavourable (firm, thick, closed) and the fetus is alive, deliver by Caesarean section **(Section 6, pages 402 - 412)**

- If there are fetal heart rate abnormalities (less than 120 or more than 160 beats per minute), deliver by Caesarean section;

- If safe anaesthesia is not available for Caesarean section or the fetus is dead or too premature for survival:
  - aim for vaginal delivery if cervix is favourable
  - if the cervix is unfavourable (firm, thick, closed), ripen the cervix using misoprostol, prostaglandins or a Foleys catheter **(Section 6, pages 385 - 386)** to achieve vaginal delivery

**Note:** If Caesarean section is performed, ensure that coagulopathy has been ruled out and safe general anaesthesia is available. Spinal anaesthesia is associated with the risk of hypotension. This risk can be reduced if adequate IV fluids (500 – 1000 ml) are infused prior to administration of the anaesthetic.

**Do not use local anaesthesia or ketamine in women with pre-eclampsia or eclampsia.**



**Magnesium sulphate protocol for severe pre-eclampsia and eclampsia**

**Loading dose**
- Give 4 g of magnesium sulphate solution IV slowly over 5 minutes;
- Follow promptly with 10 g of magnesium sulphate solution, 5 g in each buttock as deep IM injection with/without 1 ml of 2% lignocaine in the same syringe. Ensure that aseptic technique is practised when giving magnesium sulphate by deep IM injection. Inform the woman that a feeling of warmth will be felt when magnesium sulphate is given;
- If convulsions recur after 15 minutes, give 2 g magnesium sulphate IV over 5 minutes.

**Maintenance dose**
- Give 5 g magnesium sulphate $\pm$ 1 ml lignocaine 2% IM every 4 hours into alternate buttocks;
- Continue treatment with magnesium sulphate for 24 hours after delivery or the last convulsion, whichever occurs last.

**Before repeating drug administration, ensure that:**
- Respiratory rate is at least 16 per minute;
- Patella reflexes are present;
- Urinary output is at least 30 ml per hour over 4 hours.

**WITHHOLD OR DELAY DRUG IF THERE ARE SIGNS OF TOXICITY:**
- Respiratory rate falls below 16 per minute;
- Patella reflexes are absent;
- Urinary output falls below 30 ml per hour over preceding 4 hours;

**Closely monitor the woman for signs of toxicity (above) and keep an antidote ready (calcium gluconate, see below).**

**In case of respiratory arrest:**
- assist ventilation (mask and bag, anaesthesia apparatus, intubation)
- give calcium gluconate 1 g (10 ml) IV slowly until calcium gluconate begins to antagonize the effects of magnesium sulphate and respiration begins.

**(1 ml of 50% magnesium sulphate = 0.5 g; 1 ml of 20% magnesium sulphate = 0.2 g).**

**Use diazepam only if magnesium sulphate is not available**

### Diazepam protocol for severe pre-eclampsia and eclampsia

**Loading dose:**

- Diazepam, 10 mg IV slowly over 2 minutes;
- If convulsions recur, repeat loading dose.

**Maintenance dose:**

- Diazepam, 40 mg in 500 ml IV fluids (Normal saline or Ringers lactate). Titrate to keep the woman sedated but arousable;
- Do not give more than 100 mg in 24 hours
- Maternal respiratory depression may occur when the dose exceeds 30 mg in one hour. If it occurs:
  - assist ventilation (mask and bag, anaesthesia apparatus, intubation)

**Rectal administration:**

- Give diazepam rectally when access is not possible. The loading dose is 20 mg in a 10 ml syringe. Remove the needle, lubricate the barrel and insert the syringe into the rectum to half its length. Discharge the contents and leave the syringe in place, holding the buttocks together for 10 minutes to prevent expulsion of the drugs. Alternatively, the drug may be instilled in the rectum through a catheter;
- If convulsions are not controlled within 10 minutes, administer an additional 10 mg or more, depending on the size of the woman and her clinical response. Be prepared to assist ventilation.



## 3.19 MANAGEMENT OF A PATIENT WITH DIABETES MELLITUS IN LABOUR

Diabetes Mellitus in pregnancy is defined as fasting blood glucose greater than or equal to 8.0 mmol/l or a value >11 mmol/l, 2 hours after a 75 g glucose load (OGTT).

**Assessment/Identification of the Problem**

- Take a good history:
  - age, parity and gestational age,
  - past obstetric history including delivery of macrosomic babies (birth weight of 4 kg and above)
  - family history of diabetes or hypertension
  - enquire if patient is a known diabetic prior to pregnancy
- Conduct an abdominal examination to assess the fundal height, lie, presentation and fetal heart rate;
- Conduct a vaginal examination to assess the stage of labour.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of diabetes mellitus in labour should be referred to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV or Hb estimation
  - grouping and cross-matching (2 units of blood)
  - serum urea, electrolytes and creatinine
  - blood sugar, 2-4 hourly
  - urinalysis (protein, sugar and acetone) 4 hourly

**Treatment**

**Primary Health Care Level**

- Reassure the patient;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Set up a glucose and insulin infusion;
- Add 6 IU of insulin into 1 litre of dextrose saline to run 6 hourly;
- Also give 20 mmol of Potassium chloride into the infusion;
- Allow the patient to have a normal daily carbohydrate intake about 180 g;
- If the blood glucose rises, infusion rate can be increased;
- If the blood sugar falls, do not reduce the insulin infusion;
- Monitor the fetus closely with fetal heart auscultation hourly or electronic monitoring where available;
- Monitor labour with a partogragh;
- Beware of shoulder dystocia in macrosomic babies;
- If labour is not progressing satisfactorily, suspect cephalo-pelvic disproportion or if fetal heart rate is abnormal do a Caesarean section **(Section 6, pages 402 - 412)**
- Conduct active management of the third stage of labour;
- Inform the neonatologist to be available at the delivery of the baby;
- Counsel for family planning;
- Involve the physician in the management of the patient.



## 3.20 MANAGEMENT OF PATIENT WITH SICKLE CELL DISEASE IN LABOUR

The crises in sickle cell disease (SCD) are more frequent in pregnancy and there is increased risk of maternal morbidity and mortality especially in the last four weeks of pregnancy, during labour and in the first week of the puerperium.

**Assessment/Identification of the Problem**

- Take a good history as in **Section 2, pages 93 – 95;**
- Conduct a physical examination and check for the following:
  - temperature, pulse and blood pressure
  - weight and height
  - pallor, jaundice, oedema, varicose veins
  - state of hydration
  - psychological state (anxious or apprehensive)
- Conduct an abdominal examination and palpate for:
  - fundal height
  - presentation
  - engagement of the presenting part
  - signs of multiple pregnancy
- Ausculate for fetal heart rate;
- Conduct a vaginal examination:
  - determine the stage of labour noting dilatation, effacement, position of cervix and descent of the presenting part
  - conduct a pelvic assessment for its adequacy for safe vaginal delivery

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of SCD in labour should be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:

  – FBC
  – genotype
  – clotting time
  – grouping and cross-matching (2 units of blood)
  – liver function test
  – blood for malaria parasites
  – serum urea, electrolytes and creatinine
  – urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Reassure the patient;
- Refer immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Resuscitate patient:

  - set up an IV infusion line with 5% dextrose saline
  - give oxygen by face mask or nasal tube
  - give packed cells (fresh blood preferably) of haemoglobin AA, if necessary
  - give frusemide, 40 mg IV stat, in order not to overload the circulatory system
  - monitor labour with a partograph
  - give analgesics according to need (PRN)
  - if there is prolonged, obstructed labour or fetal distress, perform Caesarean section **(Section 6, pages 402 - 412)**
  - shorten second stage of labour by forceps **(Section 6, pages 391 - 394)** or vacuum extractor **(Section 6, pages 387-390)**
  - conduct active management of third stage of labour
  - after delivery of the baby, provide for immediate neonatal care
  - monitor vital signs closely
  - give broad spectrum antibiotics
  - counsel for family planning, preferably on the use of progestin-only injectables and implants.



## 3.21 MANAGEMENT OF HIV POSITIVE MOTHER IN LABOUR

An HIV-positive mother in labour is a woman who is infected with the HIV virus. The aim of management is to prevent transmission of the virus from mother to baby.

**Factors that increase the rate of transmission in labour are:**

- **Low CD4 cell count**
- **High viral load**
- **Prolonged rupture of membranes**
- **Invasive procedures such as fetal scalp electrodes and instrumental vaginal delivery**
- **Genital tract lacerations/tears during labour**

**Assessment/Identification of the Problem**

- Take a good history:

  - age, parity and gestational age
  - past obstetric history
  - previous history of STIs
  - antiretroviral (ARV) drug history

- Conduct a physical examination for pallor, jaundice and oedema;
- Check vital signs (temperature, pulse rate and respiratory rate);
- Conduct an abdominal examination to assess the fundal height, lie, presentation and fetal heart rate;
- Conduct a vaginal examination to assess the stage of labour.

**Management**

**Treatment**

**Primary Health Care Level**

- Admit the patient;

- If the patient is on ART, ensure that she takes her drug;
- If the patient is not already on ART, give either Nevirapine, 200 mg stat, or Zidovudine, 600 mg or Lamivudine in labour;
- Conduct the delivery as appropriate;
- Avoid artificial rupture of membranes (ARM);
- Avoid routine episiotomy;
- Minimize aggressive suction of the infant's mouth;
- Ensure that baby receives 2 mg per body weight of Nevirapine within 72 hours of delivery.

**Secondary and Tertiary Health Care levels**

- Monitor labour with a partograph;
- If patient is already on antretroviral drugs ensure that she takes her drug for that day;
- If not on ARV, give nevirapine, 200 mg orally stat;
- Ensure that baby receives 2 mg/kg of nevirapine within 72 hours of delivery;
- Minimize invasive procedures including artificial rupture of membranes;
- Avoid artificial rupture of membranes;
- Avoid routine episiotomy;
- Avoid assisted vaginal delivery (vacuum and forceps);
- Conduct liberal vaginal cleansing with 0.25% chlorhexidine;
- Conduct active management of third stage;
- Minimize aggressive sunction of the infant's mouth.



## 3.22 VAGINAL BIRTH AFTER CAESAREAN SECTION

It is a labour intended to achieve a vaginal delivery after a previous lower segment Caesarean section

**Assessment/Identification of the Problem**

- Take a history with emphasis on the indication for the previous Caesarean section and the post-operative period;
- Conduct a general examination to check for pallor, jaundice and oedema;
- Check the vital signs (temperature, pulse rate and BP);
- Conduct an abdominal examination to assess the fundal height, fetal lie, presentation, fetal descent and fetal heart rate;
- Conduct a vaginal examination to assess the stage of labour;
- Perform a clinical pelvimetry (assessment) to rule out a contracted pelvis.

**Management**

**Investigations**

**Primary Health Care Level**

- Cases of previous Caesarean section should be referred to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV or Hb estimation
  - grouping and cross-matching (2 units of blood)
  - serum urea, electrolytes and creatinine
  - urinalysis (protein, sugar and acetone)

**Treatment**

**Primary Health Care Level**

- Reassure the patient and relatives;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Set up an IV infusion of dextrose saline wity a wide bore cannula;
- Inform the theatre, anaesthetist and neonatologist on duty/call;
- Monitor vital signs closely (hourly);
- Monitor labour with a partogragh **(Section 3, pages 170–178);**
- Monitor fetal heart rate closely;
- If **cervical dilatation crosses the alert line** to the right of the partograph reassess patient for possible CPD and deliver by emergency Caesarean section **(Section 6, pages 402 - 412)**
- If there are **signs of imminent uterine rupture** (rapid maternal pulse, persistent abdominal pains and suprapubic tenderness, fetal distress) deliver immediately by Caesarean section **(Section 6, pages 402 - 412)**
- Avoid routine digital uterine exploration after delivery;
- Continue close monitoring even after vaginal delivery especially for bleeding per vaginam and rising maternal pulse.

**The preparation of this patient for trial of labour/scar will be with the intention of instituting surgical intervention within the shortest possible time, (5–15 minutes) if necessary.**



## 3.23 MANAGEMENT OF PRE-TERM LABOUR

This is the onset of labour before 37 completed weeks of gestation.

**Assessment/Identification of the Problem**

- Take a good history noting:
  - age, parity and gestational age
  - presence of fever
  - past obstetric history including previous pregnancies, abortions and deliveries
  - family history of diabetes or hypertension
- Check vital signs (temperature, pulse rate and BP);
- Conduct an abdominal examination to assess the fundal height, lie, presentation and fetal heart rate;
- Conduct a vaginal examination to assess the stage of labour; if liquor is present; check the colour (meconium stained, fresh or stale) odour and quantity.

**Investigations**

**Primary Health Care Level**

- Suspected cases of premature labour should be referred to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - PCV or Hb estimation
  - malaria parasites
  - grouping and cross-matching (2 units of blood)
  - serum urea, electrolytes and creatinine
  - urinalysis (protein, sugar and acetone)
  - urine microscopy, culture and sensitivity

**Treatment**

**Primary Health Care Level**

- Reassure the patient and relatives;
- **Refer** immediately to the next health care level.

**Secondary and Tertiary Health Care Levels**

- Set up an IV infusion of dextrose saline using a wide bore cannula;
- Monitor vital signs – blood pressure, pulse rate, respiratory rate and temperature;
- Conduct labour as in normal labour **(Section 3, pages 159 - 170);**
- Conduct vaginal delivery with special precautions.
  - give elective episiotomy **(Section 6, pages 431 - 435)**
  - guard the head with a forceps **(Section 6, pages 391 - 394)**
  - if the first stage of labour is delayed or prolonged, then do Caesarean section **(Section 6, pages 402 - 412)**

**Note:** In some patients in early latent phase of labour, contractions may wane and pregnancy can be allowed to continue and managed expectantly.

## SECTION FOUR: POSTPARTUM CARE

### 4.0 INTRODUCTION

Puerperium is the period from delivery of the baby and placenta to six weeks after delivery. Postpartum care is the care given to a woman and her baby during this period.

**The objectives of postpartum care are to:**

- **Detect early complications and abnormalities**
- **Ensure initiation of exclusive breastfeeding**
- **Motivate the mother for family planning**
- **Commence the baby on immunisation**
- **Refer appropriately if the need arises**

### 4.1 MANAGEMENT OF NORMAL POSTPARTUM PERIOD

#### Immediate Care of Patient with Normal Vaginal Delivery

- Establish mother-baby contact;
- Clean the mother;
- Examine the uterus to ensure it is hard and firm;
- Estimate blood loss;
- Check the vital signs;
- Encourage the mother to empty her bladder;
- Offer warm drink and food to the mother;
- Allow the mother to rest with her baby;
- Observe the mother's attitude towards her baby.

**Care of the perineum**

- Swab the vulva;



- Examine for abnormalities, e.g. growth;
- Check for lacerations, tears and bruises;
- Check for bleeding/lochia. Note the colour, quantity and odour;
- Apply sanitary towel;
- Educate the woman on vulval hygiene.

**Control of haemorrhage**

- Rub uterus for contraction;
- Check placenta and membranes for completeness;
- Repair any tears, lacerations or episiotomy immediately.

**Initiation of breastfeeding**

- Follow the 10 steps to successful breastfeeding;
- Breastfeed the baby immediately after delivery, at least within 30 minutes;
- Demonstrate positioning and attachment with return demonstration from mother **(Section 5, pages 299 - 302)**
- Highlight to the mother the importance of breastfeeding;
- Discuss how to prevent conditions that can hinder successful breastfeeding e.g. engorgement, cracked nipples, sore nipples, breast abscess, etc;
- Manage abnormal breast conditions.

**Care of episiotomy and repaired lacerations**

- Clean, repair and dry the wound;
- Check for bleeding and haematoma;

- Perform sitz bath twice daily;
- Encourage early ambulation and pelvic floor exercise;
- Educate mother on good nutrition, with plenty of fruits and vegetables for the mother;
- Give analgesics when necessary;
- Avoid hot water fomentation;
- Educate mother on vulval hygiene and toileting;
- Advise patient to avoid coitus until wound is properly healed;
- Give mother a one-week appointment to assess wound healing.

**Vitamin A Supplementation**

- Ensure that Vitamin A is given to the mother and the baby. Vitamin A is given by oral route to the baby at six months (100,000 IU) and to the mother within six weeks of delivery (200,000 IU).



## 4.2 MANAGEMENT OF BREAST DISORDERS

Breast disorders in the puerperium include breast engorgement, cracked nipples, retracted nipples, mastitis and breast abscess. These conditions can interfere with successful breastfeeding.

### 4.2.1 BREAST ENGORGEMENT

This is a condition when the breast milk is not emptied sufficiently and the breasts become enlarged, painful and tender.

**Assessment/Identification of the Problem**

- Take a history of:
  - date of delivery
  - whether baby is alive or not
  - onset and pattern of breastfeeding
  - onset of breast swelling
  - breast pain
  - fever
- Check the vital signs (BP, temperature, pulse rate, respiratory rate)
- Conduct breast examination noting:
  - engorgement
  - temperature
  - tenderness
  - condition of the nipple

**Management**

**Investigations**

**Primary Health Care Level**

- Check blood for PCV or Hb estimation;
- Check urine for protein, sugar and acetone;

**Secondary and Tertiary Health Care Levels**

- Check blood for PCV or Hb estimation;
- Check urine for protein, sugar and acetone.

**Treatment**

**Primary Health Care Level**

- Reassure the mother;
- Teach the mother how to relieve engorgement by:
  - applying warm compress
  - expressing breast milk either manually or by the use of breast pump (if baby is alive)
  - encouraging proper positioning and attachment **(Section 5, pages 299-302)**
  - encouraging use of firm brassier
- Give analgesics e.g. paracetamol two tablets three times a day;
- Encourage and support exclusive breastfeeding.

**Note:** Breast engorgement usually resolves after adequate expression of the breast milk

**Secondary and Tertiary Health Care Levels**

- Manage as at the PHC level;
- Suppress lactation if baby is not alive e.g. bromocriptine, 2.5 mg twice daily for 10 days.

### 4.2.2 CRACKED NIPPLES

This is a condition when the nipple develops fissures, and becomes sore and painful.

**Assessment/Identification of the Problem**

- Take a history of:



  - date of delivery;
  - onset and pattern of breastfeeding
  - breast swelling
  - breast pain
  - cracked or sore nipple
  - fever
- Check the vital signs (BP, temperature, pulse rate, respiratory rate);
- Conduct breast examination noting:
  - condition of the nipple;
  - bleeding from the nipple
  - engorgement;
  - temperature;
  - tenderness;

**Management**

**Investigations**

**Primary Health Care Level**

- Check blood for PCV or Hb estimation;
- Check urine for protein, sugar and acetone.

**Secondary and Tertiary Health Care Levels**

- Check blood for PCV or Hb estimation;
- Check urine for protein, sugar and acetone;
- Take a swab from the nipple for m/c/s.

**Treatment**

**Primary Health Care Level**

- Reassure the mother;

- Give analgesics for pain e.g. paracetamol 1000 mg, (2 tablets) three times daily;
- Teach the mother breast care, attachment and positioning of the baby **(Section 5, pages 299-302);**
- Encourage mother to continue breastfeeding and give breast milk on demand;
- Encourage her to take adequate fluids;
- If lesion is very extensive and progressing, which may be evidenced by fever or discharge, give antibiotics e.g ampicillin, 500 mg 6 hourly or Ampiclox, 500 mg 6 hourly or erythromycin, 500 mg 6 hourly for 5 days;
- Teach the mother to empty the breast by manual expression or the use of a breast pump;
- Do not rub any substance on the breast.

**Secondary and Tertiary Health Care Levels**

- Manage as at the primary health care (PHC) level.

### 4.2.3 RETRACTED (INVERTED) NIPPLE

This is a situation where the nipple does not protrude beyong the areola surface, and breastfeeding becomes difficult.

**Assessment/Identification of the Problem**

- Take a history of:
  - date of delivery
  - onset and pattern of breastfeeding
  - retracted nipple
  - difficulty in breastfeeding
  - breast pain
  - cracked or sore nipple
- Check the vital signs (BP, temperature, pulse rate, respiratory rate);



- Conduct breast examination noting:
  - retracted nipple
  - engorgement
  - temperature
  - tenderness

**Management**

**Investigations**

**Primary Health Care Level**

- Check blood for PCV or Hb estimation;
- Check urine for protein, sugar and acetone.

**Secondary and Tertiary Health Care Levels**

- Check blood for PCV or Hb estimation;
- Check urine for protein, sugar and acetone.

**Management**

**Primary Health Care Level**

- Reassure the mother;
- Teach the mother positioning and attachment of the baby to the breast **(Section 5, pages 299 - 301);**
- Supervise and encourage exclusive breastfeeding;
- **If retraction is severe**:
  - teach and encourage manual expression of breast milk or the use of breast pump
  - feed baby with expressed breast milk
- Teach the mother the care of the breast.

**Secondary and Tertiary Health Care Levels**

- Manage as at PHC level.

### 4.2.4 MASTITIS

This is the inflammation of the mammary gland, which could occur in the puerperium and can interfere with breastfeeding.

**Assessment/Identification of the Problem**

- Take a history of:
  - date of delivery
  - whether baby is alive or not
  - onset and pattern of breastfeeding
  - onset of breast swelling
  - breast pain
  - nipple discharge
  - fever
- Check the vital signs (BP, temperature, pulse rate, respiratory rate)
- Conduct breast examination noting:
  - engorgement
  - temperature
  - tenderness
  - condition of the nipple
  - nipple discharge

**Management**

**Investigations**

**Primary Health Care Level**

- Check blood for PCV or Hb estimation;
- Check urine for protein, sugar and acetone.



**Secondary and Tertiary Health Care Levels**

- Take blood for FBC and blood culture;
- Check urine for protein, sugar and acetone;
- Take a swab from the nipple for m/c/s

**Treatment**

**Primary Health Care Level**

- Reassure the mother;
- Teach the mother how to relieve engorgement by:
  - applying warm compress
  - expressing breast milk either manually or by the use of breast pump
  - encouraging proper positioning and attachment **(Section 5, pages 299 - 301)**
  - encouraging use of firm brassier
- Give analgesics e.g. paracetamol two tablets three times a day;
- Give antibiotics, e.g., Ampiclox, 500 mg 6 hourly or erythromycin, 500 mg 8 hourly;
- Encourage and support exclusive breastfeeding.

**Secondary and Tertiary Health Care Levels**

- Manage as at the PHC level;
- Modify antibiotic treatment based on culture result.

### 4.2.5 BREAST ABSCESS

A breast abscess is a localized collection of pus and can be very painful and tender. It usually follows acute mastitis.

**Assessment/Identification of the Problem**

- Take a history of:
  - onset of breast pain, swelling
  - breast discharge including bleeding from the breast
  - fever, chills and rigors
- Examine the breast for warmth, redness and tenderness;
- Check the vital signs.

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for PCV.

**Secondary and Tertiary Health Care Levels**

- Conduct the following investigations:
  - FBC
  - breast discharge for m/c/s

**Treatment**

**Primary Health Care Level**

- Support the mother psychologically;
- Apply warm compress;
- Give analgesic e.g. paracetamol two tablets three times a day;
- Give antibiotics, e.g., Ampiclox, 500 mg 6 hourly or erythromycin, 500 mg 8 hourly;
- Perform incision and drainage if possible and send the specimen for m/c/s;



- Encourage liberal fluid intake;
- Encourage mother on breastfeeding on the unaffected side;
- Teach her on the positioning and attachment of the baby **(Section 5, pages 299 - 301);**
- Dress wound daily.

**Secondary and Tertiary Health Care Levels**

- Manage as at PHC level;
- Modify antibiotic treatment according to sensitivity result.

## 4.3 MANAGEMENT OF POSTPARTUM HAEMORRHAGE (PPH)

Postpartum haemorrhage (PPH) is vaginal bleeding after delivery in excess of 500 ml or any amount that can cause symptoms. Common causes of PPH include uterine inertia, retained placenta, ruptured uterus and uterine inversion.

### 4.3.1 UTERINE INERTIA (ATONIC UTERUS)

It is the inability of the uterus to contract effectively after expulsion of the baby.

**Assessment/Identification of the Problem**

- Take a history of:
  - age and parity
  - past history of PPH
  - index pregnancy
  - past obstetric history
  - mode of delivery
- Conduct a physical examination to:
  - check for pallor, sweating and cold clammy extremities
  - check vital signs
- Examine the abdomen for uterine size, consistency and tenderness;
- Perform a vaginal examination to check for:
  - lacerations and tears
  - retained products of conception

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for PCV or Hb estimation.



**Secondary and Tertiary Health Care Levels**

- Take blood for:
  - PCV or Hb estimation
  - grouping and cross-matching of two units of blood
  - urea and electrolytes
  - bedside clotting time and clotting profile

**Treatment**

**Primary Health Care Level**

**If placenta has been delivered and there is bleeding:**

- Put baby to the breast;
- Ensure bladder is empty;
- Massage uterus for contraction;
- Repeat IM ergometrine, 0.5 mg or IV ergometrine, 0.25 mg or Syntometrine, 1 ml or IV oxytocin, 10 IU (if uterus has not contracted);
- If **uterus has not contracted** commence intravenous Normal saline plus 20 units Syntocinon to run fast until uterus is well contracted;
- Do manual compression of the uterus if not well contracted;
- Suture tears and lacerations accordingly if identified;
- Monitor vital signs.

**If placenta has not been delivered and there is bleeding:**

- Empty the patient's bladder;
- Put baby to breast;
- Rub up the uterus for a contraction;

- Repeat IM ergometrine 0.5 mg or IV ergometrine, 0.25 mg or IV oxytocin, 10 IU to effect good uterine contraction;
- Deliver the placenta and membranes by controlled cord traction or manual removal if retained **(Section 6, pages 436 - 439)**
- Give broad spectrum antibiotics.
- If bleeding persists, refer the patient to secondary or tertiary health care level with all relevant documents, and make sure she is accompanied by a health care provider.

**Secondary and Tertiary Health Care Levels**

- In addition to the measures taken at PHC level;
  - if Hb is lower than 9 g/dl or patient's clinical condition is worsening, arrange for blood transfusion ( **section 1 pages 20-22)**

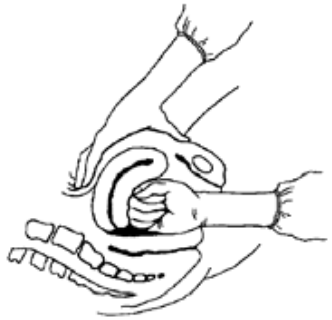
**If bleeding persists and placenta has been delivered:**

- Continue intravenous infusion with Normal saline containing 20-40 units of syntocinon to run fast until uterus contracts;
- Repeat ergometrine, 0.5 mg IM or 0.25 mg IV;
- If cervical laceration is identified, suture accordingly;
- Monitor vital signs hourly;
- Insert a urethral catheter to monitor fluid intake and urinary output;
- if **bleeding continues** in spite of management above, conduct a bimanual compression of the uterus:
  - wearing high level disinfected or sterile gloves, insert a hand into the vagina and remove any blood clots from the lower part of the uterus or cervix
  - place a fist into the anterior fornix and apply pressure against the anterior wall of the uterus



  - with the other hand, press deeply into the abdomen behind the uterus, applying pressure against the posterior wall of the uterus
  - maintain compression until bleeding is controlled and the uterus contracts **(Figure 29).**

**Figure 29: Bimanual compression of the uterus**



- Alternatively, compress the aorta **(Figure 30 )**
  - apply downward pressure with a closed fist over the abdominal aorta directly through the abdominal wall:
    - the point of compression is just above the umbilicus and slightly to the left;
    - aortic pulsations can be felt easily through the anterior abdominal wall in the immediate postpartum period
  - with the other hand palpate the femoral pulse to check the adequacy of compression:
    - if the pulse is palpable during compression, the pressure exerted by the fist is inadequate;
    - If the femoral pulse is not palpable, the pressure exerted is adequate;
  - maintain compression until bleeding is controlled.

**Figure 30: Compression of abdominal aorta and palpation of femoral pulse**

**Packing the uterus is ineffective and wastes precious time**.

- **If bleeding continues,** prepare the patient for exploratory laparotomy. Perform internal iliac artery ligation, uterine artery ligation **(Section 6, pages 460 – 462)** or hysterectomy **(Section 6, pages 463 - 468)** as necessary;

- Give broad spectrum antibiotics.

**If placenta has not been delivered:**

- Prepare patient for theatre for manual removal of placenta **(Section 6, pages 436 - 439);**

- Continue with antibiotics.

### 4.3.2 RETAINED PLACENTA

A retained placenta occurs when the placenta is not delivered within 30 minutes of delivery of the baby. There may or may not be bleeding.



**Assessment/Identification of the Problem**

- Take a history of:

  - age and parity,
  - past history of PPH
  - index pregnancy
  - past obstetric history
  - mode of delivery

- Conduct a physical examination to:

  - check for pallor, sweating and cold clammy extremities

- Check the vital signs (temperature, pulse rate, respiratory rate and BP);

- Examine the abdomen for uterine size, consistency and tenderness;

- Perform a vaginal examination to check for:

  - retained placenta (within the uterus or vagina)
  - lacerations and tears

- Check for full bladder.

**Management**

**Investigations**

**Primary Health Care Level**

- Take blood for PCV or Hb estimation.

**Secondary and Tertiary Health Care Levels**

- Take blood for:

  - PCV or Hb estimation
  - grouping and cross-matching of 2 units of blood
  - urea and electrolytes
  - bedside clotting time and clotting profile

**Treatment**

**Primary Health Care Level**

- Apply controlled cord traction to remove the placenta;

  **Note**: Avoid forceful cord traction and fundal pressure, as they may cause uterine inversion.

- If the placenta is not expelled, give oxytocin, 10 units IM if not already done in active management of third stage;

- Ensure that the bladder is empty. Catheterize the bladder if necessary;

- If the placenta is undelivered after 30 minutes of oxytocin stimulation and controlled cord traction, refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- In additrion to measures taken at PHC level:

  - perform manual removal of placenta **(Section 6, pages 436 – 439)**

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

- Give approprite antibiotics;

- If bleeding continues, reassess for DIC and treat accordingly **(Section 3, pages 270 - 272)**

### 4.3.3 RUPTURED UTERUS

Uterine rupture can present as PPH. For management of ruptured uterus see **Section 3, pages 224–225 and Section 6, pages 455– 459.**



### 4.3.4 UTERINE INVERSION

This is a condition in which the body of the uterus becomes either partially or completely turned inside out after delivery of the fetus. It can be complicated by bleeding and shock.

**Assessment/Identification of the the Problem**

- Take a history of:

  - age and parity
  - past history of PPH and uterine inversion
  - index pregnancy
  - past obstetric history
  - mode of delivery including delivery of the placenta

- Conduct a physical examination to check for pallor, sweating and cold clammy extremities;

- Check the vital signs;

- Examine the abdomen for uterine size, consistency and tenderness;

- Inspect the vagina and observe the uterus outside the vulva.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of uterine inversion should be referred immediately to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Take blood for:

  - PCV or Hb estimation
  - grouping and cross-matching of 2 units of blood
  - urea and electrolytes
  - bedside clotting time and clotting profile

**Treatment**

**Primary Health Care Level**

- Set up an IV infusion of Normal saline or Ringers lactate using a wide bore cannula or needle;
- Insert an indwelling urethral catheter;
- Give analgesics for pain relief;
- **Refer** to secondary or tertiary health care level.

**Secondary and Tertiary Health Care Levels**

- Maintain an IV infusion of Normal saline or Ringers lactate using a wide bore cannula or needle;
- Monitor fluid intake and output;
- Insert an indwelling urethral catheter to minotor urinary output;
- Replace uterus **(Section 6, pages 451 - 454)** as soon as possible, peeling the placenta off if still attached to the uterus under anaesthesia;
- Give pethidine if the patient is in severe pain;
- If bleeding continues, assess for possible Disseminated Intravascular Coagulation **( see below);**
- Give prophylactic antibiotics;
- If necrosis is suspected, perform vaginal hysterectomy.

