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LABOUR AND DELIVERY  
MODULE

STUDENT TEXT

1989

Rural Health Development Project  
Ministry of Health and Social Welfare  
Maseru, Lesotho

## ACKNOWLEDGEMENTS

Nurse Clinician training materials are Lesotho adaptations based upon the MEDEX prototype curriculum for training mid-level health workers.

The prototype MEDEX materials were developed by the Health Manpower Development Staff of the John A. Burns School of Medicine, University of Hawaii. The original prototypes were based on training experience in over a dozen third-world countries. These were revised on the basis of HMDS experience in Micronesia, Thailand, Pakistan, and Guyana before being made available to Lesotho under a U.S.A.I.D. funded contract.

Major adaptation in Lesotho began at the National Nurse Clinician Training Programme Curriculum Adaptation Workshop held at Maseru in January 1980. The nearly fifty participants represented all major health and health related activities in Lesotho, both Government and private. These participants and others working as individuals and then as review committees have adapted the Nurse Clinician training materials to meet the conditions and needs of Lesotho.

The Government of Lesotho and particularly the staff of the Nurse Clinician training Programme are grateful to HMDS for supplying the prototype materials and to all those individuals who have helped in the Lesotho adaptation process.

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SCHEDULE  
ANTENATAL, LABOUR & DELIVERY, POSTNATAL

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
8:30	PRETEST	High risk pregnancies,	Labour & delivery dis-	CLINICAL	Episiotomy & Repair
9 AM	Antenatal discussion	discussion. (Session 2)	ussion (Session 4)	-labour & delivery	discussion. (Session 7)
9:30	(Session 1)			-admission labour	Simulated demonstration.
10	ANC forms	Measure hands		-pv assessment/adequacy	
10:30	tea	tea	tea	-records	tea
11	Role play,	Role play,	Labour & Delivery Dis-	-progression of labour	Return demonstrations
11:30	"History taking"	"Identify & teach	ussion (Session 5)	-care of newborn	by students.
12		women with high			
12:30		risk factors/cond."			
1 PM	BREAK	BREAK	BREAK	BREAK	BREAK
2	ANTENATAL CLINIC	Discussion, Examination	Demonstration mechanisms	CLINICAL &/OR SIMULATION	PRACTICAL (includes
3		of a woman with	of labour and manual	PRACTICAL will be	clinical or simulation
4		at term pregnancy.	removal of placenta.	arranged.	of all skills taught to
4:30		(Session 3)	(Session 6) Practice;		this point in the module.
			Delivery, AFGAR, etc.		Tutors will arrange so
			simulation.		students obtain experience.
	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
8:30	PRETEST	Complications of labour	Monitoring Puerperium &	(Session 11) Teach nurse	(Session 12)
9 AM		and delivery discussion	Postnatal Care.	clinician to teach VHW	Newborn examination,
9:30	V.E. discussion	(Session 9)	(Session 10)	Pregnancy Care	discussion & demonstra-
10	(Session 8)		Role play "Counseling"		tion.
10:30	tea	tea	tea		tea
11	Simulated demonstration	Simulated demonstration	Role play "Teaching"		Students return demon-
11:30	of vacuum extraction	breech & rotation of			stration.
12		shoulders	Demonstration, "first		
12:30			hour puerperium"		
1 PM	BREAK	BREAK	BREAK	BREAK	BREAK
2	PRACTICAL & practice	PRACTICAL	PRACTICAL	Village experience	POSTTEST:
3	with V.E. -assemble,				-Antenatal & Postnatal
4	-apply,				-Labour & Delivery
4:30	-technique				

## INTRODUCTION

It is important to be sure that the medical history of each woman be available at the time of her labour and delivery. This will give you information about her conditions which could complicate the labour or delivery as well as endanger the woman's health. The obstetric history, a part of the medical history, will alert you to problems that have occurred with previous pregnancies.

The physical examination should be a general assessment of the woman's condition from head to toe with special attention to the abdomen and pelvis. This should identify any disease that the woman may have which could complicate labour or delivery as well as identify any physical deformities.

The antenatal history and physical exam are discussed in the Antenatal & Postnatal Care Module. If the initial information has been gathered at antenatal visit, you will already have been aware of potential complications and will have referred some women because of their high risk. If the woman has not had antenatal care, it is important to do the history and physical as soon as you see her. Just because everything was normal some weeks or months ago does not assure you that your patient is still healthy and without complicating factors when you see her at term. Therefore, it is important to re-examine your patient at the time of her labour.

It is especially important to pay close attention to the size, shape, position, and consistency of the uterine fundus.

STUDENT GUIDE

EXAMINATION OF THE PREGNANT WOMAN AT TERM

I. Entry Level Knowledge and Skills

Before starting this unit, you should be able to:

- 1. Describe the anatomy and physiology of the female reproductive system,
- 2. Perform an abdominal examination,
- 3. Perform antenatal examination.

II. Objectives

Using the information and experiences provided by the instructor and the unit text, you will be able to:

- 1. Perform an abdominal examination of a pregnant woman at term.
- 2. Determine foetal position.
- 3. Listen to the foetal heart and grade it according to Philpot method.
- 4. Perform a pelvic examination of a pregnant woman at term.
- 5. Measure pelvic adequacy for normal delivery.
- 6. Diagnose when a woman is in labour.
- 7. Maintain the labour graph.

III. Evaluation

MODULE PHASE

Upon completion of this unit, you will be assessed on:

- 1. Knowledge: Written test based on the contents of this unit; acceptable performance, 80%.
- 2. Skills: Your ability to:
  - conduct an abdominal examination of a pregnant woman at term, identifying foetal position and foetal heart tones.
  - conduct a pelvic examination of a pregnant woman at term identifying pelvic adequacy.

### ROTATION PHASE

Upon completion of the rotation phase, you will be assessed on your ability to:

1. Grade foetal heart tones,
2. Diagnose when a woman is in labour,
3. Maintain a labour graph,
4. Prepare a woman in labour.

#### IV. Activities:

In order to accomplish the objectives of this unit, you will participate in the following activities:

1. Read the unit text and answer review questions.
2. Participate in group discussion.
3. Observe abdominal examination of a term pregnant woman conducted by a doctor/midwife.
4. Perform an abdominal examination of a pregnant woman at term with supervision.
5. Observe the pelvic examination of a pregnant woman at term.
6. Perform a pelvic examination of a pregnant woman at term with supervision.
7. Complete a labour graph with supervision.

EXAMINATION OF THE  
PREGNANT WOMAN AT TERM

The examination of the pregnant woman near term requires certain skills and can be divided into several steps.

First, the abdominal examination allows one to determine the position of the foetus, its condition, and whether or not uterine contractions (labour) has begun.

Second, the pelvic exam allows the examiner to assess the condition of the cervix and gives confirming evidence regarding the position of the foetus. This examination must be used rarely and with caution because it may cause uterine contamination.

Third, an evaluation of pelvic size to determine whether the pelvis is large enough to allow a baby to come through must be done on every woman pregnant for the first time.

The following pages, 8 and 9 describe the important elements in the Diagnostic Skills: Abdominal Examination of a Pregnant Woman at Term, and Pelvic Examination of a Pregnant Woman at Term; and in a Clinical Skill: Evaluation of Pelvic Size, page

## DIAGNOSTIC SKILL

## ABDOMINAL EXAMINATION OF PREGNANT WOMAN AT TERM

Supplies

Drape  
Well-lighted room  
Foetoscope or stethoscope

Purpose

To assess foetal position, foetal condition, and uterine contractions.

Steps in the Procedure

## Preparation:

The examination and its purpose should be explained to the woman. She should be asked to urinate so that her bladder will be empty. She should lie on her back with her arms at her sides, her knees slightly flared, and be as relaxed as possible. All clothing must be removed from the abdomen. The drape should be lowered to the symphysis pubis as it is impossible to adequately examine an abdomen that is covered with cloth.

Stand at the patient's right side facing her abdomen.

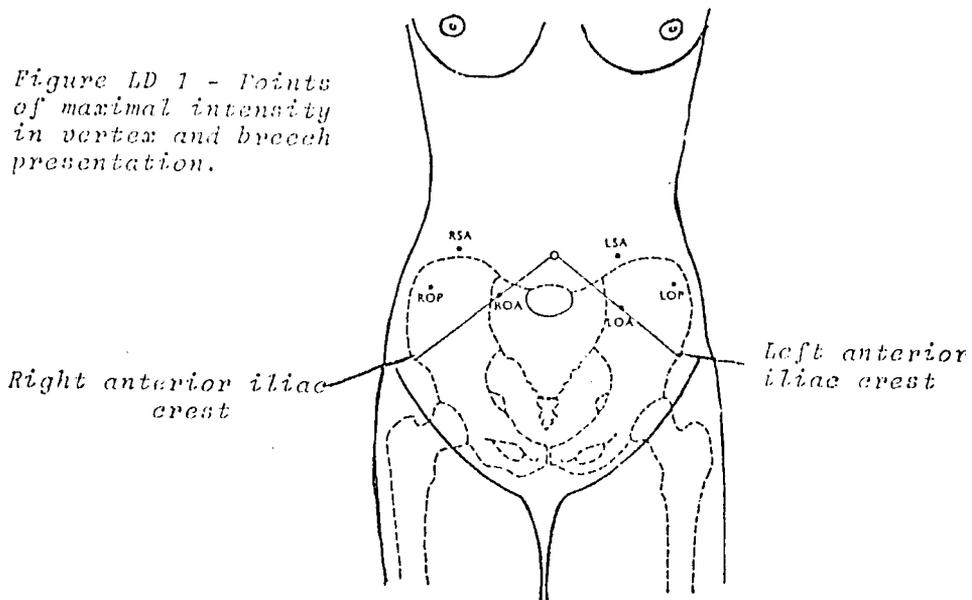
Step 1: Observe the shape of the uterus. When the foetal lie is longitudinal, the uterus is longer than it is broad. When the foetal lie is transverse, the uterus is broader than it is long. It may be possible to diagnose anterior or lateral position of the foetus by observing the position of the smooth prominent back or the lumpy extremities. It may be possible to see movement of an extremity transmitted through the abdominal wall. It may be possible to observe the presence of uterine contractions.

Step 2: Palpate the uterus. Your hands should be clean and warm since cold hands have decreased acuteness of touch sensation and are uncomfortable to the patient. If a contraction occurs, hold one of your hands lightly on the fundus to assess the strength of the contraction and time the length of the contraction. Do not try to assess foetal position or foetal heart rate during a contraction. Begin palpation of the uterus at the pubis.

One hand is placed on each side of the uterus and gentle but deliberate pressure is applied using the palm surface and the fingers with the fingers directed downward. The hands are advanced along the sides of the uterus to the fundus and the foetus is outlined. The head has a distinctive hard outline. The buttocks may also feel firm and rounded but are wider and not as hard, smooth or as well-defined as the head. Outlining may be aided by alternately applying pressure with each hand, by using rotary movements of the fingers, and by "walking" the finger tips of both hands over the abdomen from side to side. Outlining the foetus may be more difficult in the obese patient or in one with much amniotic fluid. If the foetal buttocks are pushed gently to one side, the body will move too, but since the neck is supple, pushing the head similarly will not move the body. If the foetal head is still high in the uterus, it can be moved, but if it is engaged within the pelvis, it cannot be moved.

Step 3: Using a foetoscope, listen to the foetal heart. The foetal heart should be best heard over the foetal left scapula and ribs. (See Figure LD 1). The foetoscope is placed over this area and firmly held in place against the abdomen by pressure from your ear. Do not hold it in place with your hand. This will add confusing sounds. Count the beats per minute and note the rhythm. Foetal heart rate less than 120 or greater than 160 should alert you to possible foetal distress. Soft blowing sounds from the placenta or maternal circulation may heard.

*Figure LD 1 - Points of maximal intensity in vertex and breech presentation.*



## REVIEW QUESTIONS

1. Which of the following are important in the preparation of a woman for labour?
  - she should pass urine
  - she should take nothing by mouth
  - she should be as relaxed as possible
  - her nails should be cut and cleaned
  - should drink nothing for one hour before preparation
  - all clothing should be removed from the abdomen
  - she should lie on her back, knees slightly flared
  - she should be given a sedative
  
2. Select from the following, the three essential steps of the abdominal examination of a pregnant woman at term: (number them 1, 2, and 3)
  - palpate the liver
  - listen to the mother's heart
  - palpate the spleen
  - listen for bowel sounds
  - observe the shape of the uterus
  - palpate the uterus
  - observe the shape of the breasts
  - listen to the foetal heartbeat
  - observe the shape of the pelvis

3. Complete these sentences with the correct word or words:
- When the foetal lie is transverse, the uterus is broader than it is \_\_\_\_\_ .
  - To assess the strength of a uterine contraction, one of your hands should be held lightly over the \_\_\_\_\_ of the uterus.
  - Palpation of the uterus should be begun at the \_\_\_\_\_ .
  - During a contraction, you should not try to assess either foetal \_\_\_\_\_ or foetal \_\_\_\_\_ .
4. How can you tell if the foetal head is engaged?
5. How can the foetal head be differentiated from the foetal buttocks on palpation?
6. Write an "N" beside those heart rates that would be normal for a foetus at term:
- |         |         |
|---------|---------|
| ___ 118 | ___ 112 |
| ___ 124 | ___ 144 |
| ___ 168 | ___ 160 |
| ___ 110 | ___ 138 |
| ___ 120 | ___ 96  |

## FOETAL POSITION

The relation of the foetal to the uterus and pelvis can be described by several relationships. These include:

- 1) Lie
- 2) Attitude
- 3) Presentation
- 4) Position

1. The lie is the relation of the long axis of the foetal to the long axis of the uterus. It should be longitudinal and is in most cases, but may be transverse. The longitudinal lie is usual because of the shape of the foetus and of the uterus. The uterus is oval and thus accommodates the long foetus better in a longitudinal position. In the longitudinal lie, the head or the breech will occupy the lower part of the uterus. When the lie is transverse, a shoulder occupies the lower part of the uterus and the long axis of the foetus lies across the long axis of the uterus. A transverse lie forces an abnormal presentation which makes delivery much more difficult.
2. Attitude is the relationship of the foetal head to the foetal body. It should be one of flexion. The foetus forms a snug, compact, oval mass which matches itself well to the uterine cavity and can be expelled more easily in delivery when the back is flexed. If the attitude is not flexed, labour and delivery will be more difficult. If the attitude is extended, the face will be the presenting part.
3. Presentation refers to the part of the foetus that lies in the lower end of the uterus. There are five presentations: (Vertex) top of the head is most common, then breech, then shoulder, then face and brow. Vertex, face and brow are all head presentations. When the head is flexed, the vertex presents. This is preferable. When the head is extended, the face presents. When it's partway between, the brow presents.
4. Position is the relation of the presenting part of the foetus to the pelvis. There are six possible positions for any presentation. They are:
 

- Right Posterior	- Left Posterior
- Right Lateral	- Left Lateral
- Right Anterior	- Left Anterior

Thus, the description of a foetal position could be: longitudinal lie, flexion, left occiput lateral.

Anterior positions are more favourable than posterior because the foetal back better fits the mother's abdominal wall and can, therefore, flex better. When the back is flexed the head tends also to flex and a smaller portion goes through the pelvis. There is also more room in the anterior pelvis for the broad part of the head.

#### REVIEW QUESTIONS

1. Match the descriptions in the left hand column with the technical terms in the right hand column:
 

<input type="checkbox"/> the relation of the long axis of the foetus to the long axis of the uterus	a. attitude
<input type="checkbox"/> the relationship of the foetal head to the foetal body	b. lie
<input type="checkbox"/> the part of the foetus that lies in the lower part of the uterus	c. position
<input type="checkbox"/> the relation of the presenting part of the foetus to the pelvis.	d. presentation
  
2. Select the word/phrase that most correctly describes a transverse lie:
  - left lateral
  - flexion
  - head or breech occupies lower part of uterus
  - vertex
  - a shoulder occupies the lower part of the uterus
  - long axis of foetus lies across the long axis of uterus
  - foetus forms a snug, compact, oval mass
  - face will be the presenting part
  - right anterior
  - breech

4. Give definitions for these words:

long axis

longitudinal

transverse

flexed

extended

vertex

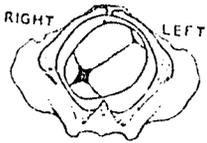
breech

posterior

anterior

lateral

5. Describe this position:



## FOETAL HEART SOUNDS

The foetal heart sounds are heard over the area at which the foetal back comes in contact with the uterine wall. They should be listened for at every visit after the 20th week of pregnancy. The presence of foetal heart sounds is proof that the foetus is alive. The absence of foetal heart sounds after the 20th week when they have previously been heard is suggestive of intra-uterine death. However, this absence alone at one visit is not diagnostic. You should listen again in a week or less and if they are still not heard, the mother should be referred to a doctor. Since the foetus moves about, the sounds may be found in different locations from week to week.

You should be able to predict where on the mother's abdominal wall you will best hear the foetal heart on the basis of your determination of foetal position.

You may hear a soft blowing sound which occurs at the same time as the maternal pulse. This is caused by the large uterine vessels. Occasionally you may hear a high pitched blowing sound at the same time as the foetal heart sound. This is caused by the blood flowing through the cord.

If the placenta is positioned anteriorly, the foetal heart sounds will be more faintly heard. They may be likened to hearing the ticking of a watch under a pillow. You may also hear foetal movement or intestinal rumbling.

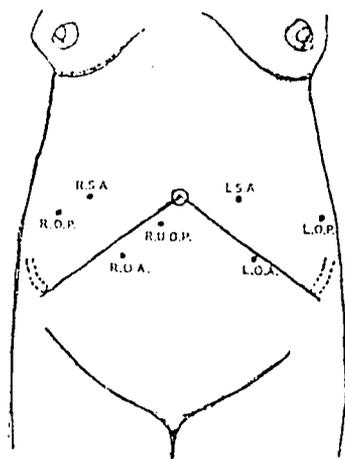


Figure 1D 2

Normal foetal heart rates are 120 to 160 per minute. It is wise to palpate mother's pulse while listening for the foetal heart rate since if the maternal pulse is rapid, the two may be confused. Listening for the foetal heart sound is rarely of value in trying to diagnose multiple pregnancies since the heart sounds of a large foetus may also be heard over a wide area.

The foetal heart is the best guide you will have as to how the foetus is doing. The normal rhythm is a double beat. You should listen during, before and after a contraction.