## 4.3.5 DISSEMINATED INTRAVASCULAR COAGULOPATHY (DIC)

This is a condition in which the patient's blood does not clot. Disseminated intravascular coagulopathy (DIC) is an emergency that



requires immediate transfusion of fresh whole blood or referral to a centre where such facility is available.

**Assessment/Identification of the Problem**

- Take a history of:
  - age and parity
  - index pregnancy
  - past obstetric history
  - antepartum haemorrhage, especially abruptio placenta
  - eclampsia
  - amniotic fluid embolism
  - intrauterine fetal death
  - mode of delivery, including delivery of the placenta
- Conduct a physical examination to:
  - check for signs of shock (pallor, sweating, cold clammy extremities)
  - check the vital signs
- Examine the abdomen for uterine size, consistency and tenderness;
- Inspect for sites of bleeding.

**Management**

**Investigations**

**Primary Health Care Level**

- Suspected cases of DIC should be referred immediately to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Take blood for:
  - FBC including platelets
  - grouping and cross-matching of 4 units of **fresh whole** blood
  - urea and electrolytes
  - bedside clotting time and clotting profile
  - liver function test

**Treatment**

**Primary Health Care Level**

- **Refer** immediately to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Treat the possible causes of coagulation failure:

  - abruptio placenta **(Section 3, pages 216 - 218)**
  - eclampsia **(Section 3, pages 234 - 238)**

- Give **fresh whole** blood to replace clotting factors and red cells;

- If fresh whole blood is not available, choose one of the following based on availability:

  - fresh frozen plasma for replacement of clotting factors (15 ml/kg body weight)
  - packed (or sedimented) red cells for red cells replacement
  - cryoprecipitate to replace fibrinogen
  - platelet concentrates (if bleeding continues and the platelet count is less than 20,000)



## 4.4 MANAGEMENT OF POSTPARTUM INFECTIONS

### 4.4.1 PUERPERAL SEPSIS

This is bacterial infection originating in the reproductive tract during labour or the puerperium. It is characterised by fever, offensive vaginal discharge, bulky uterus, lower abdominal pain, chills and rigors.

**Assessment/Identification of the Problem**

- Obtain a history of:

  - date and time of delivery
  - onset of fever
  - type of abdominal pain
  - nature of vaginal discharge

- Conduct a physical examination and check the vital signs;

- Conduct abdominal examination to check for uterine tenderness and size;

- Conduct vaginal examination to check for:

  - vaginal discharge
  - retained products of conception
  - cervical excitation tenderness
  - adnexal tenderness
  - uterine size

**Investigations**

**Primary Health Care Level**

- Take blood for PCV or Hb estimation;

- Conduct a urinalysis for protein and sugar.

**Secondary and Tertiary Health Care Levels**

- Take blood for:
  - FBC including platelet count
  - grouping and cross-matching of 2 units of blood
  - urea and electrolytes
  - bedside clotting time and clotting profile
  - culture and sensitivity
- Take urine for urinalysis and m/c/s
- Take endocervical and high vaginal swabs for m/c/s.

**Treatment**

**Primary Health Care Level**

- Encourage vulval hygiene;
- Tepid sponge if necessary;
- Give analgesics and antipyretics in case of fever;
- Give broad spectrum antibiotics e.g., Ampiclox, 500 mg orally 6 hourly, metronidazole, 400mg orally 8 hourly;
- Examine the perineum for broken down perineal wound or episiotomy and refer;
- Examine the lochia;
- Advise sitz bath with salt water, potassium permanganate or Dettol;
- Give oral ergometrine for five to seven days if there is retained products of conception/membranes;
- Do Manual Vacuum Aspiration **(Section 6, pages 423 - 427)** if there is skilled MVA provider, if not refer;
- If condition does not improve after 48 hours despite above intervention, refer to secondary or tertiary health care level.



**Secondary and Tertiary Health Care Levels**

- In addition to measures taken at PHC:
  - put up an IV infusion of Normal saline or Ringers lactate using a wide bore cannula or needle
  - give broad-spectrum antibiotics IV while awaiting results of investigations
  - make sure the uterus is empty, if not evacuate with MVA **(Section 6, pages 423 - 427)**
  - give haematinics and blood transfusion, if necessary

## 4.4.2 ENDOMETRITIS

This is an infection of the endometrium or decidua with extension into the myometrium and parametrial tissues.

**Assessment/Identification of the Problem**

- Obtain a history of:
  - date and time of delivery
  - onset of fever if any
  - type of abdominal pain
  - nature of vaginal discharge
- Conduct a physical examination and check for pallor and the vital signs (temperature, pulse rate and BP);
- Conduct abdominal examination to check for uterine tenderness and size;
- Conduct vaginal examination to check for:
  - lochia (colour, quantity, odour and contents)
  - retained products of conception
  - cervical excitation tenderness
  - adnexal tenderness
  - uterine size

**Investigations**

**Primary Health Care Level**

- Take blood for PCV or Hb estimation;
- Take urine for urinalysis and m/c/s;

**Secondary and Tertiary Health Care Levels**

- Take blood for:
  - FBC including platelet count
  - urea and electrolytes
  - culture and sensitivity
- Take urine for urinalysis (protein and sugar) and m/c/s;
- Take endo-cevical and high vaginal swabs for m/c/s.

**Treatment**

**Primary Health Care Level**

- Give antibiotics, analgesics and haematinics;
- If fever persists, refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- In addition to the measures taken at PHC level;
- Give a combination of antibiotics such as:
  - Ampiclox, 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
- Change antibiotics according to sensitivity results
- If fever still persists after 72 hours of initiating antibiotics, re-evaluate the patient and review the diagnosis:



  - if there are retained placental products, explore the uterus and remove the products using ovum forceps or MVA **(Section 6, pages 423 - 427)**
  - if there is no improvement and there are signs of peritonitis, manage as indicated in **Section 4, pages 280 - 282**
- Transfuse blood **(Section 1 pages 20-22**) if necessary;
- If uterus is necrotic and septic, perform subtotal hysterectomy **(Section 6, pages 464 - 467)** where facilities are available.

### 4.4.3 WOUND ABSCESS AND WOUND HAEMATOMA

- If there is **pus or fluid**, open and drain the wound;
- Remove infected skin or subcutaneous sutures and debride the wound. Do not remove fascial sutures;
- If there is an abscess without cellulitis, antibiotics are not required;
- Place a damp dressing on the wound and have the woman return to change the dressing every 24 hours;
- Advise the woman on the need for good hygiene and to wear clean pads or cloths that she changes often.

### 4.4.4 WOUND CELLULITIS AND NECROTISING FASCIITIS

- If there is **fluid or pus**, open and drain the wound;
- Remove infected skin or subcutaneous sutures and debride the wound. Do not remove fascial sutures;
- If **infection is superficial and does not involve deep tissues,** monitor for development of an abscess and give a combination of antibiotics:

– Ampiclox, 500 mg orally 6 hourly for 5 days

– PLUS metronidazole, 400 mg orally 8 hourly for 5 days

- If the **infection is deep, involves muscles and is causing necrosis** (nectrotising fasciitis), give a combination of antibiotics until necrotic tissue has been removed and the woman is fever-free for 48 hours:

  – Penicillin G, 2 million units IV every 6 hours
  – PLUS gentamicin, 5 mg/kg body weight IV every 24 hours
  – PLUS metronidazole, 500 mg IV every 8 hours

- Once the **woman is fever-free for 48 hours,** give:

  - Ampiclox, 500 mg 6 hourly for 5 days
  - PLUS metronidazole, 400mg 8 hourly for 5 days

**Note:** Necrotising fasciitis requires wide surgical debridement. Perform secondary closure 2-4 weeks later, depending on resolution of infection.

- If the **woman has a severe infection or necrotising fasciitis,** admit her to the hospital for management and change wound dressing twice daily.

### 4.4.5 PELVIC ABSCESS

This is collection of pus within the pelvis. There are several causes, such as poor infection prevention practices in the course of labour or pre-existing sexually transmitted infections.

**Assessment/Identification of the Problem**

- Obtain history on:

  - date and time of delivery
  - onset of fever, if any
  - nature of abdominal pain
  - nature of vaginal discharge

- Conduct a physical examination and check for pallor and the vital signs (temperature, pulse rate and BP);



- Conduct abdominal examination to check for uterine tenderness and size;

- Conduct vaginal examination to check for:

  - lochia (colour, quantity, odour and contents)
  - retained products of conception
  - cervical excitation tenderness
  - adnexal tenderness
  - uterine size

**Investigations**

**Primary Health Care Level**

- Take blood for PCV or Hb estimation;

- Conduct a urinalysis for protein and sugar.

**Secondary and Tertiary Health Care Levels**

- Take blood for:

  - FBC including platelet count
  - urea and electrolytes
  - culture and sensitivity

- Take urine for m/c/s;

- Conduct a urinalysis for protein and sugar;

- Take a high vaginal swab and endocervical swab for m/c/s;

- Perform pelvic ultrasound scan to confirm the presence of abcess in the pelvis.

**Treatment**

**Primary Health Care**

- Give analgesics;

- Give antibiotics;

- **Refer** to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Resuscitate if in shock;
- Set up an IV infusion of Normal saline or Ringers lactate using a wide bore cannula or needle;
- Give IV antibiotics;
- Drain the abscess by laparotomy or colpotomy **(Section 6, page 430)**
- Take wound swab for m/c/s;
- Relieve pain with analgesics;
- Modify antibiotic treatment based on sensitivity result.

### 4.4.6 PERITONITIS

This is infection of the peritoneum.

**Assessment/Identification of the Problem**

- Obtain a history of:
  - date and time of delivery
  - onset of fever
  - vomiting
  - nature of abdominal pain
  - abdominal distension
  - constipation
- Conduct a physical examination and check for pallor and the vital signs (temperature, pulse rate and BP);
- Conduct an abdominal examination to check for:
  - abdominal distension



  - tenderness and guarding
  - reduced or absent bowel sounds
- Conduct a vaginal examination to exclude:
  - lochia (colour, quantity, odour and contents)
  - cervical excitation tenderness
  - adnexal tenderness
  - bugginess of the pouch of Douglas

**Investigations**

**Primary Health Care Level**

- Take blood for PCV or Hb estimation;
- Conduct a urinalysis for protein and sugar.

**Secondary and Tertiary Health Care Levels**

- Take blood for:
  - FBC including platelet
  - urea and electrolytes
  - culture and sensitivity
- Conduct urinalysis and urine m/c/s;
- Take a high vaginal swab and endocervical swab for m/c/s;
- Perform a plain abdominal X-ray.

**Treatment**

**Primary Health Care Level**

- Set up an IV line;
- **Refer** to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Maintain on IV infusion of Normal saline or Ringers lactate using a wide bore cannula or needle;
- Pass a nasogastric tube for suction;
- Monitor fluid intake and ouput;
- Insert an indwelling urethral catheter for monitoring urinary output.
- Give a combination of antibiotics until the woman is fever free for 48 hours:
  - Ampiclox, 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 OR
  - adjust antibiotics according to sensitivity results
- Perform a laparotomy if indicated.

## 4.4.7 TETANUS

Tetanus is an infection caused by *Clostridium Tetani*. It is common in unsupervised septic delivery at home. Tetanus Toxoid immunisation in pregnancy is intended to prevent against tetanus infection.

**Assessment/Identification of the Problem**

- Obtain a history of:
  - spasms and difficulty in swallowing
  - stiffness of the neck
  - date and time of delivery
  - place of delivery and attendant at delivery
  - onset of fever
  - trauma or injury
  - tetanus toxiod immunisation
- Conduct a physical examination to:
  - assess level of consiousness



  - check for pallor
  - check the vital signs (temperature, pulse rate, BP and respiratory rate)
- Conduct abdominal examination to check for:
  - abdominal distension
  - tenderness and guarding
  - reduced or absent bowel sounds
- Conduct a central nervous system examination;
- Conduct a vaginal examination to check for septic wounds.

**Investigations**

**Primary Health Care Level**

- Refer to a higher level of health care.

**Secondary and Tertiary Health Care Levels**

- Take blood for:
  - FBC including platelets
  - urea and electrolytes
  - culture and sensitivity
- Collect urine for m/c/s;
- Conduct urinalysis for protein and sugar;
- Take high vaginal swab and endocervical swabs for m/c/s.

**Treatment**

**Primary Health Care Level**

- Reassure the relatives;
- Refer to a secondary or tertiary health care facility.

**Secondary and Tertiary Health Care Levels**

- Nurse in a quiet room and monitor closely;
- Check the vital signs;
- Avoid unnecessary stimuli;
- Control spasms with diazepam;
- Pass a nasogastric tube;
- Insert a urethral catheter;
- Assess the patient's breathing and put on the ventilator, if necessary;
- Commence on oxygen therapy;
- Give anti-tetanus serum (10,000 IU) after a test dose to neutralize the circulating toxins;
- Give tetanus toxoid 0.5 ml IM;
- Give Benzyl penicillin 2 million units IV, 4 - 6 hourly for 48 - 72 hours then Ampicillin, 500 mg orally 6 hourly for 10 days;
- Maintain hydration and nutrition;
- Treat secondary infections;
- Remove the cause of sepsis (retained products of conception);
- Refer to physiotherapy as soon as condition improves, if necessary.



## 4.5 POSTPARTUM MANAGEMENT OF PATIENTS WITH MEDICAL DISORDERS

Pregnancy and labour can worsen medical disorders, which lead to complications in the postpartum period. In the same vein, medical conditions may also arise in this period.

### 4.5.1 POSTPARTUM ANAEMIA

**Anaemia can be defined as haemoglobin level lower than 10 g/dl or PCV less than 30%. It may be:**

- **Mild (Hb 8.1 to 9.9 g/dl or PCV between 24% to 29%)**
- **Moderate (Hb 6.7 to 8.0 g/dl or PCV between 19% to 23%)**
- **Severe (Hb 6.6 g/dl or less or PCV of 18% or less)**

**Assessment/Identification of the Problem**

- Take history of pregnancy, labour and puerperium;
- Conduct a physical examination to check for pallor and dehydration;
- Check vital signs and record accurately;
- Examine the abdomen to make sure that the uterus is well contracted;
- Estimate the blood loss at delivery;
- Inspect the perineum, vulva and vagina for bleeding, tears and lacerations;
- Check lochia for colour, quantity, odour and contents;
- Examine placenta and membranes to make sure that they are complete.

**Management**

**Investigations**

**Primary Health Care Level**

- Check PCV or Hb;
- Conduct a stool microscopy;
- Take blood and make a smear for malaria parasites.

**Secondary and Tertiary Health Care Level**

- Take blood for the following:
  - FBC
  - genotype
  - grouping and cross-matching (2 units of blood)
  - liver function test
- Collect urine for urinalysis and m/c/s;
- Collect stool for microscopy.

**Treatment**

**Primary Health Care Level**

- Treat the underlying causes and give haematinics accordingly;
- Emphasize good nutrition;
- Keep patient in hospital for at least one week after delivery;
- Give one week appointment and repeat Hb and follow up subsequently till 6 weeks;
- Counsel for family planning;
- If Hb level does not rise by 2 g/dl in 2 weeks, refer to a higher level health care.



**Secondary and Tertiary Health Care Levels**

- In addition to the measures taken at PHC:
  - transfuse patient accordingly
  - treat underlying cause

## 4.5.2 SICKLE CELL DISEASE (SCD)

Sickle cell disease is an inherited disease of abnormality of the haemoglobin structure. It refers to individuals who are homozygotes for the S gene and those with SC.

**Assessment/Identification of the Problem**

- Take a history of:
  - previous crisis
  - sickle cell disease in the family
  - recurrent malaria
  - prophylactic drug use (folic acid and paludrine)
- Conduct a physical examination to:
  - check for pallor and jaundice
  - check for classical features of SCD (small stature, bossy forehead and permanent discoloration of sclera)
- Examine for long bone tenderness;
- Examine for hepatosplenomegaly and involuting uterine size;
- Examine the lochia.

**Management**

**Investigations**

**Primary Health Care Level**

- Check PCV or Hb;
- Conduct a sickling test;
- Conduct a stool microscopy;
- Prepare a blood smear for malaria parasites.

**Secondary and Tertiary Health Care Levels**

- Take blood for the following:
  - FBC
  - genotype
  - grouping and cross-matching (packed cells, fresh, group AA)
  - liver function test
- Take urine for urinalysis and m/c/s;
- Collect stool for microscopy.

**Treatment**

**Primary Health Care**

- Give analgesics e.g paracetamol 1000 mg (2 tablets three times daily)
- Refer to a secondary or tertiary health care level.

**Secondary and Tertiary Health Care Levels**

- Admit the patient;
- Relieve pain with analgesics;
- Keep in hospital for at least 1 week even if there is no problem;
- Ensure adequate fluid intake;
- Continue prophylactic drugs:



  - antimalarials
  - folic acid
- Give prophylactic antibiotics such as amoxycillin, 500mg 8 hourly for 5 days;
- Transfuse with packed cells if necessary;
- Monitor PCV 4 hourly for the first 48 hours, then daily for 1 week and manage appropriately;
- Counsel for family planning especially injectables and progestin-only implants and offer family limitation services where necessary;
- Refer the patient to sickle cell clinic.

### 4.5.3 POSTPARTUM ECLAMPSIA.

This is occurence of convulsions in the postpartum period associated with hypertension and proteinuria.

**Assessment/Identification of the Problem**

- Take a history of:
  - severe headache
  - epigastric pain
  - nausea and vomiting
  - visual disturbance
  - events surrounding labour and delivery
- Conduct a physical examination to check for:
  - level of consciousness
  - pallor, jaundice and oedema (pedal, facial and generalised)
- Check the vital signs (BP, pulse rate, respiratory rate and temperature);
- Conduct a chest examination to rule out pulmonary oedema;
- Conduct an abdominal examination to check for uterine involution;

- Check the reflexes;
- Check the lochia;
- Check for injuries on the body, limbs, head, etc.

**Management**

**Investigations**

**Primary Health Care Level**

- Check PCV or Hb;
- Collect urine for urinalysis.

**Secondary and Tertiary Health Care Levels**

- Take blood for the following:
  - FBC
  - grouping and cross-matching (2 units of blood)
  - liver function test
  - urea, electrolytes, uric acid and creatinine
  - random blood sugar
  - bedside clotting time and clotting profile
- Collect urine for urinalysis and m/c/s;
- Perform a chest X-ray.

**Treatment**

**Primary Health Care Level**

- Maintain a clear airway, i.e., suction or aspirate mouth, throat, etc;
- Place a padded spoon in her mouth to depress the tongue;
- Prevent patient from hurting herself by removing sharp dangerous objects around her;
- Do not restrain the patient;



- Give IV diazepam, 10 mg stat slowly and **refer** the patient to the next level of care immediately.

**Secondary and Tertiary Health Care Levels**

- Insert an oropharyngeal airway and maintain clear airways, i.e., suction or aspirate mouth, throat etc;
- Set up an IV infusion with 5% Dextrose saline;
- Give oxygen by face mask or nasal tube;
- Control convulsions using the magnesium sulphate protocol as **(Section 3, page 237);**
- If magnesium sulphate is not available use the diazepam protocol **(Section 3, page 238);**
- Prevent patient from hurting herself by removing sharp dangerous objects but do not restrain the patient;
- Monitor fluid intake;
- Catheterize the patient with an indwelling urethral catheter and monitor urinary output;
- Give IV or IM antibiotics;
- Give supportive care:
  - vulvo-vaginal care
  - personal hygiene to prevent pressure sores
  - breast care
  - baby care and assisted feeding if need be, etc.
- If diastolic blood pressure remains above 110mm Hg, give antihypertensive drugs;
- Auscultate the lung bases hourly for rales, indicating pulmonary edema in which case, withhold IV fluids and give frusemide, 40mg IV stat.

### 4.5.4 POSTPARTUM DEPRESSION AND PSYCHOSIS

Postpartum psychosis usually occurs around the time of delivery. The cause is unknown although half of the women experiencing psychosis also have a history of mental illness. This is most common in first pregnancy.

**Assessment/Identification of the Problem**

- Take history from patient or key informant, ask about:
  - onset of symptoms
  - delusions, hallucinations and sleep disturbances
  - anxiety, despair and suicidal and infanticidal impulses;
  - pre-occupation with the baby or apparent neglect of the baby
  - social history, drug use and social support
- Conduct a general physical and mental examination.

**Management**

**Investigations**

**Primary Health Care Level**

- Reassure the patient and family
- **Refer** to a higher level of care.

**Secondary and Tertiary Health Care Levels**

- Check the PCV;
- Conduct an electroencephalography, if indicated.

**Treatment**

**Primary Health Care Level**

- Give psychological support;
- **Refer** to a secondary or tertiary health care level.



**Secondary and Tertiary Health Care Levels**

- Provide psychological support and practical help (with the baby as well as home care);
- Listen to the woman and provide support and encouragement. This is important for avoiding any tragic outcome;
- Lessen the stress;
- Avoid dealing with emotional issues when the mother is unstable;
- If antipsychotic drugs are used, be aware that medication can be passed through breastmilk and that breastfeeding should be reassessed;
- Manage in conjunction with the psychiatrist.

## 4.6 POSTNATAL CHECK UP

It refers to the routine assessment of mother and baby at six weeks after delivery

**Assessment/Identification of the Problem**

- Take a history concerning mother (lactation, lochia, general condition, resumption of sexual activity, breastfeeding, weight gain and immunisation);
- Weigh mother and baby;
- Check breasts for tenderness, redness, lumps and nipples for cracks and soreness;
- Check the vital signs;
- Check the uterus for involution.

**Management**

**Investigations**

- Check PCV or Hb, when necessary;
- Test urine for sugar, acetone and protein;

**Treatment**

- Emphasize the importance of exclusive breastfeeding;
- Advise to comply with immunisation schedule;
- Give her routine drugs;
- Emphasize the need to report early at the health facility if complications arise;
- Counsel on family planning.

**Note**: Routine management is the same at all levels of health care.

## SECTION FIVE: IMMEDIATE NEONATAL CARE

### 5.0 ASSESSMENT AND CARE OF THE NORMAL BABY

A normal newborn is a baby delivered at term pregnancy (37–42 weeks), with birth weight of 2.5 kg but not exceeding 4.0 kg, and cries or establishes spontaneous and normal respiration immediately after birth. A normal newborn adapts well to the extra-uterine environment and requires minimal medical care. During the immediate postpartum period, the baby should be thoroughly examined. It is necessary to evaluate all newborn babies with a minimum but uniform standard method in order to establish normalcy and to identify those babies that would require immediate, special or emergency medical care.

### 5.1 BASIC ELEMENTS OF CARE FOR THE NORMAL NEWBORN BABY

**The basic elements of care for the normal newborn baby are the same for all levels of health care and can be applied by health care providers at their levels.**

The following approach is recommended for the general evaluation of the newborn; the evaluation of those newborn babies with special conditions is dealt with in the next section.

#### 5.1.1 INITIAL CARE

- On delivery of the baby's head, clear the airways by wiping the mouth and nose;

- On delivery of the baby's whole body:

  - clear airways by suctioning the mouth and nose
  - ligate and cut the umbilical cord with clean/sterile materials dry the baby rapidly with warm towels
  - take 1 minute APGAR score, and repeat at 5 minutes using the parameters outlined in the **Table 14 below**
  - institute resuscitation as necessary:
    - clear the airways
    - give oxygen as required
  - put identification band on the baby's wrist
  - move baby to the mother, if possible



#### 5.1.2 ASSESSMENT OF APGAR SCORE

- Assess the APGAR score immediately at 1 and 5 minutes respectively;

- Look, listen and feel for:

**A** - Appearance: observe the colour of the baby's skin (pink, bluish or pale)
**P** - Pulse: count the baby's heart beat per minute (<100 or ≥100/min)
**G** - Grimace: observe facial expression on stimulating the soles of baby's feet
**A** - Activity: observe for spontaneous movements of arms and legs and on stimulation
**R** - Respiration: observe chest and abdominal movement with respiratory excursions

A score of 2, 1 or 0 is given to each of the five parameters as shown in the table below.

**Table 14: Parameters for Apgar Scoring**

| PARAMETER | SCORE | | |
|---|---|---|---|
| | 2 | 1 | 0 |
| **Appearance** (Colour) | Completely pink body and face | Pink body, blue arms and legs; Pale body & face | Pale or blue body and face |
| **Pulse** (Heart Rate) | More than 100 beats per minute; strong | 100 beats per minute or less. Weak heart beat | No heart beat |
| **Grimace** (reflex Irritability) | Crying, coughing or sneezing | Grimace or puckering of face | No response |
| **Activity** (Muscle Tone) | Active movement; waving arms and legs | Some movement in response to stimulation | Limp arms and legs. No movement in response to stimulation |
| **Respiration** (Respiratory Effort) | Strong cry | Slow, irregular breathing; Retraction of chest wall. Grunting or weak cry | No breathing No cry |

- Add up the total score and record this on the baby's chart;
- The procedure should be carried out at 1 and 5 minutes, and thereafter at 5-minute intervals until a score of 7 is achieved;
- Use the total score obtained to categorize the baby as:

| Category | | Score |
|---|---|---|
| Normal | - | 8-10 |
| Mild Asphyxia | - | 6-7 |
| Moderate Asphyxia | - | 3-5 |
| Severe Asphyxia | - | <3 |

**Note:** Babies with score of 7 or less need varying degrees of resuscitation. Refer to **pages 307-310** resuscitation of newborn baby.

### 5.1.3 PROVISION OF WARMTH

- Ensure that the environmental temperature of the labour room is appropriate;
- Dry the baby immediately at birth; keep mother and baby in skin to skin contact, covered with a clean and dry blanket/covering as much as possible (Kangaroo nursing);
- Avoid dressing the baby in tight restrictive clothing or blankets/coverings;
- Do not bathe the baby for at least the first 6 hours after birth, and preferably not in the first 24 hours, and not until the baby's temperature is stable.

### 5.1.4 CARE OF THE UMBILICAL CORD

- Cut the umbilical cord with umbilical cord scissors or a new razor blade;
- Secure the umbilical stump tightly with clean/sterile clamp or thread to avoid bleeding;



- Clean the cord with methylated spirit/warm saline and expose, thereafter keep the cord clean and dry;
- Ensure that the cord is not enclosed in the baby's napkin to avoid infection by urine or faeces.

### 5.1.5 HELPING MOTHER TO INITIATE BREAST FEEDING

- Initiate breastfeeding within 30 minutes of delivery;

#### (a) Breastfeeding in the Sitting Position

- Use the following steps to help the mother **position her baby correctly while sitting**:
  - make sure that she is comfortable and relaxed
  - sit down yourself in a comfortable, convenient position
  - explain how to position her baby, and show her if necessary
- Use these **four** key points to help the mother position her baby correctly:
  - placing the baby's head and body straight
  - facing the mother's breast, with his nose opposite her nipple
  - keeping the baby close to her body
  - supporting the whole body, not just his neck and shoulders
- Show her how to support her breast with her:
  - fingers against her chest wall below her breast, first finger supporting the breast, and the thumb above
  - fingers not too close to the nipple
- Explain or show her how to help the baby to attach by, touching her baby's lips with her nipple, waiting until her baby's mouth is opened wide as shown in **Figure 31** on the next page:

**Figure 31: Correct positioning for breastfeeding**

**The mother's nipple is touching her baby's lips. He is opening his mouth and putting his tongue forward ready to take the breast**

- Tell her to move the baby quickly onto her breast, and aim his lower lip below her nipple;
- Observe how the mother responds and ask her how her baby's suckling feels;
- Observe for signs of good attachment and if the attachment is not good, try again.

### (b) Breast feeding while lying down

- Use the following steps to help the mother **position the baby correctly. While lying down,** help her to adopt a comfortable, relaxed position. It is better if she is not "propped up" on her elbow, as this can make it difficult for the baby to attach to the breast:

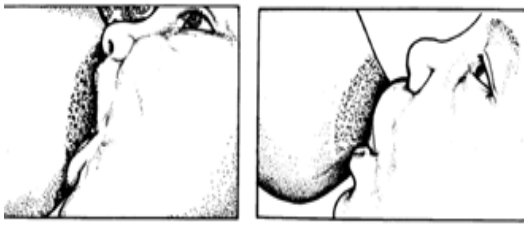
  - show her how to hold her baby, using exactly the same four key points discussed under the sitting position
  - ask her to support her baby with her lower arm, she can support her breast if necessary with her upper arm
  - tell the mother to hold the baby with her upper arm if she does not support her breast
  - observe and teach her the features of good attachment which are:

    - more areola above the baby's mouth than below it
    - the mouth is wide open



    - the lower lip turned out
    - the chin touching the breast, as illustrated on the figure below

**Figure 32: Correct and poor attachment to the breast**



**a. A baby well attached to his mother's breast** **b. A baby poorly attached to his mother's breast**

- Allow baby to be with mother up to 24 hours a day, or for as long as possible;
- Encourage mother to practise frequent on-demand feeding day and night;
- Advise mother to feed baby from one breast until it is empty before the second; feed at least every 2-3 hour intervals, including nights;
- Instruct mother **not** to use dummies/pacifiers/artificial teats.

### (c) Expressing the Breast milk

- Teach mother to maintain milk flow by expressing her milk if the baby misses a feed.

  **Note:** Do not express her milk for her. Touch her only when you want to show her what to do. Be gentle.

- Teach the mother to wash her hands thoroughly, sit or stand comfortably and hold the container near her breast. Instruct her to:

- put her thumb on her breast above the nipple and areola, and her first finger on the breast below the nipple and areola, opposite the thumb. She supports the breast with her other fingers
- press her thumb and first finger slightly inwards towards the chest wall. She should avoid pressing too far because that can block the milk ducts.
- press her breast behind the nipple and areola between her finger and thumb. She must press on the milk ducts beneath the areola
- press and release repeatedly. Ask her if it hurts; if it hurts, the technique is wrong. At first no milk may come, but after pressing a few times, milk starts to drip out. It may flow in streams if the oxytocin reflex is active
- press the areola in the same way from the sides, to make sure that milk is expressed from all segments of the breast
- avoid rubbing or sliding her fingers along the skin. The movement of the fingers should be more like rolling
- avoid squeezing the nipple itself. Pressing or pulling the nipple cannot express the milk. It is the same as the baby sucking only the nipple
- express one breast for at least 3-5 minutes until the flow slows; then express the other side; and then repeat both sides. Tell her to use either hand for either of the breasts, and change when the hands are tired

- Explain that to express breastmilk adequately would take 20 - 30 minutes, especially in the first few days when only a little milk may be produced. It is important not to try to express in a shorter time;

- Arrange a home follow up visit within the first week of birth to assess and support breastfeeding.

### 5.1.6 CARE OF THE EYES

- Clean the baby's eyes with clean cotton ball moistened with saline;

- Apply 1% silver nitrate eye drops or tetracycline eye ointment.



## 5.2 PHYSICAL EXAMINATION OF THE NORMAL BABY

- Assess APGAR score immediately at 1 and 5 minutes respectively and identify the baby's category as outlined on **page 297**;

- Take the baby's weight (strip the baby naked and place on the weighing scale; note and record the weight);

- Measure and record the baby's head circumference and length;

- Examine the baby from head to toe:

  - observe for septic spots, skin colour change (blue, pale or yellow)
  - note obvious features of abnormalities e.g. mongolism, small/large/abnormally-shaped head, hare-lip
  - check muscle movement (spontaneous/inactivity/floppiness)
  - check respiratory rate
  - check for position of apex beat.

**Head**

- Check for swellings on the baby's head, compare head size with the rest of the body;

- Observe for the presence of moulding/caput succedaneum;

- Trace and measure the size and the state of the anterior and posterior fontanelles, (bulging, depression or closure), feel for the sutures (wide separation, overlapping or fusion);

- Observe and note abnormal shapes of the head, measure and record the head circumference.

**Face**

- Check for asymmetry, the shape and size of facial features;

- Check the eyes for the presence of discharge, jaundice, sub-conjunctival haemorrhage, presence and/or dullness of

the pupils. Check for congenital cataract and note angles of the eyes for abnormal slanting (e.g. as in Down syndrome) observe and record any other abnormality;

- Check the nose for nasal discharge or blockage, observe for jaundice over the skin of nose;
- Note the size and shape of the mouth; observe and note disparity in the size of the jaws (e.g. receding chin), check the mouth for cleft palate and/or cleft lip. Note the size of the tongue (is it protruding or falling back towards the throat) and for presence of tongue-tie;
- Check for the position of the ear lobes, observe and note any abnormal shape and size of ears (e.g. absent or abnormal location of ear canal). Note any accessory auricles.

**Skin**

- Expose the baby and examine the entire skin;
- Observe for discolouration (jaundice, pallor), bruises, scarification marks, lacerations, abrasions, rashes and note their location;
- Observe for the presence of skin tags and birth marks and their location;
- Observe for the presence and distribution of excoriations in or around the buttocks/groin/anal region;
- Look for and note the presence and distribution of lanugo hair and abnormal hair growth on the skin.

**Neck**

- Check for swellings on the neck, note the position and size of the swellings;
- Feel for the presence of fractures of the clavicle and cervical bones.



**Chest**

- Observe the chest movement for laboured or shallow breathing;
- Check and note presence of depressions, in-drawing or bulging on the chest wall;
- Feel for the presence of heart beats, note the heart sounds;
- Observe the location of the nipples and noting any discharge from them;
- Feel for the size of the breast tissue and the areola.

**Abdomen**

- Check umbilical stump to ensure that it is securely clamped;
- Note the presence of bleeding, discharge or unclean dressing/clamp;
- Check for defects of the abdominal wall (e.g. protrusion of abdominal contents);
- Observe for presence of abdominal distension or localized swellings;
- Observe the movement of the abdomen with breathing;
- Check for distended vessels on the abdominal wall.

**External Genitalia**

- In females, note size and shape of labia, vaginal and urethral openings and observe for presence of vaginal discharge;
- In males, feel for the presence of testes in the scrotum, observe and note presence of any scrotal swelling;
- Observe, for the presence and location of urethral opening. In males, note if opening is on the tip of the penis or located elsewhere; note if the penile shaft is straight or bent in any direction.

**Anus**

- Look for the presence and location of the anal orifice, establish the patency by gently probing with a gloved and lubricated little finger;
- Note if baby has passed meconium;
- Feel for the tone of the anal sphincter (there is a fine grip around the examining finger normally).

**Limbs**

- Note any dissimilarity in size of the baby's arms, legs, hands and feet;
- Observe for presence of extra digits, webbing and obvious shortening;
- Observe for the presence of fractures, oedema, swellings, bruises;
- Observe spontaneous movements or inactivity limited to one side or one limb;
- Examine the ankles and feet and note any deformity;
- Examine the hips and test for presence of congenital dislocation using Ortolani's test.

**ORTOLANI'S TEST**

**It is carried out by gentle flexion of the legs and abduction/adduction of the hips; an audible click indicates the replacement of the head of the femur into the acetabulum of the dislocated hip. This act also corrects the dislocation.**

**Spine**

- Observe and note the presence of obvious spinal defects e.g. swellings, skin discolouration or patch of hair along the spine;



- Observe and feel for less obvious defects on the spine, "run" a finger over the spine to feel for defects;
- Observe and note the presence of spina bifida, meningocoele.

**Neurological**

- Observe and note for the presence of deviation of the eyes or face and the mouth on crying;
- Observe and note abnormal movements (e.g. convulsions, spasms, jitteriness, localized twitching);
- Examine the baby's muscle tone. Suspend the baby in the air on its abdomen momentarily with one hand, and observe for spontaneous neck extension and flexion of the lower limbs at the knee and hips. This is the **ventral suspension reflex.**
- Assess the reflexes present in the newborn:
  - **sucking reflex:** insert the baby's finger into the mouth and observe spontaneous suckling, note whether none, good or poor suckling
  - **rooting reflex**: use your finger to touch the angle of the baby's mouth - the baby will turn the head towards the finger and "search"
  - **grasp reflex**: stroke the back of baby's fingers, the fingers become extended and on placing the examiner's finger in the palm of the baby immediately thereafter, the baby takes a firm grasp spontaneously. Examine the toes in a similar way
  - **Moro reflex**: gently drop the baby's head a few centimeters from one hand to the other or make a loud noise near the baby. The baby gets startled and first throws out the arms and then brings them together in an embracing movement
  - **stepping reflex**: hold the baby so that both feet touch a firm surface. The baby raises one leg and takes a large step forward
- **Resuscitate the baby immediately and open the airway by:**
  - placing the baby on the back **(Figure 33)**

- positioning the head in a slightly extended position to open the airway, also support the shoulders (scapulae) with a small pillow or rolled sheet or blanket

**Figure 33: Correct position of the head for ventilation**

- Keep the baby wrapped or covered, except for the face and upper chest;

- Clear the airway by suctioning first the mouth and then the nostrils. If there is blood or meconium in the baby's mouth or nose, suction immediately to prevent aspiration

> **Do not suction deep in the throat as this may cause the heart to slow down or the baby may stop breathing.**

- Reassess the baby:

  - if the newborn starts crying or breathing, no further immediate action is needed
  - if the baby is still not breathing, start ventilating (see below)

- **Ventilate the newborn using the bag and mask of appropriate size:**

  - recheck the newborn's positioning, the neck should be slightly extended **(Figure 33)**
  - position the mask and check the seal **(Figure 34)**
  - place the mask on the newborn's face; it should cover the chin, mouth and nose
  - form a seal between the mask and the face
  - squeeze the bag gently with two fingers only or with the whole hand, depending on the size of the bag. There should be no hissing sound from the outlet valve (air-tight)



  - check the seal by ventilating twice and observing the rise of the chest.

**Figure 34: Ventilation with bag and mask**

- once a seal is ensured and chest movement is present, ventilate the newborn. Maintain the correct rate (approximately 40 breaths per minute) and the correct pressure (observe the chest for an easy rise and fall):

  **Note:** If the baby's chest is rising, ventilation pressure is probably adequate. If the baby's chest is not rising, recheck and correct, if necessary, the position of the newborn **(Figure 33).**

- reposition the mask on the baby's face to improve the seal between mask and face
- squeeze the bag a little harder to increase ventilation pressure
- repeat suction of mouth and nose to remove mucus, blood or meconium from the airway
- ventilate for 1 minute and then stop and quickly assess if the newborn is breathing spontaneously
- if the newborn is not breathing, or the breathing is weak, continue ventilating until spontaneous breathing begins
- if the newborn starts crying, stop ventilating and continue observing breathing for 5 minutes after crying stops
- monitor baby's heart rate every 15 minutes till when heart rate is greater than 100 beats per minute
- if breathing is normal (30–60 breaths per minute) and there is no in-drawing of the chest and no grunting for 1 minute, no further resuscitation is needed. Proceed with initial care of the newborn
- if the frequency of breathing is less than 30 breaths per minute, continue ventilating

- if there is **severe in-drawing of the chest,** arrange to transfer the baby to a higher level of care
- if the newborn is **not breathing regularly after 20 minutes of ventilation**, transfer the baby to the most appropriate level for the care of sick newborns
- during the transfer, keep the newborn warm and ventilated, if necessary
- if there is no gasping or breathing after 20 minutes of ventilation, stop ventilating, the baby is stillborn.

## 5.3 VITAMIN K SUPPLEMENTATION

- Administer intramuscular injection of Vitamin K (0.5 mg-1mg stat) to the baby to prevent bleeding;

- Ensure that the umbilical cord is securely tied.

## 5.4 IMMUNISATION SCHEDULE

- Inform the mother to follow the immunisation schedule for the baby as depicted in the table below.

**Table 15: The National Immunisation Schedule**

| Age | Vaccines | Dose | Route | Site |
|---|---|---|---|---|
| Birth | BCG<br>OPV0<br>HBV1 | 0.05 ml<br>2 drops<br>0.5 ml | Intradermal<br>Oral<br>Intramuscular | Left upper arm<br>Mouth<br>Outer thigh |
| 6 weeks | DPT1<br>OPV1<br>HBV2 | 0.5 ml<br>2 drops<br>0.5 ml | Intramuscular<br>Oral<br>Intramuscular | Upper outer, buttocks<br>Mouth<br>Outer thigh |
| 10 weeks | DPT2<br>OPV2 | 0.5 ml<br>2 drops | Intramuscular<br>Oral | Upper outer, buttocks<br>Mouth |
| 14 weeks | OPV3<br>DPT3<br>HBV3 | 2 drops<br>0.5 ml<br>0.5 ml | Oral<br>Intramuscular<br>Intramuscular | Mouth<br>Upper outer, buttocks<br>Outer thigh |
| 9 months | Measles<br>Yellow fever | 0.5 ml<br>0.5 ml | Subcutaneous<br>Subcutaneous | Left upper arm<br>Right upper arm |
| 9 months | Vitamin A | 100,000 IU | Oral | Mouth |
| 15 months | Vitamin A | 200,000 IU | Oral | Mouth |
| **Give CSM vaccine to children above 2 years in the meningitis belt at 3-year intervals and during epidemics & mass campaigns** | | | | |



BCG – Bacille Calmette Guerin vaccine
HBV – Hepatitis B Vaccine
DPT – Diphtheria, Pertussis and Tetanus toxoid
OPV – Oral Polio Vaccine
CSM – Cerebrospinal Meningitis

### 5.4.1 METHODS OF ADMINISTRATION OF VACCINES FOR THE NEWBORN BABY

#### (a) Bacille Calmette Guerin (BCG) Vaccine

- Measure the correct dose of BCG:

  - the dose of BCG is 0.05 ml
  - to measure and inject such small dose accurately, use a special **0.1 ml sterile syringe** and **special sterile needle (10 mm, 27G or 28G)**

- Load the syringe with BCG. Do not shake the BCG ampoule, shaking can damage the vaccine;

- Position the baby:

  - ask the parent to free the baby's upper arm from its clothing, sit him/her on her lap and hold baby firmly
  - hold the baby's arm with your left hand so that your left hand is under the baby's arm while your thumb and fingers reach around the arm to stretch the skin tight

- Inject BCG as follows:

  - clean the skin before an injection with cotton wool and a small amount of clean water – **do not use methylated spirit or antiseptic**
  - inject vaccine into the top layer of the skin (intradermal) of the upper **left arm**
  - use the same place for each baby to make it easy to find BCG scar subsequently
  - hold the syringe in your right hand with the bevel of the needle facing up towards you
  - lay the syringe and needle almost flat along the baby's arm

- keep the needle **flat** along the arm, so that it goes into the top layer of the skin only. Keep the bevel facing **up**
- insert the tip of the needle just under the skin, and insert only the bevel and a little bit more
- **do not** push too far and do **not** point down or the needle will go under the skin. if BCG is injected under the skin, an abscess or enlarged gland may result
- hold the needle in this position by putting your left thumb on the lower end of the syringe near the needle, but **do not** touch the needle
- hold the plunger end of the syringe between the index and middle fingers of your right hand and press plunger in with your right thumb

- Check that you are injecting BCG correctly.

  **Note:** If you have injected the vaccine correctly, you will see flat-topped swelling on the skin, like a mosquito bite. When intradermal injection is given correctly the plunger is hard to push. If vaccine is going in easily you may be injecting too deeply. In that case, stop injecting immediately, correct the needle position and give the remaining dose but no more. If the whole dose has already gone under the skin, count the baby as immunised; **do not** repeat the dose.

- Withdraw needle gently; do not apply dressing or massage;

- Discard needle and syringe in Safety Disposal Box. Do not attempt to dismantle or recap needle;

- Mark immunisation(s) received on the baby's immunisation card and complete other documentation;

- Inform the mother:

  - not to dress or massage the site of injection
  - the time for the next vaccines
  - to return with the baby if side effects, such as abscesses or enlarged glands appear.

### (b) Oral Polio Vaccine (OPV)

- Know the correct dose of OPV;



  - the dose of OPV is 2 drops

- Position the child;

  - ask the mother to hold the baby firmly in a reclining position on her lap

- Give OPV:

  - open the baby's mouth by squeezing the cheeks gently between your fingers
  - hold the dropper over the baby's mouth at an angle of $45^{o}$

**Figure 35: Correct position for OPV administration**

  - let two drops of vaccine fall from the dropper on to the baby's tongue **(Figure 35)**
  - do not let the dropper touch the child's mouth
  - mark immunisation(s) received on the baby's immunisation card and complete other documentation

- Inform the mother about the time for the baby's next immunisation.

**If a baby who is due for OPV has diarrhoea, give the OPV dose but do not mark it on the baby's immunisation card. Ask the mother to return with the baby in 4 weeks for another dose. This dose should be marked on the baby's card.**

### (c) Hepatitis B Vaccine (HBV)

- Measure the correct dose of Hepatitis B vaccine:

- the dose of Hepatitis B vaccine is 0.5 ml
- measure a dose accurately; use a **1 or 2 ml syringe** and **sterile needle (25 mm, 23G)**
- load the syringe with Hepatitis B vaccine

- Position the baby:

  - ask the mother to remove any clothing from the baby's right or left leg so that the baby's thigh is bare

  - let her sit the baby on her lap holding firmly

    - the mother's left arm should be around the baby, supporting his/her head and holding the outside arm
    - the baby's arms should be tucked around the mother's body
    - the mother's right arm should be holding the baby's legs

- Inject Hepatitis B vaccine as follows:

  - load the syringe with Hepatitis B vaccine
  - clean the skin before an injection with cotton wool and a small amount of clean water do not use methylated spirit or antiseptic
  - put your finger and thumb on the **outer** part of the middle of the baby's thigh
  - stretch the skin flat between your finger and thumb
  - inject the vaccine, quickly push the needle straight down through the skin between your fingers, going deep into the muscle
  - press the plunger with the thumb to inject vaccine
  - withdraw the needle and gently press the site with cotton wool
  - discard needle and syringe in Safety Disposal Box. Do not attempt to dismantle or recap needle
  - mark immunisation(s) received on the baby's immunisation card and complete other documentation

- Inform the mother:

  - about possible side effects and how to manage them at home
  - to come back if the side effects become troublesome or if she has other concerns



## 5.5 BABIES WITH SPECIAL PROBLEMS

Neonatal problems can be predicted from a record or recall of events during the pregnancy and delivery as well as from parental or family history. A good history or record may warn the care provider to anticipate problems and begin to prepare for them. A comprehensive assessment of the newborn with such detailed history and physical examination using standard methods are essential prerequisites for provision of appropriate care for the babies with special medical problems. Use the following format to evaluate for problems in the newborn baby.

### General assessment of babies with special problems

- Take a good history of the:

### Neonate

- Ask the mother/caregiver the following:

  - what are the problems of the baby
  - what care has the baby received before coming
  - baby's weight at birth
  - duration of this baby's pregnancy
  - place of birth (home, health facility or other place)
  - who assisted the delivery
  - baby's condition immediately after birth
  - whether the baby cried immediately after birth. If no, what was done?
  - when baby's problem started
  - whether the baby's condition has improved or worsened

- Ask the following questions:

  - is the baby being breastfed?
  - is the baby having any feeding problems:
    - is the baby having any breastfeeding problem?
    - is there any problem with suckling?
    - is baby having poor feeding since birth or after a period of feeding normally?
    - is the baby coughing or choking while feeding?
    - is the baby vomiting after feeding?

**Mother**

- Obtain the mother's/caregiver's personal data;

- Obtain mother's previous obstetric history, asking about:

  - past pregnancies, deliveries the mother had
  - number of children alive
  - booking status of baby's pregnancy
  - medical problems during the baby's pregnancy (TB, diabetes, PIH, STIs)
  - HIV status
  - duration of this baby's labour (duration between rupture of membrane and delivery)
  - mode of delivery
  - difficulty in labour and what was the nature of the difficulty

- Review past medical/surgical history of mother, ask about;

  - previous surgery
  - blood transfusion

- Review social history. Ask for:

  - smoking during this baby's pregnancy (frequency and duration)
  - alcohol/hard drug use during baby's pregnancy
  - marital status of the mother

- Review family history of:

  - parents' and caregiver's occupation
  - parents' and caregiver's educational status
  - number of wives the husband has
  - baby's birth order
  - similar complaints in the family.

- Conduct physical examination of the baby:

  - check vital signs (temperature, heart rate, respiratory rate)
  - take the baby's weight (strip the baby naked and place on the weighing scale)
  - examine the baby from head to toe



## 5.6 MANAGEMENT OF BABY WITH BIRTH ASPHYIXIA

Birth asphyxia is failure or inability of the baby to establish adequate respiration soon after birth. Asphyxia could occur as a result of complicated labour or problems with the newborn baby. The baby with birth asphyxia requires urgent assessment and timely intervention to prevent the effect of poor oxygen supply to the brain and its long term consequences.

**Assessment/ Identification of the Problem**

- Take history and examine as in general measures; note the following;

  - baby not crying or not crying well within one minute of birth
  - APGAR score <7
  - gasping for breath or shallow/periodic breathing
  - failure to maintain regular rhythmic breathing
  - prolonged apnoea/apnoeic attacks
  - tachycardia deteriorating to bradycardia
  - blue or white colour change of skin

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigations.

**Secondary Health Care Level**

- Conduct the following investigations:

  - electrolytes, urea, and creatinine
  - full blood count
  - blood glucose
  - blood culture

**Tertiary Health Care Level**

- Conduct the same investigations as in secondary care level, including blood gas analysis and pH.

**Treatment**

**Primary Health Care Level**

- Apply steps listed under general assessment measures (**pages 315 - 316,** as it relates to the condition);
- Wipe the face and clear the airway with mucus extractor or bulb syringe;
- If baby does not breath within one minute, give mouth-to-mouth breathing or ambu-bag;
- Keep the baby warm ;
- **Refer** if baby is still not breathing well after 5 minutes (but continue ambu-bagging) or if facilities are not available.

**Secondary Health Care Level**

- Apply steps listed under general assessment measures (**pages 315 - 316,** as it relates to the condition);
- If there is no heart beat or heart beats are less than 60/min, conduct a cardiac massage at the rate of 3 cardiac compressions to every one ventilation;
- Give oxygen by face mask or by ambu-bag continuously;
- Refer to section on active resuscitation of the baby **(pages 307 - 310)** and follow the steps outlined;
- Transfer the baby to Neonatal unit or Paediatric ward for subsequent care.
- Institute further care in the Neonatal Unit as follows:
  - resuscitate under radiant heater as outlined in the relevant section on newborn resuscitation **(pages 307 - 310)**
  - give adrenaline (0.01 ml/kg of 1:1000 units **OR** 0.1 ml/kg of 1:10,000 units) IV or through endo-tracheal tube
  - give bolus of IV glucose infusion (10% dextrose 3 ml/kg)



  - set up IV 5-10% dextrose infusion at 50-60 ml/kg in the first 24 hours increasing to 90, 120 and 150 ml/kg on 2nd, 3rd and 4th days; review fluid requirements as dictated by oral feeding and condition of baby (improvement or deterioration)
  - monitor closely rectal temperature, respiratory rate, pulse, BP, weight, fluid intake and output, blood sugar with dextrostix
  - treat complications as they arise e.g. convulsions, heart failure, renal failure, respiratory failure
  - **refer** if there is no satisfactory response

**Tertiary Health Care Level**

- In addition to measures listed under secondary health care level, carry out the following:
  - resuscitate the baby using steps outlined in active resuscitation **(pages 307 - 310)**
  - if there is no heart beat or heart beat is less than 60/min, conduct a cardiac massage at the rate of 3 cardiac compressions to one ventilation
- Transfer to Neonatal Unit or Special Care Baby Unit (SCBU) and continue care as follows:
  - administer appropriate drugs/fluids as in secondary health care level
  - in addition, use the following drugs if features of hypoxic-ischaemic encephalopathy/cerebral oedema, convulsions, acidosis occur, as appropriate:
    - dexamethasone (0.4 mg/kg stat then 0.2 mg/kg/dose 8 hourly)
    - phenobarbitone (slow IV injection to 15 - 20 mg/kg/dose, then 5 mg/kg/day to be given in 2 divided doses intramuscularly or orally)
    - sodium bicarbonate (to be given carefully, 2 mmol/kg/dose)
- Intubate baby if all the above measures fail and administer oxygen;
- Consider the use of intermittent pressure ventilation (IPPV);

- Monitor closely rectal temperature, respiratory rate, pulse, BP, weight, fluid intake and output, blood gases, pH and blood sugar with dextrostix;

- Use automated monitors as appropriate (ECG, others);

- Treat complications as they arise as in secondary health care level (e.g. seizures, bleeding disorders).



## 5.7 MANAGEMENT OF LOW BIRTH WEIGHT BABIES (PREMATURITY AND IUGR)

These are babies born before 37 completed weeks of gestation (i.e. prematurity) and/or having a birth weight of less than 2.5 kg at time of delivery. In intra-uterine growth restriction (IUGR), the babies are small for their gestational ages (SGA), and could be born at term (weight <2.5 kg), before term or even post term with weight less than the expected for their corresponding gestational age (GA). Most term babies weighing 1.5-2.5 kg (SGA) may not need extra care beyond that for normal birth weight babies. Very low birth weight babies (<1.5 kg) whether born premature or at term will often need special management. The health care provider should use the GA to identify babies as either SGA and/or premature, and proceed to manage as appropriate.

**Assessment/Identification of the Problem**

- Take history and examine as in general assessment measures **(pages 315 - 316);**

- Assess the gestational age of the baby or ask the mother about the duration of the baby's pregnancy;

- Ask about the baby's weight at birth if born before arrival at the facility;

- Take the present weight of the baby;

- Classify the baby as premature, SGA using the weight and GA.

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigations.

**Secondary Health Care Level**

- Conduct the following investigations:

- FBC
- random blood glucose (dextrostix and serum glucose),
- serum urea, electrolytes and creatinine
- serum bilirubin (SB) as deemed fit

**Tertiary Health Care Level**

- In addition to investigations at secondary health care level, request for:

  - trans-fontanelle ultrasound scan (USS)
  - Computerised Tomography (CT) scanning, if indicated
  - other investigation as required

**Treatment**

**Primary Health Care Level**

**Gestational age ≤32 weeks OR weight < 1.5 kg:**

- **Refer urgently** to a higher level of care;

- If transit time to referral centre is anticipated to be longer than 1 hour, pass a size 5 naso-gastric tube (NGT) and give expressed breast milk or glucose water.

**Gestational age 33 - 36 weeks**

- Feed frequently (at least 2 hourly);

- If weight is between 1.5 - 1.8 kg or there are other problems**, refer** urgently to a higher level of care;

- If weight between 1.8 - 2.49 kg and there are no obvious problems, provide routine care including immunisation;

- Teach and counsel mother/caregiver on how to keep baby warm and feed on demand at home;

- Teach mother how to recognize danger signs at home (e.g. poor feeding, lethargy/less activity, excessive/poor cry and convulsion);



- Give follow-up appointment for the 3rd and 7th day of life and tell mother to report back immediately if any of the danger signs appear before appointment day.

**Secondary Health Care Level**

- Apply steps listed under general assessment measures;

- Keep the baby warm (incubator care);

- Use the gestational age and weight to decide on the management as follows:

**Gestational age < 32 weeks or weight < 1.5 kg**

- Admit into Neonatal Ward/Unit;

- Provide incubator care or keep warm with minimal handling;

- Give a bolus of 2 ml/kg body weight of 25% dextrose IV diluted with an equal volume of water for injection as indicated by signs of hypoglycaemia, or if suspected or if indicated by result of blood glucose estimation;

- Set up an IV infusion with 7.5% dextrose (60 ml/kg in the first 24 hours and 90ml/kg in the next 24 hours);

- Monitor the vital signs closely, as well as daily weighing and fluid intake and output;

- Review frequently and if stable within next 24 - 48 hours, commence feeding by naso-gastric tube (NGT);

- Introduce feeds gradually with small aliquots of 1 - 5 ml of expressed breast milk (EBM) or other milk while still on IV infusion;

- Ensure gastric emptying by withdrawing stomach contents just before administering feeds, withhold feeds if any residual amounts found;

- Continue gradual feeding till baby is able to take orally;

- Assess and treat complications: feeding problems, hypoglycaemia, infections, hypothermia, jaundice, anaemia, etc (for management of these refer to relevant pages of this document);

- Refer to tertiary health care level if baby cannot be managed as above or baby is not responding to treatment.

**Gestational age 33 - 36 weeks or birth weight 1.5 kg - 2.49 kg**

- Admit to Neonatal Unit/Ward;

- Feed frequently (at least 2 hourly);

- Monitor vital signs closely, as well as daily weighing and fluid intake/output;

- Assess and treat complications: feeding problems, hypoglycaemia, infections, hypothermia, jaundice, anaemia, etc.

- **Refer** if baby cannot be managed as above or baby is not responding to treatment.

**Tertiary Health Care Level**

- Apply steps listed as in secondary care level.

**Gestational age < 32 weeks or weight < 1.5 kg.**

- Admit into Special Care Baby Unit;

- Monitor closely as in secondary health care level including use of apnoea monitors, ECG, etc;

- Assess and treat complications as in secondary care level;

- Review closely and if condition is poor, transfer to the Intensive Care Unit.

**Gestational age 33 - 36 weeks or birth weight 1.5 kg - 2.49 kg**

- Feed frequently;

- Monitor closely, as above;

- Assess and treat complications as above.



## 5.8 MANAGEMENT OF BABY WITH NEONATAL INFECTION

This is any infection in the newborn, either local or generalized. Local infections include skin, ears, eyes, and umbilical stump infections. Systemic include infections such as septicaemia, pneumonia, meningitis, bone and urinary tract infection, etc).

**Assessment/Identification of the Problem**

- Take history and examine as in general assessment measures **(pages 315 - 316);**

- Observe for:

  - fever (>37.5$^0$C) or low temperature (<36$^0$C)
  - poor feeding, vomiting, convulsions, weakness/reduced activity
  - irritability/excessive crying
  - fast or slow breathing, breathing difficulty, grunting, chest in-drawing
  - discharges from the ear, eyes, skin, umbilicus, etc
  - diarrhoea
  - colour changes on skin (jaundice, pallor)
  - skin & mouth rashes/pustules, etc
  - bulging fontanelle
  - convulsions
  - pallor (anaemia)

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following investigations:

  - FBC,
  - random blood glucose (dextrostix and serum glucose)
  - serum urea, electrolytes and creatinine
  - serum bilirubin as deemed fit

- urinalysis
- CSF analysis and m/c/s
- stool and swab of discharge from ears, umbilical stump, eyes, etc, for Gram-stain and culture, as appropriate
- X-rays (chest, bone, abdomen), as appropriate.

**Tertiary Health Care Level**

- In addition to investigations at secondary health care level, conduct ultrasound scan and CT scan, etc, as indicated by type and site of infection.

**Treatment**

**Primary Health Care Level**

**Local Infections**

**Eye infection**

- Irrigate the eyes with saline and apply chloramphenicol eye ointment 4 times daily till redness and discharge clear;
- If redness or eye discharge persists after 3 days, refer to a higher level of health care.

**Ear infection**

- Wick the ear till dry;
- If symptoms persist, refer.

**Skin sepsis**

- Open and drain pustules, boils;
- Apply gentian violet (GV) twice daily ;
- If pustules/boils are many or severe, refer.



**Oral thrush**

- Clean the mouth with warm saline and apply GV twice or Nystatin drops 4 times daily till healing occurs;
- If thrush is not responding or is recurrent, refer.

**Umbilical sepsis**

- Clean the stump with saline and apply GV twice daily;
- If redness extends to the skin, refer.

**Diarrhoea**

- Give oral rehydration solution (ORS) or salt sugar solution (SSS);
- Teach the mother how to prepare and give replacement fluid at home;
- Encourage the mother to breastfeed frequently;
- Tell the mother to return for follow-up on 3$^{rd}$ and 7$^{th}$ days or as soon as baby's condition begins to deteriorate;
- **Refer** to a higher level of health care if there is blood in stool, severe dehydration, very frequent stooling, persistent vomiting or baby not responding to treatment.

**Cough and difficulty in breathing**

- If baby is only having catarrh and cough and no other signs, treat as for local infections and clear the nostrils;
- Encourage the mother to continue breastfeeding or other feeding of choice on demand;
- Tell the mother to return for follow-up on 3$^{rd}$ and 7$^{th}$ days or as soon as baby's condition begins to deteriorate;

- If baby is having severe difficulty in breathing or has features of systemic infection, **refer** immediately.

**Secondary Health Care Level**

**Local infections**

**Eye infection**

- Irrigate and apply chloramphenicol as at the primary health care level;
- If culture result is available, and response to first line treatment is inadequate, change antibiotic using the sensitivity pattern;
- If redness or eye discharge persists after 5 days, refer to an Ophthalmologist;
- If gonococcal infection is suspected/confirmed, institute intensive 4-hourly saline irrigation, IV penicillin plus chloramphenicol eye ointment;
- **Refer** to an Ophthalmologist if response is unsatisfactory.

**Ear infection**

- Wick the ear till dry;
- Give oral antibiotics e.g. Ampiclox or Amoxicillin;
- If discharge is profuse, treat as for systemic infection;
- **Refer** to a Paediatrician if response is unsatisfactory.

**Skin sepsis**

- Open and drain pustules/boils;
- Apply gentian violet (GV) twice daily;
- If pustules are many or severe, treat as for systemic infection;
- **Refer** to a Paediatrician if response is unsatisfactory.



**Oral thrush**

- Clean the mouth with warm saline and apply GV twice or Nystatin 4 times daily till healing occurs;
- If thrush is not responding to treatment or is recurrent, screen for HIV infection and manage as appropriate or **refer** to tertiary health care level.

**Umbilical sepsis**

- Clean the umbilical stump with warm saline;
- Teach the mother how to clean and apply GV twice daily at home;
- Instruct the mother to return for follow-up on 3$^{rd}$ and 7$^{th}$ days OR return as soon as possible if baby develops features of generalized infection (see features of systemic infection below);
- If redness extends to the skin or features of systemic infection appear treat as for systemic infections.

**Diarrhoea**

- Provide initial management as outlined at the primary health care level;
- If response to treatment is not satisfactory, admit in Neonatal Unit/Ward;
- Assess the degree of dehydration and estimate the fluid deficit required for replacement;
- Set up an IV infusion with Normal saline or half-strength Darrow's enriched to 7.5% dextrose, as appropriate;
- **Refer** to a higher level of health care if the baby is not responding to treatment.

**Cough and difficulty in breathing**

- Treat as in primary health care level;
- Assess further for congenital pneumonia and chest anomalies;
- Treat as per identified diagnosis;
- **Refer** to a higher level of health care if response is not satisfactory or diagnosis not identified.

**Systemic infection**

- Admit the baby into the neonatal ward;
- Apply general assessment steps;
- Give parenteral antibiotics (e.g. IV Ampiclox and IM gentamicin) depending on local experience/sensitivity pattern;
- Continue breastfeeding or nasogastric tube (NGT) feeding with expressed breast milk (EBM) if baby is unable to suck and has no abdominal distension;
- Give IV 7.5% dextrose infusion if indicated;
- Treat for hypoglycaemia if suspected or found on investigation as appropriate.

**Tertiary Health Care Level**

**Local infections**

**Eye infection**

- Treat as at the secondary health care level;
- If redness or eye discharge persists after 5 days, refer to an Ophthalmologist;
- Treat gonococcal infection as at secondary health care level;
- **Refer** to an Ophthalmologist if response is unsatisfactory.



**Ear infection**:

- Treat as at the secondary health care level;
- **Refer** to Ear Nose and Throat (ENT) Unit if response is unsatisfactory.