The foetal heart rate should be graded according to the following by Philpott:

- Grade 1: Normal 120/160/min, no change during or after contraction.
- Grade 2: Abnormal above 160/min or between 100-120/min with no change during or after contraction.
- Grade 3: A slowing early in the contraction (early deceleration) which returns to the baseline before the end of the contraction. If a baseline rate is normal this is defined as a Grade 3a, or abnormal a Grade 3b.
- Grade 4: A slowing late in the contraction (late deceleration) which does not return to the baseline rate until at least 30 seconds after the contraction is completed. If baseline rate is normal this is Grade 4a, if abnormal Grade 4b.
- Grade 5: A rate persistently less than 100 beats/minute.

During the first stage of labour the foetal heart should be listened to at least every half hour and more frequently if there is any indication of complication or ruptured membranes. Toward the end of stage one, FHR should be checked progressively more often.

Foetal distress is indicated with a persistent abnormal foetal heart pattern.

#### REVIEW QUESTIONS

1. Write the letter "R" next to each of these signs that would cause you to refer a pregnant woman to a doctor:
  - \_\_\_ the absence of foetal heart sounds after the 20th week, when they had previously been heard,
  - \_\_\_ foetal heart sounds like the ticking of a clock under a pillow,
  - \_\_\_ a soft, blowing sound occurring at the same time as the maternal pulse,
  - \_\_\_ a high-pitched blowing sound at the same time as the foetal heart beat,
  - \_\_\_ Foetal heart rate decreases by more than 20 beats/min. during a contraction, returns to normal baseline before end of contraction.

- Marked slowing of the foetal heart rate late in the contraction returns to normal baseline 30 seconds after contraction
- foetal heart sounds in different locations at each prenatal visit.
2. Match the phrases in the left column with the "causes" listed in the right hand column:
- |  |   |
|--|---|
| <input type="checkbox"/> faint foetal heart sounds                                     | a. blood flowing through the cord       |
| <input type="checkbox"/> irregular foetal heart sounds                                 | b. foetal distress                      |
| <input type="checkbox"/> foetal heart sounds at different locations                    | c. placenta positioned anteriorly       |
| <input type="checkbox"/> marked slowing of foetal heart rate after uterine contraction | d. circulation in large uterine vessels |
| <input type="checkbox"/> high-pitched blowing sound at same time as foetal heartbeat   | e. foetal anoxia                        |
| <input type="checkbox"/> soft blowing sound at same time as maternal pulse             | f. foetus moves around                  |
3. Mark with a cross those phrases that could be used to complete this sentence correctly:
- "The foetal heartbeat should be listened to every five minutes ....."
- when the placenta is positioned anteriorly,
- in multiple pregnancies,
- if there is any indication of complications,
- toward the end of stage one,
- when the membranes rupture,
- if the foetal heartbeat is irregular, intermittent, or weak.

DIAGNOSTIC SKILL  
PELVIC EXAMINATION OF TERM PREGNANCY WOMAN

Supplies

Drape

Well-lighted room

A pair of sterilized surgical gloves

Sterilized small bowl

Examining table or bed

Antiseptic solution

Sterile Cotton balls

Purpose

To assess cervical condition and foetal position.

- Indications -
- 1) To decide whether a woman is in labour.
  - 2) To monitor progression of labour.
  - 3) To assess presentation, especially on obese patient or one with rigid abdominal wall.
  - 4) Before giving enema to multiparous patient having strong contractions in case she is nearing the second stage of labour.

One pelvic examination is often adequate. The more you do, the greater the risk of infection.

Steps in the Procedure

Preparation:

The examination and its purpose should be explained to the woman. Ask the woman to urinate to empty her bladder thus lessening the discomfort of the exam. The patient should remove her clothes from the lower part of her body. The patient should lie on an examining table with her legs apart and knees bent (lithotomy position). (See Figure LD 3). Antiseptic should be placed in the small bowl over several sterile cotton balls.

Step 1: Wash the patient's thighs and vulva.

Step 2: Wash your hands and put on sterile gloves.

Step 3: Using your right hand pick up the cotton ball from the bowl containing the antiseptic solution; transfer the cotton ball to your left hand without allowing your hands to touch each other, and using the left hand swab the vulva. Each cotton ball is used for only one wipe which is always done in a direction away from the vagina. (Note:



*Figure LD 3*

the right hand is to remain sterile for use in examining the vagina. Therefore, the right and left hands must never touch each other.)

- Step 4: The right, index and middle fingers are dipped into the antiseptic solution. The labia are held apart by the left thumb and index finger and the right index and middle fingers are gently introduced into the vagina. (Note: Keep the other fingers of the right hand away from the anus.) Once inserted into the vagina the fingers are not to be withdrawn until the examination is completed. Withdrawal and reinsertion would increase the risk of infection.
- Step 5: Assess vaginal condition. The walls should be warm, moist, soft and stretchy. Any hardening or scar tissue should be noted. Bladder condition, faeces in rectum, cystocele or rectocele should be noted.
- Step 6: Assess the cervix. Prior to labour the cervix is firm with a canal of up to 3 cm in length (Figure LD 4). In multiparous women the cervix easily admits a finger where in a primiparous woman it is usually impossible to enter the cervix without a dilating instrument. During labour the cervix begins to shorten (effacement) and softens (Figure LD 5). Full effacement is identified when no canal is present (Figure LD 6). Full dilation occurs (see Figure LD 7) when the cervix is not palpable on vaginal examination. A small baby is able to deliver without complete cervical dilation.

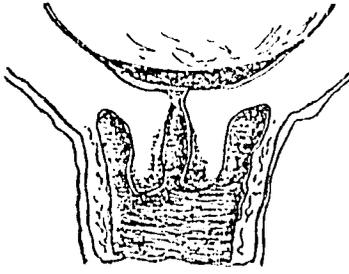


Figure LD 4

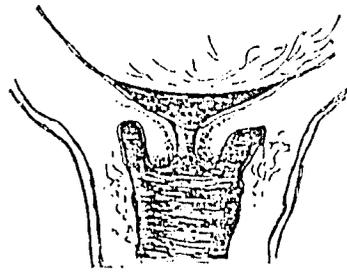


Figure LD 5

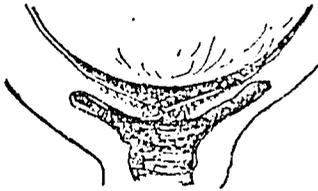


Figure LD 6

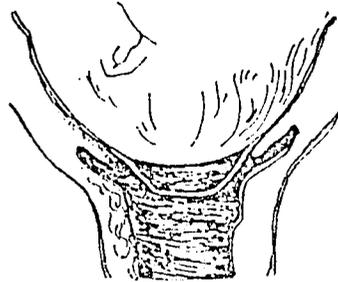


Figure LD 7

Step 7: Assess the membranes and bag of waters. This may be difficult if the membranes stick to the presenting part. During a contraction they become tense and can be more easily felt with fluid between them and the presenting part. If there is doubt as to whether the membranes have ruptured, upward pressure on the presenting part between contractions may allow fluid to escape.

Step 8: Assess the level of the presenting part. (See Figure LD 8 on next page). The head that is five-fifths above is entirely above the brim; four-fifths is just entering the brim. When there is three-fifths above, the hands, on abdominal palpation, can still go partially round the head. When two-fifths above, the hands splay outwards because more than half of the head had entered the brim. When one-fifth above, only the sinciput can be tipped abdominally and 0-fifths represents a head entirely in the pelvis. The number of fifths is plotted on the cervicograph with an 'O'.

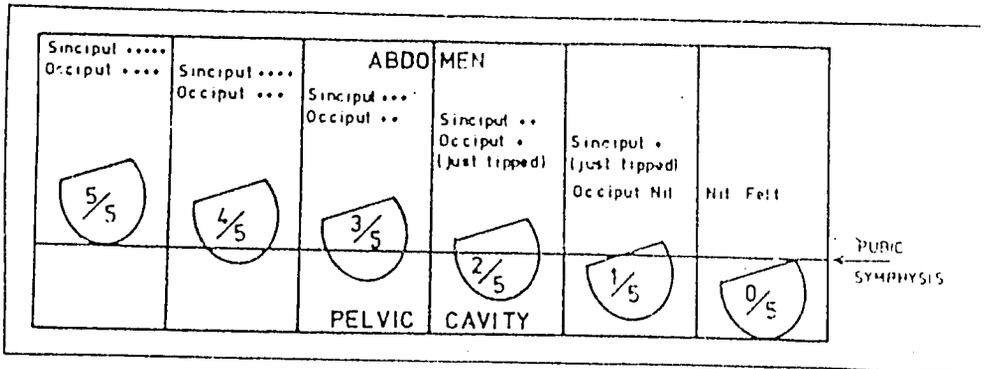


Figure LD 8 - Level of the head above the brim,  
measured by abdominal palpation.

- Step 9: Assess the presentation. In most cases the vertex of the foetal skull presents and presentation can be recognized by palpation of skull bones, fontanelles, and suture lines. The anterior fontanelle is diamond-shaped, about 2.5 x 1.25 cm and can be recognized as the junction of four sutures. The posterior fontanelle is triangular, is small and can be recognized as the junction of three sutures. Presentation can be determined by which fontanelle lies anterior and whether it lies to the left or right side of the pelvis.
- Step 10: Assess the degree of moulding. This can be determined by the amount of overlapping of the skull bones.
- Step 11: Note any abnormalities. These might include bleeding, presentation of the cord, anencephaly, hydrocephaly, unusual presentation, etc.
- Step 12: Remove your hands, return the patient to the appropriate position, and NOTE YOUR FINDINGS ON THE LABOUR CHART.

## LABOUR GRAPH

A composite labour graph should be used for every patient admitted to a labour ward. The graph displays observations made during labour in an easier-to-read manner. Detailed record of findings and interpretations of findings of the graph should be made on a separate page.

The three major features of this graph by Philpott are:

- A. Foetal condition
- B. Labour progress
- C. Maternal condition

Zero time is taken as the time of admission to the hospital rather than the time on onset of labour prior to admission. The actual time and the number of hours since admission are recorded to alert the nurse clinician to the passage of time.

### A. FOETAL CONDITION:

This is recorded in the top portion of the chart and includes:

- 1. Foetal heart rate
- 2. Condition of liquor
- 3. Degree of moulding of the foetal head

1. Foetal heart rate is counted before, during and after a contraction. It is graded 1-5 and recorded every half hour during labour.

Grade 1: Normal 120/160/min, no change during or after contraction.

Grade 2: Abnormal above 160/min or between 100-120/min with no change during or after contraction.

Grade 3: A slowing early in the contraction (early deceleration) which returns to the baseline before the end of the contraction. If a baseline rate is normal this is defined as a Grade 3a, if abnormal a Grade 3b.

Grade 4: A slowing late in the contraction (late deceleration) which does not return to the baseline rate until at least 30 seconds after the contraction is completed. If baseline rate is normal this is Grade 4a, if abnormal Grade 4b.

Grade 5: A rate persistently less than 100 beats/minute.

2. The liquor and condition of membranes are recorded using the following:

'I' = membranes intact  
 'C' = membranes ruptured, clear liquor  
 'M' = membranes ruptured, meconium-stained liquor

3. Moulding should be assessed with each vaginal examination and recorded:

- = bones normally separated  
 + = bones touching each other  
 ++ = bones overlapping but on digital pressure can be easily separated  
 +++ = bones overlapping and on digital pressure cannot be separated

#### B. LABOUR PROGRESS

The rate of progress of labour is shown by:

1. The rate of cervical dilation
2. The rate of descent of the presenting part
3. The duration and frequency of uterine contractions

1. Cervical dilation is determined by vaginal examination and plotted as an 'X' on the graph. Time for the next vaginal examination should be planned and marked with an arrow as shown on the graph. If the progress of cervical dilation does not remain on the left of the alert line but crosses it, the labour should be considered high risk and preparations for transfer made.
2. Descent of the head is plotted on the graph with 'O' refer to Figure LD 8, (level of the head above the brim, measured by abdominal palpation.) The rate of the head should be related to moulding as the two features combined give an idea of the degree of cephalo-pelvic disproportion present.
3. Uterine contractions are recorded every half hour using the following example of a labour graph. (Page 24)

#### C. MATERNAL CONDITION

The mother's condition and any treatment given are recorded in the bottom part on the chart. Refer to the following example of a labour graph. (Page 24)



CLINICAL SKILL  
EVALUATION OF PELVIC SIZE

Supplies:

Gloves  
Examining table  
Patient's record

Purpose of Procedure

The purpose of this procedure is to determine the adequacy of the pelvic structures to permit delivery of a normal sized baby.

It should be done in every primiparous woman and in any multiparous woman in whose case there is a question of adequacy by history. The best time to do this examination is between the 36th and 38th week. It should certainly be done before labour begins if at all possible since if inadequate size is noted the woman must be referred to the hospital for delivery.

Steps in Procedure

- Step 1: After she has emptied her bladder, the patient is placed in position for a pelvic examination.
- Step 2: Using sterile well-lubricated gloves, the index and middle fingers of your right hand are inserted into her vagina. Reach as far back as possible attempting to reach the sacral promontory. This should be as high on the sacral bone as you can reach. While your fingertips are against the sacral promontory, mark the place on that hand where it contacts the lower border of the symphysis pubis. The length from the fingertips to this point is measured after you withdraw your hand. This length should be 12 cm or greater. (Figure LD 9)

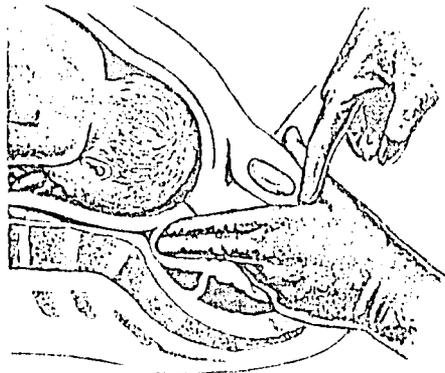


Figure LD 9

- Step 3: Note the curve of the sacrum.
- Step 4: The ischial spines are palpated on each side to see if they are unduly prominent decreasing the space available.
- Step 5: The sacro-sciatic notch should be evaluated. It should accommodate two fingers.
- Step 6: Note the angle of the pubic arch. It should accommodate two fingers.
- Step 7: After completing the pelvic examination, evaluate the distance across the lower outlet. Place the woman on her side with her knees drawn up. Place the knuckle of your middle finger on the posterior border of her anus and insert the middle joints of your gloved fist between the tuberosities directed slightly backward. The distance between the tuberosities should be 9 cm or greater measured in this way. Knowing the width of your fist you should be able to determine the adequacy of the outlet. (Figure LD 10).
- Step 8: Record your findings.

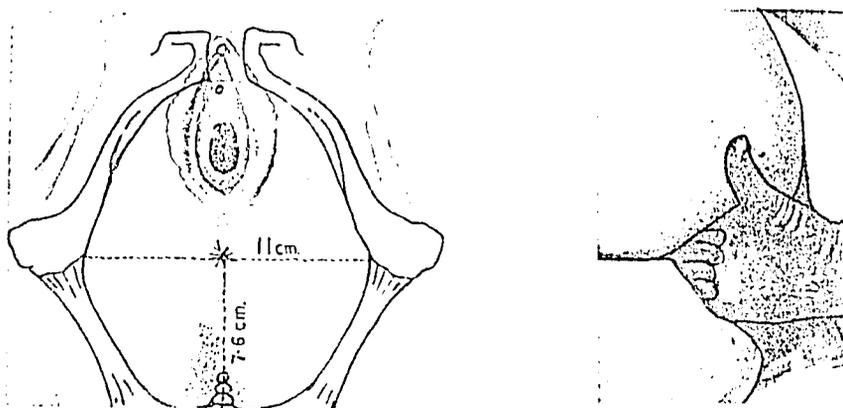


Figure LD 10

LABOUR  
DIAGNOSIS OF LABOUR

During the three weeks before labour begins, signs often appear suggesting that labour is approaching. These include:

- 1) Lightening
  - 2) Frequency of urination
  - 3) False pains
  - 4) Taking up of the cervix
1. Lightening is a sinking of the uterus as the pelvic bone widens and the pelvic floor relaxes. The lungs, heart and stomach are no longer as crowded so it is easier to breathe and there is a feeling of decreased pressure described as "lightening". Walking becomes more difficult and there may be aches in the back or pelvic joints. The effects are less noticeable in multiparous women than in primiparous.
  2. Because of the change in position of the uterus, there is pressure on the bladder. This limits its capacity and forces frequent urination.
  3. False pains may cause real discomfort but are not labour. They are erratic and irregular. They may last for several minutes and are not accompanied by backache.
  4. On pelvic examination, the cervix can be noted to be shortening itself as it is readied for dilation. (Figures LD 4, 5, and 6.)

The signs of true labour are:

- 1) Painful rhythmic uterine contractions.
  - 2) Dilation of the cervical opening
  - 3) Show
1. Uterine contractions begin painlessly with pain increasing in intensity to a peak and then diminishing. They are felt as tightening or pain. The uterus feels hard to the touch during a contraction. They rarely exceed one minute, recur with rhythmic regularity, and are often accompanied by some backache.
  2. The cervix is shortened and the opening dilates to allow passage of the foetal head. The membranes may be felt as tense during a contraction. (Figure LD 7)
  3. Show is a blood-stained thick mucous discharge that occurs within a few hours before or after the start of labour.

## REVIEW QUESTIONS

1. Mark with the letter "L." those signs that would suggest that labour would soon occur:
  - constipation
  - frequency of urination
  - rapid heartbeat
  - sweating
  - rise in temperature
  - lightening
  - false pains
  - dry mouth
  - taking up of the cervix
  
2. Circle the phrases that accurately describe false labour and labour contractions:
  - a. False labour:
    - may cause real discomfort
    - erratic and irregular
    - may last several minutes
    - rhythmic and regular
    - are accompanied by backache
    - are always present
  
  - b. Labour contractions:
    - may begin painlessly
    - erratic and irregular
    - may last several minutes
    - are accompanied by backache
    - are rhythmic and regular
    - may not be painful
  
3. Give definitions of these words and phrases:
  - false labour
  
  - lightening
  
  - show
  
  - frequency of urine
  
4. Describe the steps in assessing pelvic adequacy.

## STUDENT GUIDE

## PREPARATION FOR AND NORMAL PROGRESSION OF LABOUR

## I. Entry Level Knowledge and Skills

Before starting on this unit, you should:

1. Be familiar with the meaning of the terms "sepsis" and "asepsis".
2. Have completed Unit 1 of this module.

## II. Objectives

Using the information and experiences provided by the instructor and the unit text, you will be able to:

1. Discuss the importance of emotional support during labour.
2. Discuss the importance of asepsis during labour.
3. Perform needed prep of a woman in labour, including urinary catheterization.
4. Identify the different stages of labour.
5. Discuss normal progression of labour.
6. Discuss the appropriate use of medications during labour.