**Skin sepsis**

- Treat as at the secondary health care level.

**Oral thrush**

- Treat as at the secondary health care level.

**Umbilical sepsis**:

- Treat as at the secondary health care level.

**Systemic infection**

- Admit the baby into the Neonatal Ward;
- Apply general assessment steps;
- Give parenteral antibiotics depending on local experience or sensitivity pattern;
- Continue breastfeeding or NGT feeding with EBM if unable to suck and there is no abdominal distension;
- Give IV infusion, 7.5% dextrose if indicated;
- Treat for suspected or confirmed hypoglycaemia with 25% Dextrose as indicated;
- Consider blood transfusion, exchange blood transfusion (EBT) and other treatment as indicated by results of investigations (e.g. subdural tap for effusion, treatment for cerebral oedema if present, acetazolamide for hydrocephalus);
- Take measures to avoid cross infection in the Newborn Unit.

## 5.9 MANAGEMENT OF BABY WITH NEONATAL TETANUS

Neonatal tetanus is still an important cause of disease and death in neonates and antecedent factors that lead to the development of tetanus infection are prevalent in Nigeria. The newborn baby with tetanus requires urgent identification and referral to at least a secondary health facility for special care.

**Assessment/Identification of the problem**

- Take history and examine as in general assessment measures **(pages 315 – 316);**

- Specifically observe the following:

  - baby not able to suck on the breast
  - rigidity in all muscles
  - persistent or recurrent spasms
  - opisthotonic posture with hyper-extended/arched spine
  - infected umbilical stump, foul smelling/purulent discharge.

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following investigations:

  - FBC
  - blood culture
  - serum urea, electrolytes and creatinine
  - blood glucose
  - swab from umbilical stump and other sites e.g. throat if baby had uvulectomy, circumcision for culture/sensitivity
  - lumbar puncture for CSF gram-stain and m/c/s
  - chest X-ray



**Tertiary Health Care Level**

- In addition to investigations at the secondary health care level, conduct blood gas analysis and blood pH.

**Treatment**

**Primary Health Care Level**

- Stop spasms by giving rectal diazepam, 0.15 - 0.3 mg/kg IM or paraldehyde 0.3 ml/kg;

- Give stat dose of IM procaine penicillin, 50,000 IU/kg;

- Treat to prevent low blood sugar with EBM or glucose water;

- **Refer urgently** to next nearest health facility.

**Secondary Health Care Level**

- Admit in a quiet corner of the Neonatal Ward/Unit or Isolation Ward;

- Control spasms, as follows:

**Regimen 1**

- Use the following drugs.

  - give IV diazepam, 0.1 - 0.3 mg/kg over 3 minutes
  - start on phenobarbitone, 3 - 5 mg/kg in divided doses and chlorpromazine, 3 - 5 mg/kg through NGT, alternating 6 hourly
  - IV diazepam, 0.1 - 0.3 mg/kg for break through spasms

- Increase the doses of these drugs in a stepwise manner (up to 10 mg/kg/day) if spasms are responding satisfactorily;

- Keep the baby warm;

- Give IM ATS, 10,000 - 50,000 IU or IM Human Tetanus Immunoglobulin, 600 IU stat after a dose;

- Pass NGT and feed baby as appropriate;
- Maintain spasms chart;
- Commence mother on TT immunisation;
- Clean umbilical stump with methylated spirit/saline.
- Give IV crystalline penicillin, 50,000 – 150,000 IU 6 hourly or IM procaine penicillin, 25,000 - 50,000 IU once daily;
- **Refer** if response to treatment is not satisfactory, or spasms are frequent/severe in spite of the above measures.

**Tertiary Health Care Level**

- Admit in the SCBU or Neonatal Ward;
- Treat as in steps outlined at the secondary health care level;
- Control spasms: use **Regimen I** as in secondary health care level or **Regimen II.**

**Regimen II:**

- **Give the following:**
  - IV diazepam, 5 mg/kg/day to be infused continuously and IM phenobarbitone (5 mg/kg/day in 3 divided doses)
- Review child and increase dose of diazepam gradually as necessary to as high as 30 mg/kg/day;
- Withhold diazepam and phenobarbitone if the respiratory rate is <30 cycles/min even if spasms continue;
- If spasms are not controlled, admit into the Intensive Care Unit (ICU):
  - place on general anaesthesia to control spasms
  - put on ventilator as indicated
  - treat for pneumonia with cephalosporins and gentamicin or using sensitivity pattern or local experience



## 5.10 MANAGEMENT OF BABY WITH CONVULSIONS

Neonatal convulsions are common in Nigeria and are caused by a variety of conditions such as birth asphyxia, systemic infections (e.g. meningitis, septicaemia), hypoglycaemia, electrolyte abnormalities, intracranial bleeding, etc. Early identification of convulsive disorders and their prompt management in appropriate settings is a priority in order to prevent brain damage.

**Assessment/Identification of the problem**

- Take history and examine as in general assessment measures **(page 315 - 316)**. Observe the following:
  - generalized, repetitive jerky movements of the body associated with loss of consciousness
  - focal repetitive twitching of a limb or part of the limb or face

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following investigations:
  - blood sugar
  - lumbar puncture for CSF analysis and m/c/s
  - blood and urine cultures
  - serum urea, electrolytes, creatinine, calcium, magnesium and phosphorus
  - serum bilirubin (SB)
  - FBC

**Tertiary Health Care Level**

- In addition to investigations at the secondary health care level, conduct trans-fontanelle ultrasound scan and CT scan.

**Treatment**

**Primary Health Care Level**

- Give IM paraldehyde, 0.3 ml/kg or rectal; or diazepam 0.15 - 0.3 mg/kg IM or by NGT;
- Give stat dose of oral or IM antibiotics;
- Treat to prevent low blood sugar (breastfeeding or milk or sugar/glucose water through NGT);
- **Refer** the baby urgently.

**Secondary Health Care Level**

- Stop seizures by giving IM paraldehyde or rectal Diazepam as at the primary health care level **OR** IV diazepam, 0.15 - 0.3 mg/kg over 3 minutes;
- Admit into Neonatal Unit/Ward;
- Give antibiotics, dextrose infusion, etc if indicated from results of investigations;
- Monitor the vital signs closely as well as coma chart, seizure chart, occipito-frontal circumference (OFC), etc;
- **Refer** if seizures are uncontrolled and provide care (suctioning, oxygen, positioning) on transit.

**Tertiary Health Care Level**

- Admit SCBU or Neonatal Unit;
- Stop seizures as at the secondary health care level;
- If seizures are not controlled, give phenytoin, phenobarbitone at appropriate doses as dictated by frequency of seizures;
- If response is not satisfactory transfer to ICU;
- Give general anaesthesia;



- Treat cause(s) of seizure as per investigation results;
- Monitor closely: vital signs, seizures, OFC, etc;
- Attach to such monitors as ECG, apnoea monitor, as necessary;
- Provide appropriate supportive care – suctioning, oxygen, positioning, etc as necessary.

## 5.11 MANAGEMENT OF BABY WITH NEONATAL JAUNDICE

Neonatal jaundice is the yellowish discoloration of the eyes, skin and mucous membranes caused by high level of bilirubin in the blood. It is an important cause of severe illness and complications such as brain damage could occur if interventions are not promptly instituted.

**Assessment/Identification of the problem**

- Take history and conduct an examination as in general assessment measures, **(pages 315 - 316)** and observe for:

  - yellow discolouration on the skin and mucous membranes
  - pallor
  - diminished activity of baby
  - presence of convulsions and abnormal postures
  - poor feeding
  - vomiting
  - abnormal cry (high-pitched)
  - features of generalised infections

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following investigations:

  - cord blood Hb
  - cord blood SB
  - serial serum (SB) estimations
  - FBC
  - serum urea and electrolytes, creatinine
  - blood, urine and stool cultures (depending on possible or suspected condition)
  - Coomb's test
  - blood grouping and cross-matching (both baby and mother)
  - G6PD enzyme assay



**Tertiary Health Care Level**

- Same as at the secondary health care level.

**Treatment**

**Primary Health Care Level**

- Keep baby warm;
- Maintain regular feeds;
- **Refer** urgently.

**Secondary Health Care Level**

- Admit into Neonatal Unit;
- Keep baby warm or in an incubator;
- Maintain regular feeding on demand;
- Give extra fluid (at least up to 20% of total daily requirement);
- Provide specific treatment depending on the serum bilirubin type and level;
- Treat identified causes of the jaundice;
- For un-conjugated hyperbilirubinaemia, proceed as follows:

  - commence phototherapy
  - take precautions to protect the eyes and genitalia by appropriate coverings (e.g. gauze)
  - monitor clinical condition of the baby while on phototherapy
  - monitor serial SB levels
  - refer if baby's condition not satisfactory

- Arrange for follow up after discharge.

**Tertiary Health Care Level**

- In addition to the tasks listed under secondary health care level:

  - consider blood transfusion and EBT as dictated by clinical condition and trends in SB levels
  - treat for identified complications as they arise (e.g. convulsions, etc)
  - arrange for follow up after discharge



## 5.12 MANAGEMENT OF BLEEDING IN THE NEWBORN

Neonatal bleeding is a potential cause of death in newborn babies. Most of the possible causes of bleeding in the newborn are largely preventable. However, bleeding may be severe enough to lead to significant blood loss and its associated complications. The common causes of bleeding in the newborn period include haemorrhagic disease of the newborn, poorly-ligated umbilical cord and bleeding from circumcision and uvulectomy sites. Urgent measures must be taken to evaluate and manage such conditions to prevent death.

**Assessment/Identification of the Problem**

- Take an appropriate history and examine as per general assessment measures (**pages 315 - 316);**
- Look for obvious or hidden site of bleeding (e.g. poorly ligated umbilical stump, mouth, anus or the glans penis/vagina);
- Check for pallor;
- Check for evidence of massive blood loss (rapid pulse/heart rate, low BP, cold extremities);
- Observe for lethargy and inactivity;
- Observe for bleeding from injection sites.

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following investigations:

  - FBC

- clotting profile i.e., Prothrombin Time (PT) and Kaolin Cephalin Clotting Time (KCCT)
- sepsis screening (cultures of blood, urine and stool)
- blood grouping and cross-matching

**Tertiary Health Care Level**

- Same as at the secondary health care level.

**Treatment**

**Primary Health Care Level**

- Ligate loose umbilical stump, if identified;
- Ensure that baby is kept warm in transit – on referral;
- Refer urgently.

**Secondary Health Care Level**

- Re-ligate the umbilical stump if identified;
- Admit into Neonatal Unit/Ward;
- Assess severity of blood loss (degree of pallor, signs of heart failure or shock);
- Administer oxygen (100%) by face mask;
- Transfuse with fresh whole blood (including EBT if necessary);
- Treat identified causes;
- Give IM Vitamin K, 1 mg stat, repeat 12 hours later;
- Treat for severe infections if identified or suspected, as appropriate;
- Monitor child closely;
- Treat complications as they arise;



- **Refer,** if bleeding persists after 24 hours.

**Tertiary Health Care Level**

- Treat as at the secondary health care level;
- Transfuse with clotting factor concentrates (if available).

## 5.13 MANAGEMENT OF BABY OF A MOTHER WITH TUBERCULOSIS

Tuberculosis (TB) can be transmitted to the newborn from the mother during early postpartum period. Early recognition of the condition of the mother with prompt intervention can prevent the neonate from being infected.

**Assessment/Identification of the Problem**

- Take relevant history and ask about symptoms of TB in the mother and use of anti-tuberculosis drugs;
- Conduct examination as in general assessment measures **(pages 315 - 316);**

**NOTE:** Symptoms of tuberculous infection are not obvious in the immediate neonatal period.

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- No specific investigation.

**Tertiary Level**

- No specific investigation.

**Treatment**

**Primary Health Care Level**

- Ensure mother is breastfeeding the baby;
- **Refer** to secondary health care level.



**Secondary Health Care Level**

- Give INH–resistant BCG;
- Give oral INH, 5 mg/kg/day for 6 weeks;
- Continue breastfeeding;
- Ensure mother is taking her anti-TB drugs regularly.

**Tertiary Health Care Level**

- Same as in secondary health care level.

## 5.14 MANAGEMENT OF BABY OF A DIABETIC MOTHER

Babies of diabetic mothers are at high risk for developing low blood glucose during the first three days of life, even if they are feeding well. Low levels of blood glucose could lead to convulsions and if prolonged, could lead to brain damage and rapid mortality. Adequate measures must be taken to anticipate, identify and manage such babies appropriately.

**Assessment/Identification of the problem**

- Take history and examine as in general assessment measures **(pages 315 - 316);**
- Ask/note for large size at birth (above 4.0 kg);
- Look for:
  - tremors or jitteriness
  - presence of convulsions
  - birth injuries (because of the large size)
  - features of birth asphyxia
  - congenital abnormalities (such as heart defect)
  - jaundice

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following investigations:
  - random blood sugar
  - serum urea, electrolytes and creatinine
  - FBC
  - blood culture



**Tertiary Health Care Level**

- In addition to investigations at the secondary health care level, conduct any other investigation as necessary.

**Treatment**

**Primary Health Care Level**

- Encourage breastfeeding about 8 - 12 times/day;
- **Refer** immediately.

**Secondary Health Care Level**

- Give IV 25% Dextrose bolus (2 ml/kg in 1:1 dilution) in a large vein;
- Encourage breastfeeding about 8 – 12 times/day;
- Use laboratory result to treat as necessary;
- If complications such as persistent low blood glucose arise, **refer** to tertiary health care level.

**Tertiary Health Care Level**

- In addition to the tasks listed in secondary health care level:
  - monitor blood glucose level at regular intervals until it stabilizes to normal for two consecutive days
  - discharge the baby if the blood glucose level has been normal for three days and the baby is feeding well with no other problems
  - arrange for follow up as necessary

## 5.15 MANAGEMENT OF BABY OF HIV POSITIVE MOTHER

HIV infection could be transmitted from mother-to-child in utero, at time of delivery and during breastfeeding. There are recognized risk factors that favour transmission and every effort must be made to reduce the chances of transmission especially during delivery. Since most babies acquire HIV during the last trimester and at birth, there are no specific features diagnostic of HIV infection, and signs may only begin to appear around six weeks of life.

**Assessment/Identification of the problem**

- Take history and examine as per general assessment measures **(pages 315 - 316);**
- Look for evidence of intra-uterine growth retardation (e.g. SGA, prematurity);
- Look for features of associated problems;
- Ask if mother is on anti-retroviral therapy (ART).

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- No specific investigation.
- Investigate for associated problems if present.

**Tertiary Health Care Level**

- Take blood for Polymerase Chain Reaction (PCR) and CD4 cell count.

**Treatment**



**Primary Health Care Level**

- **Refer** immediately.

**Secondary Health Care Level**

- Respect the confidentiality of the mother and family;
- Find out mother's choice of infant feeding that may have been made during ANC and help her implement this correctly;
- Emphasise to mother the need to avoid mixed-feeding;
- Remember to apply universal precautions while handling the baby;
- Do not isolate baby or mother;
- Provide emotional support;
- Give the baby ART according to the national protocol **(Section 2, pages 118 - 123);**
- Give the baby routine immunisation immediately;
- Arrange for follow up to ensure compliance with choice of feeding.

**Tertiary Health Care Level**

- In addition to treatment in secondary health care level:
  - refer the mother to adult ARV clinic to commence treatment and follow up as appropriate
  - treat the baby according to the national protocol
  - schedule a follow up for the baby in a Paediatric ARV clinic

## 5.16 MANAGEMENT OF BABY OF RHESUS NEGATIVE MOTHER

Rhesus or Rh (D) incompatibility can occur when a woman with an Rh (D) negative blood type is carrying a baby with an Rh (D) positive blood type. It is one of the causes of severe anaemia and jaundice in the newborn period and measures must be taken to identify and prevent the complications promptly.

**Assessment/Identification of the Problem**

- Take history and examine as in general assessment measure **(pages 315 - 316);**
- Check for jaundice, anaemia;
- Check for features of hydrops fetalis (oedema, pallor, ascites, heart failure).

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following:
  - Kleihauer-Betke test for the mother
  - FBC
  - cord blood bilirubin and Hb
  - serial SB and Hb levels
  - Coomb's test

**Tertiary Health Care Level**

- Investigate as at the secondary health care level.

**Treatment**



**Primary Health Care Level**

- **Refer** to a higher health care level.

**Secondary Health Care Level**

- Treat for anaemia as appropriate **(pages 341 - 343);**
- Treat for jaundice as appropriate **(pages 338 - 340);**
- Ensure adequate breastfeeding;
- Treat complications as they arise.

**Tertiary Health Care Level**

- In addition to treatment offered at the secondary health care level, arrange for follow up.

## 5.17 MANAGEMENT OF BABY WITH BIRTH TRAUMA

Birth trauma is mechanical injury incurred by the newborn during delivery. Birth trauma should be recognized by the attending care provider who should examine the baby carefully soon after delivery. While most birth injuries are minor requiring only reassurance, some may be major and life-threatening requiring prompt intervention.

**Assessment/Identification of the Problem**

- Take a history and examine as in general assessment measures **(pages 315 - 316);**

- Check for the following:

  - obvious deformities
  - swelling, bleeding, lacerations, fractures especially clavicle and long bones
  - asymmetry of the face
  - relative inactivity of a limb or part of the body
  - pallor and jaundice

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigations.

**Secondary Health Care Level**

- Conduct the following investigations:

  - FBC
  - serum urea, electrolytes and creatinine
  - SB
  - X-rays

**Tertiary Health Care Level**

- In addition to the investigations under the secondary care level, request for a trans-fontanelle ultrasound scan and a CT scan as indicated.



**Treatment**

**Primary Health Care Level**

- Refer to secondary or tertiary health care level.

**Secondary Health Care Level**

- Treat as per investigation results.

**Tertiary Health Care Level**

- Treat complications as they arise;

- Arrange for follow up as necessary.

## 5.18 MANAGEMENT OF BABY WITH CONGENITAL ABNORMALITIES

Congenital malformations can affect any part, organ or system of the body. The malformations may be obvious at birth from the physical appearance of the body or may affect the internal organs like the heart or kidneys. They can be classified as major or minor based on their medical, surgical or cosmetic significance.

**Assessment/Identification of the Problem**

- Take history and examine as in general assessment measures **(pages 315 - 316);**
- Check for obvious defects such as cleft lip/palate, abnormal digits, imperforate anus, abnormally large head;
- Search thoroughly on all body parts for more defects if one is identified on one part of the body.

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following investigations:
  - ultrasound scan
  - FBC
  - serum urea, electrolytes and creatinine

**Tertiary Health Care Level**

- In addition to the tasks under secondary health care level perform.
  - buccal smear for chromosomal karyotyping
  - trans-fontanelle ultrasound scan
  - CT scan



**Treatment**

**Primary Health Care Level**

- Refer to secondary or tertiary health care level.

**Secondary Health Care Level**

- Treat as per laboratory result and as appropriate.

**Tertiary Health Care Level**

- In addition to treatment at the secondary health care level:
  - treat complications as they arise
  - institute follow up schedule

## 5.19 MANAGEMENT OF BABY DELIVERED BY SURGICAL INTERVENTION

Instrumental deliveries are those that are carried out by the use of obstetric instruments such as forceps, vacuum extractor and Caesarean section. Some can be elective or emergency and the method of delivery will determine the preparedness of the health provider for the baby at birth. The indications could either be due to fetal or maternal problems and may also determine the outcome at birth and in the early neonatal period.

**Assessment/Identification of the Problem**

- Take history and examine as in general assessment measures
- Check for drowsiness, floppiness and poor activity in the baby (following mother's anaesthesia);

- Check for obvious injuries such as fractures, lacerations, swellings and bruises.

**Management**

**Investigations**

**Primary Health Care Level**

- No specific investigation.

**Secondary Health Care Level**

- Conduct the following:

    - FBC
    - serum urea, electrolytes and creatinine
    - X-rays

**Tertiary Health Care Level**

- In addition to investigations at the secondary care level, request for ultrasound scan and CT scan.

**Treatment**



**Primary Health Care Level**

- Refer to a higher level of health care

**Secondary Health Care Level**

- Treat as per laboratory results and as appropriate;

- Refer if complications arise.

**Tertiary Health Care Level**

- In addition to the treatment at the secondary health care level:

    - treat complications as they arise
    - institute follow up schedule.

# SECTION SIX: PROCEDURES

## 6.0 INTRODUCTION

Some of the procedures used in obstetric and gynaecological practice will be described in this section.

## 6.1 CLINICAL PELVIMETRY

This is a method of assessing whether the pelvis of a pregnant woman would allow the passage of an average-sized fetus through it, particularly a primigravida. The procedure is usually performed after the 36$^{th}$ week of gestation or during labour.

There are three levels of assessment:
- The brim (inlet);
- The mid-cavity;
- The outlet.

**Note**: Before the procedure the examiner should measure the length of his/her fingers from the tip of the middle finger to the junction of the thumb.

### PROCEDURE:

- Put the patient in the dorsal position;

- Wearing a HLD glove on the right hand, insert the middle and the index fingers into vagina;

- Approach the sacral promontory with the middle finger and attempt to reach it:

  - if the middle finger can reach the sacral promontory, it is adjudged inadequate (less than 11.5cm)
  - if the sacral promontory cannot be reached, it is adjudged to be adequate

- While the fingers are still in the vagina, run them down the sacral promontory and the curvature - it should be concave;

- Feel for the ischial spines and note:

- its prominence/bluntness
- whether protruding sharply or not

**Note:** Where ischial spines are prominent or protruding, the diameter of the mid-cavity is adjudged to be **inadequate.**

- Then, withdraw the two fingers gently and put them in the sub-pubic arch:

  - if the sub-pubic arch is obtuse **(adequate)** it will admit two fingers
  - if the sub-pubic arch is acute **(inadequate)** it will not admit the two fingers

- Feel the coccyx whether it is movable (backwards) or not;

- Assess the softness or rigidity of the soft tissues

- Withdraw the hand and form a fist to fit in-between the two ischial tuberosities. If the inter-tuberous (interspinous) diameter accepts the four knuckles, the pelvic outlet is adequate.



## 6.2 PARACERVICAL BLOCK

**Table 16: Indications and precautions for paracervical block**

| Indications | Precautions |
|---|---|
| ▪ Dilatation and curettage<br>▪ Manual vacuum aspiration | ▪ Make sure there are no known allergies to lignocaine or related drugs<br>▪ Do not inject into a vessel<br>▪ Maternal complications are rare but may include haematoma |

- Review general care principles **(Section 1, pages 1 - 29);**

- Prepare 20 ml of 0.5% lignocaine solution without adrenaline;

- Use a 3.5 cm, 22-gauge or 25-gauge needle to inject the lignocaine solution;

- If **using a tenaculum to grasp the cervix,** first inject 1 ml of 0.5% lignocaine solution into the anterior or posterior lip of the cervix which has been exposed by the speculum (the 10 o'clock or 12 o'clock position is usually used);

  **Note:** With incomplete abortion, a ring (sponge) forceps is preferable as it is less likely than the tenaculum to tear the cervix with traction and does not require the use of lignocaine for placement;

- With the tenaculum or ring forceps on the cervix vertically (one tooth in the external os, the other on the face of the cervix), use slight traction and movement to help identify the area between the smooth cervical epithelium and the vaginal tissue. This is the site for insertion of the needle around the cervix;

- Insert the needle just under the epithelium.

**Tip**: Some practitioners have suggested the following step to divert the woman's attention from the insertion of the needle. Place the tip of the needle just over the site selected for insertion and ask the woman to cough. This will "pop" the needle just under the surface of the tissue.

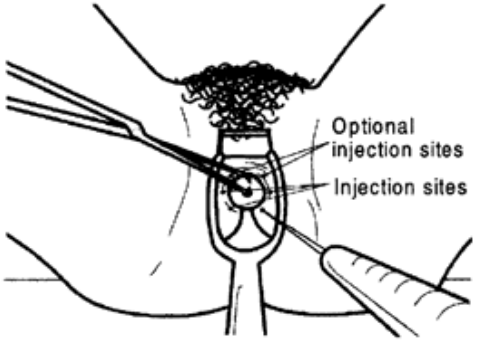
**Note:** Aspirate (pull back on the plunger) to be sure that no vessel has been penetrated. If **blood is returned in the syringe with aspiration,** remove the needle. Re-check the position carefully and try again. Never inject if blood is aspirated. **The woman can suffer convulsions and death if IV injection of lignocaine occurs.**

- Inject 2 ml of lignocaine solution just under the epithelium, not deeper than 3 mm, at 3, 5, 7 and 9 o'clock, **(Figure 36).** Optional injection sites are at 2 and 10 o'clock. When correctly placed, a swelling and blanching of the tissue can be noted;

- At the conclusion of the set of injections, wait 2 minutes and then pinch the cervix with forceps. If the **woman feels the pinch,** wait 2 more minutes and then retest.

**Anaesthetize early to provide sufficient time for effect.**

**Figure 36: Paracervical block injection sites**






## 6.3 PUDENDAL BLOCK

**Table 17: Indications and precautions for pudendal block**

| Indications | Precautions |
|---|---|
| ▪ Instrumental or breech delivery<br>▪ Episiotomy and repair of perineal tears<br>▪ Craniotomy or craniocentesis<br>▪ Manual removal of placenta | ▪ Make sure there are no known allergies to lignocaine or related drugs<br>▪ Do not inject into a vessel |

- Review general care principles **(Section 1, pages 1 - 29);**

- Prepare 40 ml of 0.5% lignocaine solution without adrenaline;

  **Note:** It is best to limit the pudendal block to 30 ml of the solution so that the remaining 10 ml may be injected into the perineum during repair of tears, if needed.

- Use a 15 cm 22-gauge needle to inject the lignocaine;

The target is the pudendal nerve as it passes through the lesser sciatic notch. There are two approaches:
- through the perineum
- through the vagina

The perineal approach requires no special instrument. For the vaginal approach, a special needle guide ("trumpet"), if available, provides protection for the provider's fingers.

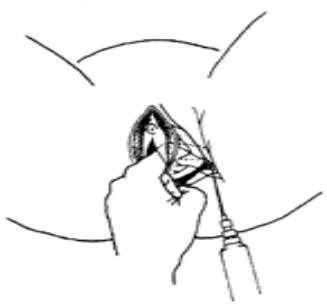
### 6.3.1 PERINEAL APPROACH

- Infiltrate the perineal skin on both sides of the vagina using 10 ml of lignocaine solution;

**Note:** Aspirate (pull back on the plunger) to be sure that no vessel has been penetrated. If **blood is returned in the syringe with aspiration**, remove the needle. Re-check the position carefully and try again. Never inject if blood is aspirated. **The woman can suffer convulsions and death if IV injection of lignocaine occurs.**

- Wearing high-level disinfected gloves place two fingers in the vagina and guide the needle through the perineal tissue to the tip of the woman's left ischial spine (**Figure 37);**

**Figure 37: Perineal approach**



- Inject 10 ml of lignocaine solution in the angle between the ischial spine and the ischial tuberosity;

- Pass the needle through the sacrospinous ligament and inject another 10 ml of lignocaine solution;

- Repeat the procedure on the opposite side;

- If **an episiotomy is to be performed,** infiltrate the episiotomy site in the usual manner at this time **(Section 6, pages 431 - 435);**

- At the conclusion of the set of injections, wait for 2 minutes and then pinch the area with forceps. If the **woman can feel pain**, wait for 2 more minutes and then retest.

**Anaesthetize early to provide sufficient time for effect.**



### 6.3.2 VAGINAL APPROACH

- Wearing high-level disinfected or sterile gloves, use the left index finger to palpate the woman's left ischial spine through the vaginal wall **(Figure 38);**

**Figure 38: Vaginal approach**

- Use the right hand to advance the needle guide ("trumpet") towards the left spine, keeping the left fingertip at the end of the needle guide;

- Place the needle guide just below the tip of the ischial spine;

**Remember to keep the fingertip near the end of the needle guide. Do not place the fingertip beyond the end of the needle guide as needle-stick injury can easily occur.**

- Advance a 15 cm, 22-gauge needle with attached syringe through the guide;

- Penetrate the vaginal mucosa until the needle pierces the sacrospinous ligament;

**Note:** Aspirate (pull back on the plunger) to be sure that no vessel has been penetrated. **If blood is returned in the syringe with aspiration**, remove the needle. Re-check the position carefully and try again. Never inject if blood is aspirated. **The woman can suffer convulsions and death if IV injection of lignocaine occurs.**

- Inject 10 ml of lignocaine solution;
- Withdraw the needle into the guide and reposition the guide to just above the ischial spine;
- Penetrate the vaginal mucosa and aspirate again to be sure that no vessel has been penetrated;
- Inject another 5 ml of lignocaine solution;
- Repeat the procedure on the other side, using the right index finger to palpate the woman's right ischial spine. Use the left hand to advance the needle and needle guide and inject the lignocaine solution;
- If an **episiotomy is to be performed,** infiltrate the episiotomy site in the usual manner at this time **(pages 431 - 435);**
- At the conclusion of the set of injections, wait for 2 minutes and then pinch the area with forceps. **If the woman feels pain**, wait for 2 more minutes and then retest.

**Anaesthetize early to provide sufficient time for effect.**



## 6.4 LOCAL ANAESTHESIA FOR CAESAREAN SECTION

Local anaesthesia is a safe alternative to general, ketamine or spinal anaesthesia when anaesthetic agents or persons trained in their use are not available.

The use of local anaesthesia for Caesarean section requires that the provider counsels the woman and reassures her throughout the procedure. The provider must keep in mind that the woman is awake and alert and should use instruments and handle tissue as gently as possible.

**Table 18: Indications and precautions for local anaesthesia for caesarean section**

| Indications | Precautions |
|---|---|
| ▪ Caesarean section (especially in women with heart failure) | ▪ Avoid use in women with eclampsia, severe pre-eclampsia or previous laparotomy<br>▪ Avoid use in women that are obese, apprehensive or allergic to lignocaine or related drugs<br>▪ Avoid use if the surgeon is inexperienced at caesarean section<br>▪ Do not inject into a vessel. |

- Review general care principles **(Section 1, pages 1-29)** and start an IV infusion **(Section 1, page 19);**
- Prepare 200 ml of 0.5% lignocaine with 1:200,000 adrenaline**.** Usually less than half this volume (approximately 80 ml) is needed in the first hour;
- If the **fetus is alive,** give pethidine, 1 mg/kg body weight (but not more than 100 mg) IV slowly (or give morphine, 0.1 mg/kg body weight IM) and promethazine, 25 mg IV **after** delivery. Alternatively, pethidine (or pentazocin, 0.5 mg/kg body weight IM) and promethazine may be given before delivery, but the baby may need to be given naloxone, 0.1 mg/kg body weight IV at birth;

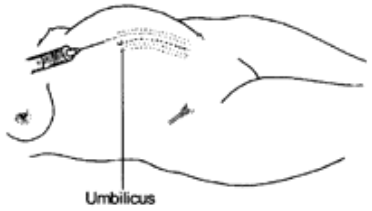
- If the **fetus is dead,** give pethidine, 1 mg/kg body weight (but not more than 100 mg) IV slowly (or give morphine, 0.1 mg/kg body weight IM, or Pentazocin, 0.5 mg/kg body weight) and promethazine, 25 mg IV;

**Talk to the woman and reassure her throughout the procedure**.

- Using a 10 cm needle, infiltrate one band of skin and subcutaneous tissue on either side of the proposed incision, two finger breadths apart (**Figure 39).**

  **Note:** Aspirate (pull back on the plunger) to be sure that no vessel has been penetrated. **If blood is returned in the syringe with aspiration**, remove the needle. Re-check the position carefully and try again. Never inject if blood is aspirated. **The woman can suffer convulsions and death if IV injection of lignocaine occurs.**

**Figure 39: Infiltration of skin and subcutaneous tissue with local anaesthesia for Caesarean section**




- Raise a long wheal of lignocaine solution 3 - 4 cm on either side of the midline from the symphysis pubis to a point 5 cm above the umbilicus;

- Infiltrate the lignocaine solution down through the layers of the abdominal wall. The needle should remain almost parallel to the skin. Take care not to pierce the peritoneum and insert the needle into the uterus, as the abdominal wall is very thin at term;

- At the conclusion of the set of the injections, wait for 2 minutes and then pinch the incision site with forceps. If the **woman feels pain,** wait for 2 more minutes and then retest.