## III. Evaluation

MODULE PHASE

Upon completion of this unit, you will be assessed on the following:

1. Knowledge: Written test based on the contents of this unit.
2. Skills: Your ability to:
  - perform urinary catheterization of an adult female patient
  - manage the preparation of a woman in labour
  - maintain a labour graph

ROTATION PHASE

Upon completion of the rotation phase, you will be assessed on:

1. Emotional preparation of a woman in labour.
2. Physical preparation of a woman in labour (perineal, bowel, urinary).
3. Maintain and interpret labour graph.
4. Manage a woman in labour: activity, diet, emotional support, medications.

#### IV. Activities:

In order to accomplish the objectives of this unit, you will participate in the following activities:

1. Read the unit text and answer review questions.
2. Participate in group discussion.
3. Participate in role-play: "Emotional support of a woman during the onset of labour".
4. Observe a woman at onset of labour.

## PREPARATION OF THE WOMAN IN LABOUR

### Emotional Support

The emotions of the woman in labour influence her reaction to discomfort and pain determining the amount of physical and mental exhaustion she will experience. The nurse clinician must remember that the birth of a baby is an important family affair. Husbands and other relatives should be included in the entire event if they so wish. The nurse clinician's interest and understanding has a reassuring effect on the woman in labour and on her family.

### Asepsis

There are several things that the nurse clinician can do to help prepare the woman in labour to prevent sepsis. Anything that remove germs which could contaminate the birth process may prevent complications and potentially life-threatening infection. Your attention to cleanliness and sterile technique are very important.

### Perineal Care

The perineal area (between the vulva and anus) may have the hair clipped if an episiotomy is being considered.

### Bowel Care

It is wise to empty the lower bowel of every patient at the beginning of labour. The best method of emptying the lower bowel in early labour is usually an enema. It is more immediate and more thorough than a suppository.

Since there are connections between the nerves of the uterus and of the bowel, stimulating the bowel tends to stimulate uterine contractions. This is often useful early in labour.

Since the colon and rectum pass through the pelvic canal, a loaded rectum occupies space that the foetus could use on its descent.

If the lower bowel is not emptied, the descending foetus will usually do the job for you but immediately before and during the delivery. This does make the maintenance of asepsis more difficult!

The enema is contraindicated in a woman suffering from eclampsia or haemorrhage. It is also unwise in the already dilated multiparous woman.

During labour, urine and stool should be passed into a bedpan which may be placed on a chair or short stool, rather than a toilet. This allows you a chance to observe output and is a safety measure since the sensation of urge to pass stool and that to pass a baby may be similar.

#### Urinary Care

It is very important to pass urine often (at least every three hours) throughout labour. The bladder is being squeezed by the delivery process which greatly decreases its capacity. A full bladder may slow the descent of the foetus. It may cause unnecessary pain during labour. It may lead to urinary retention after delivery. It may lead to poor uterine contractions. And it may be bruised which can lead to the very difficult long-term complication of a vesico-vaginal fistula. A full bladder with increased pressure can produce pressure on the sphincter making voiding impossible. This may require catheterization. Catheterization must always be done under strict asepsis. See Therapeutic Skill Urinary Bladder Catheterization.

#### General Cleanliness

A shower or sponge bath on admission may be taken depending on the intensity of the labour. After the enema, a thorough cleansing of the perineal area with soap and water should be performed in preparation for delivery.

## REVIEW QUESTIONS

1. From the following, select what you think is the MAIN purpose of physical preparation of the woman for labour. Mark your selection with a cross.  
 to stimulate the bowel  
 to prevent urinary retention  
 to prevent infection  
 to inspect the hair for pediculi
2. Which of the following could result from a full bladder during labour?  
 poor contractions  
 vesico-vaginal fistula  
 unnecessary pain  
 slowing of the descent of the foetus  
 urinary retention  
 bruising of the bladder
3. Give three examples of cases in which it would be unwise to give a preparatory enema to a woman in labour.
  - 1.
  - 2.
  - 3.
4. Discuss emotional support of a woman in labour.

## NORMAL PROGRESSION OF LABOUR

Labour is the process of expelling the foetus, placenta, and membranes from the uterus. Labour demands the woman's total participation (physical and emotional).

### Activity During Labour

The woman in labour should be encouraged to maintain positions that she finds comfortable. The only reason for lying down is to rest and relax if she is feeling tired or if there are complications, i.e., premature rupture of membranes, multiple pregnancy, etc.

In the upright position (walking and sitting) the antero-posterior diameter of the pelvis enlarges slightly assisting the force of gravity to enable the foetus to move lower in the pelvis.

### Diet

Lack of food and dehydration must be prevented to provide adequate energy for the labour process. The nurse/clinician should encourage the woman in labour to take nourishing foods and drinks during early labour. Easily digested foods like porridge with milk, non-greasy soups, toasted bread and tea, fresh fruit juice or fruit jelly or puddings if available must be eaten during the latent phase of labour. In the active phase, oral feeds and fluids are better withheld because pain and nervous tension retard absorption of food. If labour seems prolonged, then intravenous dextrose 5% should be given.

### Stages of Labour

There are three stages of labour. The first is that of complete dilation of the cervix. The second is that of the expulsion of the foetus. The third is the separation and expulsion of the placenta and membranes.

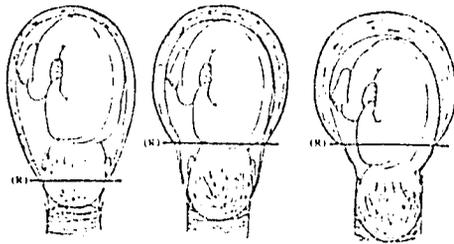
### Duration of Labour

The duration of labour varies widely. Among identified factors affecting duration are whether this is the woman's first baby or not, the length of time since the birth of her last child, pelvic size, foetal presentation, strength of contractions and the general physical and emotional condition of the mother. The total time should be less than 24 hours. The majority of this is in the first stage. Second stage may last from a few minutes in a multiparous woman to a couple of hours in a primiparous woman. Third stage is usually less than 30 minutes.

## STAGE ONE

Stage one involves three functions: the contractions of the uterine muscle, the thinning and dilation of the cervix uteri, and the rupture of the bag of waters. Stage one is divided into two phases - the latent phase which is from the beginning of regular contractions, to 3 cm cervical dilation; it lasts for about 6-8 hours in a Primigravida - the active phase which is from 3 cm cervical dilation to full dilation. During this phase, cervical dilation takes place at the rate of 1 cm an hour.

A. Uterine contractions are involuntary. With contractions, the muscle fibres become shorter and thicker. Between contractions, the muscle fibres retain some of the retraction without completely relaxing. Contractions last about a minute; if longer the oxygen supply to the foetus is reduced. Contractions are rhythmic with decreasing intervals usually beginning about 15 minutes apart early in stage one. By the end of stage two, the contractions are regular 2-3 minutes apart. The contractions start in the fundus of the uterus and spread downward. They are stronger and longer in the upper segment uterus. This allows the lower segment of the uterus to dilate so that the foetus can leave the uterus.



*Figure 1D 11 - As the upper segment of the uterus contracts and retracts, the lower segment of the uterus has to "thin out" until the cervix is fully dilated and the foetus leaves the uterus.*

A ridge forms where the thick upper segment and the thin lower segment meet. This is normal. In obstructed labour the foetus has nowhere to go as the uterus contracts. In this case the ridge between the segments can be felt and seen as a depressed ridge running across the lower part of the abdomen above the symphysis pubis. This warning sign of obstruction and possible uterine rupture requires immediate referral.

B. The thinning and dilation of the cervix involves the 'taking up' of the cervix by which it becomes continuous with the lower uterine segment. The bag of waters and the presenting part assist in the dilation by applying pressure to the cervix. (See Figure LD 12.) Voluntary bearing down before complete dilation may lead to oedema of the cervix.



Figure LD 12 - 'Taking up' of cervix with pressure from bag of waters.

C. When the lower segment uterus stretches, the membrane becomes detached from it and the increased intrauterine pressure causes the loosened part of the sack to bulge downward into the cervix. It is advantageous for the membranes to remain intact until the cervix is completely dilated.

#### REVIEW QUESTIONS

1. List the three functions of Stage one labour and describe.
  - 1)
  - 2)
  - 3)

2. Discuss the diet of a woman in labour.
  
  
  
  
  
  
  
  
  
  
3. From the following, select those cases in which a woman in labour should be resting in bed. Mark your selections with crosses.
  - at the onset of labour
  - if she is tired at the onset of labour
  - when the "false" labour occurs
  - when the membranes rupture prematurely
  - in a multiple pregnancy
  
4. Which of the following can affect the duration of labour? Mark those items that do affect it with the letter "D".
  - number of babies woman has had
  - how long has passed since last baby was born
  - age of the woman
  - temperature of the room
  - foetal presentation
  - emotional condition of mother
  - strength of contractions
  - size of woman's pelvis
  
5. Mark with a letter "R" the warning sign that shows that there is obstruction and the uterus is about to rupture.
  - a thick, mucous discharge
  - rupture of the membranes
  - shortening and thinning of the cervix
  - visible or palpable depressed ridge in lower abdomen
  - two minutes only between contractions
  - oedematous anterior lip of the cervix

6. Complete the following sentences:

- a. The first stage of labour is divided into the \_\_\_\_\_ and the \_\_\_\_\_ phase; the latter starts when the cervix is 3 cm. dilated and during this phase the cervix dilates at the rate of \_\_\_\_\_ an hour.
- b. A woman whose cervical dilation is 4 cm. at 10 a.m. should deliver by \_\_\_\_\_.
- c. If progress of cervical dilation crosses the \_\_\_\_\_ of the labour graph, the labour should be considered at \_\_\_\_\_ and the patient transferred to hospital.
- d. If regular contractions have continued but at the end of 8 hours after admission cervical dilation has not reached 3 cm. i.e. active phase, this must be diagnosed as \_\_\_\_\_ phase and the patient should be \_\_\_\_\_.
- e. In remote health units where transport facilities are poor it is necessary to screen patients before labour starts so that all suspects of \_\_\_\_\_ should be sent to hospital right away.

## USE OF MEDICATIONS IN STAGE ONE LABOUR

The use of medications during labour can be a difficult decision. It must be constantly kept in mind that not one, but two patients will be medicated since most medications will cross the placenta and affect the foetus. Desirable effects on the mother may well be most undesirable on the foetus.

Every woman in labour should be given the maximum relief from pain that is consistent with her own and her infant's safety. But medications are not the only means whereby pain can be relieved. By creating a peaceful atmosphere for labour, by suggestion, by relaxation and by having a prepared mother, you can prevent or alleviate much pain.

Pain is detrimental during labour when it exhausts the woman physically and emotionally. A vicious cycle is set up in which the exhaustion reduces the pain threshold which worsens the pain which worsens the exhaustion. Therefore, there are times when an analgesic medication is required during normal labour. When pain medications are given late in labour they are often at peak effect at or after delivery causing a depressed baby; thus, giving them earlier to break the pain cycle and to allow rest may be the better course.

Among medications that you may have to administer are Chloral Hydrate 1 to 2 grams; pethidine - 100 mg IM; or promethazine 50 mg IM alone. The latter will be useful in promoting sedation and preventing vomiting. None of these medications should be given late into labour because they will depress the newborn.

Oxytocins should not be used by the nurse clinician before or during the first stage of labour to stimulate contractions.

Antibiotics are required whenever there is more than 24 hours between rupture of the membranes and delivery. They are also required in the presence of a maternal fever greater than  $37.5^{\circ}\text{C}$ . Ampicillin 500 mg every 6 hours is a usual choice. Tetracycline is not recommended for long term treatment because of its effect on the bones and teeth of the infant.



STUDENT GUIDE  
ASSISTING DELIVERY

I. Entry Level Knowledge and Skills

Before starting on this unit, you should have successfully completed all previous units in this module. (Acceptable performance, 80%.)

II. Objectives

Using the information and experiences provided by the instructor and the module text, you will be able to:

1. Describe the progress of labour and mechanisms of delivery.
2. Identify the signs of foetal distress.
3. Identify the signs of maternal distress.
4. Discuss the considerations involved in rupture of the membranes.
5. Assist in normal delivery at a health unit.
6. Demonstrate procedure for cutting the umbilical cord.
7. Assist in home delivery.
8. Describe the initial assessment of the newborn.
9. Describe the manual removal of a placenta.

III. Evaluation

MODULE PHASE

Upon completion of this unit, you will be assessed on:

1. Knowledge: Written test based on the contents of this unit. Acceptable performance, 80%.
2. Skills: Your ability to:
  - assist in a normal delivery
  - tie and cut umbilical cord
  - delivery placenta
  - care for newborn (initial assessment and resuscitation)

ROTATION PHASE

Upon completion of this rotation phase, you will be assessed on:

- managing a normal delivery, including newborn in health unit or home.
- manual removal of a placenta

## IV. Activities:

In order to accomplish the objectives of this unit, you will participate in the following activities:

1. Read the unit text and answer review questions.
2. Participate in group discussion.
3. Observe normal delivery.
4. Assist in at least one normal delivery.
5. Observe cutting of the umbilical cord.
6. Observe the delivery of normal placenta.
7. Observe and perform initial assessment of newborn.
8. Participate in simulated home delivery.

## GENERAL PROGRESSION OF BIRTH PROCESS

## (Labour Stage Two)

It is not always easy by observation to tell when the transition from stage one to stage two of labour occurs. There is only one positive sign - the full dilation of the cervix. This can only be confirmed by a vaginal examination. There are, however, a number of probable signs that can be useful and help you avoid repeated vaginal examinations which always include the possibility of introducing infection. These include:

- A. Change in the type of contraction to the expulsive type with involuntary bearing down;
- B. A trickle of blood may occur from small lacerations of the cervix - but this can occur with a partially dilated cervix or may not occur at all;
- C. The anus may be seen to be "pouting" and gaping. This can occur with a deeply engaged head late in the first stage but usually indicates second stage;
- D. Gaping of the vulva in the primiparous woman is usually significant. In the multiparous woman the relaxed state of the tissues makes this sign unreliable;
- E. Appearance of the presenting part is usually a useful sign but not always, as for instance in the case of a foot presenting in a footling breech when dilation need only be partial for the foot to be seen;
- F. Bulging of the perineum is a good late sign usually indicating that delivery is imminent.

Duration

The importance of diagnosing stage two labour is in allowing for the timing of the duration. It should be short. It may be as short as a few minutes. It should be no longer than 30 minutes in the multiparous woman or one hour in the primiparous woman. Prolonged beyond this there may be danger to both the mother and the child.

Phases

There are two phases to the second stage of labour:

1. The phase of descent in most multigravidous women is completed within minutes after full cervical dilation. In the primiparous woman the presenting part should be showing within 30 minutes. If it is not, a vaginal examination should be made to determine why not.
2. The perineal phase should last no more than 30-45 minutes. There should be advance with each contraction. Lack of advance within 15 minutes with good contractions is a danger sign.

Monitoring

Monitoring during this stage must be continuous. The foetal heart should be listened to after each contraction in order to be alert of developing foetal distress. If foetal distress is suspected, the foetal heart should be listened to before, during and after each contraction. The point at which it can be heard will move downward and toward the midline as descent occurs.

Maternal condition should be checked with the taking of pulse every ten minutes and observation of contractions. Contractions should be closely watched for strength, frequency and duration and whether the uterus relaxes between them.

General Care

Because of the danger of aspirating vomitus, only sips of water or glucose water should be permitted at this stage. The bladder should be emptied at the end of the first stage/start of the second stage. If the woman cannot do this, catheterization will be required. If the membranes have not ruptured, they should be ruptured. The woman should be encouraged to maintain a comfortable position. The dorsal position has advantages during this stage, including the chance to rest between contractions, ease in observing the patient's abdomen, face, vulva, and ease of listening to the foetal heart. Positions such as squatting, crouching, kneeling or lying on the side may be more comfortable to some women.

### Bearing Down (Pushing Out)

When the presenting part appears at the vulva the woman can help by 'pushing out' or bearing down. She may need instruction or just a reminder in how to push. Help her get into good position with a pillow or other support under her head and upper back. She should grasp her legs with her knees bent. (See Figure LD 13.)

Her legs will need support by someone or with pillows between contractions. Have her take a very deep breath, hold it and bear down with her abdominal muscles as if she is going to pass stool. When she has pushed as hard and as long as she can, have her let any remaining air out, quickly take another very deep breath, and push again as long as she can.



*Figure LD 13 - Position for bearing down.*

Tell her to keep her eyes open and her mouth loose and relaxed during a push. She should not push unless she has a contraction. Give the mother moral support while she is pushing by letting her know when she pushes well and by telling her exactly how much progress she is making.

### Preparing for Delivery

The woman should be encouraged to empty her bladder. If she is unable and the bladder is palpable, a catheter should be passed. The pubic area, thighs, and buttocks should be washed with soap and water. In the primiparous woman this can be done when about 5 cm of presenting part is visible. In the rapidly progressing multiparous woman the preparation is best done near the end of stage one.

### Scrubbing Up

The nurse clinician should put on an apron/gown, prepare the delivery supplies, and place the patient in position for delivery. She should scrub her hands and arms for 5 minutes using a soft brush. Swab the vulva before putting on sterile gloves (if gloves are used), otherwise a sterile forceps can be used to swab the vulva with antiseptic solution.

## REVIEW QUESTIONS

1. What is the only sure way to tell when stage two of labour begins?
  
2. Match the words in column 1 with the correct definitions in column 2.
 

a) ___ expulsive	1) floor of the pelvis
b) ___ multiparous	2) pushing out
c) ___ primiparous	3) who has had a child before
d) ___ perineum	4) who has not had a child before
  
3. Mark those signs that may be seen at the beginning of the second stage of labour with a "2".
  - Change in the type of the contraction to an expulsive type.
  - Painful contractions every fifteen minutes.
  - Rupture of the bag of waters.
  - Gaping of the vulva or anus.
  - Bulging of the perineum.
  - Full dilation of the cervix.
  - The expulsion of the placenta.
  
4. The second stage of labour should not be longer than \_\_\_\_\_ hour in a multiparous woman and not longer than \_\_\_\_\_ in a primiparous woman.
  
5. Why is it important to keep the bladder empty during the first and second stages of labour?

## MECHANISMS OF DELIVERY

The mechanisms involved are a series of passive movements of the foetus as it presents the widest diameter of each of the parts of its body to the widest diameter of the birth canal on its journey through. Thus there is a series of movements. The exact movements vary with the presentation, but the principle that the foetus is being pushed through the birth canal with its differing inlet and outlet shapes and forward curve at the lower end is the same. Knowing the mechanisms will allow you to assist rather than hinder the process. With a vertex presentation, which is the most common presentation, the movements are as follows:

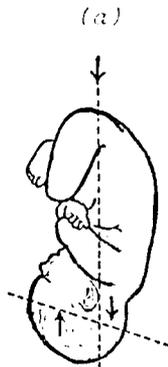


Figure LD 14 - The uterus pushes on the foetal spine with contractions (a).

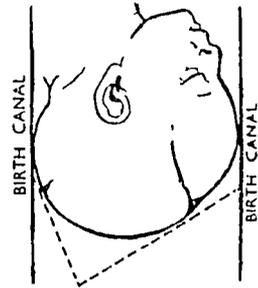


Figure LD 15 - The head meets the resistance of the pelvis, cervix and pelvic floor increasing flexion and a wedge shape of the head.

1. Flexion of the head is a continuation of the usual process of descent which may begin two weeks before labour. The increased flexion presents the smallest possible diameter, one that is half a centimetre less, thus easing the passage. (See Figure LD 16 and 17.)

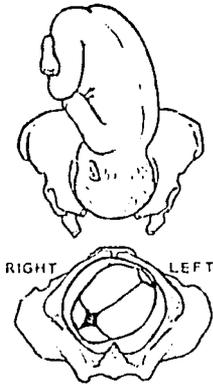


Figure LD 16 - Vertex, left occipito-anterior. Sutures and fontanelles as seen from below prior to flexion of the head.

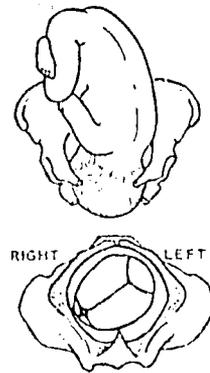


Figure LD 17 - Showing descent with increase in flexion of the head.

2. Internal rotation is the turning forwards of whatever part of the foetus reaches one side of the pelvic floor first. The force of contraction causes the presenting part to stretch that part of the pelvic floor. With the end of that contraction the pelvic floor recoils or "bounces back". Since it slopes forward, the presenting part is guided forward and rotates.

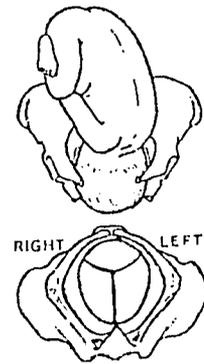


Figure LD 18 - Showing internal rotation of the head. The occiput lies behind the symphysis pubis.

3. Crowning is the term used when the presenting part escapes under the symphysis pubis and no longer recedes between contractions.

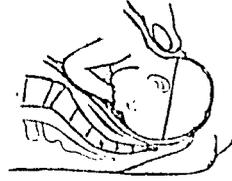
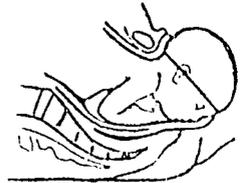


Figure LD 19 -  
Crowning of the head.

4. Extension is the movement by which the flexion is undone. The back of the neck rotates on the lower border of the symphysis as the face and chin pass over the thinned perineum.

Figure LD 20 -  
Extension of the head.



5. Restitution is the turning of the head to undo the twist in the neck that occurred during internal rotation of the head. This confirms the position and will assist you in knowing how to guide the shoulders. In the LOA (Left Occiput Anterior) the restitution is back to the left.

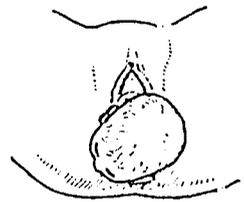
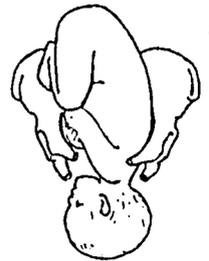


Figure LD 21 -  
Restitution of the head, occiput turns to left in an L.O.A.

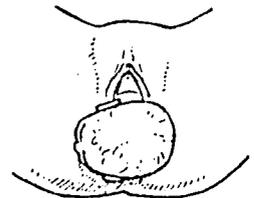
6. Internal rotation of the shoulders is a movement similar to that which occurred to the head in 2. This presents the shoulders to the outlet in the Anterior-Posterior diameter. It occurs the next contraction after the head is delivered.

Figure LD 22 -  
Internal rotation of the shoulders.

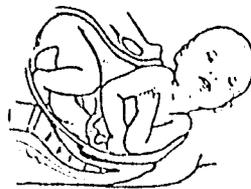


7. External rotation of the head is the movement of the head accompanying the internal rotation of the shoulders. It is always in the same direction as restitution. It indicates that the shoulders are now in the Anterior-Posterior diameter ready for expulsion.

Figure LD 23 -  
External rotation of the head.



8. Lateral flexion of the body is the sideways bending of the spine that occurs so that the body fits the curve of the birth canal while the body is being expelled. The body passes over the perineum and is carried upwards over the symphysis pubis towards the mother's abdomen by the nurse clinician to aid in lateral flexion.



*Figure 10 24 - Lateral flexion of the body.*

#### REVIEW QUESTIONS

- Match the words or phrases in the first column with those in the second column:
  - \_\_\_ lateral flexion of the body
  - \_\_\_ extension
  - \_\_\_ restitution
  - \_\_\_ internal rotation
  - \_\_\_ crowning
  - \_\_\_ external rotation of head
  - \_\_\_ internal rotation of shoulders
  - \_\_\_ flexion of the head
  - a. turning of the head to undo the twist in the neck.
  - b. turning forwards of whatever part of the foetus reaches one side of the pelvic floor first.
  - c. the movement by which flexion is undone.
  - d. movement of head accompanying internal rotation of the shoulders.
  - e. sideways bending of the spine.
  - f. continuation of the usual process of descent.
  - g. the presenting part no longer recedes between contractions.
  - h. similar to internal rotation of the head.
- Why is it useful to know the different mechanism of delivery?

## SIGNS OF FOETAL DISTRESS

Lack of oxygen (anoxia) is the most common cause of foetal distress. Anything that causes a decreased amount of oxygen to be available to the foetus is a potential cause of foetal distress. This can include such things as placental insufficiency or infarct, prolapse or pressure on cord, inadequate maternal circulation, various medications given to the mother etc. Oxygen lack can cause foetal death and stillbirth or brain damage.

Signs of foetal distress are:

1. Abnormal foetal heart rate.
2. Foetal heart that is irregular, intermittent or weak.
3. Meconium - stained amniotic fluid.
4. Excessive foetal movements.
5. Cord-murmur.

1. The earliest sign of foetal distress is often an increase in foetal heart rate. An increase of over 20 beats per minute or a rate of over 160 per minute should alert you to foetal distress.

When the foetal heart decreases by 20 beats per minute this indicates severe lack of oxygen. The heart beats progressively slower. A rate of under 110 per minute should concern you and below 100 indicates the foetus is in the danger zone.

2. Any alteration of rhythm may indicate foetal distress. A weak sound may indicate distress or it may simply indicate the foetus has changed position, thus muffling the sound.

Foetal heart sounds can be strong and normal and suddenly fail. They may be abnormal but the baby be born in satisfactory condition. They are still the best system for monitoring the foetus that you have.

3. The passage of meconium which is a thick dark green material should be considered a serious sign except when the breech is the presenting part and pressure causes the passage of meconium. In other cases it indicates a relaxed state of the intestine and anal sphincter because of poor muscle tone induced by anoxia. Slight green staining of the amniotic fluid may be due to previous distress from which the foetus has recovered, but thick fresh meconium indicates current foetal distress.

4. Excessive foetal movements may indicate anoxic convulsions and sometimes precede intra-uterine death. Normally there is little foetal movement during labour.
5. A soft blowing sound or murmur at the same time as the foetal heart beat may indicate that the cord circulation is impeded. This could occur from prolapse or pinching of the cord or from a tightening of a knot in the cord. It does not always indicate foetal distress, but it may.

#### REVIEW QUESTIONS

1. Match the words or phrases in column 1 with the appropriate word or phrase in column 2:

COLUMN 1	COLUMN 2
<input type="checkbox"/> most common cause of foetal distress	a. meconium
<input type="checkbox"/> earliest sign of foetal distress	b. unusual
<input type="checkbox"/> foetal heart rate of less than 100	c. may indicate cord circulation is impeded
<input type="checkbox"/> meconium in amniotic fluid	d. lack of oxygen
<input type="checkbox"/> foetal movement during labour	e. sign of foetal distress
<input type="checkbox"/> soft blowing sound at same time as foetal heartbeat	f. increase in foetal heartbeat of over 20 beats per minute
<input type="checkbox"/> foetal stool	g. sign of very serious foetal distress

2. Mark with the letter "A" those items below that can be responsible for foetal anoxia.

- placental insufficiency
- placental infarct
- hot, humid climate
- cold, dry surroundings
- prolapse of the cord
- pressure on the cord
- medications given to mother
- vertex presentation
- episiotomy

## SIGNS OF MATERNAL DISTRESS

It is important not to forget to monitor for maternal condition during labour as well as that of the foetus. Blood pressure, pulse and temperature should be taken and recorded at least every four hours. Don't wait until maternal distress is apparent but anticipate it. Take into consideration:

1. Her underlying health
2. Her general vitality
3. The length of time she has been in labour
4. The length of time since the membranes ruptured which could expose her to infection
5. How much sleep she has had
6. How much pain she has experienced
7. Whether dehydration or ketosis are present.

An early sign of maternal distress may be a rising pulse. Over 90 per minute should be a warning. Her temperature may increase. Over 37.5°C should be a warning. She may feel weak and be apathetic or have vomiting. Acetone may be present in the urine.

Later, signs of maternal distress may be an anxious expression with paleness around the mouth. The woman looks and feels ill; she senses something is wrong. Beads of perspiration may be seen on her upper lip. Signs of dehydration may be manifested, including a dry mouth and concentrated urine. Marked restlessness may occur with inability to relax between contractions. Dark-coloured vomitus welling up into her mouth is a bad sign.

Rehydration with dextrose and electrolytes given intravenously may be required and transfer to the hospital, if that is possible, may be indicated. Sedation is also indicated.

## REVIEW QUESTIONS

1. Write the letters "MD" next to each of the following that could be indications of maternal distress:

<input type="checkbox"/> pulse of 60 per minute	<input type="checkbox"/> anxious expression
<input type="checkbox"/> pulse of 84 per minute	<input type="checkbox"/> pallor around mouth
<input type="checkbox"/> temperature of $37.5^{\circ}\text{C}$	<input type="checkbox"/> beads of perspiration on upper lip
<input type="checkbox"/> acetone present in urine	<input type="checkbox"/> restlessness
<input type="checkbox"/> temperature of $36.4^{\circ}\text{C}$	<input type="checkbox"/> vomiting
<input type="checkbox"/> blood pressure of 130/92	<input type="checkbox"/> pulse of 100 per minute
<input type="checkbox"/> feeling of weakness	<input type="checkbox"/> dry mouth

2. Maternal blood pressure, pulse and temperature should be taken and recorded at least every \_\_\_\_\_ hours during labour.

In cases of severe dehydration of the woman in labour, rehydration with intravenous \_\_\_\_\_ and \_\_\_\_\_ may be required.

3. Give definitions of these words:

ketosis:

apathetic:

electrolytes:

## RUPTURE OF MEMBRANES

The amniotic membranes make up a sack that contains the foetus and the amniotic fluid. It is often called the "bag of waters". It ruptures during labour to permit the expulsion of the amniotic fluid and the foetus. It is adherent to the uterus throughout pregnancy until the third stage of labour when it, along with the placenta, detaches and is expelled.

Occasionally, the membranes will rupture or be torn very early in labour. This can complicate the labour and can allow infection to develop. If delivery is delayed more than 24 hours after the rupture of the membranes there is a chance of infection within the amniotic fluid. This can often be detected by the foul odour. It is dangerous in that the resultant infection can spread to the pelvic organs. If the foetus inhales some of the infected fluid it can lead to serious neonatal pneumonia. In cases involving rupture of the membranes for over 24 hours, antibiotics such as ampicillin 500 mg every six hours should be given to the mother. Any fever above  $37.5^{\circ}\text{C}$  during labour requires the administration of antibiotics.

Another problem resulting from early rupture of the membranes is that with the draining off of the amniotic fluid the uterus may mould around and cling to the foetus. This can make labour and delivery more difficult and may interfere with placental-foetal circulation leading to anoxia.

Ideally the membranes remain intact until the cervical os is fully dilated. This protects against sepsis and anoxia. The intact membranes help distribute the forces of contractions more efficiently. At or near full dilation there is little support of the membranes and it is common for them to rupture at that time. The nurse clinician may need to rupture the membranes if this does not occur spontaneously by the end of the first stage. Normally, the presenting part fitting into the cervix retains most of the amniotic fluid even after membrane rupture and maintains the advantage of the fluid equalizing the pressure force of contractions.

Whether the membranes have ruptured can be determined by the pelvic examination when the intact membrane can be palpated bulging in the os. This may be misleading since it is possible for intact membranes to cling to the foetal presenting part or for the membranes to rupture higher in the uterus releasing fluid while the presenting membrane remains intact and bulges.

When there is doubt about whether the membranes have ruptured, upward pressure on the presenting part between contractions may allow clear pale straw-coloured fluid to escape if they have. A green tint indicates meconium in the fluid and suggest foetal distress. Golden colour may indicate a foetal hemolytic disease. Milky colour or the presence of white specks is due to the normal covering of the foetus and holds no significance.

#### REVIEW QUESTIONS

1. From the list below, select what you think to be the greatest danger from premature rupture of the membranes: Mark it with the letter "D".

- the uterus may mold around and cling to the foetus
- fluid can be released
- infection can develop leading to neonatal pneumonia
- the force of contractions may be distributed evenly
- foetal hemolytic disease can develop

2. Match the words and phrases in column 1 with those in column 2:

##### COLUMN 1

- clear pale straw-coloured
- green tint in amniotic fluid
- golden colour of amniotic fluid
- milky colour of amniotic fluid
- foul odour
- fever above  $37.5^{\circ}$  during labour

##### COLUMN 2

- a. might indicate foetal hemolytic disease
- b. ruptured membranes for over 24 hours
- c. normal colour of amniotic fluid
- d. requires antibiotics
- e. meconium - foetal distress
- f. normal - covering of the foetus

3. Define the words:

intact:

haemolytic:

neonatal:

differentiate:

adherent:

detaches:

CLINICAL SKILL  
NORMAL DELIVERY  
IN HEALTH UNIT

Supplies

Antiseptic solution & basin  
Table or bed  
Well-lighted room  
Clean sheet/waterproof sheet  
Cotton balls  
Clean wrap for baby  
Container for placenta  
Apron/gown

Sterile Instruments

Catheter and bowl  
Rubber bulb nose syringe  
Episiotomy scissors  
Tray with syringes for  
medications  
Scissors for cord  
Cord ties  
Gloves (if used)  
2 clamps (artery forceps or  
haemostats)

Purpose

Assist in the normal delivery process

Introduction

It is well to remember that in the normal delivery your job is to assist, not to deliver. The body does the delivery. (Refer to Mechanisms of Delivery.) The temptation to actively interfere, to speed up the process, to push or pull should be strongly resisted as it tends to complicate a normal process leading to injuries of the foetus and mother.

Dress in clean and washable clothes and shoes. It is impossible to assist in a delivery without soiling one's gown and clothes with amniotic fluid, blood, meconium etc.

Prepare: Pitocin injection for use after delivery of the baby. Delivery instruments/supplies.

During all of this preparation, remember to continue to encourage and support the woman and her family. It is easy to become so involved in preparing of equipment etc. that one forgets the monitoring and support needed at this crucial time for the woman, baby and family.

Step 1: Have the woman lie in on her back with her knees bent on a clean sheet/waterproof sheet.

Step 2: Encourage the woman to urinate. If unable and the bladder is palpable, catheterize.

- Step 3: Wash the pubic area, thighs and buttocks with soap and water.
- Step 4: Scrub your hands with a soft brush and anti-septic soap for 5 minutes.
- Step 5: Put on sterile gloves (if available).
- Step 6: Stand on either side of the woman (right side if you are right handed).
- Step 7: Place palm of left hand on the crowning head (LD 25) Ask the woman to stop pushing and begin to pant.
- Step 8: Allow the head to glide over the perineum (extension) encouraging the woman to continue to pant.
- Step 9: An episiotomy may be required at this time to prevent a perineal tear (see section on episiotomy).
- Step 10: The chin may be freed, if necessary, by slipping the index finger under the side of the jaw, sweeping it below the chin and out at the other side.
- Step 11: Since in many cases the umbilical cord is looped around the baby's neck from one to several times, the finger of your clean hand (not one that has been near the anus) should be inserted into the vagina to feel if the umbilical cord is around the baby's neck. If it is, it should be gently taken over the baby's head. Do not pull vigorously on the cord or it may break or choke the baby. If the cord will not come over the head, it should be clamped with two clamps and cut between the clamps.
- Step 12: Suck mucus from the mouth and nose of the baby using the bulb syringe.
- Step 13: Normally the shoulders are born during the next contraction after the head. Do not hurry the process unless the face becomes dark blue in colour or you have had to cut the cord.