**Anaesthetize early to provide sufficient time for effect.**

**Note**: When local anaesthesia is used, perform a midline incision that is about 4 cm longer than when general anaesthesia is used. A **Pfannenstiel incision should not be used** as it takes longer, requires more lignocaine and retraction is poorer.

**The anaesthetic effect can be expected to last about 60 minutes.**

- Proceed with Caesarean section **(pages 402 - 412)** keeping the following in mind:

  – do not use abdominal packs. Use retractors as little as possible and with a minimum of force
  – inject 30 ml of lignocaine solution beneath the uterovesical peritoneum as far laterally as the round ligaments. No additional anaesthetic drug is required. The peritoneum is sensitive to pain while the myometrium is not
  – inform the woman that she will feel some discomfort from traction when the baby is delivered. This is usually no more than occurs during vaginal delivery
  – remove the placenta by controlled cord traction **(Section 3, page 183)**
  – repair the uterus without removing it from the abdomen

- Additional local anaesthesia may be necessary to repair the abdominal wall.

## 6.5 SPINAL (SUBARACHNOID) ANAESTHESIA

**Table 19: Indications and precautions for spinal anaesthesia**

| Indications | Precautions |
|---|---|
| ▪ Caesarean section<br>▪ Laparotomy<br>▪ Dilatation and curettage<br>▪ Manual removal of placenta<br>▪ Repair of third and fourth degree perineal tears | ▪ Make sure there are no known allergies to lignocaine or related drugs<br>▪ Avoid use in women with uncorrected hypovolaemia, severe anaemia, coagulation disorders, haemorrhage, local infection, severe pre-eclampsia, eclampsia or heart failure due to heart disease. |

- Review general care principles **(Section 1, pages 1- 29)** and start an IV infusion **(Section 1, page 19)**

- Infuse 500-1000 ml of IV fluids (Normal saline or Ringer's lactate) to pre-load the woman and avoid hypotension. This should be done 30 minutes before anaesthesia;

- Prepare 1.5 ml of the local anaesthetic: 5% lignocaine in 5% dextrose. Add 0.25 ml of adrenaline (1: 1 000) if the anaesthetic needs to be effective for longer than 45 minutes;

- Ask the woman to sit up (or lie on her side), ensuring that the lumbar spine is well flexed. Ask the woman to flex her head onto her chest and round her back as much as possible;

- Identify and, if required, mark the proposed site of injection. A horizontal line from the iliac crest will cross the woman's vertebral column between the spines of the fourth and fifth lumbar vertebrae. Choose this space or the space just above it;

> **Sterility is critical. Do not touch the point or shaft of the spinal needle with your hand. Hold the needle only by its hub.**

- Inject 1% lignocaine solution using a fine needle to anaesthetize the woman's skin;



- Introduce the finest spinal needle available (22- or 23-gauge) in the midline through the wheal, at a right angle to the skin in the vertical plane.

  **Note**: Fine needles tend to bend.

- If the **needle hits bone,** it may not be in the midline. Withdraw the needle and reinsert, directing it slightly upwards while aiming for the woman's umbilicus;

- Advance the spinal needle towards the subarachnoid space. A distinct loss of resistance will be felt as the needle pierces the ligamentum flavum;

- Once the needle is through the ligamentum flavum, push the needle slowly through the dura. You will feel another slight loss of resistance as the dura is pierced;

- Remove the stylet. Cerebrospinal fluid should flow out of the needle;

- If **cerebrospinal fluid does not come out,** reinsert the stylet and rotate the needle gently. Remove the stylet to see if the fluid is flowing out. If you fail two times, try another space;

- Inject 1 - 1.25 ml of the local anaesthetic solution.

  **Note**: For pregnant women who have not delivered, a smaller dose of the drug is needed since the available subarachnoid space is reduced due to engorged epidural veins.

- Help the woman to lie on her back. Have the operating table tilted to the left or place a pillow or folded linen under her right lower back to decrease supine hypotension syndrome;

- Recheck the woman's blood pressure. A fall in blood pressure is likely. **If there is significant hypotension**, give the woman more IV fluids (500 ml quickly):

  – if this **does not raise her blood pressure**, give ephedrine, 0.2 mg/kg body weight IV in 3 mg increments
  – if **blood pressure continues to fall after giving IV ephedrine** boluses four times, give ephedrine, 30 mg IM

- Give oxygen at 6 - 8 litre per minute by mask or nasal cannulae;

- After injecting the local anaesthetic solution, wait for 2 minutes and then pinch the incision site with forceps. If the **woman feels pain, wait for 2 minutes and then retest;**

**Anaesthetize early to provide sufficient time for effect.**

- After surgery, keep the woman flat for at least 6 hours with only a single pillow beneath her head to prevent post-spinal headache. She must not sit up or strain during this period.



## 6.6 KETAMINE ANAESTHESIA

**Table 20: Indications and precautions for Ketamine anaesthesia**

| Indications | Precautions |
|---|---|
| ▪ Any procedure that is relatively short (less than 60 minutes) and where muscle relaxation is not required (e.g. repair of perineal tears or extensive cervical tears, manual removal of placenta, caesarean section, drainage of breast abscess)<br>▪ Suitable as a back-up if inhalation apparatus (or gas supply for a Boyle's anaesthesia machine) fails or if general anaesthesia is used without inhalation apparatus**.** | ▪ When used alone, Ketamine can cause unpleasant hallucinations. Avoid use in women with history of psychosis. To prevent hallucinations, give diazepam 10 mg IV **after** the baby is delivered.<br>▪ By itself ketamine does not provide muscular relaxation, so the incision for Caesarean section may need to be longer.<br>▪ **Ketamine should not be used** in women with elevated blood pressure, pre-eclampsia, eclampsia or heart disease. |

- Review general care principles **(Section 1, pages 1-29)** and start an IV infusion **(Section 1, pages 19);**

- Ketamine may be given IM, IV or by infusion. The dose of Ketamine is variable:
  - most women will require 6 - 10 mg/kg body weight IM. Surgical anaesthesia is reached within 10 minutes and lasts up to 30 minutes
  - alternatively, give 1 - 2 mg/kg body weight IV slowly over 2 minutes (in which case the action lasts for only 15 minutes)
  - infusion of Ketamine is described below and this is suitable for Caesarean section
  - when additional pain relief is needed, give Ketamine 1 mg/kg body weight IV.

**Ketamine anaesthesia should not be used in women with elevated blood pressure, pre-eclampsia, eclampsia or heart disease.**

### 6.6.1 KETAMINE INFUSION

#### Premedication

- Give atropine sulfate, 0.6 mg IM 30 minutes prior to surgery;
- Give diazepam 10 mg IV at the time of induction to prevent hallucinations (for Caesarean sections, give diazepam after the baby is delivered);
- Give oxygen at 6-8 litres per minute by face mask or nasal tube.

#### Induction and Maintenance

- Check the woman's vital signs (pulse, blood pressure, respiration, temperature);
- Insert an oropharyngeal airway to prevent airway obstruction by the tongue;
- Induction of anaesthesia is achieved by administering ketamine, 2 mg/kg body weight IV slowly over 2 minutes. For short procedures lasting less than 15 minutes, this will provide adequate anaesthesia;
- For longer procedures, infuse ketamine, 200 mg in 1 1itre 5% dextrose at 2 mg per minute (i.e. 20 drops per minute);
- Check the level of anaesthesia before proceeding with the surgery. Pinch the incision site with forceps. If the **woman feels pain,** wait 2 minutes and then retest;
- Monitor vital signs (pulse, blood pressure, respiration, temperature) every 10 minutes during the procedure.



#### Post-Procedure Care

- Discontinue ketamine infusion and administer a postoperative analgesic suited to the type of surgery performed;
- Maintain observations every 30 minutes until the woman is fully awake, ketamine anaesthesia may take up to 60 minutes to wear of;
- Remove oropharyngeal airway when the patient is conscious.

## 6.7 EXTERNAL VERSION

- Review for indications. Do not perform this procedure before 37 weeks of gestation or if facilities for emergency Caesarean section are not available;

- Have the woman lie on her back, and elevate the foot of the bed;

- Listen to and note the fetal heart rate. If there are **fetal heart rate abnormalities** (less than 120 or more than 160 beats per minute):

  - do not proceed with external version
  - manage as for fetal distress **(Section 3, pages 228 - 229)**

- Palpate the abdomen to confirm presentation and position of the fetal head, back and hips;

- To mobilize the breech, gently lift the lowest part of the fetus from the pelvic inlet by grasping above the pubic bone **(Figure 40 A, page 377);**

- Bring the head and buttocks of the fetus closer to each other to achieve forward rotation. Rotate the fetus slowly by guiding the head in a forward roll as the buttocks is lifted (**Figure 40B-C, page 377);**

- Listen to the fetal heart rate. If an **abnormality is detected:**

  - have the woman turn on to her left side
  - give oxygen at 4 - 6 litre per minute by mask or nasal cannula
  - reassess every 15 minutes

- If the procedure is successful, have the woman remain lying down for 15 minutes. Counsel her to return if bleeding or pain occurs or if she believes the baby has returned to the previous presentation;

- If the **procedure is unsuccessful**, try again using a back ward roll **(Figure 40D);**

- If the **procedure is still unsuccessful** and fetal heart rate is good, tocolytics may increase the chances of successful version. Give:



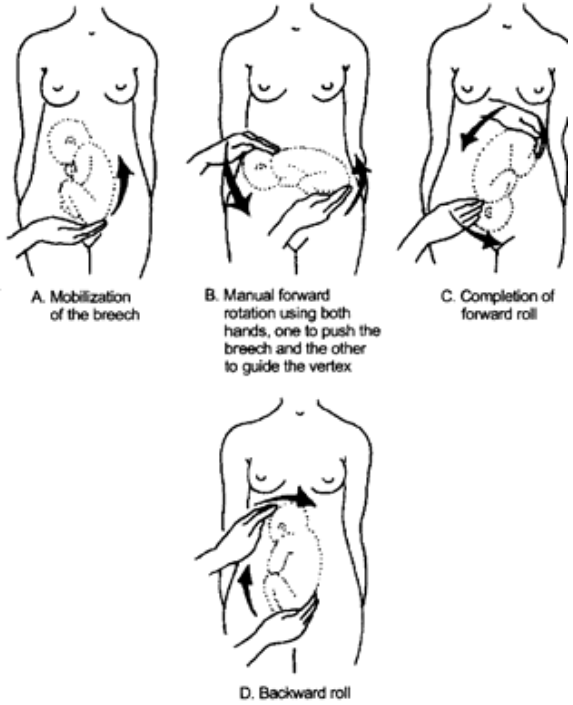
  - terbutaline, 250 mcg IV slowly over 5 minutes
  - OR salbutamol, 0.5 mg IV slowly over 5 minutes

- If the **procedure is still unsuccessful**, attempt version again after 1 week or if the woman presents in early labour with breech or transverse lie;

- If there are **fetal heart abnormalities:**

  - turn the woman onto her left side
  - reassess the fetal heart rate every 5 minutes
  - if the **fetal heart rate does not stabilize within the next 30 minutes**, deliver by Caesarean section **(pages 402 - 412)**

**Figure 40: External version of a breech presentation.**



## 6.8 INDUCTION AND AUGMENTATION OF LABOUR

Induction of labour and augmentation of labour are performed for different indications but the methods are essentially the same.

- **Induction of labour**: stimulating the uterus to begin labour;

- **Augmentation of labour**: stimulating the uterus during labour to increase the frequency, duration and strength of contractions.

A satisfactory labour pattern is established when there are three contractions in 10 minutes, each lasting more than 40 seconds.

If the **membranes are intact**, it is recommended practice in both induction and augmentation of labour to first perform artificial rupture of membranes (ARM). In some cases, this is all that is needed to induce labour. Membrane rupture, whether spontaneous or artificial, often sets off the following chain of events:

- amniotic fluid is expelled
- uterine volume is decreased
- prostaglandins are produced, stimulating labour
- uterine contractions begin (if the woman is not in labour) or become stronger (if she is already in labour).

### 6.8.1 ARTIFICIAL RUPTURE OF FETAL MEMBRANES

- Review for indications;

  **Note:** In areas of high HIV/Hepatitis prevalence it is prudent to leave the membranes intact for as long as possible to reduce perinatal transmission of HIV.

- Listen to and note the fetal heart rate;

- Ask the woman to lie on her back with her legs bent, feet together and knees apart (dorsal position);

- Wearing high-level disinfected or sterile gloves, use one hand to examine the cervix and note the consistency, position, effacement, dilatation and feel for possible cord presentation;



- Use the other hand to insert an amnion hook or a Kochers forceps into the vagina;

- Guide the forceps or hook towards the membranes along the fingers in the vagina;

- Place two fingers against the membranes and gently rupture the membranes with the instrument in the other hand. Allow the amniotic fluid to drain slowly around the fingers;

- Note the colour of the fluid (clear, greenish, bloody). **If thick meconium is present,** suspect fetal distress **(Section 3, pages 228 - 229);**

- After ARM, listen to the fetal heart rate during and after a contraction. If the **fetal heart rate is abnormal** (less than 120 or more than 160 beats per minute), suspect fetal distress **(Section 3, pages 228 - 229);**

- If **delivery is not anticipated within 18 hours,** give prophylactic antibiotics in order to help reduce neonatal infections e.g:

  - Ampiclox, 500 mg IV every 6 hours
  - **OR** Ampicillin, 500 mg IV every 6 hours until delivery
  - if there are **no signs of infection after delivery**, discontinue antibiotics

- If satisfactory **labour is not established 1 hour after ARM,** begin oxytocin infusion (**pages 380-384);**

- If **labour is induced because of severe maternal disease (**e.g. eclampsia), begin oxytocin infusion at the same time as ARM.

### 6.8.2 INDUCTION OF LABOUR

#### Assessment of the Cervix

The success of induction of labour is related to the condition of the cervix at the start of induction. To assess the condition of the cervix, a cervical examination is performed and a score is assigned based on the criteria in **Table 21.**

- If the **cervix is favourable** (has a score of 6 or more), labour is usually successfully induced with oxytocin alone;

- If the **cervix is unfavourable** (has a score of 5 or less), ripen the cervix using prostaglandins **(pages 384-385)** or a Foleys catheter **(pages 385-386)** before induction of labour.

**Table 21: Assessment of cervix for induction of labour (Modified Bishop's Score)**

| Factor | Rating | | | |
|---|---|---|---|---|
| | **0** | **1** | **2** | **3** |
| Dilatation (cm) | closed | 1 – 2 | 3 – 4 | 5 and above |
| Length of cervix (cm) | more than 4 | 3 – 4 | 1 – 2 | less than 1 |
| Consistency | Firm | Average | Soft | - |
| Position | Posterior | Mid | Anterior | - |
| Station of head (cm from ischial spines) | - 3 | - 2 | - 1, 0 | + 1, + 2 |

## OXYTOCIN

Use oxytocin with great caution as fetal distress can occur from hyperstimulation and rarely, uterine rupture. Multiparous women are at higher risk for uterine rupture.

The effective dose of oxytocin varies greatly between women. Cautiously administer oxytocin in IV fluids (dextrose or Normal saline), gradually increasing the rate of infusion until good labour is established (three contractions in 10 minutes, each lasting more than 40 seconds). Maintain this rate until delivery. The uterus should relax between contractions**.**

**When oxytocin infusion results in a satisfactory labour pattern, maintain the same rate until delivery.**

- Review for indications;

- Monitor the woman's pulse, blood pressure and contractions and check the fetal heart rate;



**Be sure induction is indicated, as failed induction is usually followed by Caesarean section.**

- Ensure that the woman is on her left side;

- Record the following observations on a partograph every 30 minutes **(Section 3, pages 167 - 168);**

  - rate of infusion of oxytocin (changes in arm position may alter the flow rate)
  - duration and frequency of contractions
  - fetal heart rate. Listen every 30 minutes, always immediately after a contraction. If the **fetal heart rate is less than 120 beats per minute or more than 160 beats per minute**, stop the infusion and manage for fetal distress **(Section 3, pages 228 - 229)**

**A patient receiving oxytocin should never be left alone.**

- Infuse oxytocin, 2.5 units in 500 ml of 5% dextrose (or Normal saline) at 10 drops per minute (**Table 22, page 383 and Table 23, page 384**). This is approximately 2.5 mIU per minute;

- Increase the infusion rate by 10 drops per minute every 30 minutes until a good contraction pattern is established (contractions lasting more than 40 seconds and occurring three times in 10 minutes);

- Maintain this rate until delivery is completed;

- If **hyperstimulation occurs** (any contraction lasting longer than 60 seconds or if there are more than four contractions in 10 minutes**)**, stop the infusion and relax the uterus using tocolytics:

  - terbutaline, 250 mcg IV slowly over 5 minutes
  - OR salbutamol, 10 mg in 1 litre IV fluids (Normal saline or Ringers lactate) at 10 drops per minute

- If there are less than three contractions in 10 minutes, each lasting more than 40 seconds with the infusion rate at 60 drops per minute:

- increase the oxytocin concentration to 5 units in 500 ml of dextrose (or Normal saline) and adjust the infusion rate to 30 drops per minute (15 mIU per minute)
- increase the infusion rate by 10 drops per minute every 30 minutes until a satisfactory contraction pattern is established or the maximum rate of 60 drops per minute is reached

- If labour still has not been established using the higher concentration of oxytocin:

  - in **multigravida** and in **women with previous caesarean scars**, induction has failed, deliver by Caesarean section **(pages 402 - 412)**
  - in **primigravida**, infuse oxytocin at a higher concentration (rapid escalation, **Table 23, page 384)**
  - infuse oxytocin 10 units in 500 ml dextrose (or Normal saline) at 30 drops per minute
  - increase infusion rate by 10 drops per minute every 30 minutes until good contractions are established
  - if **good contractions are not established at 60 drops per minute** (60 mIU per minute), deliver by Caesarean section **(pages 402 - 412).**

**Do not use oxytocin, 10 units in 500 ml (i.e. 20 mIU/ml) in multigravidae and women with previous caesarean section.**



**Table 22. Oxytocin infusion rates for induction of labour**

| Time of onset of Induction (hours) | Oxytocin Concentration | Drops per Minute | Approximate Dose (mIU/ minute) | Volume Infused | Total Volume Infused |
|---|---|---|---|---|---|
| 0.0 | 2.5 units in 500 ml dextrose or normal saline (5 mIU/ml) | 10 | 3 | 0 | 0 |
| 0.30 | Same | 20 | 5 | 15 | 15 |
| 1.00 | Same | 30 | 8 | 30 | 45 |
| 1.30 | Same | 40 | 10 | 45 | 90 |
| 2.00 | Same | 50 | 13 | 60 | 150 |
| 2.30 | Same | 60 | 15 | 75 | 225 |
| 3.00 | 5 units in 500 ml dextrose or normal saline (10mIU/ml) | 30 | 15 | 90 | 315 |
| 3.30 | Same | 40 | 20 | 45 | 360 |
| 4.00 | Same | 50 | 25 | 60 | 420 |
| 4.30 | Same | 60 | 30 | 75 | 495 |
| 5.00 | 10 units in 500 ml dextrose or normal saline (20 mIU/ml) | 30 | 30 | 90 | 585 |
| 5.30 | Same | 40 | 40 | 45 | 630 |
| 6.00 | Same | 50 | 50 | 60 | 690 |
| 6.30 | Same | 60 | 60 | 75 | 765 |
| 7.00 | Same | 60 | 60 | 90 | 855 |

**(Note: 1 ml ≈ 20 drops)**

**Increase the rate of oxytocin infusion only to the point where satisfactory uterine contractions are established and then maintain infusion at that rate.**

**Table 23: Rapid escalation for primigravida: Oxytocin infusion rates for induction of labour**

| Time since Induction (hours) | Oxytocin Concentration | Drops per Minute | Approximate Dose (mIU/ minute) | Volume Infused | Total Volume Infused |
|---|---|---|---|---|---|
| 0.00 | 2.5 units in 500 mL dextrose or normal saline (5 mIU/ mL) | 15 | 4 | 0 | 0 |
| 0.30 | Same | 30 | 8 | 23 | 23 |
| 1.00 | Same | 45 | 11 | 45 | 68 |
| 1.30 | Same | 60 | 15 | 68 | 135 |
| 2.00 | 5 units in 500 mL dextrose or normal saline (10 mIU/ mL) | 30 | 15 | 90 | 225 |
| 2.30 | Same | 45 | 23 | 45 | 270 |
| 3.00 | Same | 60 | 30 | 68 | 338 |
| 3.30 | 10 units in 500 mL dextrose or normal saline (20mIU/ mL) | 30 | 30 | 90 | 428 |
| 4.00 | Same | 45 | 45 | 45 | 473 |
| 4.30 | Same | 60 | 60 | 68 | 540 |
| 5.00 | Same | 60 | 60 | 90 | 630 |

**(Note: 1 ml ≈ 20 drops)**

## PROSTAGLANDINS

Prostaglandins are highly effective in ripening the cervix during induction of labour. However, they are very unstable in hot climates.

- Review for indications;
- Check the woman's pulse, blood pressure and contractions and check the fetal heart rate. Record findings on a partograph **(Section 3, pages 167 - 178);**
- Prostaglandin $E_2$, ($PGE_2$) is available in several forms (e.g. 3 mg pessary, 2 - 3 mg gel). The prostaglandin is placed high in the posterior fornix of the vagina and may be repeated after 6 hours if required;

**Monitor uterine contractions and fetal heart rate of all women undergoing induction of labour with prostaglandins.**



- Discontinue use of prostaglandins and begin oxytocin infusion if:
  - membranes rupture
  - cervical ripening has been achieved
  - labour has been established, or
  - 12 hours have passed

## MISOPROSTOL

- Use misoprostol to ripen the cervix **only in highly selected situations** such as:
  - severe pre-eclampsia or eclampsia when the cervix is unfavourable and safe Caesarean section is not immediately available or the baby is too premature to survive
  - post date or post term
  - intrauterine fetal death
- Place misoprostol, 50 mcg in the posterior fornix of the vagina. Repeat after 6 hours, if the patient is not in established phase of labour;
- Do not use more than 50 mcg at a time and do not exceed three doses (150 mcg).

**Do not use oxytocin within 8 hours of using misoprostol. Monitor uterine contractions and fetal heart rate.**

## FOLEYS CATHETER

The Foleys catheter is an effective alternative to prostaglandins for cervical ripening and labour induction. It should, however, be avoided in women with obvious cervicitis or vaginitis.

**If there is a history of bleeding or ruptured membranes or obvious vaginal infection, do not use a Foleys catheter**.

- Review for indications;

- Gently insert a high-level disinfected or sterile speculum into the vagina;
- Hold the catheter with a high-level disinfected or sterile forceps and gently introduce it through the cervix. Ensure that the inflatable bulb of the catheter is beyond the internal os;
- Inflate the bulb with 30 - 40 ml of water;
- Strap the catheter to the thigh;
- Leave the catheter inside until contractions begin or for at least 12 hours;
- Deflate the bulb before removing the catheter and then proceed with oxytocin infusion.

### 6.8.3 AUGMENTATION OF LABOUR WITH OXYTOCIN

- Review for indications;
- Infuse oxytocin as described for induction of labour **(pages 380 - 384);**

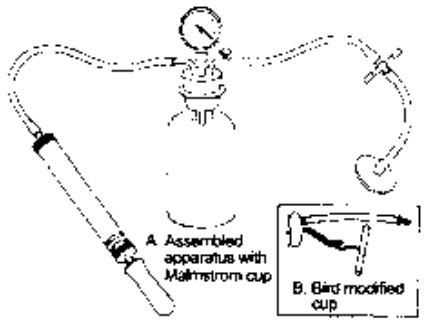
  **Note:** Do not use rapid escalation for augmentation of labour.



## 6.9 VACUUM EXTRACTION

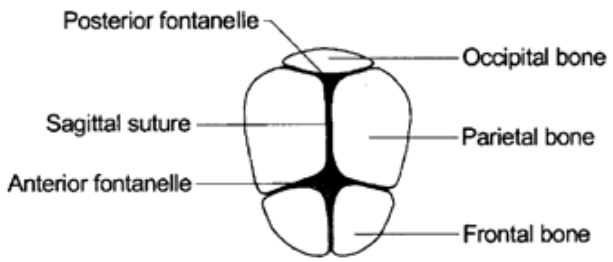
**Figure 41** shows the essential components of the vacuum extractor.

**Figure 41: Vacuum extractor**



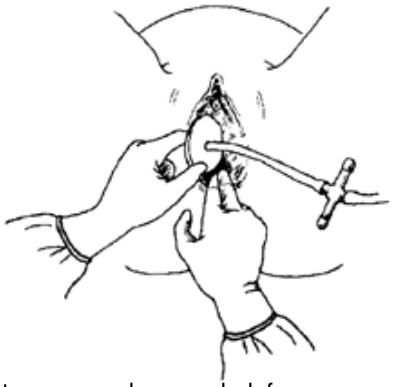

- Review for conditions:
  - vertex presentation
  - term fetus
  - cervix fully dilated
  - fetal head at least at 0 station or no more than 2/5 palpable above symphysis pubis
- Check all connections and test the vacuum on a gloved hand;
- Provide emotional support and encouragement. If necessary, use a pudendal block **(pages 363 - 366);**
- Assess the position of the fetal head by feeling the sagittal suture line and the fontanelles;
- Identify the posterior fontanelle **(Figure 42, page 388);**

**Figure 42: Landmarks of the fetal skull**




- Apply the largest cup that will fit, with the centre of the cup over the flexion point, 1 cm anterior to the posterior fontanelle. This placement will promote flexion, descent and autorotation with traction (**Figure 43);**

**Figure 43: Applying the Malmstrom cup**



- An episiotomy may be needed for proper placement at this time **(pages 431 - 435).** If **an episiotomy is not necessary for placement,** delay the episiotomy until the head stretches the perineum or the perineum interferes with the axis of traction. This will avoid unnecessary blood loss;

- Check the application. Ensure there is no maternal soft tissue (cervix or vagina) within the rim;

- With the pump, create a vacuum of 0.2 kg/cm$^2$ negative pressure and check the application;

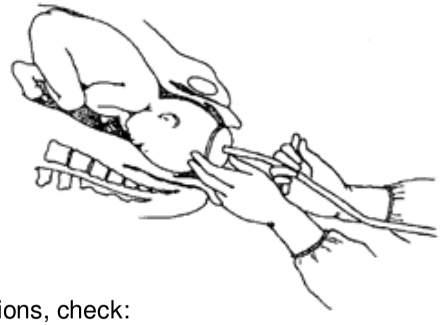


- Increase the vacuum to 0.8 kg/cm$^2$ and check the application;

- After maximum negative pressure, start traction in the line of the pelvic axis and perpendicular to the cup. If the **fetal head is tilted to one side or not flexed well**, traction should be directed in a line that will try to correct the tilt or deflection of the head (i.e. to one side or the other, not necessarily in the midline);

- With each contraction, apply traction in a line perpendicular to the plane of the cup rim **(Figure 44).** Wearing high level disinfected gloves, place a finger on the scalp next to the cup during traction to assess potential slippage and descent of the vertex;

**Figure 44: Applying traction**



- Between contractions, check:

  - Fetal heart rate
  - Application of the cup

- After delivery of the head, release vacuum, remove cup and complete the delivery of the baby and placenta.

**Tips**

- Never use the cup to actively rotate the baby's head. Rotation of the baby's head will occur with traction;

- The first pull helps to find the proper direction for pulling;

- Do not continue to pull between contractions and expulsive efforts;

- With progress, and in the absence of fetal distress, continue the "guiding" pulls for a maximum of 30 minutes.

**Failure**

- Vacuum extraction has failed if:

  - the head does not advance with each pull
  - the fetus is undelivered after three pulls with no descent or after 30 minutes
  - the cup slips off the head twice at the proper direction of pull with a maximum negative pressure

- Every application should be considered a trial of vacuum extraction. Do not persist if there is no descent with every pull;

- If **vacuum extraction fails,** you may perform Caesarean section **(pages 402 - 412).**



## 6.10 FORCEPS DELIVERY

- Review for conditions:

  - vertex presentation or face presentation with chin-anterior or entrapped after-coming head in breech delivery **(page 399)**
  - cervix fully dilated
  - fetal head at +2 or +3 station or descent of 1/5

Ideally, the sagittal suture should be in the midline and straight, guaranteeing an occipito-anterior or occipito-posterior position.

- Provide emotional support and encouragement. If necessary, use a pudendal block **(pages 363 - 366);**

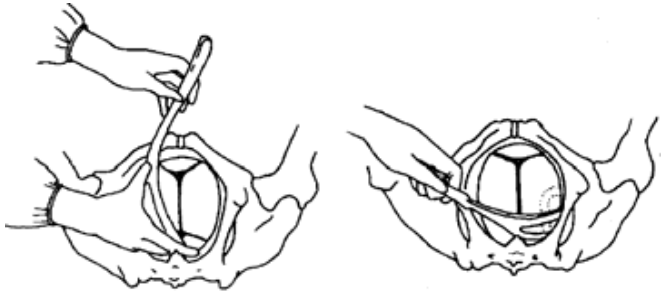
- Assemble the forceps before application. Ensure that the parts fit together and lock well;

- Lubricate the blades of the forceps;

- Wearing high-level disinfected or sterile gloves, insert two fingers of the right hand into the vagina on the side of the fetal head. Slide the left blade gently between the head and fingers to rest on the side of the head **(Figure 45);**

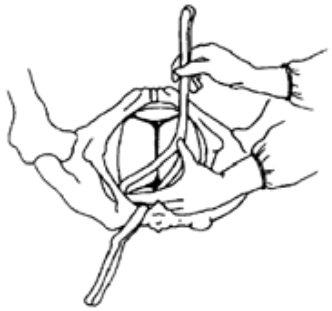
**A biparietal application is the only safe application.**

**Figure 45: Applying the left blade of the forceps**



- Repeat the same manoeuvre on the other side, using the left hand and the right blade of the forceps **(Figure 46);**

**Figure 46: Applying the right blade of the forceps**

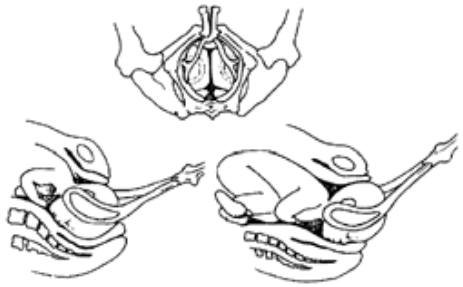


- Depress the handles and lock the forceps;

- Difficulty in locking usually indicates that the application is incorrect. In this case, remove the blades and re-check the position of the head. Re-apply only if position is confirmed;

- After locking, apply steady traction inferiorly and posteriorly with each contraction **(Figure 47);**

**Figure 47: Locking and applying traction**



- Between contraction check:

  - fetal heart rate
  - application of forceps



- When the head crowns, make an adequate episiotomy if necessary **(pages 431 - 435);**

- Lift the head slowly out of the vagina between contractions. The head should descend with each pull. Only two or three pulls should be necessary;

- Remove blades after the delivery of the head and complete the delivery of the baby and placenta.

**Failure**

- Forceps has failed if:

  - fetal head does not advance with each pull
  - fetus is undelivered after three pulls with no descent or after 30 minutes

- Every application should be considered a trial of forceps. Do not persist if there is no descent with every pull;

- **If forceps delivery fails,** perform a Caesarean section **(pages 402 - 412).**

**Complications**

**Fetal Complications**

- Injury to facial nerves requires observation. This injury is usually self-limiting;

- Lacerations of the face and scalp may occur. Clean and examine lacerations to determine if sutures are necessary;

- Fractures of the face and skull require observation.