Figure LD 25

- Step 14: The mother should be given Pitocin 1 cc, IM after the anterior shoulder is delivered, or after delivery of the baby if you do not have an assistant. \*Rule out twins before giving pitocin.
- Step 15: When the anterior shoulder is free, the head may be guided upward slowly and smoothly to ease the escape of the posterior shoulder.
- Step 16: Delay in the natural delivery of the shoulders is usually due to incomplete rotation of the shoulders. Rotation may be assisted by a finger carefully and gently hooked into the anterior axilla causing forward rotation followed by downward traction. If this fails, refer to Delay with Shoulders.
- Step 17: The baby is carried up onto the mother's abdomen as the body is delivered.
- Step 18: Time should be noted if possible. Initial assessment is made (APGAR).
- Step 19: Stimulate respiration of baby if needed. (See Care of Newborn).
- Step 20: Sixty seconds or when cord stops pulsating, clamp and tie the cord. (See section on Cutting the Cord.)

## REVIEW QUESTIONS

## Clinical Skill - Normal Delivery

1. Define these words:

Crowning:

Extension:

Pant:

AGPAR:

2. Complete these sentences:

- a. The nurse clinician must resist the temptation to interfere with the normal birth process, since to do so might lead to injuries of the \_\_\_\_\_ and \_\_\_\_\_.
- b. When assisting in the delivery, the nurse clinician should scrub \_\_\_\_\_ for \_\_\_\_\_ minutes and wear \_\_\_\_\_, (if available).
- c. After crowning, the woman is asked to stop \_\_\_\_\_ and \_\_\_\_\_.
- d. The baby's head is allowed to glide smoothly upward and outward over the \_\_\_\_\_.
- e. Vigorous pulling on the umbilical cord may cause it to \_\_\_\_\_.

3. Discuss umbilical cord looped around the baby's neck.

4. When and for what reason(s) is Pitocin used?

## CLINICAL SKILL HOME DELIVERY

### INTRODUCTION

Two-thirds of all babies born in the world today are delivered at home by local birth attendants. The Nurse Clinician (N.C.) and traditional birth attendants should work together to help parents have normal and healthy babies. N.C. should encourage traditional birth attendants (T.B.A.) in their area to share and learn about child birth. The N.C. should approach them with respect. These persons have the benefit of long experience. They may have received extensive training in traditional or herbal medicine. They offer an important service to the community. More important, they have the confidence of the women. They deserve respect. The N.C. can learn about the T.B.A. by going with them for home births. If the N.C. is assisting in a home birth, she should invite the local birth attendant to help. This is a good time for teaching and learning methods of safe child birth.

Having a baby is a natural experience. The person assisting with the birth should remember that she is there to help. It's a wonderful feeling to be able to help a woman who is happy to be having a baby.

The family asks the N.C. to help with the birth. They prepare the place of birth and decide who will be present for the birth. With the help of the N.C., the family gathers the needed supplies in advance of the expected birth. They call the N.C. when labour begins and give the mother support and encouragement during the birth process.

The N.C. may be asked to help with a home birth by the family or by the local birth attendant. In either case the N.C. should encourage the T.B.A. to accompany her on home visits and for delivery. The N.C. helps the family prepare for the birth and at the same time discusses with the T.B.A. her methods and preferences.

The T.B.A. goes with the N.C. for home visits and birth as a way of updating and learning new skills and to help the N.C. in any ways that are needed. The T.B.A. may very well reach the home before the N.C. when they are called for the delivery since she will probably live closer than the N.C. Thus, it is important that the T.B.A. and N.C. share information about pregnant women in their area.

## PREPARATION

The N.C. needs to help the family make plans for the home birth. The family should decide who will be present for the birth and what roles they should play. The birth of a child is an important family event. It is good for the mother and baby to have friends/family around during this time. In some areas, certain family members may not be allowed to attend the child birth. These are important factors to be recognized and accepted by all health workers involved in the birth.

The family will identify the birthing area. The N.C. needs to discuss the importance of a clean area. The area may be a room in the house, a place in a shed, or an enclosure in the yard.

Supplies prepared by the family:

Clean material for the mother to rest on to delivery. This may be a clean mat or clean bed cloth.

Material to soak up blood and water, such as newspaper, clean leaves, dried grass or cloths.

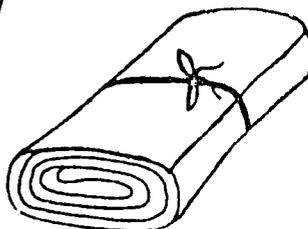
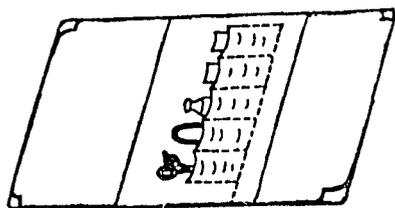
Soap and cleaned boiled water.

Sanitary pads or pieces of clean cloth

Boiled Razor blade and material to tie the cord (fish string, thread)

### NURSE CLINICIAN HOME DELIVERY KIT

Scissors  
Mucous extractor  
Eye ointment  
Sterile cord ties  
Methylated Spirits  
Soap  
Nail brush  
Ergot Injection  
(sterile syringe, needle)



*Figure LD26-Nurse Clinician Kit  
for Home Delivery*

BIRTH

Purpose: Assist in a normal home delivery.

Introduction: It is good to remember that friendly surroundings and an understanding, relaxed and kind nurse clinician will do much to help the mother during the more difficult time of the labour. The mother should be encouraged to bath, walk around, eat a good meal as she would before doing any type of hard work and just be comfortable.

Prepare: Supplies and equipment

Step 1: The mother feels the urge to 'pass stool' and push. Encourage her to push with each contraction assuming which ever position she finds most comfortable.



Figure LD 27 -  
A. Squatting

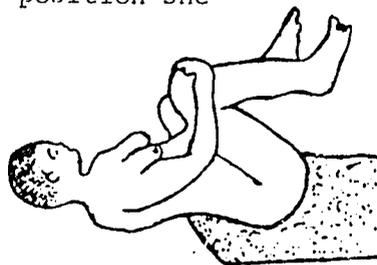


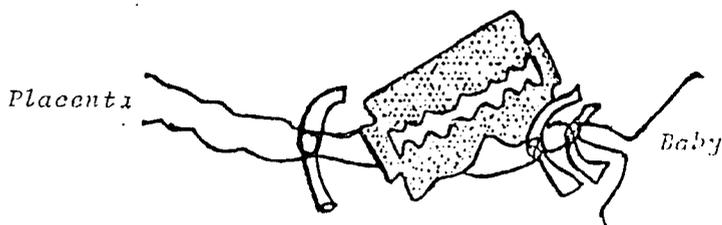
Figure LD 29 -  
Lying down



Figure LD 28 -  
B. Kneeling

- Step 2: Encourage her to relax between pushing out contractions.
- Step 3: Wash the pubic area, thighs and buttocks with soap and water.
- Step 4: Wash your hands and arms with soap and water, using the nail brush.
- Step 5: Squat, sit, or stand beside the woman.

- Step 6: If the woman is in position B or C, place the palm of your hand on the crowning head. Ask the woman to stop pushing and begin to pant. ((If the woman is in position A, encourage the woman to stop pushing and pant as soon as the baby's head can be seen. She will just pant (breathe) the baby out and the baby will slide on to the mat under the woman.))
- Step 7: Allow the head to glide over the perineum, encouraging the woman to continue panting.
- Step 8: Check that the cord is free (loose).
- Step 9: Clear the mouth and nose of mucous.
- Step 10: Support the baby as the body turns and comes out. Remember the baby is slippery.
- Step 11: Clear the mouth and nose of mucous.
- Step 12: When the baby is crying loudly and the colour is good, tie the cord in three places.



*Figure 1D 30*

- Step 13: Cut the cord leaving two ties for the baby.
- Step 14: Wrap the baby in a dry cloth; hand to T.B.A. or family member to put the baby to breast.
- Step 15: When the signs of placental separation are present (see delivery of placenta) encourage the mother to push the placenta out.
- Step 16: Rub the uterus gently with the palm of the hand.
- Step 17: Look at the placenta and membranes to make sure no missing parts.

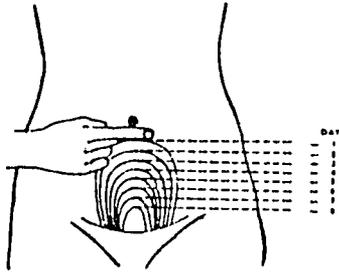
- Step 18: Check birth canal for tears.
- Step 19: Check uterus to make sure it is hard. Look at the bleeding.
- Step 20: Have the mother empty her bladder, bath and put on clean clothes.
- Step 21: Look at the baby and put eye ointment in the eyes. Check the cord for bleeding and put on solution. Wrap in another clean, dry cloth.
- Step 22: Put to the breast.
- Step 23: Check the uterus.
- Step 24: Clean up equipment.
- Step 25: Check the uterus.
- Step 26: Tell the mother when you will return.

#### AFTER BIRTH

Purpose: To make sure everything is OK with the mother and baby.

The T.B.A. and N.C. should take time to talk about the birth, sort of to share view of how things went. The T.B.A. should accompany the N.C. during the home visits and can help the N.C. to do the three days of home visits after the delivery.

- Step 1: Visit the mother and baby every day for three days and again in 4 weeks.
- Step 2: Check the uterus and the vaginal discharge. Check whether the baby is sucking and the cord is clean and dry.
- Step 3: Advise the mother:
- keep the breasts clean by washing with soap and water twice in a day.
  - the uterus will gradually decrease, each day one finger breadth until by the 10th day it cannot be felt. (See LD 31)



*Figure LD 31*

- discharge from the birth canal is red for about 3 days, then pinkish-brown for about 6 days and the amount decreases. Then it becomes whitish. In three weeks after the birth the discharge will stop.
- wash the vulval area with soap and water each time after urinating or passing stool until the discharge stops.
- rest is important.
- caution about the dangers of putting cow dung, native medicine, etc. on cord.
- if baby is circumcised, caution about putting medicines, advise soap and water.
- if male baby not circumcised, show mother about washing under the foreskin.

Step 4: Report the birth to the proper authorities and obtain birth certificate.

## CUTTING THE CORD

The umbilical cord links the foetus to the placenta and allows circulation carrying oxygen and nourishment. It has two arteries which carry blood from the foetus to the placenta and one vein carrying blood back to the foetus. The average cord length is about 55 cm but they may be half that length or three times that length. The cord may be wrapped around the neck of the foetus from one to several times. Cords may include knots formed when the foetus passed through a loop.

The cord, since it provides oxygen to the foetus through the circulation, must be preserved and protected as long as possible. It should be handled carefully for a torn cord may allow haemorrhage of foetal blood. Thirty cc of foetal blood is equivalent to 600 cc loss of blood in an adult! The cord will stop pulsating after birth and should be tied and cut at that time. Occasionally, the cord must be cut earlier because of tight loops around the baby's neck or because of short length.

The cord should be tied three times and cut between the outer two ties as a safety measure. It must be handled and cut with sterile technique to prevent infection. The cut end of the cord must be kept clean and dry. It should be checked regularly in the first 24 hours for any sign of bleeding.

## REVIEW QUESTIONS

1. What structures are in the cord and what is their function?
2. When is the cord usually cut?
3. When may it be necessary to cut the cord early?
4. What could contamination of the cord cause?

## CARE OF THE NEWBORN

### Cleaning the Air Passages

Breathing is the first function of the newborn to be established since the newborn will no longer be supplied oxygen through the placenta and cord. Therefore, the first action of the newborn will be to gasp for breath. If the mouth, nose and air passages are full of mucous or other fluid this will be sucked into the lungs and may make breathing difficult or impossible. Therefore, your first responsibility to the newborn is to clear the air passages. As soon as the nose and mouth are delivered, wipe them with a sterile gauze or cloth to remove mucous. Then use the bulb syringe to aspirate mucous and fluid from the nose and mouth of the baby.

### Stimulating the Newborn

Often the process of birth will be sufficient stimulation to initiate active respiration. If not, as soon as the baby is born, hold it with the head lower than the level of the placenta and clamp/tie cord 30-60 seconds after delivery is completed. Hold the baby with the head lower than the legs so that fluid can drain out (remember that babies are slippery so hold carefully). Stimulate by rubbing the back and repeat aspiration with the bulb syringe. Mouth to mouth respiration may be attempted. Remember that the baby's lungs are small and fragile. Use puffs of breath from your cheeks at the rate of 20/minute.

### Assessing the Condition of the Newborn

The "Apgar score" is a standardized method of evaluating the condition of the newborn. It is usually scored at one and five minutes after birth. The five minute score gives a reasonably accurate prediction regarding survival.

### INITIAL NEWBORN ASSESSMENT AT BIRTH (See page 69)

Purpose: To detect abnormalities.  
Initial assessment should be made at the time of the delivery.

A healthy baby breathes and cries as soon as he is born.  
His colour quickly changes from pale to pink.  
When you suck him out, he coughs.  
He moves his arms and legs.  
His body feels firm and is curled up (flexed).



Figure LD 38 - A healthy newborn baby.

## INITIAL ASSESSMENT - (may be called APGAR scoring)

	NORMAL (2)	BELOW NORMAL (1)	ABNORMAL (0)
1. BREATHING	-taking breaths -breathing irregular for 5-15 minutes  -cries	-not breathing well -grunting, insuction, irregular breathing after 15 minutes -whimpers	-no breathing  -no cry
2. COLOUR OF SKIN	-body & face pink -hands & feet pale, if cold	-pale body &/or face -pale hands and feet	-blue, pale body and face -blue, pale hands and feet
3. HEART	-heart beat strong -rate above 100/min	-heart beat weak -rate below 100/min	-no heart beat
4. MUSCLE TONE AND MOVEMENT	-flex & move arms/legs spontaneously  -firm arms and legs	-no spontaneous movement of arms & legs, movement present with stimulation -floppy, flexed arms and legs	-no movement with stimulation  -limp arms and legs
5. RESPONSE	-coughs &/or sneezes when sucked with extractor (bulb syringe, catheter, etc.)	-facial grimace when sucked	-no response when sucked

RATING: NEWBORN DISTRESS AT 1 and 5 MINUTES:

Severe:	0 - 2
Moderate:	3 - 6
Normal:	7 - 10

### General Care

The most important general care of the newborn is to keep it warm. It has been living at a constant controlled temperature in the amniotic fluid. Its body may not be able to control its temperature well immediately after birth. A wet, naked newborn will chill rapidly from evaporation. Therefore, dry the baby and wrap it in a cloth or towel. Remember, the baby's head is one-fourth of its body surface, so cover the back and top of its head too. The newborn does not need bathing immediately after birth. That tends to chill it and is unnecessary. It can be washed with a mild soap and warm water in 12 to 24 hours.

The best place to put the wrapped baby is in the mother's arms so that the baby can nurse from her breast as soon as possible. This is of advantage to both the newborn and to the mother. Remember that, you the nurse clinician is used to seeing newborn babies, but the mother may be disappointed with what she sees. The cord stump should be kept clean and dry.

After caring for the mother be sure to do a complete physical examination of the newborn. (See Newborn Examination.)

### Care of the Eyes

Soon after the birth of the baby it is important to take special care of the eyes. This is because of the serious consequences should infection develop. Infection with gonorrhoea which can be acquired during passage through the birth canal can cause permanent blindness.

With freshly washed hands, any mucous or matter is gently wiped from the outside of the eyelids using cotton or gauze. Then two drops of fresh 1% Silver Nitrate Solution or tetracycline eye ointment is instilled into each eye. The 1% fresh Silver Nitrate solution may produce reddening of the eye in a few hours, but this is self-limited and not dangerous.

## REVIEW QUESTIONS

INITIAL CARE OF THE NEWBORN

1. What is your first responsibility to the newborn?  
Mark the answer you select with a cross:

- evaluate its condition  
 clear the air passages  
 give mouth to mouth resuscitation  
 flick the soles of its feet with your fingers  
 predict whether it will survive  
 keep it warm  
 do a complete physical examination  
 keep the cord stump clean

2. What would the APGAR score be for the following babies?

Baby A: Body pink, limbs blue, respiration  
 slow, weak cry, heart rate less  
 than 100, some flexion of limbs,  
 facial grimace when sucked out \_\_\_\_\_

Baby B: Colour pink, strong cry, heart  
 rate less than 100, active  
 movements, facial grimace when  
 sucked out \_\_\_\_\_

Baby C: Colour blue-pale, slow, irregular  
 breathing, weak cry, heart rate  
 over 100, some flexion of limbs,  
 cries when sucked out \_\_\_\_\_

3. Complete these sentences:

- a. Babies can become infected with gonorrhoea during  
 \_\_\_\_\_ .
- b. Infection with gonorrhoea can lead to the baby's  
 permanent \_\_\_\_\_ .
- c. After cleaning away mucous from the eyes, two  
 drops of \_\_\_\_\_ are put  
 into the baby's eyes.

### Third Stage

#### DELIVERY OF PLACENTA

The third stage of labour is the separation and expulsion of the placenta. This is usually accomplished in 5 to 15 minutes but may take up to 30 minutes. With the birth of the baby, the placenta no longer has any function so the body normally expels it.

#### Mechanisms of Placental Separation

After delivery of the baby, the uterus continues to contract and retract. Its internal surface area decreases. When it gets to about half of its previous area, the placenta begins to buckle and separate from the uterus. The more vigorous the contractions, the more rapid the separation. As the placenta is separated, it is forced into the lower uterine segment. (See Figure LD 33.) It then slides down into the vagina and out or can be lifted out from the vagina.

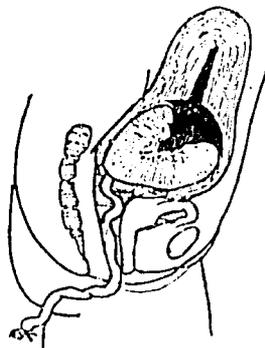


Figure LD 33 - Third stage. Placenta in lower uterine segment.

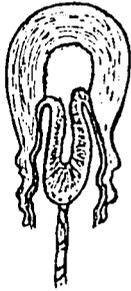
#### Use of Oxytocic Drugs

Administration of an oxytocic drug, Pitocin 1 cc to the mother immediately after the baby has been born, increases contractility of the uterus, hastens the third stage of labour, and reduces blood loss. It should not be given earlier.

### Signs of Placental Separation

There are a number of signs that are evidence that the placenta has separated and left the upper uterine segment.

1. The fundus feels hard and round rather than its previous flattening laterally.
2. The fundus rises to the umbilicus and can be palpated or seen as lying just under the abdominal wall.
3. The uterus is mobile. Since it has risen and is no longer restrained by the pelvic rim, it can be noted to be freely movable. This should be tested gently.
4. The cord lengthens at the vulva because the placenta, having slid down into the vagina, pushes more of the cord outside.
5. The placenta may be seen at the vulva. If the shiny foetal surface is visible, it is usually completely separated. (See Figure LD 34) If the dull maternal surface is visible, parts may still be adherent to the wall of the lower uterine segment. (See Figure LD 35)



*Figure LD 34 -  
Expulsion of the Placenta.  
The Schultze method.  
Shiny surface*



*Figure LD 35 -  
Expulsion of the Placenta.  
The Matthews Duncan method.  
Dull surface*

### Blood Loss

Until there is separation of the placenta, there will be little blood loss. Under normal circumstances, the contraction of the uterine muscle fibres pinch off the vessels that supplied blood to the placenta. The usual amount of loss is 100 cc to 250 cc. It is important to observe the uterus for size and tone and to measure or estimate the amount of blood loss. Should signs of shock, such as pallor or rapid heart rate develop, it is urgent that the bleeding be located and stopped and that supportive measures to counteract the shock be taken.

### Expulsion of the Placenta

As soon as the uterus is felt to contract and signs of placental separation are observed, the mother should be asked to bear down and push as she did for the birth of the baby. You may assist by supporting the abdominal muscles with your hands. Place the palms of your hands on the abdomen just below the umbilicus as the mother pushes. If this fails, make sure the placenta has separated by rechecking for the signs of separation.

If the placenta has separated, rub up a contraction in the uterus using the palm of your hand. Deliver the placenta using controlled cord traction (Brandt-Andrews method). Traction is applied to the cord with the right hand while the uterus is supported by the left hand placed on the abdomen just above the symphysis pubis.

If the cord breaks (unusual) a gentle vaginal examination should be done to determine whether the placenta is in the vaginal canal or gripped in the cervix.

If vaginal bleeding starts during or after delivery of the placenta, a uterine contraction should be rubbed up. Ergometrine 0.5 mg IV should be given. (See PPH page 90)

### Inspecting the Placenta

After the delivery of the placenta and membranes, inspect it for completeness. Grasp the cord and examine the membranes. Then hold the placenta in both hands with the rough surface exposed. Look for the missing parts of the placental lobes (cotyledons). The placenta should be disposed of taking into consideration customs and traditions.

### Manual Removal of Placenta

This is a serious and difficult procedure. Haemorrhage will not occur as long as the placenta is completely attached. In case it is adherent it is best to transfer the patient to a hospital if that is possible, monitoring carefully during the transfer. At times, because of remoteness and haemorrhage from partially detached placenta, it may be necessary for you to do a manual removal.

- Step 1: Patient is placed on the lithotomy position and the vulva quickly cleaned with soap, water and antiseptic solution. Ensure that the bladder is empty.
- Step 2: Make your hands as aseptic as possible by washing, using sterile gloves and lubricating the right glove with antiseptic.
- Step 3: Hold the cord taut with the left hand.
- Step 4: Insert the right hand into the vagina by forming it into a cone shape with thumb in palm.
- Step 5: With the right hand, follow the cord up to the placenta.
- Step 6: The left hand releases the cord and is used on the abdomen to steady the uterus and hold it down within reach of the right hand.
- Step 7: On finding the separated area, the ulnar border of the extended fingers of the right hand is slipped between the placenta and the uterus with the palm facing the placenta. (See Figure LD 36.)
- Step 8: With a sideways slicing movement the placenta is gently detached.
- Step 9: The left hand rubs the uterus through the abdominal wall to produce a contraction and expel the right hand with the placenta in its grasp.

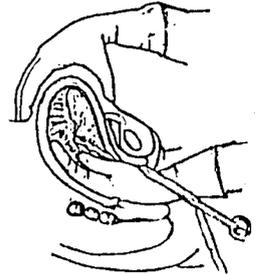


Figure LD 36 - Manual removal of placenta. Fingers separating placenta.

## REVIEW QUESTIONS

1. Mark with the letter "T" those phrases that are TRUE for the third stage of labour.
  - it is the expulsion of the foetus and placenta
  - it is the expulsion of the placenta
  - it normally is accomplished in 30 minutes
  - it normally is accomplished in two minutes
  - it normally is accomplished in five to fifteen minutes
  - during it, the normal amount of blood loss is about 150 cc.
  
2. What is the purpose of giving an oxytocic drug (Pitocin 1 cc) to the mother after the baby has been born? Mark the answer you select with a cross.
  - it stimulates the baby's respiration
  - it increases contractility of the uterus
  - it prevents gonorrhoea
  - it raises the mother's blood pressure
  - it prevents shock
  
3. List 4 signs of placental separation.
  - 1)
  - 2)
  - 3)
  - 4)
  
4. Discuss the mechanism of placental separation.
  
  
5. Describe the technique of delivering the placenta using cord traction.
  
  
6. When should the nurse clinician manually remove a placenta?

## USE OF MEDICATION DURING DELIVERY

There are several medications that at times may be required during Stages II and III of labour.

1. Oxytocics may be administered after the delivery of the anterior shoulder. They may also be required in atonic postpartum haemorrhage. Pitocin 1 cc may be given I.M. The patient's condition should be monitored carefully especially after IV administration.
2. Local infiltration anaesthesia with xylocaine 0.5% or 1% will be required for an episiotomy or repair or for repair of a perineal laceration. Make certain by syringe aspiration that it is not being injected into a blood vessel.
3. IV fluids may be required in treatment of shock. See Emergency Module.
4. One percent fresh (1%) Silver Nitrate solution or tetracycline eye ointment should be used for prophylaxis against neonatal eye infections.

## STUDENT GUIDE

## Monitoring of Puerperium (Postnatal)

## I. Entry Level Knowledge and Skills

Before starting on this unit, you should have successfully completed all previous units in this module and should have observed or participated in at least one delivery.

## II. Objectives

Using the information and experiences provided by the instructor and the module text, you will be able to:

1. Describe and monitor the normal puerperium.
2. Describe the complications of the puerperium.
3. Describe and perform the examination of a newborn.

## III. Evaluation

MODULE PHASE

Upon completion of this unit, you will be assessed on the following:

1. Knowledge: Written test based on the contents of this unit. Acceptable performance, 80%.
2. Skills:
  - a. Your ability to monitor a woman in the first hour of puerperium.
  - b. Your ability to monitor (1) return of reproductive organs to normal state, (2) initiation of lactation, and (3) rest physical and emotional.
  - c. Your ability to perform a physical examination of the newborn.

ROTATION PHASE

1. Your ability to manage a woman in the first hour and after of puerperium.
2. Your ability to diagnose and manage sepsis.
3. Your ability to diagnose and manage post partum haemorrhage.

#### IV. Activities

In order to accomplish the objectives of this unit, you will participate in the following activities:

1. Read the module text and answer review questions.
2. Participate in group discussion.
3. Attend a woman in puerperium with supervision.
4. Conduct physical examination of a newborn with supervision.

## GENERAL CONSIDERATIONS IN PUERPERIUM (POSTNATAL)

Puerperium is the period following labour during which the reproductive organs return to their prepregnant state, lactation is established and the mother recuperates from labour. The first hour is the most critical time requiring close monitoring in case haemorrhage should develop. The puerperal period extends beyond that hour for six to eight weeks.

### The First Hour

The woman should be kept warm, offered food/drink and encouraged to rest. You should remain nearby monitoring her condition frequently. This should include:

1. Temperature
2. Pulse
3. Blood pressure
4. Colour
5. Uterine condition
6. Amount of blood loss
7. The condition of the newborn should also be monitored.
8. Bladder

### After the First Hour

1. The uterus should remain firm and should not increase in size. After completion of labour the fundus is 5 cm below the umbilicus. In the first 24 hours it will rise to the umbilicus. Thereafter, it will decrease in height about 1 cm a day until it is no longer palpable abdominally by 10 or 11 days. Palpation should always be done with an empty bladder.
2. Lochia (vaginal discharge) always follows labour as the lining of the uterus is shed. The amount is greater than that of a normal menstrual period.

For the first three days or so the discharge is mainly old blood so the discharge is red.

For the next week to 10 days the discharge contains less blood and changes to pink or brown in colour.

For about two more weeks the discharge continues with a usually creamy colour. Occasionally there is a small amount of blood passed in this stage.

Persistent red discharge or bright red discharge should be a warning sign that placental tissue or membranes have been retained and could cause severe haemorrhage. This should be referred to the hospital.

#### General Support During Recuperation

The woman needs adequate rest after the hard work she has done, just as anyone would after any hard work. She should be encouraged to eat an adequate diet and iron tablets may be needed especially if blood loss was heavy. Pain may be present and can usually be controlled with aspirin. If an episiotomy was done or if there was a perineal laceration, warm sitz baths may be comforting.

Attention should be paid to urinary output. If retention should develop it may need to be relieved by catheterization.

#### Puerperal Sepsis

Careful attention to asepsis during labour and delivery will decrease the risk of sepsis. If the new mother should develop a fever during the first 2 to 3 weeks after delivery, sepsis should be suspected. The vaginal discharge may be noted to be heavy, foul odoured, and perhaps to include pieces of tissue. The uterus may be soft and tender. Prompt recognition of the sepsis and antibiotic treatment can prevent life-threatening complications such as septicaemia. (See section on Puerperal sepsis in Problems of Women Module.)

## REVIEW QUESTIONS

1. The greatest hazard in the first hour after labour is \_\_\_\_\_ .
2. What should be monitored during that first hour?
  - a)
  - b)
  - c)
  - d)
  - e)
  - f)
3. The uterus should remain \_\_\_\_\_ and should not be palpable after the \_\_\_\_\_ or \_\_\_\_\_ day.
4. Persistent red vaginal discharge should warn you of \_\_\_\_\_ .
5. Fever during the first 2 or 3 weeks should lead you to suspect \_\_\_\_\_ which must be promptly treated with \_\_\_\_\_ .

NEWBORN EXAMINATION

Purpose: To detect abnormalities

The examination should be conducted within the first 12 hours after birth. Care must be taken to keep the newborn warm during the exam. Observations and examinations should be carried out systematically from the head downwards. Auscultation of the heart and lungs, and palpation of the abdomen should be accomplished first, when the baby is quiet. Hip abductions should be performed last, since this usually causes the baby to cry.

EXAMINATION	NORMAL	ABNORMAL
<p>A. General appearance (may be performed during B or c)</p> <p>1. COLOUR blanche skin by pressing with finger</p> <p>2. POSTURE AND MOVEMENTS</p> <p>3. SKIN</p>	<p>pink, brown or dark skinned</p> <p>lies on back with vigorous movements of the limbs</p> <p>soft and smooth -vernix caseosa -milia</p>	<p>pale, cyanotic, jaundice</p> <p>lies on back with legs flopped (frog position) - NOT ABNORMAL if breech delivery</p> <p>dry, peeling (placental insufficiency, post maturity) birth marks</p>
<p>B. Vital Signs (may be performed by assistant before nurse clinician sees patient)</p> <p>1. TEMPERATURE rectal preferred for accuracy axilla may be used</p> <p>2. WEIGHT weigh without clothes</p>	<p>rectal - 37.2 axillary - 35.0</p> <p>average 3½ kg.</p>	<p>subnormal: serious signs of premature, newborn, severe malnutrition</p> <p>fever: sign of local or general infection</p> <p>low weight (refer to Child</p>

NEWBORN EXAMINATION

EXAMINATION	NORMAL	ABNORMAL
<p>3. LENGTH measure lying down (measuring box) or measure with tape measure</p> <p>C. CHEST - Lungs: -palpate the chest with both hands: place hands anterior, lateral, and posterior to detect changes in transmission of sound. If changes present auscultate as in adult, the Breath Sounds will be louder and harsher than adults.</p> <p>Heart: -palpate femoral arteries -observe pulsations of anterior fontanelle, or auscultate heart for heart rate</p> <p>-auscultate for murmur if signs of heart disease/insufficiency are present</p>	<p>crown to heels 51 cms crown to rump 30 cms</p> <p>rapid, abdominal breathing 30-50/min: newborn 40-90/min: premature</p> <p>breasts may be enlarged and/or secreting white liquid</p> <p>barrel shaped</p> <p>heart rate: 110-140/min</p> <p>equal femoral pulses</p>	<p>refer to Child Growth Problems - this module</p> <p>irregular, see-saw (chest and abdomen alternate with very fast respiration)</p> <p>refer to Respiratory System and Heart Modules for abnormal breath sounds</p> <p>unequal or absent femoral pulse</p> <p>REFER TO RESPIRATORY AND HEART MODULE</p> <p>signs of heart disease: -heart rate over 140/min -respiration over 50/min -a prominent, active, heaving or thrusting heart -cyanosis of lips, fingers, toes -clubbing of fingers and toes -enlarged liver</p>

## NEWBORN EXAMINATION

EXAMINATION	NORMAL	ABNORMAL
<p>D. ABDOMEN</p> <ul style="list-style-type: none"> <li>-palpate with one hand and hold the legs, flexing the knees with the other hand to ensure relaxation of the abdominal muscles.</li> <li>-femoral pulses may be checked if not done before</li> <li>-examine cord</li> </ul>	<ul style="list-style-type: none"> <li>-may palpate spleen and liver edges, and frequently both kidneys</li> <li>-bladder may be palpated and percussed</li> <li>-colon may be palpated left lower quadrant</li> <li>-no bleeding</li> </ul>	<ul style="list-style-type: none"> <li>-tenderness</li> <li>-masses</li> <li>-enlarged liver, spleen</li> <li>-bleeding, swelling around cord, redness.</li> </ul>
<p>E. NEURO</p> <ul style="list-style-type: none"> <li>-rub his cheek (ROOTING REFLEX)</li> <li>-hold him in your arms and quickly lower him, as if you might drop him (MORO REFLEX)</li> <li>-listen to cry during exam</li> </ul>	<ul style="list-style-type: none"> <li>he should turn towards your finger and try to suck</li> <li>both arms should reach out and then come toward each other</li> <li>lusty, loud for short time</li> </ul>	<ul style="list-style-type: none"> <li>no or partial response, may indicate brain damage</li> <li>no or partial response, may indicate brain damage</li> <li>shrill, high pitched may indicate increased intra-cranial pressure</li> <li>continuous (unless hungry/wet)</li> </ul>
<p>F. HEAD, EYES, EARS</p> <ul style="list-style-type: none"> <li>-head: circumference</li> </ul>	<p>average 34-35 cm</p>	<p>above or below average</p>

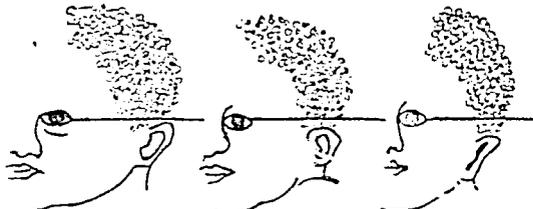


Figure LD 37

NEWBORN EXAMINATION

EXAMINATION	NORMAL	ABNORMAL
<p>F. HEAD, EYES, EARS - cont'd</p> <p>palpate entire head gently with the palm surface of your hand</p> <p>-fontanelles: anterior posterior</p> <p>palpate neck with thumb and two fingers while infant supine</p> <p>run fingers along clavicles</p> <p>rotate head and extend it laterally</p> <p>-<u>eyes</u> inspect the eyes</p>	<p>smooth, round, overlapping of bones (moulding)</p> <p>anterior, open posterior, partly closed or just palpable</p> <p>cartilage and soft tissue</p> <p>smooth lines of bones</p> <p>smooth muscle (sternomastoid)</p> <p>haemorrhages (disappear 1 wk) -subconjunctival</p> <p>squint (first 6 months)</p>	<p>round, soft swelling over one of the bones in the head (cephalhaematoma) tense, flat or sunken prominent or open</p> <p>excessive moulding and large caput may suggest intracranial injury</p> <p>midline: enlarged thyroid or cyst</p> <p>irregular line of clavicle (may be fracture)</p> <p>sternomastoid haematoma</p>

## NEWBORN EXAMINATION

EXAMINATION:	NORMAL	ABNORMAL
<p>F. HEAD, EYES, EARS -cont'd</p> <p>-ears: observe location, size, shape</p>	<p>Figure LD 38</p> 	<p>Low set ears may indicate congenital abnormalities</p>
<p>hearing can be tested by making a loud noise (suddenly)</p>	<p>observe blinking of eyes in response to sudden sound</p>	<p>no blinking of eyes in response to sudden sound</p>
<p>G. NOSE, MOUTH</p> <p>-nose: look in nostrils close mouth and alternate closing each nostril</p>	<p>clear, nasal septum present normal breathing without difficulty</p>	<p>not clear, septum partial difficulty breathing snuffles as baby breathes, may indicate congenital syphilis</p>
<p>-mouth: look at mouth, lips, gums, tongue Palpate upper palate</p>	<p>intact palate, no lesions free, movable tongue</p>	<p>cleft lip, and/or palate facial paralysis (mouth drawn to one side) tongue tied supernumary teeth (these are soft, without enamel and are shed in a few days)</p>

NEWBORN EXAMINATION

EXAMINATION	NORMAL	ABNORMAL
<p>H. GENITALIA AND RECTUM</p> <ul style="list-style-type: none"> <li>-urination observed</li>   <li>-rectal temperature and/or bowel movement</li>   <li>-male: retract foreskin of penis</li>   <li>-female: visualize labia, urethra, vaginal mucosa by spreading legs</li> </ul>	<p>patent urethra</p> <p>patent anus</p> <p>some narrowing of foreskin easily retractable (will retract over the glans in 3-8 months)</p> <p>smooth skin, moist mucosa, bloody vaginal discharge (lasts 2-5 days)</p>	<p>blocked urethra</p> <p>anal opening not formed</p> <p>stricture of foreskin adhesions discharge</p> <p>lesions, cysts foul smelling discharge labia adherent</p>
<p>I. MUSCOLOSKELETAL (look for fractures, dislocations, paralysis)</p> <ul style="list-style-type: none"> <li>-count fingers and toes</li>   <li>-move arms and legs through range of motion</li> <li>-palpate and observe spine</li> <li>-look at feet</li> <li>-palpate and rotate hips</li> </ul>	<p>normal movement, no resistance</p> <p>smooth and flexible</p> <p>flexible, turned inward may be from foetal position.</p>	<p>extra digits</p> <p>resistance, no spontaneous movement of one or more limbs</p> <p>irregular, tender, spina bifida</p> <p>club feet</p> <p>hip dislocation</p>

Figure LD 32



## REVIEW QUESTIONS

## NEWBORN EXAMINATION AT BIRTH

1. Mark the letter "A" before any of the times below that you would consider abnormal findings when examining a newborn.

- |   |   |
|---|---|
| <input type="checkbox"/> cyanosis                           | <input type="checkbox"/> rapid and regular respirations for first hour    |
| <input type="checkbox"/> pale skin                          | <input type="checkbox"/> squint   |
| <input type="checkbox"/> vigorous movements                 | <input type="checkbox"/> cleft lip or palate                              |
| <input type="checkbox"/> dry, peeling skin                  | <input type="checkbox"/> presence of teeth                                |
| <input type="checkbox"/> birth weight $3\frac{1}{2}$ Kg.    | <input type="checkbox"/> enlarged breasts                                 |
| <input type="checkbox"/> birth weight $2\frac{1}{2}$ Kg.    | <input type="checkbox"/> abdomen moving alternately with each respiration |
| <input type="checkbox"/> small white lumps on nose          | <input type="checkbox"/> subconjunctival haemorrhage                      |
| <input type="checkbox"/> head circumference 30 cm           | <input type="checkbox"/> black sticky stool                               |
| <input type="checkbox"/> posterior fontanelle partly closed | <input type="checkbox"/> snuffles   |

2. Give definitions for these terms:

- a. milia -
- b. cephalhaematoma -
- c. subconjunctival -
- d. snuffles -
- e. septum -
- f. cyanosis -
- g. moulding -
- h. clavicle -
- i. rooting reflex -
- j. Moro reflex -

## POST PARTUM HAEMORRHAGE

### General Considerations

This is one of the most serious complications in obstetrics and must be promptly dealt with. Post partum haemorrhage is severe bleeding during the third stage of labour or within the next 24 hours. The amount of blood lost during labour and delivery should always be estimated.