**Maternal Complications**

- Tears of the genital tract may occur. Examine the woman carefully and repair any tear of the cervix **(pages 440 - 441**) or vagina (**pages 442 - 450**) or repair episiotomy (**pages 431 - 435);**

- Uterine rupture may occur and requires immediate treatment (**pages 455 - 459).**



## 6.11 BREECH DELIVERY

### 6.11.1 ASSISTED BREECH DELIVERY

- Review for indications;

- Ensure that all conditions for safe vaginal breech delivery are met;

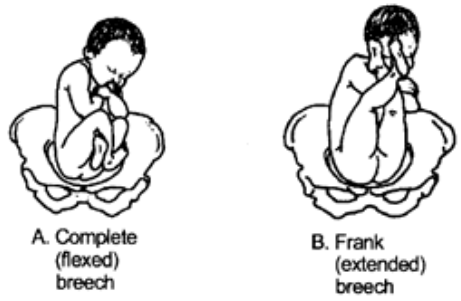
- Review general care principles **(Section 1, pages 1-29)** and start an IV infusion **(Section 1, page 19);**

- Provide emotional support and encouragement. If necessary, use a pudendal block **(pages 363 - 366);**

- Perform all manoeuvres gently without undue force.

#### COMPLETE OR FRANK BREECH

**Figure 48: Breech presentation**




#### Delivery of the Buttocks and Legs

- Once the buttocks have entered the vagina and the cervix is fully dilated, inform the woman to bear down with the contractions;

- If the **perineum is very tight,** perform an episiotomy **(pages 431 - 435)**;

- Allow delivery of the buttocks until the lower back and then the shoulder blades are seen;

- Gently hold the buttocks in one hand but do not pull;

- If the legs do not deliver spontaneously, deliver one leg at a time:

  - push behind the knee to bend the leg
  - grasp the ankle and deliver the foot and leg
  - repeat for the other leg

**Do not pull the baby while the legs are being delivered.**

- Hold the baby by the hips, as shown in **Figure 49.** Do not hold the baby by the flanks or abdomen as this may cause kidney or liver damage.

**Figure 49: Hold the baby at the hips, but do not pull**

## Delivery of the Arms

**If arms are felt on chest:**

- Allow the arms to disengage spontaneously one by one. Only assist if necessary;



- After spontaneous delivery of the first arm, lift the buttocks towards the mother's abdomen to enable the second arm to deliver spontaneously;

- If the **arm does not spontaneously deliver,** place one or two fingers in the elbow and bend the arm, bringing the hand down over the baby's face.

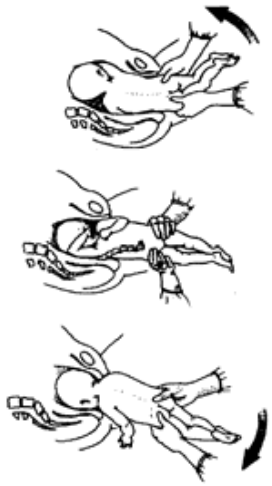
**If arms are stretched above the head or folded around the neck (extended arms),** use the Lovset's manoeuvre (**Figure 50**).

- Hold the baby by the hips and turn half a circle, keeping the back uppermost and applying downward traction at the same time, so that the arm that was posterior becomes anterior and can be delivered under the pubic arch;

- Assist delivery of the arm by placing one or two fingers on the upper part of the arm. Draw the arm down over the chest as the elbow is flexed, with the hand sweeping over the face;

- To deliver the second arm, turn the baby back half a circle, keeping the back uppermost and applying downward traction, and deliver the second arm in the same way under the pubic arch.

**Figure 50: Lovset's manoeuvre**



### Baby's Body cannot be turned

If the **baby's body cannot be turned to deliver the arm that is anterior first,** deliver the shoulder that is posterior (**Figure 51).**

- Hold and lift the baby up by the ankles;
- Move the baby's chest towards the woman's inner thigh. The shoulder that is posterior should deliver;
- Deliver the arm and hand;
- Lay the baby back down by the ankles. The shoulder that is anterior should now deliver;
- Deliver the arm and hand.

**Figure 51: Delivery of the shoulder that is posterior**


### Delivery of the Head

Deliver the head by the Mauriceau-Smellie-Veit manoeuvre (**Figure 52, page 399)** as follows:

- Lay the baby face down with the length of its body over your hand and arm;

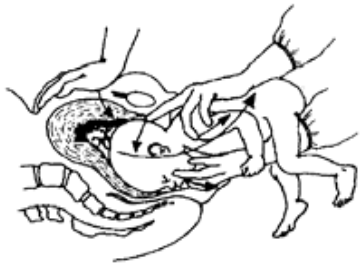


- Place the first and third fingers of this hand on the baby's cheekbones and place the second finger in the baby's mouth to pull the jaw down and flex the head;
- Use the other hand to grasp the baby's shoulders;
- With two fingers of this hand, gently flex the baby's head towards the chest, while applying downward pressure on the jaw to bring the baby's head down until the hairline is visible;
- Pull gently to deliver the head.

  **Note:** Ask an assistant to push above the mother's pubic bone as the head delivers. This helps to keep the baby's head flexed. Do not allow the head to pop – up.

- Raise the baby, still astride the arm, until the mouth and nose are free.

**Figure 52 : The Mauriceau-Smellie-Veit manoeuvre**



### Entrapped (Stuck) Head

- Catheterize the bladder;
- Have an assistant available to hold the baby while applying Piper or long forceps;
- Be sure the cervix is fully dilated;
- Wrap the baby's body in a cloth or towel and hold the baby up;
- Place the left blade of the forceps;

- Place the right blade and lock handles;
- Use the forceps to flex the baby's head and deliver the head;
- If **unable to use forceps,** apply firm pressure above the mother's pubic bone to flex the baby's head and push it through the pelvis.

## FOOTLING BREECH

A footling breech baby (**Figure 53**) should usually be delivered by Caesarean section (**pages 402 - 412).**

**Figure 53: Single footling breech presentation, with one leg extended at hip and knee.**

- If a footling breech has to be deliverd vaginally, limit it to:
  - advanced labour with fully dilated cervix
  - preterm baby that is not likely to survive after delivery
  - delivery of additional baby(ies) in multiple gestation
- To deliver the baby vaginally:
  - grasp the baby's ankles with one hand
  - if **only one foot presents,** insert a hand (wearing high-level disinfected or sterile gloves) into the vagina and gently pull the other foot down
  - gently pull the baby downwards by the ankles
  - deliver the baby until the back and shoulder blades are seen
  - proceed with delivery of the arms **(page 396)**



## 6.11.2 BREECH EXTRACTION

- Wearing high-level disinfected or sterile gloves (wear long gloves if available), insert a hand into the uterus and grasp the baby's foot;
- Hold the foot and pull it out through the vagina;
- Exert traction on the foot until the back and shoulder blades are seen;
- Proceed with delivery of the arms (**page 396);**
- Give prophylactic antibiotics after breech extraction
  - Ampicillin, 500 mg 6 hourly for 5 days PLUS metronidazole, 400 mg 8 hourly for 5 days.

## POST – DELIVERY CARE

- Suck the baby's mouth and nose;
- Clamp and cut the cord;
- Give oxytocin, 10 units IM within 1 minute of delivery and continue active management of the third stage **(Section 3, page 183);**
- Examine the woman carefully and repair any tears to the cervix (**pages 440 - 441)** or vagina **(pages 442 - 450)** or repair episiotomy **(pages 431 - 435).**

## 6.12 CAESAREAN SECTION

- Review for indications; ensure that vaginal delivery is not possible;

- Check if fetus is alive by listening to the fetal heart rate and examine for fetal presentation;

- Review operative care principles **(Section 1, pages 30 - 35)**;

- Use local infiltration with lignocaine **(pages 367 - 369)**, ketamine **(pages 373 - 375),** spinal anaesthesia **(pages 370 - 372)** or general anaesthesia:

  - local anaesthesia is a safe alternative to general, ketamine or spinal anaesthesia when these anaesthetics or persons trained in their use are not available

  - the use of local anaesthesia for Caesarean section requires that the provider counsels the woman and reassures her throughout the procedure. The provider should use instruments and handle tissues as gently as possible, keeping in mind that the woman is awake and alert

  **Note:** In the case of heart failure, use local infiltration anaesthesia with conscious sedation. Avoid spinal anaesthesia.

- Start an IV infusion **(Section 1, page 19)**

- If the **baby's head is impacted into the pelvis** as in obstructed labour, prepare the vagina for assisted Caesarean delivery **(page 406)**;

- Have the operating table tilted to the left or place a pillow or folded linen under the woman's right lower back to decrease supine hypotension syndrome.

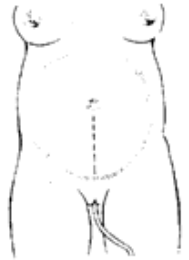


### 6.12.1 OPENING THE ABDOMEN

- Make a midline vertical incision below the umbilicus to the pubic hair, through the skin and to the level of the fascia **(Figure 54).**

**Note:** If the **Caesarean section is performed under local anaesthesia,** make the midline incision about 4 cm longer than when general anaesthesia is used. A **Pfannenstiel incision should not be used** as it takes longer time, retraction is poorer and it requires more local anaesthetic.

**Figure 54: Site of abdominal incision**



- Make a 2 – 3 cm vertical incision in the fascia;

- Hold the fascial edge with forceps and lengthen the incision up and down using scissors;

- Use fingers or scissors to separate the rectus muscles (abdominal wall muscles);

- Use 2 small artery forceps to lift the peritoneum, exclude trapped bowel and use scissors to make an opening in the peritoneum. Use scissors to lengthen the incision up and down in order to see the entire uterus. To prevent bladder injury, carefully use the scissors to separate the peritoneum in the upper part before opening the the lower part of the peritoneum;

- Correct dextro-rotation of the uterus if present;

- Place a bladder retractor over the pubic bone;

- Use forceps to pick up the loose peritoneum covering the anterior surface of the lower uterine segment and incise with scissors;

- Extend the incision by placing the scissors between the uterus and the loose serosa and cutting about 3 cm on each side in a transverse fashion;

- Use two fingers to push the bladder downwards off the lower uterine segment. Replace the bladder retractor over the pubic bone and bladder.

### 6.12.2 OPENING THE UTERUS

- Determine the type of Caesarean section to perform (lower segment or classical). A high vertical incision (classical) **(page 411)** is indicated when:

  - lower segment is inaccessible due to dense adhesions from previous Caesarean sections
  - fetus is in transverse lie (with back down) for which a lower uterine segment incision cannot be safely performed
  - there are fetal malformations (e.g. conjoined twins)
  - large fibroids are over the lower uterine segment
  - there is highly vascular lower segment due to placenta praevia
  - carcinoma of the cervix is present

- Use a scalpel to make a 3 cm transverse incision in the lower segment of the uterus. It should be about 1 cm below the level where the vesico-uterine serosa was incised to bring the bladder down;

- Widen the incision by placing a finger at each edge and gently pulling upwards and laterally at the same time **(Figure 55);**

- If the **lower uterine segment is thick and narrow,** extend the incision in a crescent shape, using scissors instead of fingers to avoid lateral extension of the uterine vessels



**It is important to make the uterine incision big enough to deliver the head and body of the baby without tearing the incision.**

**Figure 55: Enlarging the uterine incision**

### 6.12.3 DELIVERY OF THE BABY AND PLACENTA

- To deliver the baby, place one hand inside the uterine cavity between the uterus and the baby's head;

- With the fingers, grasp and flex the head;

- Gently lift the baby's head through the incision **(Figure 56, page 406)** taking care not to extend the incision down towards the cervix;

- With the other hand or with the help of an assistant, gently press on the abdomen over the top of the uterus to help deliver the head;

- If the **baby's head is impacted in the pelvis or vagina**, ask an assistant (wearing high-level disinfected or sterile gloves) to reach into the vagina and push the baby's head up through the vagina. Then lift and deliver the head (**Figure 57, page 406);**

**Figure 56: Delivering the baby's head**

**Figure 57: Delivering the deeply engaged head**

- Suction the baby's mouth and nose when delivered;
- Deliver the shoulders and body;
- Give ergometrine 0.5 mg IV except in hypertensive patient, where you give oxytocin, 10 units IV bolus then 20 units in 1 litre IV fluids (Normal saline or Ringers lactate) at 60 drops per minute for 2 hours;
- Clamp and cut the umbilical cord;
- Hand the baby to the paediatrician/assistant for initial care **(Section 5, pages 296-310),** apply Green-Armytage forceps;
- Keep gentle traction on the cord and massage (rub) the uterus through the abdomen;
- Deliver the placenta and membranes. Use sponge holding (ring) forceps to ensure that all membranes are removed.

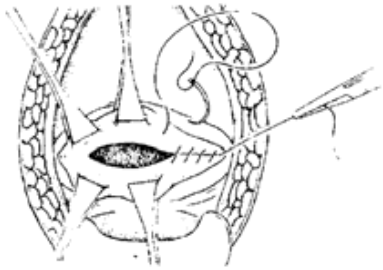


### 6.12.4 CLOSING THE UTERINE INCISION

- Lift into view the corners of the uterine incision with the Green-Armytage clamps;
- Grasp the bottom edge of the incision with Green-Armytage clamps. Make sure it is separate from the bladder;
- Look carefully for any extensions of the uterine incision;
- Repair the incision and any extension with a continuous locking stitch of 1 chromic catgut (or polyglycolic) suture **(Figure 58);**
- If there is any **further bleeding from the incision site,** close with figure-of-eight sutures. There may not be the need for a routine second layer of sutures in the uterine incision.

**Note:** If a **Couvelaire uterus** (swollen and discolored by blood) is seen at Caesarean section, close it in the normal manner and observe for bleeding and assess uterine tone. Be prepared to manage coagulopathy **(Section 3, pages 270 - 272)** or atonic uterus **(Section 3, pages 262 – 266)**

**Figure 58: Closing the uterine incision**



### 6.12.5 CLOSING THE ABDOMEN

- Look carefully at the uterine incision before closing the abdomen. Make sure there is no bleeding and the uterus is firm. Use a swab on stick to remove any clots inside the abdomen;

- Examine carefully for injuries to the bladder and repair any found **(pages 458 - 459);**

- Close the rectus sheath (fascia) with continuous 0 chromic catgut (or polyglycolic) suture or nylon 0;

**Note:** There may be no need to close the bladder peritoneum or the abdominal peritoneum.

- If **there are no signs of infection**, close the skin with vertical mattress sutures of 2 - 0 nylon (or silk) and apply a sterile dressing;

- Gently push on the abdomen over the uterus to remove clots from the uterus and vagina.

### 6.12.6 PROBLEMS DURING SURGERY

**Bleeding is not Controlled**

- Massage the uterus,

- If the **uterus is atonic**, continue to infuse oxytocin and give ergometrine 0.2 mg IM and prostaglandins, if available. These drugs can be given together or sequentially.

- Transfuse as necessary **(Section 1, pages 20 - 22)**

- Have an assistant press fingers over the aorta to reduce the bleeding until the source of bleeding can be found and stopped;

- If **bleeding is not controlled**, perform uterine and utero-ovarian artery ligation **(pages 460 - 462)** or hysterectomy (**pages 463 - 468).**

#### BABY IS BREECH

- If the **baby is breech,** grasp a foot and deliver it through the incision.



- Complete the delivery as in a vaginal breech delivery **(pages 395 - 401):**

  - deliver the legs and the body up to the shoulders, then deliver the arms
  - flex (bend) the head using the Mauriceau-Smellie-Veit manoeuvre**.**

#### BABY IS TRANSVERSE

**The Baby's Back is up (anterior)**

- If the **back is up** (near the top of the uterus), reach into the uterus and find the baby's ankles;

- Grasp the ankles and pull gently through the incision to deliver the legs and complete the delivery as for a breech baby **(pages 395 - 401).**

**The Baby's Back is down (posterior)**

- If the **back is down with adequate liquor and no shoulder impaction,** deliver as above;

- If the **back is down and the liquor has drained with impacted shoulder,** a high vertical uterine incision (classical) is the preferred incision (**pages 411 - 413);**

- After the incision is made, reach into the uterus and find the feet. Pull them through the incision and complete the delivery as for a breech delivery (**pages 395 - 401);**

- To repair the vertical incision, you will need several layers of suture **(pages 411 - 413).**

#### PLACENTA PRAEVIA

- If a **low anterior placenta** is encountered incise through it and deliver the fetus;

- After delivery of the baby, **if the placenta cannot be detached manually**, the diagnosis is placenta accreta, a common finding at the site of a previous Caesarean scar. Consider hysterectomy (**pages 463 - 468);**

- Women with placenta previa are at high risk of postpartum haemorrhage. If there is **bleeding at the placental site**, under-run the bleeding sites with chromic catgut (or polyglycolic) sutures;

- Watch for bleeding in the immediate postpartum period and take appropriate action **(Section 4, pages 262 - 268).**



## POST-PROCEDURE CARE

- Review postoperative care principles **(Section 1, pages 30-35);**

- If **bleeding occurs:**

  - massage the uterus to expel blood and blood clots. Presence of blood clots will inhibit effective uterine contractions
  - give oxytocin 20 units in 1 litre of IV fluids (Normal saline or Ringers lactate) at 60 drops per minute and ergometrine 0.2 mg IM and prostaglandins**.** These drugs can be given together or sequentially

- If there **are signs of infection** or the patient **currently has fever**, give the following combination of antibiotics until she is fever-free for 48 hours

  - Ampiclox, 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

- Give appropriate analgesic drugs;

- Leave an indwelling catheter if the indication for the Caesarean section is prolonged and/or obstructed labour.

## HIGH VERTICAL ("CLASSICAL") INCISION

- Open the abdomen through a midline incision. Approximately one third of the incision should be above the umbilicus and two-thirds below;

- Use a scalpel to make the incision:

  - check the position of the round ligaments and ensure that the incision is in the midline (the uterus may have twisted to one side)
  - make the uterine incision in the midline over the fundus of the uterus

- the incision should be approximately 12–15 cm in length and the lower limit should not extend to the utero-vesical fold of the peritoneum

- Ask an assistant (wearing high-level disinfected or sterile gloves) to apply pressure on the cut edges to control the bleeding;

- Cut down to the level of the membranes and then extend the incision using scissors;

- After rupturing the membranes, grasp the baby's foot and deliver the baby;

- Deliver the placenta and membranes;

- Grasp the edges of the incision with Green-Armytage forceps;

- Close the incision using at least three layers of suture:

  - close the first layer closest to the cavity, but avoiding the decidua, with a continuous 0 chromic catgut (or polyglycolic) suture
  - close the second layer of uterine muscle using interrupted 1 chromic catgut (or polyglycolic) sutures
  - close the superficial fibres and the serosa using a continuous 0 chromic catgut (or polyglycolic) suture with an atraumatic needle

- Close the abdomen as for lower segment Caesarean section (**pages 407-408).**

**Such patients should not be allowed to labour with future pregnancies.**

### 6.12.7 TUBAL LIGATION AT CAESAREAN SECTION

Tubal ligation can be done at Caesarean section if the woman requested for the procedure **before** labour began (during antenatal visits). Adequate counseling and informed decision-making and consent must precede voluntary sterilization procedures; this is often not possible during labour and delivery.



- Obtain patient's consent;

- Grasp the least vascular, middle portion of the fallopian tube with a Babcock or Allis forceps;

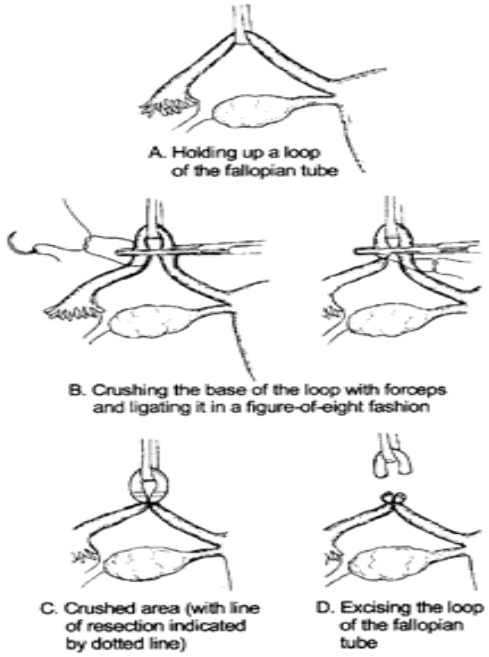
- Hold up a loop of tube 2.5 cm in length (**Figure 59A);**

- Crush the base of the loop with artery forceps and ligate it with 0 plain catgut suture **(Figure 59B);**

- Excise the loop (a segment 1 cm in length) through the crushed area **(Figure 59, C-D);**

- Repeat the procedure on the other side.

**Figure 59: Tubal ligation**



## 6.13 CRANIOTOMY (SKULL PERFORATION)

In certain cases of obstructed labour with fetal death, reduction in the size of the fetal head by craniotomy makes vaginal delivery possible and avoids the risks associated with caesarean delivery.

- Provide emotional support and encouragement. If necessary, give diazepam IV (10 mg) slowly or use a pudendal block **(pages 363 - 366);**
- Review the indications;
- Review general care principles **(Section 1, pages 1 - 29)** and apply antiseptic solution to the vagina;
- Perform an episiotomy, if required **(pages 431 - 435).**

### CEPHALIC PRESENTATION

- Make a cruciate (cross-shaped) incision on the scalp **(Figure 60);**

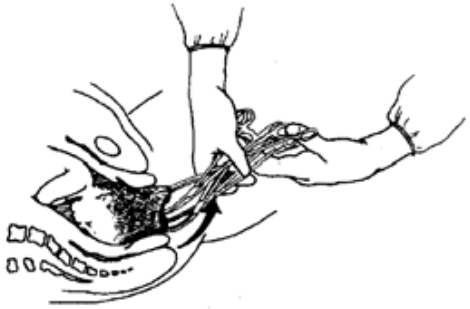
**Figure 60: Cruciate incision on scalp**

- Open the cranial vault at the lowest and most central bony point with a Simpson perforator (or large pointed scissors or a heavy scalpel). In face presentation, perforate the orbits;
- Insert the Simpson perforator or craniotome into the fetal cranium and fragment the intracranial contents;



- Grasp the edges of the skull with several heavy-toothed forceps (e.g. Kochers) and apply traction in the axis of the birth canal (**Figure 61);**

**Figure 61: Extraction by scalp traction**



- As the head descends, pressure from the bony pelvis will cause the skull to collapse, decreasing the cranial diameter;
- After delivery, examine the woman carefully and repair any tear to the cervix **(pages 440 - 441)** or vagina (**pages 442 - 450**), or repair episiotomy **(pages 431 - 435);**
- Leave a self-retaining catheter in place until it is confirmed that there is no bladder injury (at least 10 -14 days);
- Ensure adequate fluid intake and urinary output.

### BREECH PRESENTATION WITH ENTRAPPED AFTERCOMING HEAD

- Make an incision through the skin at the base of the neck;
- Insert a craniotome (or large pointed scissors or a heavy scalpel) through the incision and tunnel subcutaneously to reach the occiput;
- Perforate the occiput and open the gap as widely as possible;
- Apply traction on the trunk to collapse the skull as the head descends.

## 6.14 CRANIOCENTESIS (SKULL PUNCTURE)

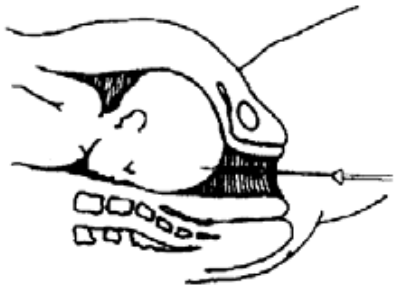
Craniocentesis can be used to reduce the size of a hydrocephalic baby to make vaginal delivery possible.

- Review for indications;
- Review general care principles **(Section 1, pages 1 - 29)** and apply antiseptic solution to the vagina;
- Make a large episiotomy, if required **(pages 431 - 435).**

### Fully Dilated Cervix

- Pass a large-bore spinal needle through the dilated cervix and through the sagittal suture line or fontanelles of the fetal skull (**Figure 62);**
- Aspirate the cerebrospinal fluid until the fetal skull has collapsed and allow normal delivery to proceed.

**Figure 62: Craniocentesis with a dilated cervix**



### Closed Cervix

- Palpate for location of fetal head;
- Apply antiseptic solution to the suprapubic skin;

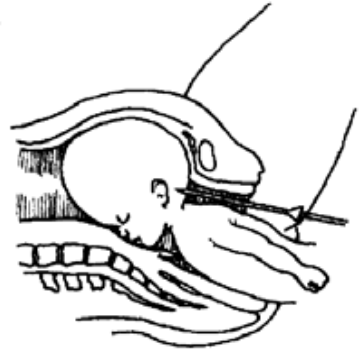


- Pass a large-bore spinal needle through the abdominal and uterine walls and through the hydrocephalic skull;
- Aspirate the cerebrospinal fluid until the fetal skull has collapsed and allow normal delivery to proceed.

### Aftercoming Head During Breech Delivery

- After the rest of the body has been delivered, insert a large-bore spinal needle through the dilated cervix and foramen magnum **(Figure 63);**
- Aspirate the cerebrospinal fluid and deliver the aftercoming head as in breech delivery **(page 398).**

**Figure 63: Craniocentesis of the aftercoming head**



### During Caesarean Section

- After the uterine incision is made, pass a large-bore spinal needle through the hydrocephalic skull;
- Aspirate the cerebrospinal fluid until the fetal skull has collapsed;
- Deliver the baby and placenta as in Caesarean section (**pages 402 - 412**).

## POST-PROCEDURE CARE

- After delivery, examine the woman carefully and repair tears to the cervix **(pages 440 - 441)** or vagina **(pages 442 - 450),** or repair episiotomy **(pages 431 - 435);**
- Leave a self-retaining catheter in place until it is confirmed that there is no bladder injury;
- Ensure adequate fluid intake and urinary output;
- Give appropriate antibiotics.



## 6.15 DILATATION AND CURETTAGE

The preferred method of evacuation of the uterus is by manual vacuum aspiration **(pages 423 - 427). Dilatation and curettage should be used only if manual vacuum aspiration is not available.**

- Review for indications **(page 423);**
- Review general care principles **(Section 1, pages 1 - 29);**
- Provide emotional support and encouragement and give pethidine IM or IV before the procedure. If necessary, use a paracervical block (**pages 361 - 362);**
- Administer oxytocin, 10 units IM or ergometrine, 0.2 mg IM before the procedure to make the myometrium firmer and reduce the risk of perforation;
- Perform a bimanual pelvic examination to assess the size and position of the uterus and the condition of the fornices;
- Insert a speculum or vaginal retractor into the vagina;
- Apply antiseptic solution to the vagina and cervix (especially the cervical os)**;**
- Check the cervix for tears or protruding products of conception. If **products of conception are present in the vagina or cervix**, remove them using ring or sponge forceps;
- Gently grasp the anterior or posterior lip of the cervix with a vulsellum or single-toothed tenaculum **(Figure 64, page 420);**

  **Note:** With incomplete abortion, a ring (sponge) forceps is preferable as it is less likely than the tenaculum to tear the cervix with traction and does not require the use of lignocaine for placement.

- If **using a tenaculum to grasp the cervix**, first inject 1 ml of 0.5% lignocaine solution into the anterior or posterior lip of the cervix which has been exposed by the speculum (the 10 o'clock or 12 o'clock position is usually used);

- Dilatation is needed only in cases of missed abortion or when some retained products of conception have remained in the uterus for several days:

  - gently introduce the widest gauge cannula or curette
  - use graduated dilators only if the cannula or curette will not pass. Begin with the smallest dilator and end with the largest dilator that ensures adequate dilatation, usually 10-12 mm, (**Figure 65, page 421);**

**Note:** Take care not to tear the cervix or to create a false opening.

**Figure 64: Inserting a retractor and holding the anterior lip of the cervix**

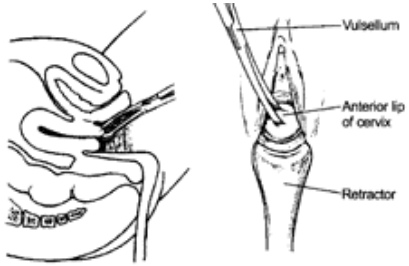
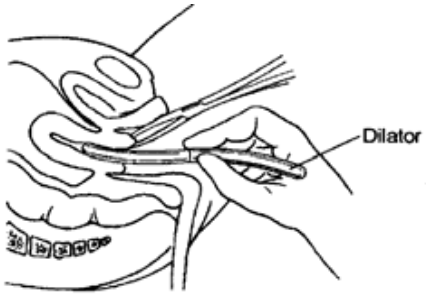





**Figure 65: Dilating the cervix**

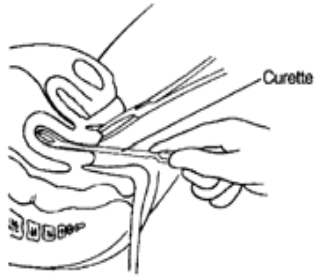



- Gently pass a uterine sound through the cervix to assess the length and direction of the uterus;

**The uterus is very soft in pregnancy and can be easily injured during this procedure.**

- Evacuate the contents of the uterus with ring forceps or a large curette **(Figure 66).** Gently curette the walls of the uterus until a grating sensation is felt;

**Figure 66: Curetting the uterus**




- Remove the speculum or retractors and perform a bimanual pelvic examination to check for the size and firmness of the uterus;

- Examine the evacuated product **(page 426).** Send product for histopathologic examination.

## POST-PROCEDURE CARE

- Give paracetamol, 1000 mg orally as needed;
- Encourage the woman to eat, drink and walk about as she wishes;
- Offer other health services, if possible, including tetanus prophylaxis, counselling for a family planning method;
- Discharge uncomplicated cases in 1 – 2 hours;
- Advise the woman to watch for symptoms and signs requiring immediate attention:

  - prolonged cramping (more than a few days)
  - prolonged bleeding (more than 2 weeks)
  - bleeding more than normal menstrual bleeding
  - severe or increased pain
  - fever, chills or malaise
  - fainting



## 6.16 MANUAL VACUUM ASPIRATION (MVA)

- Review for indications (inevitable abortion before 14 weeks, incomplete abortion, molar pregnancy or delayed PPH due to retained placental fragments);
- Review general care principles **(Section 1, pages 1 - 29);**
- Provide emotional support and encouragement. Rarely, a paracervical block may be needed **(pages 361 - 362);**
- Prepare the MVA syringe:

  - assemble the syringe
  - close the pinch valve
  - pull back on the plunger until the plunger arms lock.

  **Note:** For molar pregnancy, when the uterine contents are likely to be copious, have three syringes ready for use or use a suction machine.

- Even if bleeding is slight, give oxytocin, 10 units IM or ergometrine, 0.5 mg IM before the procedure to make the myometrium firmer and reduce the risk of perforation;
- Perform a bimanual pelvic examination to assess the size and position of the uterus and the condition of the fornices;
- Insert a speculum or vaginal retractor;
- Apply antiseptic solution to the vagina and cervix (especially the cervical os);
- Check the cervix for tears or protruding products of conception. If **products of conception are present in the vagina or cervix,** remove them using ring or sponge forceps;
- Gently grasp the anterior or posterior lip of the cervix with a vulsellum or single-toothed tenaculum;

**Note**: With incomplete abortion, a ring or sponge forceps is preferable as it is less likely than the tenaculum to tear the cervix with traction and does not require the use of lignocaine for placement.