In estimating, it is important to include the amount that has soaked into clothes, sheets, drapes and bedding. An estimated loss of more than 500 ml or any mother with systemic signs (weakening) and even moderate blood loss must be considered a grave emergency. The effect of the blood loss is more important than the amount.

Atonic post partum haemorrhage is more common and is always from the placenta site. Anything that interferes with the normal haemostatic method of compression of the blood vessels that served the placenta by contraction of uterine muscle fibres can produce this.

- A. The uterus may simply not contract well. This can occur after a prolonged labour especially if there was an obstruction. The woman who has had many children in rapid succession may be anaemic, weak from malnutrition, and have a lax uterus. Sedation or anaesthesia may interfere with uterine contraction. The rapid expulsion of a large baby may not give the fibres of the upper uterus time to retract properly. The over-distention of the uterus and large placental site of a multiple pregnancy may interfere with haemostasis.
- B. Mismanagement of the third stage of labour is probably the most common cause. A distended bladder may prevent complete placental separation and expulsion. Meddling is hazardous! The uterus needs time to recover after delivery of the baby and clots must form on the placental site vessels. Massaging, kneading or squeezing at the wrong time may cause irregular contractions which are not effective. Retained products may be overlooked and left in the uterus. The uterus cannot retract completely until it is empty.
- C. Multiple fibroids may interfere with muscle action to squeeze shut the vessels.

- D. Antepartum haemorrhage or placenta previa may interfere with muscle action.
- E. Hypofibrinogenaemia may occur with disastrous haemorrhage.

Traumatic post partum haemorrhage is usually due to lacerations of the cervix or upper vagina. It is differentiated by starting immediately after the baby is born, being continuous even though only a heavy trickle, and occurring in the presence of a well contracted uterus.

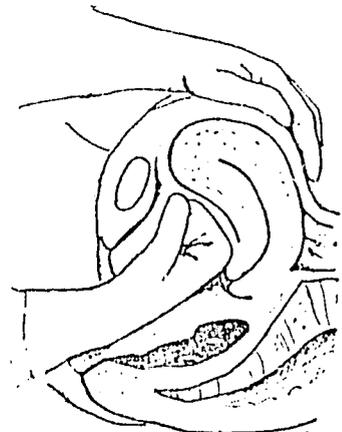
#### Management of Post Partum Haemorrhage

Management requires specific action, aimed at the cause, to stop the bleeding. If the placenta is still in place, it must be removed without delay. If it has been removed, then external stimulation may produce the necessary contraction of the uterus. The uterus should be massaged until it contracts. Blood clots are then expelled. Massage of the uterus should be done carefully and only as required to stimulate contractions after the baby is born. When the uterus is felt to contract, you should stop massaging but continue checking the uterus every minute and if it begins to feel soft again, resume the massage.

Oxytocic drugs should be given, Pitocin 1 cc I.M, IV fluids, such as Lactated Ringers, 5% Dextrose in water, 5% Dextrose in normal saline or blood may be required because of systemic collapse. (See Emergency Trauma Module on Shock.) If an IV is in place, the Pitocin 1 cc may be given by IV push slowly.

Bimanual compression of the placental site may be required until the drugs take effect. Compress the uterus between your two hands. Continue the compression until the uterus contracts and retracts. In the case of a thick abdominal wall as with an obese patient, it may be necessary to place your right hand on the vagina as described for use in removing the placenta and compress the uterus between that hand as a fist pressing on the anterior uterine wall and your left hand behind the uterus abdominally. Internal bimanual compression may be needed.

*Figure LD 40 - Internal bimanual compression of the placental site. The left hand is on the abdomen.*



The only satisfactory treatment of traumatic post partum haemorrhage is to suture the laceration. Use the principles and techniques discussed in repair of an episiotomy. Expect the cervix to be very friable if you must suture a laceration on it. Be sure to inspect the laceration carefully to determine its extent. If a laceration has extended into the rectum or bladder the patient should immediately be referred to the hospital. Oxytocic drugs will not be of assistance in traumatic haemorrhage if the uterus is already contracted.

If you are unable to stop the haemorrhage you must, of course, transfer the patient to a hospital. Direct pressure to a cervical laceration that you are unable to suture may in that case be applied with sterile gauze or cloth packing against the bleeding area. But the patient must be transported immediately, supported for shock, and observed to be certain the uterus is not expanding from bleeding extending into it.

Vulvar haemorrhage can occur from tearing of subcutaneous vessels. There may be a bulging into the vagina or a labia majora. This should be referred to the hospital.

#### REVIEW QUESTIONS

1. How much bleeding constitutes post partum haemorrhage?
2. What are the two types?
  - a)
  - b)
3. What can cause the atonic type?
  - a)
  - b)
  - c)
  - d)
  - e)
4. What is the most common cause of atonic post partum haemorrhage?
5. When is uterine massage indicated?
6. How is traumatic post partum haemorrhage treated?
7. When is bimanual compression indicated?
  - external
  - internal

## USE OF MEDICATION DURING PUERPERIUM

There are several medications that at times may be required during puerperium.

1. Oxytoxics may be required to maintain uterine firmness to prevent haemorrhage. After the initial use of injectible oxytoxics ergometrine 0.2 gm.tab. may be given three times a day for three days if needed.
2. Antibiotics may be required if sepsis develops (see Puerperal Septsis in Problems of Women Module.)
3. Iron tablets and folic acid tablets - one per day are required.
4. IV fluids may be required in treatment of shock.

## STUDENT GUIDE

## Complications of Labour and Delivery

## I. Entry Level Knowledge and Skills

Before starting on this unit, you should have successfully completed all previous units in this module. (Acceptable performance, 80%.)

## II. Objectives

Using the information and experiences provided by the instructor and the module text, you will be able to:

1. Describe the effects and explain management of eclampsia on labour and delivery.
2. Explain and describe management of the risks involved in postmaturity.
3. Describe the management of prematurity.
4. Describe the management of prolapsed cord.
5. Describe and demonstrate on a model, the management of a breech delivery.
6. Identify and describe management of abnormal presentations.
7. List the signs of multiple pregnancy and describe its management.
8. Identify the signs of urinary retention.
9. Identify the signs of impending rupture of the uterus and rupture of the uterus.
10. Describe the procedures for making and repairing an episiotomy.
11. Describe the procedure for vacuum extraction.

## III. Evaluation

## MODULE PHASE

Upon completion of this unit, you will be assessed on the following:

1. Knowledge: Written test based on the contents of this unit. Acceptable performance 80%.
2. Skills: Your ability to:
  - a. demonstrate management of a breech delivery using a model.
  - b. demonstrate management of the following abnormal presentations using a model: incomplete rotation of shoulders, occipito-posterior, face, brow, shoulder and compound presentation.
  - c. assist in episiotomy and repair.
  - d. set up for a vacuum extraction.

ROTATION PHASE

Upon completion of the rotation phase, you will be assessed on the following:

1. Your ability to diagnose and manage eclampsia. (Pre-eclampsia)
2. Your ability to diagnose and manage premature labour.
3. Your ability to diagnose multiple pregnancy.
4. Your ability to manage an episiotomy and repair.

IV. Activities:

In order to accomplish the objectives of this unit, you will participate in the following activities:

1. Read the module text and answer review questions.
2. Participate in group discussion.
3. Observe demonstrations, using a model, of breech delivery and other abnormal presentations and their management.
4. Demonstrate, on a model, the management of breech and other abnormal presentations.
5. Observe delivery with vacuum extractor.
6. Set up vacuum extractor equipment.
7. Observe episiotomy and repair.

## TOXAEMIA

If the woman presents with signs of eclampsia, (See Problems of Woman Module), she should be immediately transferred to the hospital. If labour has progressed too far for transfer at the time you see her, use medications as noted in the eclampsia section to prevent convulsions and deliver her as rapidly as possible, but be prepared to care for a depressed baby. Since the most convulsions with eclampsia occur at or within the first 12 hours after delivery, monitoring must be continuous and medication must be immediately available to deal with seizures.

## PREMATURE LABOUR

Premature labour is often associated with a factor complicating pregnancy such as pre-eclampsia, eclampsia, antepartum haemorrhage, multiple pregnancy, foetal malformation, acute physical or emotional illness. It may occur at any time during pregnancy but only after about the 28th week is survival of the newborn very likely. The closer to term that the pregnancy can last, the more likely it is that the baby will live.

If there is severe bleeding, rupture of the membranes, or the cervix is dilated, then labour will continue to delivery. If these have not occurred, the patient should be put to bed and carefully monitored. Sedatives such as phenobarbital 60 mg p.o. up to four times a day can be given. Because of the potential complications to mother and premature baby, refer to hospital if at all possible.

Special attention must be given to keeping the premature baby warm. If it does not tolerate feeding with breast milk, it should be immediately referred to the hospital.

### POSTMATURITY

Usually delivery occurs by 40 weeks. After 41 weeks it is said to be postmature. The risk of death of these babies double if delivery is delayed until the 42nd week and triples by the 43rd. Anoxia is often present. Labour is prolonged and the harder head does not mould well. The problem that occurs in diagnosing postmaturity is uncertainty of dates. This is one of the reasons early and regular prenatal care is important. The date at which foetal movements were first felt may be useful in determining dates. If at 40 weeks the cervix is still long, hard and closed, or if delivery has not occurred by 41 weeks, the patient should be referred to the hospital.

### PROLAPSE OF CORD

The umbilical cord may be the presenting part with the membranes intact or after they rupture. It may also lie alongside the presenting part. It is more common when the presenting part does not fit well into the lower uterus thus allowing the cord to slip ahead. Multi-parity and abnormal presentations are common causes.

If prolapse of the cord is noted and it is possible to transport the woman to the hospital immediately, place her on her knees and chest and transport her. If this is not possible, then delivery must proceed but will produce a dead baby.

## REVIEW QUESTIONS

1. Mark with the letter "P" those conditions that are often associated with premature labour.

<input type="checkbox"/> antepartum haemorrhage	<input type="checkbox"/> emotional illness
<input type="checkbox"/> rheumatic fever	<input type="checkbox"/> cancer
<input type="checkbox"/> tonsillitis	<input type="checkbox"/> multiple pregnancy
<input type="checkbox"/> eclampsia	<input type="checkbox"/> foetal malformation

2. Define these words:

a. antepartum -  
 b. postmature -  
 c. prolapse -  
 d. multiparity -

3. Mark with the letter "X" the statements that are those for post maturity.

a.  The risk of death doubles by 42nd week and triples by 43rd week.  
 b.  The labour is prolonged.  
 c.  There is risk of excessive moulding.  
 d.  Anoxia is rarely present.  
 e.  The head does not mould well.

4. How should the nurse clinician manage a case of cord prolapse while being transported to the hospital?

## BREECH PRESENTATION

Since the risks of complication are greater in breech than in vertex presentation, if breech is diagnosed early enough, the breech presentation should be referred to the hospital for labour and delivery. There will be times, however, when the breech is not diagnosed until the woman is in labour and easy referral cannot be done. Therefore, it is necessary for you to be acquainted with procedures for delivery of a breech. Breech will be more common in premature and multiple pregnancies.

### Types

There are two basic types of breech presentation. In one, the complete breech the foetal attitude is complete flexion including the thighs and legs. In the second or incomplete, flexion is incomplete. The thighs may be flexed but the legs extended; the thighs may be extended but one or both legs flexed which makes the presenting part a knee, or either thighs or legs are fully flexed presenting a foot.

### Mechanism of Labour

The internal rotation of the breech body brings the buttocks into the A-P diameter of the pelvic outlet for their delivery.

The anterior buttock escapes followed by the posterior buttock with a lateral flexion of the body.

There is return of the buttocks to their original position as the body is born.

The shoulders internally rotate in the same direction as the buttocks did.

The head internally rotates so that the occiput is anterior.

The body externally rotates to follow the twist of the head so that the back is anterior.

The head is born as the back of the head pivots on the symphysis pubis and the chin and face sweep out across the perineum. Using the back of the neck as the pivot can crush the spine.

### Dangers of Breech Presentation

- A. Maternal - Trauma to the cervix and perineum is more common. The fact that the head is large in relation to the pelvis may not be evident until the baby is born as far as the umbilicus. This may force trauma as the obstruction is dealt with. The wide stretching of maternal tissues may come more rapidly leading to more risk of tearing.
- B. Baby
1. Prematurity is a more common event with breech leading always to increased risk to the newborn.
  2. Since the after coming head has not been slowly moulded to a smaller more compact structure as in a vertex presentation, its rapid compression and sudden release can cause intracranial haemorrhage. Episiotomy may decrease this risk.
  3. Anoxia can occur because the placenta separates too early, because the aftercoming head compresses the cord, because the cord presents first, or because the foetus is stimulated to breathe too soon and inhales mucous or amniotic fluid.
  4. Injuries can occur through the forces of labour or by rough handling. These can include fractures, ruptured abdominal organs, or nerve damage.

#### REVIEW QUESTIONS

1. What are the dangers to the baby, of a breech presentation?
  - a.
  - b.
  - c.
  - d.
2. In what circumstances is breech presentation more common?
  - a.
  - b.
3. Where should breech deliveries preferably be done?

CLINICAL SKILL  
DELIVERY OF BREECH PRESENTATION

Supplies and Instruments

The same as required in normal delivery.

Introduction

Labour is monitored the same as for a vertex presentation. A vaginal examination is done immediately after the membrane rupture to find out whether the cord is presenting and to determine the cervical dilation. If the cord is presenting and is being compressed the delivery must be accomplished immediately or the baby will die or at the least have brain damage. The woman should not push until the buttocks are bulging at the vulva. Complete cervical dilation may be critical to the delivery of the aftercoming head.

- Step 1: The woman should lie with her buttocks at the edge of the table or bed and her feet supported or placed on chairs.
- Step 2: Stand between her legs, facing her.
- Step 3: The buttocks and body up to the umbilicus should be expelled by the unaided bearing down efforts of the mother.
- Step 4: A loop of cord is gently pulled down to avoid traction on the umbilicus. If possible, the cord should be moved so that it is on the perineum rather than being pinched by the pubis.
- Step 5: The feet may need to be helped across the perineum - remember, the knees are made to bend in only one direction.
- Step 6: Feel if the elbows are on the chest. They usually are. If they are, wait for the next contraction.
- Step 7: During contraction and pushing by the patient, you may assist the expulsion of the shoulders by grasping the baby by the iliac crests with your thumbs low on the sacrum and pulling downward until the anterior shoulder escapes. Then, the buttocks are lifted to allow the posterior shoulder and arm to pass over the perineum.

- Step 7A: If the arms are extended and the elbows cannot be felt on the chest they will have to be brought down.
- Step 7C: The body is turned in a half circle ( $180^{\circ}$ ) turning so that the back is turned uppermost. This brings what was the posterior arm anterior.
- Step 7D: The body is then rotated back half a circle in the opposite direction, bringing the back uppermost. The arm that has been lying posterior is now anterior and is delivered in the same way as the other was.
- Step 8: As soon as the shoulders have been delivered, the infant is allowed to hang by its own weight. This brings the head onto the pelvic floor rotating the occiput forward. The baby can be allowed to hang for one or two minutes as the head slowly moves downward and outward.
- Step 9: The back of the head (not the neck) should pivot under the pubic arch as you support the baby by the feet. The feet are lifted through an arc of  $180^{\circ}$  until the mouth and nose are free of the perineum.
- Step 9A: If when the baby is allowed to hang, the neck and hairline are not visible, it is probable the head is extended.
- Step 9B: Baby is held draped over the left arm with the left palm supporting the chest. The left index and ring fingers are placed over the chin and if necessary the left middle finger may be placed gently well back into the mouth and aid the flexion.
- Step 9C: Pressure on the uterine fundus pushing on the lower abdominal wall usually brings the head down. The index and middle fingers of the right hand hooked over the shoulders pull downward gently.
- Step 10: As the baby is held upside down so that the fluid or mucous can drain from the breathing passages, the mouth and nose are wiped with a gauze or cloth and suctioned using a bulb syringe mucous extractor. The respirations of the baby should be stimulated if that is required. (See section in Care of Newborn.)

- Step 11: Let the mother slowly expel the rest of the head using deliberate regular breaths. To protect the perineum by slowly stretching this may require 2 or 3 minutes.
- Step 12: While you are waiting, continue to hold the baby up by its feet, an oxytocic medication may be injected in the mother. (Make sure only one baby.)
- Step 13: Time should be noted and cord cut, as in the delivery of a vertex presentation.

#### REVIEW QUESTIONS

1. What should the vaginal examination determine in a breech presentation?
  - a.
  - b.
2. Why is a loop of cord pulled down after the buttocks have been expelled?
3. When should you assist by pulling on the baby?
4. How should you grasp it?
5. Which part of the body must be kept uppermost?
6. In what position should you suction the baby?