- If **using a tenaculum to grasp the cervix**, first inject 1 ml of 0.5% lignocaine solution into the anterior or posterior lip of the cervix which has been exposed by the speculum (the 10 o'clock or 12 o'clock position is usually used);

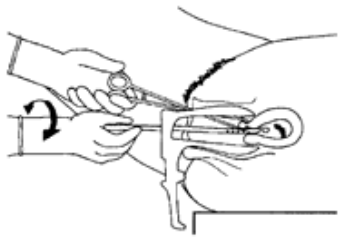
- Dilatation is needed only in cases of missed abortion or when products of conception have remained in the uterus for several days:

  - gently introduce the widest gauge suction cannula
  - use graduated dilators only if the cannula will not pass through the os. Begin with the smallest dilator and end with the largest dilator that ensures adequate dilatation (usually 10-12mm) (**Figure 65, page 421)**

  **Note**: Take care not to tear the cervix or to create a false opening.

- While gently applying traction to the cervix, insert the cannula through the cervix into the uterine cavity just past the internal os **(Figure 67)**. Rotating the cannula while gently applying pressure often helps the tips of the cannula pass through the cervical canal;

**Figure 67: Inserting the cannula**



- Slowly push the cannula into the uterine cavity until it touches the fundus, but not more than 10 cm. Measure the depth of the uterus by dots visible on the cannula and then withdraw the cannula slightly;



- Attach the prepared MVA syringe to the cannula by holding the vulsellum or tenaculum and the end of the cannula in one hand and the syringe in the other;

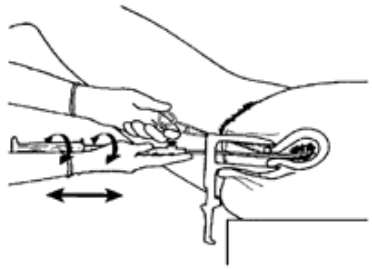
- Release the pinch valve(s) on the syringe to transfer the vacuum through the cannula to the uterine cavity;

- Evacuate remaining contents by gently rotating the syringe from side to side (10 to 12 o'clock) and then moving the cannula gently and slowly back and forth within the uterine cavity **(Figure 68).**

  **Note**: To avoid losing the vacuum, do not withdraw the cannula opening past the cervical os. If the **vacuum is lost** or if the **syringe is more than half full**, detach and empty it and then re-establish the vacuum.

  **Note:** Avoid grasping the syringe by the plunger arms while the vacuum is established and the cannula is in the uterus. If the plunger arms become unlocked, the plunger may accidentally slip back into the syringe, pushing material back into the uterus.

**Figure 68: Evacuating the contents of the uterus**



- Check for signs of completion:

  - red or pink foam but no more tissue is seen in the cannula
  - a grating sensation is felt as the cannula passes over the surface of the evacuated uterus
  - the uterus contracts around (grips) the cannula

- Withdraw the cannula. Detach the syringe and place the cannula in decontamination solution;

- With the valve open, empty the contents of the MVA syringe into a strainer by pushing on the plunger;

  **Note:** Place the empty syringe on a high-level disinfected or sterile tray or container until you are certain the procedure is complete.

- Remove the speculum or retractors and perform a bimanual examination to check the size and firmness of the uterus;

- Quickly inspect the tissue removed from the uterus:

  - for quantity and presence of products of conception
  - to ensure complete evacuation
  - to check for molar pregnancy (rare).

- If necessary, strain and rinse the tissue to remove excess blood clots, then place in a container of clean water, saline or weak acetic acid (vinegar) to examine. Tissue specimens may also be sent to the pathology laboratory (in formalin solution), if indicated;

- If no products of conception are seen:

  - all of the products of conception may have been passed before the MVA was performed (complete abortion)
  - the uterine cavity may appear to be empty but may not have been emptied completely. Repeat the evacuation
  - the vaginal bleeding may not have been due to an incomplete abortion (e.g. breakthrough bleeding, as may be seen with hormonal contraceptives or uterine fibroids)
  - the uterus may be abnormal (i.e. cannula may have been inserted in the non-pregnant horn of a double uterus)

  **Note**: Absence of products of conception in a woman with symptoms of pregnancy raises the strong possibility of ectopic pregnancy **(Section 2, pages 78-80).**

- Gently insert a speculum into the vagina and examine for bleeding. If **the uterus is still soft and not smaller** or if there is **persistent, brisk bleeding,** repeat the evacuation.



## POST-PROCEDURE CARE

- Give paracetamol, 1000 mg orally as needed;

- Give prophylactic antibiotics;

- Encourage the woman to eat, drink and walk about as she wishes;

- Offer other health services, if possible, including tetanus prophylaxis, counseling for a family planning method;

- Discharge uncomplicated cases in 1 - 2 hours;

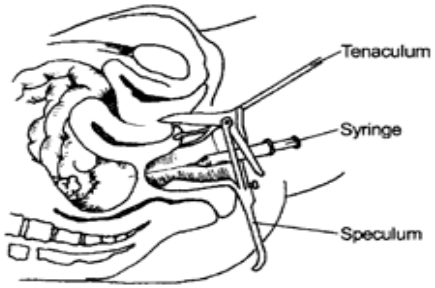
- Advise the woman to watch for symptoms and signs requiring immediate attention:

  - prolonged cramping (more than a few days)
  - prolonged bleeding (more than 2 weeks)
  - bleeding more than normal menstrual bleeding
  - severe or increased pain
  - fever, chills or malaise
  - fainting.

## 6.17 CULDOCENTESIS

- Review for indications;
- Review general care principles **(Section 1, pages 1 - 29)** and apply antiseptic solution to the vagina (especially posterior fornix)**;**
- Provide emotional support and encouragement. If necessary, use local infiltration with lignocaine**;**
- Gently grasp the posterior lip of the cervix with a tenaculum and gently pull to elevate the cervix and expose the posterior vaginal fornix;
- Place a long needle (e.g. spinal needle) on a syringe and insert it through the posterior vaginal fornix, just below the posterior lip of the cervix **(Figure 69);**

**Figure 69: Diagnostic puncture of the pouch of Douglas or cul-de-sac**




- Pull back on the syringe to aspirate the pouch of Douglas or cul-de-sac (the space behind the uterus);
- If **non-clotting blood** is obtained, suspect ectopic pregnancy **(Section 2, pages 78 - 80);**
- If **clotting blood** is obtained, a vein or artery may have been aspirated. Remove the needle, re-insert and aspirate again;



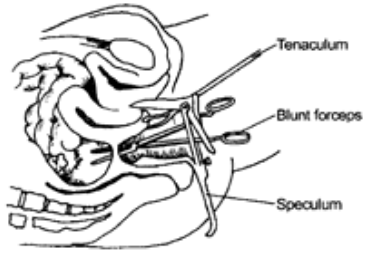
- If **clear or yellow fluid** is obtained, there is no blood in the peritoneum. The woman may, however, still have an unruptured ectopic pregnancy and further observation and tests may be needed **(Section 2, pages 78 - 80);**
- If no fluid is obtained, remove the needle, re-insert and aspirate again. If no fluid is obtained, the woman may have an unruptured ectopic pregnancy **(Section 2, pages 78-80);**
- If pus is obtained, keep the needle in place and proceed to colpotomy (see next page).

## 6.18 COLPOTOMY

- If **pus is obtained** on culdocentesis, keep the needle in place and make a stab incision at the site of the puncture;

- Remove the needle and insert blunt forceps or a finger through the incision to break loculi in the abscess cavity **(Figure 70);**

**Figure 70: Colpotomy for pelvic abscess**




- Allow the pus to drain;

- Insert a high-level disinfected or sterile soft rubber corrugated drain through the incision;

  **Note**: A drain can be prepared by cutting off the fingertips of a high-level disinfected or sterile examination glove.

- If required, use a stitch through the drain to anchor it in the vagina;

- Remove the drain when there is no more drainage of pus.



## 6.19 EPISIOTOMY

Episiotomy should not be performed routinely.

- Review for indications (See box below);

**Episiotomy should be considered only in the case of:**

- complicated vaginal delivery (breech, shoulder dystocia, forceps, vacuum)
- scarring from female genital cutting or poorly healed third degree tears
- fetal distress.

### 6.19.1 PERFORMING EPISIOTOMY

- Review general principles **(Section 1, pages 1 - 29)** and apply antiseptic solution to the perineal area;

- Provide emotional support and encouragement. Use local infiltration with lignocaine or a pudendal block **(pages 363 - 366);**

- Make sure there are no known allergies to lignocaine or related drugs;

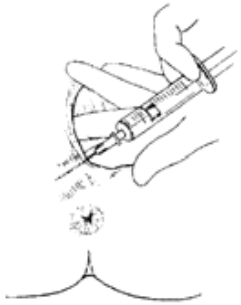
- Infiltrate beneath the vaginal mucosa, beneath the skin of the perineum and deeply into the perineal muscle **(Figure 71, page 432)** using about 10 ml 0.5% lignocaine solution;

**Note**: Aspirate (pull back the plunger) to be sure that no vessel has been penetrated. If **blood is returned in the syringe with aspiration**, remove the needle. Recheck the position carefully and try again. Never inject if blood is aspirated. **The woman can suffer seizures and death if IV injection of lignocaine occurs.**

- At the conclusion of the set of injections, wait for 2 minutes and then pinch the incision site with forceps. If the **patient feels pain**, wait for 2 more minutes and then retest;

**Anaesthetize early to provide sufficient time for effect.**

**Figure 71: Infiltration of perineal tissue with local anaesthetic**



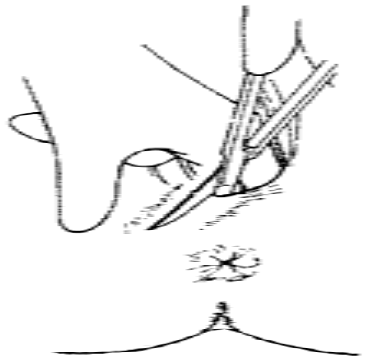
- Wait to perform episiotomy until:
  - the perineum is thinned out
  - **and** 3-4 cm of the baby's head is visible during a contraction

**Performing an episiotomy will cause bleeding. It should not, therefore, be done too early.**

- Wearing high-level disinfected or sterile gloves, place two fingers between the baby's head and the perineum;
- Use scissors to cut the perineum about 3-4 cm in the mediolateral direction **(Figure 72, page 433);**
- Use scissors to cut 2-3 cm up the middle of the posterior vagina;
- Control the baby's head and shoulders as they deliver, ensuring that the shoulders have rotated to the midline to prevent an extension of the episiotomy;
- Carefully examine for extensions and other tears and repair (see below).



**Figure 72: Making the incision while inserting two fingers to protect the baby's head.**



### 6.19.2 REPAIR OF EPISIOTOMY

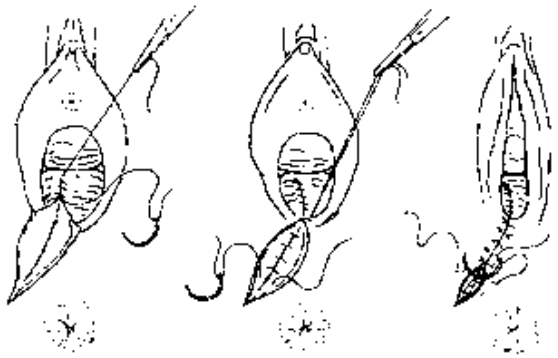
**Note:** It is important that absorbable sutures be used for closure. Polyglycolic (vicryl) sutures are preferred over chromic catgut for their tensile strength, non-allergenic properties and lower probability of complications arising from infections and episiotomy breakdown. Chromic catgut is an acceptable alternative but it is not ideal.

- Apply antiseptic solution to the area around the episiotomy;
- If the episiotomy is extended through the anal sphincter or rectal mucosa, manage as a third degree tear **(pages 445 - 448);**
- Close the vaginal mucosa using continuous 2-0 suture **(Figure 73A, page 434):**
  - start the repair about 1 cm above the apex (top) of the episiotomy. Continue the suture to the level of the vaginal opening
  - start at the opening of the vagina, bring together the cut edges of the vaginal opening
  - bring the needle under the vaginal opening and out through the incision and tie.

- Close the perineal muscle using interrupted 2-0 sutures **(Figure 73 B);**

- Close the skin using interrupted (or subcuticular) 2-0 sutures **(Figure 73 C).**

**Figure 73: Repair of episiotomy**



**A. Vaginal mucosa** **B. Muscle layer** **C. Skin**

**Complications**

- If a **haematoma occurs**, open and drain. If there are **no signs of infection** and **bleeding has stopped,** reclose the episiotomy;

- If there are **signs of infection,** open and drain the wound. Remove infected sutures and debride the wound:

  - if the **infection is present but does not involve deep tissues,** give the following combination of antibiotics**:**

    - Ampiclox, 500 mg orally four times daily for 5 days
    - **plus** metronidazole, 400 mg by mouth three times daily for 5 days.



  - if the **infection is deep, involves muscles and is causing necrosis** (necrotising fasciitis), give the following combination of antibiotics until necrotic tissue has been removed and the woman is fever-free for 48 hours

    - Penicillin G, 2 million units IV every 6 hours
    - **plus** gentamycin, 5 mg/kg body weight IV for 24 hours in three divided doses
    - **plus** metronidazole, 500 mg IV every 8 hours

  - once the **patient is fever-free for 48 hours,** give:

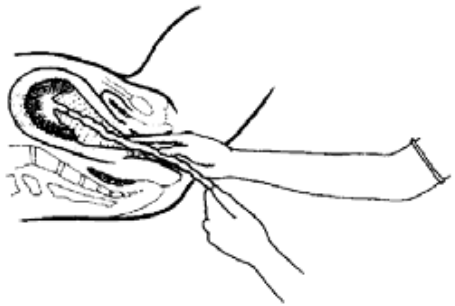
    - Ampiclox, 500 mg orally 6 hourly for 5 days
    - **plus** metronidazole, 400 mg orally 8 hourly for 5 days

**Note:** Necrotising fasciitis requires wide surgical debridement. Perform secondary closure in 2-4 weeks (depending on resolution of the infection).

## 6.20 MANUAL REMOVAL OF PLACENTA

- Review for indications
- Review general care principles **(Section 1, pages 1 - 29)** and start an IV infusion **(Section 1, page 19);**
- Provide emotional support and encouragement. Give pethidine and diazepam IV slowly (do not mix in the same syringe) or use ketamine **(pages 373 - 375);**
- Catheterize the bladder or ensure that it is empty;
- Give prophylactic antibiotics**;**
- Hold the umbilical cord with a clamp. Pull the cord gently until it is parallel to the floor;
- Wearing high-level disinfected or sterile gloves (use long gloves if available), insert a hand into the vagina and up into the uterus **(Figure 74);**

**Figure 74: Introducing one hand into the vagina along cord**



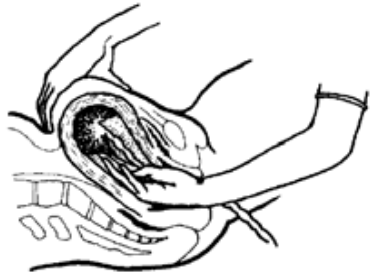
- Let go off the cord and move the hand up over the abdomen in order to support the fundus of the uterus and to provide counter-traction during removal to prevent inversion of the uterus (**Figure 75, page 437);**

**Note:** If **uterine inversion occurs**, reposition the uterus (**pages 351-454).**



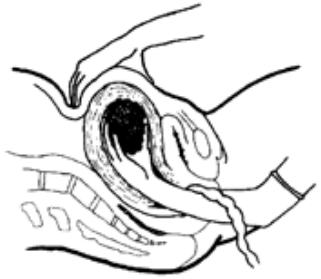
- Move the fingers of the hand in the uterus laterally until the edge of the placenta is located;
- If the **cord has been detached previously**, insert a hand into the uterine cavity. Explore the entire cavity until a line of cleavage is identified between the placenta and the uterine wall;

**Figure 75: Supporting the fundus while detaching the placenta**



- Detach the placenta from the implantation site by keeping the fingers tightly together and using the edge of the hand to gradually make a space between the placenta and the uterine wall;
- Proceed slowly all around the placental bed until the whole placenta is detached from the uterine wall;
- If the **placenta does not separate from the uterine surface** by gentle lateral movement of the fingertips at the line of cleavage, remove the placenta piecemeal (fragments);
- If the tissue is very adherent, suspect placenta accreta and proceed to laparotomy and possible subtotal hysterectomy **(pages 464 - 467);**
- Hold the placenta and slowly withdraw the hand from the uterus, bringing the placenta with it **(Figure 76, page 438);**
- With the other hand, continue to provide counter-traction to the fundus by pushing it in the opposite direction of the hand that is being withdrawn;

**Figure 76: Withdrawing the hand from the uterus**



- Palpate the inside of the uterine cavity to ensure that all placental tissue has been removed;
- Give oxytocin 20 units in 1 litre IV fluids (Normal saline or Ringer's lactate) at 60 drops per minute;
- Have an assistant massage the fundus of the uterus to encourage a tonic uterine contraction;
- If there is **continued heavy bleeding,** give ergometrine, 0.5 mg IM or prostaglandins;
- Examine the uterine surface of the placenta to ensure that it is complete. If any **placental lobe or tissue is missing,** explore the uterine cavity to remove it;
- Examine the woman carefully and repair any tear to the cervix **(pages 440 - 441)** or vagina **(pages 442 - 450)**, or repair episiotomy **(pages 431 - 435).**

**Problems**

- If the placenta **is retained due to a constriction ring** or if **hours or days have passed since delivery,** it may not be possible to get the entire hand into the uterus. Extract the placenta in fragments (piecemeal) using two fingers, ovum forceps or a wide curette.



**POST-PROCEDURE CARE**

- Observe the woman closely until the effect of IV sedation has worn off;
- Monitor the vital signs (pulse, blood pressure, respiration) every 30 minutes for the next 6 hours or until stable;
- Palpate the uterine fundus to ensure that the uterus remains contracted;
- Check for excessive lochia;
- Continue infusion of IV fluids;
- Transfuse as necessary **(Section 1, pages 20 - 22).**

## 6.21 REPAIR OF CERVICAL TEARS

- Review general care principles **(Section 1, pages 1 - 29)** and apply antiseptic solution to the vagina and cervix**;**

- Provide emotional support and encouragement. Anaesthesia is not required for most cervical tears. For tears that are high and extensive, give pethidine and diazepam IV slowly (do not mix in the same syringe) or use ketamine **(pages 373 - 375);**

- Ask an assistant to massage the uterus and provide fundal pressure to help push the cervix into view;

- Use vaginal retractors as necessary to expose the cervix;

- Gently grasp the cervix with ring or sponge forceps. Apply the forceps on both sides of the tear and gently pull in various directions to see the entire cervix. There may be several tears;

- Close the cervical tears with continuous 0 chromic catgut (or polyglycolic) suture starting at the apex (upper edge of tear), which is often the source of bleeding **(Figure 77, page 441);**

- If a **long section of the rim of the cervix is tattered,** under-run it with continuous 0 chromic catgut (or polyglcolic) suture;

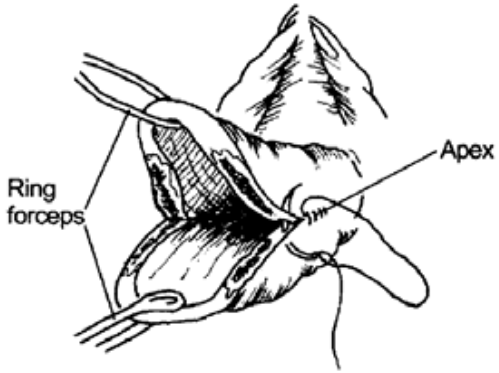
- If the **apex is difficult to reach and ligate,** grasp it with artery or ring forceps. Leave the forceps in place for 4 hours. Do not persist in attempts to ligate the bleeding points as such attempts may increase the bleeding. Then:

  - after 4 hours, open the forceps partially but do not remove;
  - after another 4 hours, remove the forceps completely.

  **Note:** A laparotomy may be required to repair a cervical tear that has extended deep beyond the vaginal vault.



**Figure 77: Repair of a cervical tear**



## 6.22 REPAIR OF VAGINAL AND PERINEAL TEARS

There are three degrees of tears that can occur during delivery:

- First degree tears involve the vaginal mucosa and connective tissue;
- Second degree tears involve the vaginal mucosa, connective tissue and underlying muscles;
- Third degree tears involve complete transection of the anal sphincter to involve the rectal mucosa;

**Note**: It is important that absorbable sutures be used for closure. Polyglycolic sutures (vicryl) are preferred over chromic catgut for their tensile strength, non-allergenic properties and lower probability of complications from infections. Chromic catgut is an acceptable alternative but it is not ideal.

### 6.22.1 REPAIR OF FIRST AND SECOND DEGREE TEARS

Some first degree tears close spontaneously without sutures.

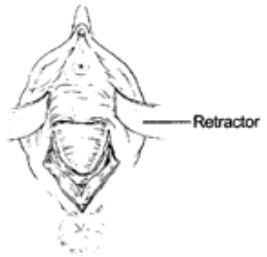
- Review general care principles **(Section 1, pages 1 - 29);**
- Provide emotional support and encouragement. Use local infiltration with lignocaine. If necessary, use a pudendal block **(pages 363 – 366)**;
- Ask an assistant to massage the uterus and provide fundal pressure;
- Carefully examine the vagina, perineum and cervix **(Figure 78, page 443);**
- If the **tear is long and deep through the perineum**, inspect to be sure that there is no third degree tear:



  - place a gloved finger in the anus
  - gently lift the finger and identify the sphincter
  - feel for the tone or tightness of the sphincter

- Change to clean, high-level disinfected or sterile gloves;
- If the **sphincter is injured**, see the section on repair of third degree tears **(pages 445-448);**
- If the **sphincter is not injured,** proceed with repair;

**Figure 78: Exposing a perineal tear**




- Apply antiseptic solution to the area around the tear;
- Make sure there are no known allergies to lignocaine or related drugs;

**Note: If more than 40 ml of lignocaine** solution will be needed for the repair, add adrenaline to the solution .

- Infiltrate beneath the vaginal mucosa, beneath the skin of the perineum and deeply into the perineal muscle using about 10 ml 0.5% lignocaine solution;

**Note**: Aspirate (pull back the plunger) to be sure that no vessel has been penetrated. If **blood is returned in the syringe with aspiration**, remove the needle. Re-check the position carefully and try again. Never inject if blood is aspirated. **The woman can suffer seizures or die if IV injection of lignocaine occurs.**

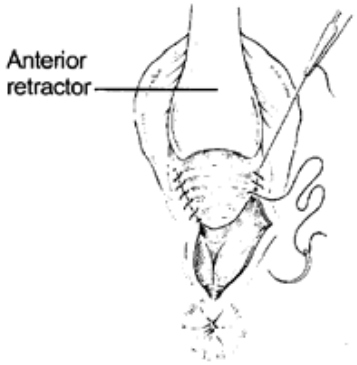
- At the conclusion of the injections, wait for 2 minutes and then pinch the area with forceps. If the woman feels pain, wait for 2 more minutes and then retest;

**Anaesthetize early to provide sufficient time for effect.**

- Repair the vaginal mucosa using continuous 2-0 suture (**Figure 79):**

  - start the repair about 1 cm above the apex (top) of the vaginal tear. Continue the suture to the level of the vaginal opening
  - at the opening of the vagina, bring together the cut edges of the vaginal opening
  - bring the needle under the vaginal opening and out through the perineal tear and tie.

**Figure 79: Repairing the vaginal mucosa**




- Repair the perineal muscles using interrupted 2-0 suture **(Figure 80)**. If the **tear is deep**, place a second layer of the same stitch to close the space;



**Figure 80: Repairing the perineal muscles**

- Repair the skin using interrupted (or subcuticular) 2-0 sutures starting at the vaginal opening **(Figure 81);**

- If the **tear was deep,** perform a rectal examination. Make sure no stitches are in the rectum.

**Figure 81: Repairing the skin**

### 6.22.2 REPAIR OF THIRD DEGREE PERINEAL TEARS

**Note:** The patient may suffer loss of control over bowel movements and gas if a torn anal sphincter is not repaired correctly. If a **tear in the rectum is not repaired,** the woman can suffer from infection and rectovaginal fistula (passage of stool through the vagina).

- Repair the tear in the operating room;

- Review general care principles **(Section 1, pages 1 - 29);**

- Provide emotional support and encouragement. Use a pudendal block (**pages 363 - 366)** or ketamine (**pages 373 - 375**) or spinal anaesthesia (**pages 370 - 372**). Rarely, if all edges of the tear can be seen, the repair can be done using local infiltration with lignocaine (see above) and pethidine and diazepam IV slowly (do not mix in the same syringe);

- Ask an assistant to massage the uterus and provide fundal pressure;

- Examine the vagina, cervix, perineum and rectum;

- To see if the anal sphincter is torn:
  - place a gloved finger in the anus and lift slightly
  - identify the sphincter, or lack of it
  - feel the surface of the rectum and look carefully for a tear

- Change to clean, high-level disinfected or sterile gloves;

- Apply antiseptic solution to the tear and remove any faecal material, if present;

- Make sure there are no known allergies to lignocaine or related drugs;

- Infiltrate beneath the vaginal mucosa, beneath the skin of the perineum, and deeply into the perineal muscle using about 10 ml of 0.5% lignocaine solution;

**Note**: Aspirate (pull back on the plunger) to be sure that no vessel has been penetrated. If **blood is returned in the syringe with aspiration,** remove the needle. Re-check the position carefully and try again. Never inject if blood is aspirated. **The patient can suffer seizures or die if IV injection of lignocaine occurs.**

- At the conclusion of the set of injections, wait 2 minutes and then pinch the area with forceps. If the patient feels pain, wait 2 more minutes and then re-test;



**Anaesthetize early to provide sufficient time for effect.**

- Repair the rectum using interrupted 3-0 or 4-0 sutures, 0.5 cm apart to bring together the mucosa **(Figure 82).**

  **Remember:** Place the suture through the muscularis (not all the way through the mucosa)

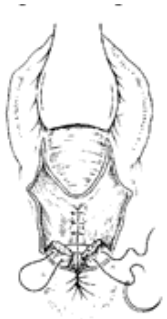
  - cover the muscularis layer by bringing together the fascial layer with interrupted sutures
  - apply antiseptic solution to the area frequently.

**Figure 82: Closing the muscle wall of the rectum**

- If the **sphincter is torn:**

  - grasp each end of the sphincter with an Allis clamp (the sphincter retracts when torn). The fascial sheath around the sphincter is strong and will not tear when pulling with the clamp **(Figure 83)**
  - repair the sphincter with two or three interrupted stitches of 1 suture.

**Figure 83: Suturing the anal sphincter**



- Apply antiseptic solution to the area again;
- Examine the anus with a gloved finger to ensure the correct repair of the rectum and sphincter. Then change to clean, high-level disinfected or sterile gloves;
- Repair the vaginal mucosa, perineal muscles and skin **(pages 442 - 445).**

## POST-PROCEDURE CARE

- If there is **a third degree tear**, give a single dose of prophylactic antibiotics:
  - Ampiclox, 500 mg orally 6 hourly for 5 days
  - PLUS metronidazole, 400 mg orally 8 hourly for 5 days
- Follow up closely for signs of wound infection;
- Avoid giving enema or performing rectal examinations for 2 weeks;
- Give stool softener by mouth for 1 week, if possible.



## 6.22.3 MANAGEMENT OF NEGLECTED PERINEAL TEARS

A perineal tear may be contaminated with faecal material. If **closure is delayed more than 12 hours**, infection is likely. Delayed primary closure is indicated in such cases.

- For **first and second degree tears,** leave the wound open, and have the woman return in 6 days. If there are no signs of infection, proceed with delayed primary closure;
- For **third degree tears,** close the rectal mucosa with some supporting tissue and approximate the fascia of the anal sphincter with 2 or 3 sutures. Close the muscle and vaginal mucosa and the perineal skin 6 days later.

### Complications

- If a **haematoma is observed,** open and drain it. If there are **no signs of infection and the bleeding has stopped,** the wound can be reclosed;
- If there are **signs of infection,** open and drain the wound. Remove infected sutures and debride the wound:
  - if the **infection is present but does not involve deep tissues,** give the following combination of antibiotics**:**
    - Ampiclox, 500 mg orally 6 hourly for 5 days
    - PLUS metronidazole, 400 mg orally 8 hourly for 5 days.
- if the **infection is deep, involves muscles and is causing necrosis** (necrotising fasciitis), give the following combination of antibiotics until necrotic tissue has been removed and the patient is fever-free for 48 hours:
  - Penicillin G, 2 million units IV every 6 hours
  - PLUS gentamycin, 5 mg/kg body weight IV for 24 hours in three divided doses
  - PLUS metronidazole, 500 mg IV every 8 hours

- once the **patient is fever-free for 48 hours,** give:
- Ampiclox, 500 mg orally 6 hourly for 5 days
- PLUS metronidazole, 400 mg orally 8 hourly for 5 days

**Note:** Necrotising fasciitis requires wide surgical debridement. Perform secondary closure in 2-4 weeks (depending on resolution of the infection).

- Faecal incontinence may result from complete sphincter transection. Many women are able to maintain control of defaecation by the use of other perineal muscles. When incontinence persists, reconstructive surgery must be undertaken 3 months or more after delivery;

- Recto-vaginal fistula requires reconstructive surgery 3 months or more postpartum.



## 6.23 CORRECTING UTERINE INVERSION

- Review for indications;

- Review general care principles **(Section 1, pages 1-29)** and start an IV infusion **(Section 1, page 19);**

- Give pethidine and diazepam IV slowly (do not mix in the same syringe). If necessary, use general anaesthesia;

- Thoroughly cleanse the inverted uterus using antiseptic solution;

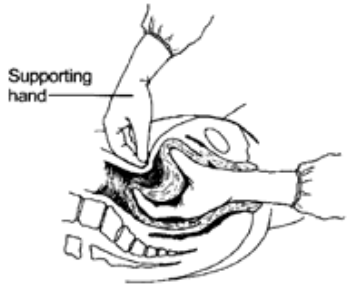
- Apply compression to the inverted uterus with a moist, warm sterile towel until ready for the procedure.

### 6.23.1 MANUAL CORRECTION

- Wearing high-level disinfected or sterile gloves, grasp the inverted uterus and push it through the cervix towards the umbilicus to its normal position, using the other hand to support the uterus (**Figure 84**). If the **placenta is still attached**, manually remove the placenta **after** correction;

**It is important that the part of the uterus that came out last (part closest to the cervix) goes in first.**

**Figure 84: Manual replacement of the inverted uterus**




- If **correction is not achieved**, proceed to hydrostatic correction **(page 452).**

### 6.23.2 HYDROSTATIC CORRECTION

- Place the woman in deep Trendelenburg position (head down);
- Prepare a high-level disinfected or sterile douche system with large nozzle and long tubing (2 metres) and a warm water reservoir (3 to 5 litres);

**Note:** This can also be done using warm normal saline and an ordinary IV administration set.

- Identify the posterior fornix. This is easily done in partial inversion when the inverted uterus is still in the vagina. In other cases, the posterior fornix is recognized by where the rugose vagina becomes the smooth vagina;
- Place the nozzle of the douche in the posterior fornix;
- At the same time, with the other hand hold the labia sealed over the nozzle and use the forearm to support the nozzle;
- Ask an assistant to start the douche with full pressure (raise the water reservoir to at least 2 metres). Water will distend the posterior fornix of the vagina gradually so that it stretches. This causes the circumference of the orifice to increase, relieves cervical constriction and results in correction of the inversion.

### 6.23.3 MANUAL CORRECTION UNDER GENERAL ANAESTHESIA

- If **hydrostatic correction is not successful,** try manual repositioning under general anaesthesia using halothane. Halothane is recommended because it relaxes the uterus;
- Grasp the inverted uterus and push it through the cervix in the direction of the umbilicus to its normal position using the other hand to stabilize the uterus **(Figure 84, page 451.** If the **placenta is still attached,** perform a manual removal **after** correction.

### 6.23.4 COMBINED ABDOMINO-VAGINAL CORRECTION

Abdomino-vaginal correction of uterine inversion under general anaesthesia may be required if the above measures fail.



- Review for indications;
- Review operative care principles **(Section 1, pages 30-35);**
- Open the abdomen:
  - make a midline vertical incision below the umbilicus to the pubic hair, through the skin and to the level of the fascia
  - make a 2-3 cm vertical incision in the fascia
  - hold the fascial edge with forceps and lengthen the incision up and down using scissors
  - use fingers or scissors to separate the rectus muscles (abdominal wall muscles)
  - use fingers or scissors to make an opening in the peritoneum near the umbilicus. Use scissors to lengthen the incision up and down. Carefully, to prevent bladder injury, use scissors to separate layers and open the lower part of the peritoneum
  - place a bladder retractor over the pubic bone and place self-retaining abdominal retractors
- Dilate the constricting cervical ring digitally;
- Place a tenaculum through the cervical ring and grasp the inverted fundus;
- Apply gentle continuous traction to fundus while an assistant attempts manual correction vaginally;
- If **traction fails:**
  - incise the constricting cervical ring vertically and posteriorly (where the incision is least likely to injure the bladder or uterine vessels)
  - repeat digital dilatation, tenaculum and traction steps
  - close the constriction ring
- If **correction is successful**, close the abdomen:

- make sure there is no bleeding. Use a sponge holding forceps to remove any clots inside the abdomen
- close the fascia with continuous 0 chromic catgut (or polyglycolic) or nylon 1 suture

**Note:** There is no need to close the bladder peritoneum or the abdominal peritoneum.

- close the skin with vertical mattress sutures of 2-0 nylon (or silk) and apply a sterile dressing.

## POST-PROCEDURE CARE

- Once the inversion is corrected, infuse oxytocin 20 units in 500 ml IV fluids (Normal saline or Ringers lactate) at 10 drops per minute:

  - if **haemorrhage is suspected,** increase the infusion rate to 60 drops per minute
  - if the **uterus does not contract after oxytocin,** give ergometrine, 0.2 mg or prostaglandins **(page 384).**

- Give prophylactic antibiotics after correcting the inverted uterus:

  - Ampicillin, 500 mg 6 hourly PLUS metronidazole, 400 mg 8 hourly for 5 days

- If **combined abdomino-vaginal correction** was used, see postoperative care principles **(Section 1, pages 33-35);**

- If there are **signs of infection** or the **woman currently has fever,** give the following combination of antibiotics until she is fever-free for 48 hours:

  - Ampicillin, 2 g IV every 6 hours
  - PLUS gentamycin, 5 mg/kg body weight IV for 24 hours in three divided doses
  - PLUS metronidazole, 500 mg IV every 8 hours

- Give appropriate analgesic drugs.



## 6.24 REPAIR OF RUPTURED UTERUS

- Review for indications;

- Review general care principles **(Section 1, pages 1 - 29),** operative care principles **(Section 1, pages 30 - 35),** and start an IV infusion **(Section 1, page 19);**

- Give prophylactic antibiotics:

  - Ampicillin, 500 mg IV 6 hourly and metronidazole 500 mg IV 8 hourly
    **OR**
  - cephalosporins

- Open the abdomen:

  - make a midline vertical incision below the umbilicus to the pubic hair, through the skin and to the level of the fascia
  - make a 2-3 cm vertical incision in the fascia
  - hold the fascial edge with forceps and lengthen the incision up and down using scissors
  - use fingers or scissors to separate the rectus muscles (abdominal wall muscles)
  - use fingers or scissors to make an opening in the peritoneum near the umbilicus. Use scissors to lengthen the incision up and down in order to see the entire uterus. Carefully, to prevent bladder injury, use scissors to separate layers and open the lower part of the peritoneum;
  - examine the abdomen and the uterus for site of rupture and remove clots;
  - place a bladder retractor over the pubic bone and place self-retaining abdominal retractors

- Deliver the baby and placenta;

- Infuse oxytocin, 20 units in 1 litre IV fluids (Normal saline or Ringers lactate) at 60 drops per minute until the uterus contracts and then reduce to 20 drops per minute;

- Lift the uterus out of the pelvis in order to note the extent of the injury;
- Examine the anterior, posterior and lateral aspects of the uterus;
- Hold the bleeding edges of the uterus with Green-Armytage clamps or ring forceps;
- Separate the bladder from the lower uterine segment by sharp or blunt dissection. If the **bladder is scarred to the uterus**, use fine scissors.

## RUPTURE THROUGH CERVIX AND VAGINA

- If the uterus is torn through the cervix and vagina, mobilize the bladder at least 2 cm below the tear;
- If possible, place a suture 2 cm above the lower end of the cervical tear and keep traction on the suture to bring the lower end of the tear into view as the repair continues.

## RUPTURE LATERALLY THROUGH UTERINE ARTERY

- If the **rupture extends laterally to damage one or both uterine arteries**, ligate the injured artery;
- Identify the arteries and ureter prior to ligating the uterine vessels (**Figure 86, page 461).**

## RUPTURE WITH BROAD LIGAMENT HAEMATOMA

- If the **rupture has created a broad ligament haematoma** (**Figure 85),** clamp, cut and tie off the round ligament;

**Figure 85: Rupture of lower uterine segment into broad ligament will not release blood into the abdominal cavity**.




- Open the anterior leaf of the broad ligament;
- Drain off the haematoma manually, if necessary;
- Inspect the area carefully for injury to the uterine artery or its branches. Ligate any bleeding vessels.

## REPAIRING THE UTERINE TEAR

- Repair the tear with a continuous locking stitch of 0 chromic catgut (or polyglycolic) suture. If **bleeding is not controlled** or if the **rupture is through a previous classical or vertical incision,** place a second layer of suture;

> **Ensure that the ureter is identified and exposed to avoid including it in a stitch.**

- If the **rupture is too extensive for repair**, proceed with hysterectomy (**pages 463 - 468);**
- Control bleeding by clamping with long artery forceps and ligating. If the **bleeding points are deep**, use figure-of-eight sutures;
- If the **woman has requested tubal ligation**, perform the procedure at this time **(pages 412 - 413);**
- Remove clots from the paracolic gutters;
- Lavage the peritoneal cavity with warm saline;
- Place an abdominal drain if necessary;
- Close the abdomen:
  - ensure that there is no bleeding
  - in all cases, check for injury to the bladder. If a **bladder injury is identified**, repair the injury (see below)
  - close the fascia with continuous 0 chromic catgut (or polyglycolic) or nylon 1 suture

**Note**: There may be no need to close the parietal peritoneum.

- Close the skin with vertical mattress sutures of 2-0 nylon (or silk) and apply a sterile dressing.

## REPAIR OF BLADDER INJURY

- Identify the extent of the injury by grasping each edge of the tear with a clamp and gently stretching. Determine if the injury is close to the bladder trigone (ureters and urethra);

- Dissect the bladder off the lower uterine segment with fine scissors or with a sponge on a clamp;

- Free a 2 cm circle of bladder tissue around the tear;

- Repair the tear in two layers with continuous 2-0 chromic catgut (or polyglycolic) suture:

  - suture the bladder mucosa (thin inner layer) and bladder muscle (outer layer)
  - invert (fold) the outer layer over the first layer of suture and place another layer of suture
  - ensure that sutures are not inserted in the trigone area

- Test the repair for leaks:

  - fill the bladder with sterile saline or water through the transurethral catheter
  - if **leaks are present**, remove the suture, repair and test again

- If it is **not certain that the repair is well away from the ureters and urethra,** complete the repair and refer the woman to a higher level facility for an intravenous urogram (IVU);

.

- Keep the bladder catheter in place for at least seven days and until urine is clear. Continue IV fluids to ensure flushing of the bladder and encourage the woman to drink fluids.



## POST-PROCEDURE CARE

- Review postoperative care principles **(Section 1, pages 33-35);**

- Give the following combination of antibiotics until she is fever-free for 48 hours
  - Ampicillin, 2 g IV every 6 hours
  - PLUS gentamicin, 5 mg/kg body weight IV for 24 hours in three divided doses
  - PLUS metronidazole, 500 mg IV every 8 hours

- Give appropriate analgesic drugs;

- If there are **no signs of infection**, remove the abdominal drain after 48 hours;

- Offer other health services, if possible**;**

- If **tubal ligation was not performed**, counsel for family planning . If the **woman wishes to have more children** counsel her for elective Caesarean section for future pregnancies.

**Because there is an increased risk of rupture with subsequent pregnancies, the option of permanent contraception needs to be discussed with the woman after the emergency is over. Permanent contraception should not be performed without informed consent from the woman.**

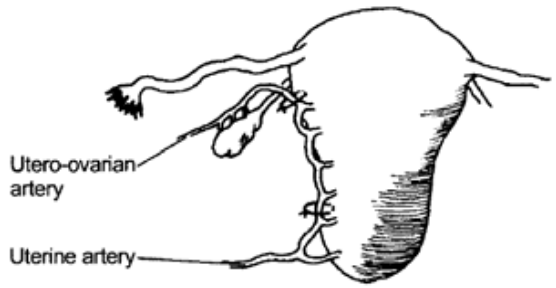
## 6.25 UTERINE AND UTERO-OVARIAN ARTERY LIGATION

- Review for indications;
- Review general care principles **(Section 1, pages 1 - 29)** and operative care principles **(Section 1, pages 30 - 35)** and start an IV infusion **(Section 1, page 19)**
- Start prophylactic antibiotics**:**
  - Ampiclox, 1 g IV at once
  - **OR** cephalosporin
- Open the abdomen:
  - make a midline vertical incision below the umbilicus to the suprapubic area, through the skin and to the level of the fascia
  - make a 2 - 3 cm vertical incision in the fascia
  - hold the fascial edge with forceps and lengthen the incision up and down using scissors
  - use fingers or scissors to separate the rectus muscles (abdominal wall muscles)
  - use fingers to make an opening in the peritoneum near the umbilicus. Use scissors to lengthen the incision up and down in order to see the entire uterus. Carefully, to prevent bladder injury, use scissors to separate layers and open the lower part of the peritoneum
  - place a bladder retractor over the pubic bone and place self-retaining abdominal retractors
- Pull on the uterus to expose the lower part of the broad ligament;
- Feel for pulsations of the uterine artery near the junction of the uterus and cervix;
- Using 0 chromic catgut (or polyglycolic) suture on a large needle, pass the needle around the artery and through 2 - 3 cm of myometrium (uterine muscle) at the level where a transverse lower uterine segment incision would be made. Tie the suture securely;
- Place the sutures as close to the uterus as possible, as the ureter is generally only 1 cm lateral to the uterine artery;



- Repeat on the opposite side;
- If the **artery has been torn**, clamp and tie the bleeding ends;
- Ligate the utero-ovarian artery just below the point where the ovarian suspensory ligament joins the uterus **(Figure 86);**
- Repeat on the opposite side;
- Observe for continued bleeding or formation of haematoma;

**Figure 86: Sites for ligating uterine and utero-ovarian arteries**




- Close the abdomen:
  - ensure that there is no bleeding. Remove clots using a sponge
  - examine carefully for injuries to the bladder and repair any found **(pages 458-459)**
  - close the fascia with continuous 0 chromic catgut (or polyglycolic) suture

  **Note:** There may be no need to close the bladder peritoneum or the abdominal peritoneum.

  - close the skin with vertical mattress sutures of 2-0 nylon (or silk) and apply a sterile dressing.

## POST-PROCEDURE CARE

- Review postoperative care principles **(Section 1, pages 33-35);**
- Monitor urine output. If there is **blood in the urine** or the **woman has loin pain**, refer the woman to a tertiary centre, if possible, for treatment of an obstructed ureter;
- Give a combination of antibiotics until she is fever-free for 48 hours;
  - Ampiclox, 500 mg IV every six hours
  - **plus** gentamicin, 5 mg/kg body weight IV for 24 hours in three divided doses
  - **plus** metronidazole, 500 mg IV every eight hours
- Give appropriate analgesic drugs**;**
- If there are **no signs of infection or drain site is dry**, remove the abdominal drain after 48 hours;
- Offer other health services, if possible.



## 6.26 POSTPARTUM HYSTERECTOMY

Postpartum hysterectomy can be **subtotal** (supracervical) unless the cervix and lower uterine segment are involved. **Total** hysterectomy may be necessary in the case of a tear of the lower segment that extends into the cervix or bleeding after placenta praevia.

- Review for indications;
- Review general care principles **(Section 1, pages 1 - 29),** operative care principles **(Section 1, pages 30 - 35)** and start an IV infusion **(Section 1, page 19);**
- Start prophylactic antibiotics:
  - Ampiclox, 1 g IV at once
  - **OR** cephalosporins
- If there is **uncontrollable haemorrhage following vaginal delivery**, keep in mind that speed is essential. To open the abdomen:
  - make a midline vertical incision below the umbilicus to the pubic hair, through the skin and to the level of the fascia
  - make a 2 - 3 cm vertical incision in the fascia
  - hold the fascial edge with forceps and lengthen the incision up and down using scissors
  - use fingers or scissors to separate the rectus muscles (abdominal wall muscles)
  - use scissors or fingers to make an opening in the peritoneum near the umbilicus. Use scissors to lengthen the incision up and down in order to see the entire uterus. Carefully, to prevent bladder injury, use scissors to separate layers and open the lower part of the peritoneum
  - place a bladder retractor over the pubic bone and place self-retaining abdominal retractors
- If the **delivery was by Caesarean section**, clamp the sites of bleeding along the uterine incision:

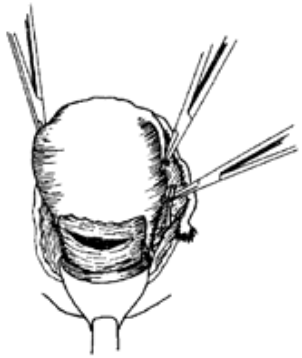
- in case of **massive bleeding**, have an assistant press fingers over the aorta in the lower abdomen. This will reduce intraperitoneal bleeding
- extend the skin incision, if needed.

### 6.26.1 SUBTOTAL (SUPRACERVICAL) HYSTERECTOMY

- Lift the uterus out of the abdomen and gently pull to maintain traction;

- Doubly clamp and cut the round ligaments with scissors (**Figure 87**). Clamp and cut the pedicles, but ligate after the uterine arteries are secured to save time;

**Figure 87: Dividing the round ligaments**



- From the edge of the cut round ligament, open the anterior leaf of the broad ligament. Incise to:

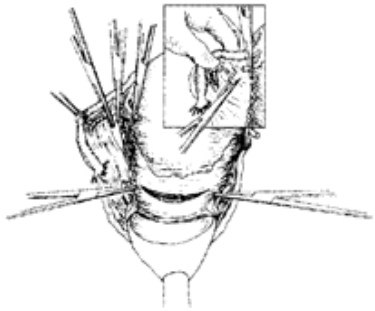
  - the point where the bladder peritoneum is reflected onto the lower uterine surface in the midline **or**
  - incised peritoneum at a Caesarean section

- Use sponge on stick or two fingers to push the posterior leaf of the broad ligament forward, just under the tube and ovary, near the uterine edge. Make a hole the size of a finger in the broad ligament, using scissors. Doubly clamp and cut the tube, the ovarian ligament and the broad ligament through the hole in the broad ligament (**Figure 88).**



**The ureters are close to the uterine vessels. The ureter must be identified and exposed to avoid injuring it during surgery or including it in a stitch.**

**Figure 88: Dividing the tube and ovarian ligaments**



- Divide the posterior leaf of the broad ligament downwards towards the uterosacral ligaments, using scissors;

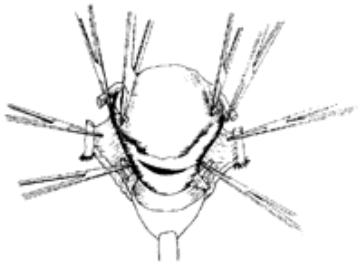
- Grasp the edge of the bladder flap with forceps or a small clamp. Using fingers or scissors, dissect the bladder downwards off the lower uterine segment. Direct the pressure downwards but inwards towards the cervix and the lower uterine segment;

- Reposition the bladder retractor and retract the bladder inferiorly;

- Locate the uterine artery and vein on each side of the uterus. Feel for the junction of the uterus and cervix;

- Doubly clamp across the uterine vessels at a 90 degree angle on each side of the cervix. Cut and doubly ligate with 1 chromic catgut (or polyglycolic) suture (**Figure 89);**

**Figure 89: Dividing the uterine vessels.**

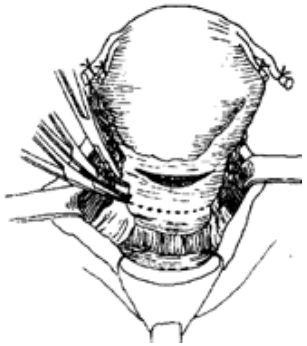


- Observe carefully for any further bleeding. If the **uterine arteries are ligated correctly**, bleeding should stop and the uterus should look pale;

- Return to the clamped pedicles of the round ligaments and tubo-ovarian ligaments and ligate them with 1 chromic catgut (or polyglycolic) suture;

- Amputate the uterus above the level where the uterine arteries are ligated, using scissors **(Figure 90);**

**Figure 90: Line of amputation**



- Close the cervical stump with interrupted 2-0 or 3-0 chromic catgut (or polyglycolic) sutures;



- Carefully inspect the cervical stump, leaves of the broad ligament and other pelvic floor structures for any bleeding;

- If **slight bleeding persists or a clotting disorder is suspected**, place a drain through the abdominal wall. Do not place a drain through the cervical stump, as this can cause postoperative infection;

- Close the abdomen:

  - ensure that there is no bleeding. Remove clots using a swab on stick
  - in all cases, check for injury to the bladder. If a **bladder injury is identified**, repair the injury **(pages 458 - 459)**
  - close the fascia with continuous 0 chromic catgut (or polyglycolic) or nylon 1 suture.

  **Note:** There may be no need to close the bladder peritoneum or the abdominal peritoneum.

  - close the skin with vertical mattress sutures of 3-0 nylon (or silk) and apply a sterile dressing.

### 6.26.2 TOTAL HYSTERECTOMY

The following additional steps are required for total hysterectomy:

- Push the bladder down to free the top 2 cm of the vagina;

- Open the posterior leaf of the broad ligament;

- Clamp, ligate and cut the uterosacral ligaments;

- Clamp, ligate and cut the cardinal ligaments, which contain the descending branches of the uterine vessels. This is the critical step in the operation:

  - grasp the ligament vertically with a large-toothed clamp (e.g. Kochers)

- place the clamp 5 mm lateral to the cervix and cut the ligament close to the cervix, leaving a stump medial to the clamp for safety
- if the **cervix is long,** repeat the step two or three times as needed

**Note:** The upper 2 cm of the vagina should now be free of attachments.

- Circumcise the vagina as near to the cervix as possible, clamping bleeding points as they appear;

- Place haemostatic angle sutures, which include round, cardinal and uterosacral ligaments;

- Place continuous or interrupted sutures on the vaginal cuff to stop haemorrhage;

- Close the abdomen (as above) after placing a drain in the extraperitoneal space near the stump of the cervix .

## POST-PROCEDURE CARE

- Review postoperative care principles **(Section 1, pages 33 - 35);**

- Monitor urine output. If there is **blood in the urine or the patient has loin pain**, refer her to a tertiary centre, if possible, for treatment of an obstructed ureter;

- Continue the combination of the following antibiotics until she is fever-free for 48 hours:

  - Ampiclox, 2 g IV every six hours
  - **plus** gentamicin, 5 mg/kg body weight IV for 24 hours in three divided doses
  - **plus** metronidazole, 500 mg IV every eight hours

- Give appropriate analgesic drugs**;**

- If there **are no signs of infection**, remove the abdominal drain after 48 hours;

- Offer other health services, if possible**.**



## 6.27 POST-PARTUM INTRAUTERINE CONTRACEPTIVE DEVICE (PPIUD)

Several contraceptive methods, including IUD, are appropriate for use soon after a woman delivers a baby.

There are two types of insertion techniques **Forceps** and **Manual** Insertion.

### 6.27.1 FORCEPS INSERTION

This method of insertion is performed after expulsion of the placenta and within 48 hours of delivery. It entails the placement of the IUD in the uterine fundus with a Kelly forceps. It is simple to perform and more comfortable for the patient.

**Figure 91: A Kelly forceps holding copper T IUD**

### 6.27.2 MANUAL INSERTION

The manual method of insertion is appropriate when performed within 10 minutes of expulsion of the placenta. Manual insertion requires no special instruments. The insertion is achieved using the gloved hand to place the IUD high in the fundus.

**Figure 92: The IUD strings placed in the palm of hand in Post-placental Manual Procedure**

### 6.27.3 INSERTION TECHNIQUES FOR VARIOUS TIMINGS (Table 24)

- **Pre-discharge:** insertion after the post-placental period, but within 48 hours of delivery and before the woman leaves the hospital;
- **Post-placental:** insertion immediately after expulsion of the placenta. It is recommended that the insertion takes place within 10 minutes after expulsion of the placenta following a vaginal delivery, or at the time of Caesarean section;
- **Trans-Caesarean:** insertion that takes place following a Caesarean delivery, before the uterus is closed;
- **Post-Caesarean:** *pre-discharge* insertion following Caesarean delivery;
- **Post-abortion:** IUD insertion following an abortion. Following a second trimester abortion, a *postpartum* insertion technique is used. After a first trimester abortion, the IUD is inserted using an *interval* technique. This is due to the differences in anatomy and physiology between the first and second trimesters.



**Figure 93: Placing the IUD at the top (fundus) of the uterine cavity, post-placental manual procedure**

**Table 24: Appropriate insertion technique for specific timing**

| | Pre-discharge | Post-placental | Trans-Caesarean | Post-Caesarean | 2nd Trimester Abortion |
|---|---|---|---|---|---|
| Manual | | X | X | | |
| Forceps | X | X | X | X | X |

### Pre-Insertion Tasks

- Determine that patient has been counseled;
- Confirm that the woman's choice is the IUD;
- Describe examination and insertion procedure and what to expect.

### Patient Assessment

- Review patient's record or interview her to verify that the pertinent information is recorded and determine if she is appropriate for postpartum IUD insertion;
- Review obstetric events related to present delivery.

## 6.27.4 INSERTION PROCEDURES

### A. PRE-DISCHARGE IUD INSERTION USING KELLY PLACENTAL FORCEPS

**Physical Examination**

- Wear HLD or sterile gloves as required throughout clinical procedure;
- Palpate uterus to evaluate the contraction and size;
- Inspect the external genitalia, vagina, and cervix, and using a retractor if necessary, for appropriate suture of injuries if any.

**Insertion Tasks**

- Tell patient what is going to be done and encourage her to express discomfort;
- Place a sterile drape over her abdomen;
- Clean the external genitalia and gently insert a Graves speculum;
- Prepare the cervix and vagina with liberal application of antiseptic solution;
- Gently grasp the anterior lip of the cervix with a sterile or HLD ring forceps;
- Grasp the IUD with sterile or HLD Kelly placental forceps;
- Grasp ring forceps on the cervix and hold the cervix in view while introducing the Kelly placental forceps using a “no-touch” technique;
- Gently insert the Kelly forceps with the IUD through the cervix and into the uterine cavity;
- Gently release the hand that is holding the cervix with the ring forceps and move it to the abdomen;



- With free hand, stabilise the IUD in an upward motion towards the umbilicus;
- Move the Kelly forceps with the IUD in an upward motion towards the umbilicus;
- If the woman has delivered vaginally after a previous Caesarean section, take care to avoid placing the IUD through any defect in the previous incision;
- By feeling the tip of the Kelly forceps at the fundus, verify the correct position of IUD at the fundus;
- Release the IUD from the Kelly forceps;
- Slowly remove the Kelly forceps from the uterine cavity;
- Examine cervix, if strings can be seen, remove and reinsert IUD;
- Remove the ring forceps from anterior lip of the cervix and remove the Graves speculum;
- Place used instruments in 0.5% chlorine solution for 10 minutes for decontamination;
- Dispose waste materials appropriately.

### B. POST-PLACENTAL MANUAL IUD INSERTION

**Physical Examination**

- Wear HLD or sterile gloves as required throughout clinical procedure;
- Inspect the placenta to make certain that there are no missing parts;
- Palpate the uterus to stimulate the corpus to contract and to confirm size;
- Inspect the external genitalia, vagina and cervix, and using a retractor if necessary, for cervical or vaginal tears;

- If the woman has delivered vaginally after a previous Caesarean section, manually palpate the previous incision to identify any defects that might be present.

**Insertion Tasks**

- Tell patient what is going to be done and encourage her to express discomfort;
- Place a sterile drape over her abdomen;
- Clean the external genitalia;
- Prepare cervix and vagina with liberal application of antiseptic solution;
- Holding the IUD by gripping the vertical rod between the index and the middle fingers, insert it through the cervix and into the uterine cavity;
- Gently release the hand that is holding the cervix with the ring forceps and move it to the abdomen;
- With a free hand, stabilize the uterine fundus by grasping the uterus through the abdominal wall;
- Move the hand holding the IUD in an upward motion towards the umbilicus;
- By palpation with the tip of the fingers holding the IUD, verify the correct position of IUD at the fundus;
- Release the IUD from the fingers;
- Slowly remove the hand from the uterine cavity;
- Place a Graves speculum and examine cervix, if strings can be seen, remove and reinsert IUD;
- Place used instruments in 0.5% chlorine solution for 10 minutes for decontamination;
- Dispose waste materials appropriately.



## C. POST-PLACENTAL FORCEPS IUD INSERTION

**Physical Examination**

- Wear HLD or sterile gloves as required throughout clinical procedure;
- Inspect the placenta to make certain that there are no missing parts;
- Palpate uterus to stimulate it to contract and to confirm size;
- Inspect external genitalia, vagina, and cervix, and using a retractor if necessary, for cervical or vaginal tears;
- If the woman has delivered vaginally after a previous Caesarean section, manually palpate the previous incision to identify any defects that might be present.

**Insertion Tasks**

- Tell the patient what is going to be done and encourage her to express discomfort;
- Place a sterile drape over her abdomen;
- Clean the external genitalia, gently apply a Graves speculum and prepare the cervix and vagina with liberal application of antiseptic solution;
- Gently grasp the anterior lip of the cervix with a sterile or HLD ring forceps;
- Grasp the IUD with a sterile or HLD Kelly forceps;
- Using a “no-touch” technique, gently insert the forceps holding the IUD through the cervix and into the uterine cavity;
- Gently release the hand that is holding the cervix with the ring forceps and move it to the abdomen;

- With a free hand, stabilise the uterine fundus by grasping the uterus through the abdominal wall;
- Move the forceps with the IUD in an upward motion towards the umbilicus;
- By feeling the fundus at the tip of the forceps, verify the correct position of IUD at the fundus;
- Release the IUD from the forceps.
- Slowly remove the forceps from the uterine cavity;
- Examine cervix, if strings can be seen, remove and reinsert IUD;
- Remove the second ring forceps from anterior lip of the cervix;
- Place used instruments in 0.5% chlorine solution for 10 minutes for decontamination;
- Dispose waste materials appropriately.

### 6.27.5 POST-PARTUM INTRAUTERINE DEVICE (PPIUD) INSERTION COUNSELING

- Teach the patient how and when to check for strings;
- Remind her of the warning signs of complications;
- Review information that the IUD does not provide protection against STIs;
- Discuss what to do if she experiences any side effects, complications, or other problems related to her IUD;
- Provide follow-up visit instructions and appointments;
- Remind her of a 10 - 12 year effective life of Copper T-380A IUD;
- Assure patient she can return at any time to receive advice, medical attention, and, if desired, to have the IUD removed;
- Have her repeat the instructions.



## 6.28 SALPINGECTOMY FOR ECTOPIC PREGNANCY

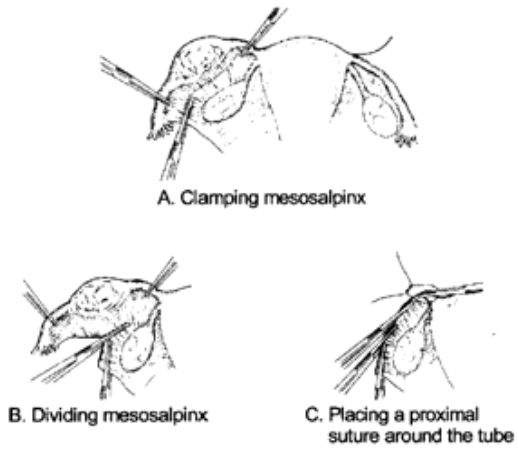
- Review for indication;
- Review general care principles **(Section 1, pages 1 - 29),** operative care principles **(Section 1, pages 30 - 35)** and start an IV infusion **(Section 1, page 19);**
- Start on prophylactic antibiotics**:**
  - Ampicillin, 2 g IV;
  - **OR** cephalosporins
- Open the abdomen:
  - make a midline vertical incision below the umbilicus to the pubic hair, through the skin and to the level of the fascia
  - make a 2 – 3 cm vertical incision in the fascia
  - hold the fascial edge with forceps and lengthen the incision up and down using scissors
  - use fingers or scissors to separate the rectus muscles (abdominal wall muscles)
  - use scissors or fingers to make an opening in the peritoneum near the umbilicus. Use scissors to lengthen the incision up and down in order to see the entire uterus. Carefully, to prevent bladder injury, use scissors to separate layers and open the lower part of the peritoneum
  - place a bladder retractor over the pubic bone and place self-retaining abdominal retractors
- Identify and bring to view the fallopian tube with the ectopic gestation and its ovary;
- Apply traction forceps (e.g. Babcock) to increase exposure and clamp the mesosalpinx to stop haemorrhage;
- Suck blood from the lower abdomen and remove blood clots;
- Apply gauze moistened with warm saline to pack off the bowel and omentum from the operative field;

- Divide the mesosalpinx using a series of clamps **(Figure 94A-C).** Apply each clamp close to the tubes to preserve ovarian vasculature;

- Transfix and tie the divided mesosalpinx with 0 chromic catgut (or polyglycolic) suture before releasing the clamps;

- Place a proximal suture around the tube at its isthmic end and excise the tube;

**Figure 94: Clamping, dividing and cutting the mesosalpinx**




- Close the abdomen:

  - ensure that there is no bleeding. Remove clots using a sponge
  - close the fascia with continuous 0 chromic catgut (or polyglycolic) or nylon 1 suture
  - close the skin with vertical mattress sutures of 3 - 0 nylon (or silk) and apply a sterile dressing



## 6.29 SALPINGOSTOMY

Rarely performed, when there is little damage to the tube, the gestational sac can be removed and the tube conserved. This should be done only in cases where the conservation of fertility is very important to the woman since she is at risk for another ectopic pregnancy.

- Open the abdomen and expose the appropriate ovary and fallopian tube (**page 477);**

- Apply traction forceps (e.g**.** Babcock) on either side of the unruptured tubal pregnancy and lift to view;

- Use a scalpel to make a liner incision through the serosa on the side opposite to the mesentery and along the axis of the tube, but do not cut the gestational sac;

- Use the scalpel handle to slide the gestational sac out of the tube;

- Ligate bleeding points;

- Return the ovary and fallopian tube to the pelvic cavity;

- Close the abdomen.

### POST-PROCEDURE CARE

- Review post-operative care principles **(Section 1, pages 33 - 35);**
- Continue the following combination of antibiotics until she is fever-free for 48 hours:
  - Ampicillin, 2 g IV every six hours
  - **plus** gentamicin, 5 mg/kg body weight IV for 24 hours in three divided doses
  - **plus** metronidazole, 500 mg IV every eight hours

- Give appropriate analgesic drugs;

- Offer other health services, if possible;

- If **salpingostomy was performed**, advise the woman of the risk for another ectopic pregnancy and counsel for family planning.



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## INDEX

**A**

**D**







**E**

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