## ABNORMAL PRESENTATIONS

Occipito-Posterior positions occur in as many as 10% of vertex presentations. Often inspection of the abdomen will show a depression at or below the umbilicus. Stage I labour may be slowed even with good uterine action and no problem with the size of the foetal head. In most cases good contractions produce flexion and descent and the head rotates so that the occiput is delivered anteriorly. In a few, flexion does not occur, the front of the skull reaches the pelvic floor first and rotates forward, and the baby is born face to pubis. It may be possible in these cases to hold the front of the skull back under the symphysis pubis so that as contractions continue the occiput advances, flexion occurs and the head pivots. Occasionally, with vertex presentations, especially occipito-posterior ones, flexion does not take place and the head stops high up transverse to the pelvis. (Refer to V.E.Extraction, page 114). It may be possible to increase flexion by pushing up on the front of the head or even with a sterile gloved whole hand in the vagina to rotate the head. If not, the patient should be given analgesic or sedative medication if necessary and transport immediately to the hospital.

Face presentation occurs with complete extention of the head. This usually develops during, rather than before, labour. On vaginal examination the presenting part is high, soft, and irregular. The smooth, hard vertex with its sutures and fontanelles is not palpated. Care must be taken not to damage the eyes with vigorous palpation. The chin becomes the leading part and the head is born by flexion rather than by extention. Delay in labour is common as are perineal lacerations. The cord may present first. In the majority of cases the baby is born spontaneously, but if the head remains high in spite of good contractions the patient should be referred immediately to the hospital. It is important in delivering a face presentation to maintain extention by holding back on the brow so that the chin can escape under the symphysis pubis first. An episiotomy will likely be necessary. If the chin remains posterior the patient must be transported immediately to the hospital.

Brow presentation is seldom diagnosed before the onset of labour. The presenting part may be too high or reach or the anterior fontanelle may be felt on one side of the pelvis and the orbital ridges on the other. The patient should be referred immediately to the hospital.

Shoulder presentation occurs with a transverse lie. Because the presenting part fits badly in the pelvis the membranes usually rupture early. In all cases these patients should be referred immediately to the hospital.

Compound presentation is said to occur when a hand or foot lies alongside the head. If diagnosed in the first stage of labour the patient should be referred to the hospital. If it is not noted until the second stage, make an attempt to hold the hand or foot back directing it over the face.

#### Incomplete Rotation of Shoulders

Delay in the natural delivery of the shoulders is usually due to incomplete rotation of the shoulders. Rotation may be assisted by a finger gently hooked into the anterior axilla causing forward rotation followed by downward traction.

If this fails, an attempt can be made to rotate the shoulders bringing the posterior arm anterior.

Should this fail, an episiotomy should be made and four fingers inserted behind the posterior shoulder which is pushed into the hollow of the sacrum rotating the anterior shoulder under the pubic arch.

As a very last resort an attempt can be made to deliver the posterior shoulder. Two fingers are needed to splint the humerus of the posterior arm (which can be easily broken); the elbow is flexed; the arm is swept over the chest; and the hand delivered thus allowing delivery of the posterior shoulder followed by the anterior.



## MULTIPLE PREGNANCY

More than one foetus can occur in the uterus at the same time. This can produce twins (2), triplets (3), etc. This can occur from one ovum and one sperm in which case the babies are identical; and there is one placenta and one or multiple sets of membranes or from multiple ova each fertilized by a sperm in which cases there are multiple placentas and multiple sets of membranes.

### Diagnosis

Diagnosis of multiple pregnancy is not always easy but should be done! After the 20th week the uterus is larger than usual for dates. On palpation finding more than one head is diagnostic. For this reason the abdominal palpation of every pregnant woman must include the entire uterus even though a head is found immediately at one or the other end of it. The head may feel small in relation to the size of the uterus or multiple foetal parts may be palpated. At times the presence of more than one baby is not suspected until it is noted that the uterus is still large and high after birth of the first baby. Feeling foetal parts and hearing a foetal heart remaining in the uterus at that time is diagnostic!

### Effects of Multiple Pregnancy

A multiple pregnancy has all the side effects and problems of any other pregnancy only more so. The minor problems such as morning sickness, oedema and backaches are more pronounced, but so also are the more serious ones such as toxæmia and anaemia. There is also a strong tendency for premature labour.

### Management of Labour

Since labour is often premature the baby born even following an uncomplicated delivery is often premature or at least immature and at higher risk. The risk of these babies dying is at least three times that of single births, and the risk to the second baby is twice that of the first because of interference with placental circulation. It is usual for at least one of these foetuses to have an abnormal presentation. For these reasons multiple pregnancies should be referred to the hospital for labour and delivery. Since it is possible that you may be presented with a multiple pregnancy that is too far advanced in labour to be referred, the procedure for delivery is included even though referral is to be done wherever possible.

### Procedure for Delivery

The preparations and supplies required are similar to those for the normal single delivery except that two or more sets of supplies and instruments are needed.

- Step 1: The woman is delivered in the dorsal position. An episiotomy may be made to lower the risk to the babies by easing the resistance of the perineum and speeding the process.
- Step 2: As soon as it is delivered, the airway of the first baby is cleared and respiration stimulated if necessary.
- Step 3: The cord is ligated and cut as in a single birth. It is especially important to tie the placental end of the cord carefully too, since the placenta and the circulation may be shared between babies.
- Step 4: The first baby is warmly wrapped and given to an assistant to monitor.
- Step 5: Immediately palpate the abdomen to ensure that the lie is longitudinal and listen to the foetal heart.
- Step 6: With three or four good contractions the second baby should be born. If after five minutes, contractions have not resumed, making sure that the head or the breech is presenting, rupture the membranes and massage the uterus to stimulate contraction.
- Step 6A: If the second foetus has a transverse lie, while its membranes are still intact, you should attempt to turn it to a longitudinal lie.
- Step 6B: By palpation locate the head and back of the foetus.
- Step 6C: By steady pressure turn the foetus in the direction of its face (to keep it in flexion).
- Step 6D: While maintaining the pressure to keep it in position, rupture the membranes so that the head or breech will engage.
- Step 7: Pitocin 1 cc I.M. should follow the last baby.

### Delay in Birth of Second Baby

If contractions do not resume within 30 minutes after you have punctured the membranes, the patient should be immediately transported to the hospital. Cases of two or three days elapsing between the births of twins have occurred but sepsis and foetal anoxia leading to still-birth are high risks of delay. If the first placenta should separate or bleeding occur before birth of the second baby this should warn you of the likelihood of anoxia to the second baby. Massage the uterus and use fundal pressure if necessary to expel the second baby as soon as possible.

### Puerperium

Careful monitoring is required. The uterus may be slower at contracting and resuming prepregnant size; the babies may be premature and require more attention; and providing adequate breast milk may be a problem.

### REVIEW QUESTIONS

1. Why is an episiotomy performed in the case of a multiple pregnancy?
  
2. What are the two principal risks in delay in the birth of the second baby?
  - a.
  - b.
  
3. Complete these sentences:
  - a. Babies born in a multiple pregnancy are often \_\_\_\_\_ .
  - b. Multiple pregnancies should be referred to \_\_\_\_\_ .
  - c. In multiple pregnancies it is usual for one of the babies to have an abnormal \_\_\_\_\_ .
  - d. The risk of babies from multiple pregnancy dying is at least \_\_\_\_\_ times that of normal births.
  - e. One problem after delivery of twins or triplets may be inability to provide adequate amounts of \_\_\_\_\_ .

## EPISIOTOMY

An episiotomy is an incision into the perineum to enlarge the vulvar opening, thus prevent tearing. It may be required because of delay due to rigid perineum or disproportion between foetus and vulvar opening; to hasten the birth of a baby with foetal distress; to avoid intracranial damage to a premature baby; to reduce the effort of bearing down in pre-eclampsia or maternal cardiac disease; or by the presence of scar tissue interfering with stretching of the perineum.

### Timing

If the episiotomy is done too early, bleeding may be heavy. If it is delayed too long, the muscles of the perineum will have been excessively stretched. Among signs that the perineum is likely to tear are: a perineum that is not stretching; one that is long, non-elastic or oedematous; trickling blood from the vagina when the head is on the perineum; blue appearance at the midline becoming white, shiny and transparent; tearing of the perineum before the head is crowned. The best time for an episiotomy varies but is usually when the head is visible 2 to 3 cm.

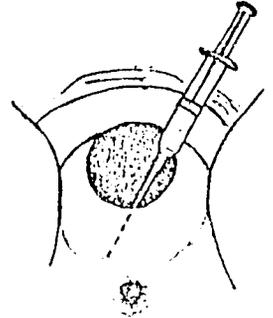
### Types

<u>Median</u>	<u>Medio-lateral</u>
1. Easy to repair	More difficult to repair
2. Faulty healing rare	Faulty healing not uncommon
3. Rarely painful in puerperum	Pain in 1/3
4. Pain on intercourse	Pain on intercourse occasional
5. Anatomic end results good	10% faulty
6. Smaller blood loss	Larger blood loss
7. 2-5% third-degree extension	Less than 1%

The medio-lateral episiotomy allows more room without the risk of third degree extension but is more difficult to repair well.

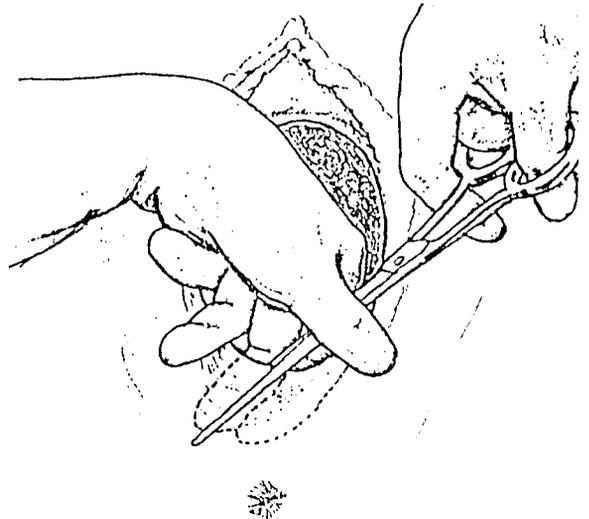
### Procedure

Step 1: 5 cc of 1% local Procaine may be infiltrated into the perineum. This is optional and often unnecessary since the stretching of the perineum provides at least partial anaesthesia. Insert 2 fingers along path for needle so as to protect the head. The needle is introduced in the midline of the perineum and directed subcutaneously for 3 cm in the direction the episiotomy will be made. Aspiration with the syringe checks for blood. If none is noted the anaesthetic is injected as the syringe is withdrawn. This is repeated to each side of the episiotomy track.



*Figure LD 41 - Inject of local analgesic.*

Step 2: The first two fingers of the left hand are inserted between the perineum and the foetal head to protect the head. One blade of a straight mayo scissors is placed inside the vagina between the two fingers. The episiotomy is made with one snip if possible.



*Figure LD 42 - Fingers protecting foetus.*

Step 3: Mediolateral - the incision begins at the midline of the perineum and is directed to the patient's right posterero-laterally. If the anus is 6 on the clock face, the episiotomy would be cut toward 7. It should be about 3 cm long.

Median - The incision is on the midline of the perineum. It should be about 2.5 cm long.

## REPAIR OF EPISIOTOMY

Supplies (Sterile)

Gauzes	2 - allis tissue forceps
Plain catgut 0,1/Chromic 00	Toothed dissecting forcep
Needle holder	Suture scissors
Cutting needle	2 - Round needles (to prevent contamination)

Procedure

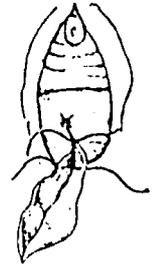
Step 1: If anaesthetic has not been infiltrated it will be required. It is best to repair episiotomy as soon as possible to minimize blood loss and the risk of sepsis. To prevent blood from covering the incision, place a gauze tampon high in the vagina.



Step 2: The wound is inspected to determine its extent as well as whether the anal sphincter is intact. If it has been torn, the two ends are grasped with the allis forceps and are sutured together using figure of eight sutures (2 or 3) with 0-plain gut or chromic 00, on a round needle. (Referral/consult.)

Figure LD 43 -  
Episiotomy wound.

Step 3: Identify apex (beginning) of vaginal incision by placing 2 fingers, widely separated, into the vagina and pull downwards.



Step 4: Place first stitch above the apex, using round body needle. Tie and continue with a continuous running suture (or single stitches) to the junction with the vulva skin.

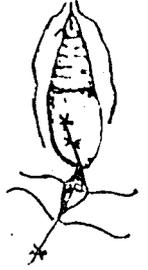
Figure LD 44 -  
First suture insert  
in apex of wound

Step 5: The deep tissue should be closed to eliminate any space which could develop into an infected cavity. The rectum should be pressed downward in the vagina to prevent injury to the rectum and possibly infection. Close deep muscle with interrupted sutures. Check with finger to be sure you have eliminated all spaces. Usually need to take 2-3 interrupted stitches.



Figure LD 45 -  
Deep sutures insert:

Step 6: Skin and subcutaneous tissues are brought together with stitches at least 5 mm from the edges of the incision to protect against tearing with developing tissue oedema. A cutting needle is used for these external stitches.



Step 7: A rectal examination must be performed to make sure that no stitches have been placed through the rectum. If they have, the repair should be taken down to remove these stitches.

Figure LD 46  
External suture

Step 8: Remove the vaginal tampon.

#### REVIEW QUESTIONS

1. The following are advantages and disadvantages of the two types of episiotomy. Before the phrases that apply to Median episiotomies, write the letter "M". Before the phrases that apply to the Medio-Lateral type of episiotomy, write the letters "ML".

- |                                 |                                    |
|---------------------------------|------------------------------------|
| ___ 10% faulty                  | ___ rarely painful in puerperium   |
| ___ faulty healing rare         | ___ occasional pain on intercourse |
| ___ 2.5% third-degree extension | ___ pain on intercourse            |
| ___ Anatomic end results good   | ___ larger blood loss              |
| ___ Pain in 1/3                 | ___ less than 1% extension         |
| ___ More difficult to repair    | ___ easy to repair                 |
| ___ Smaller blood loss          | ___ faulty healing not uncommon    |

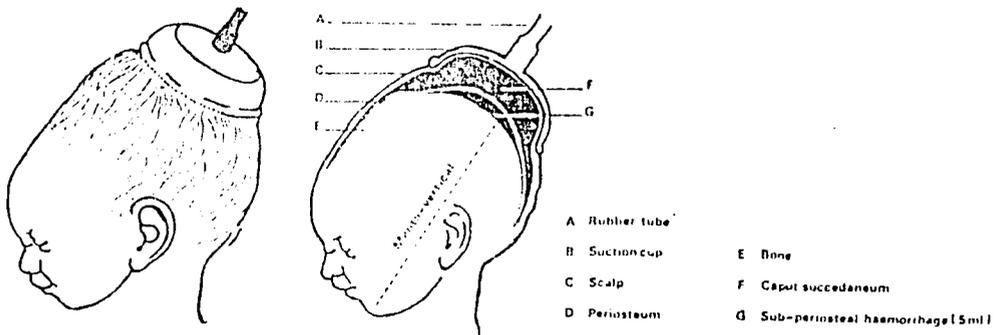
2. Discuss how the nurse clinician determines that the episiotomy has extended into the anus.

MANAGEMENT SKILL.

Vacuum Extraction

Introduction

The vacuum extractor is used to help remove a foetus by a suction cup applied to the scalp. The larger the cup, the greater the suction area; thus increasing the extractive force that can be applied. A vacuum is applied to the inside of the cup using a rubber tube, pump and vacuum bottle. This vacuum inside the cup causes it to fill with the skin of the baby's head and stick to the baby's scalp. (See Figure LD 47.)



*Figure LD 47 - Showing the effect of suction*

The vacuum extractor as a piece of equipment includes a rubber tubing (B) containing a metal chain that terminates in a traction handle connected to the cup. The rubber tubing (A) extends through the handle and enters a glass container fitted with a pressure gauge. A hand pump that extracts air and produces the vacuum is attached to a short piece of rubber tubing (C) and the glass container. A wire basket supports and protects the vacuum bottle. (See Figure LD 46.) Using the hand pump extracts air from the glass bottle creating a vacuum. The vacuum creates suction on the surface of the head where the cup is attached. The operator uses the traction handle to apply "pull pressure" to aid in the delivery of the baby.

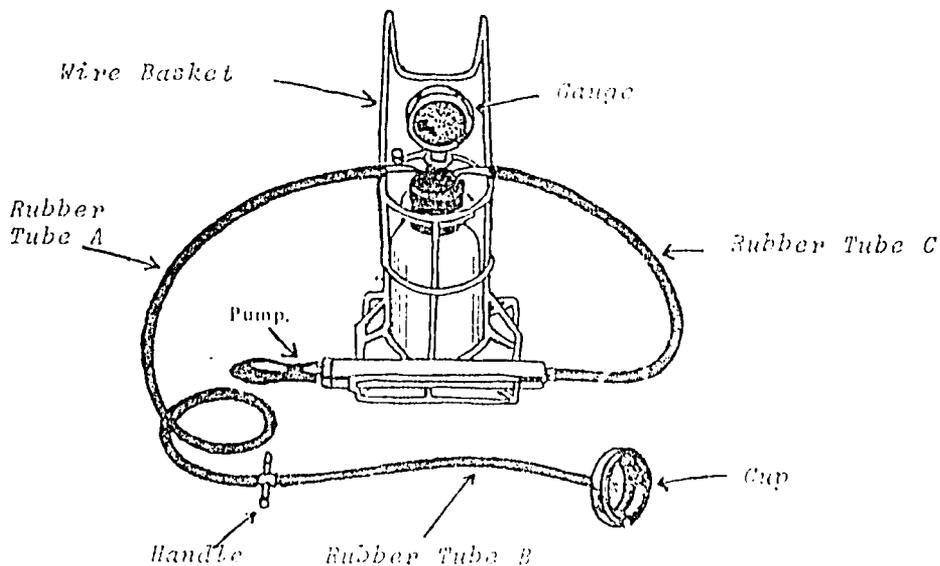


Figure LD 43 - Vacuum extractor

#### Supplies and Instruments

The same as required in a normal delivery.

Vacuum extractor: Sterile - cup (30, 40, 50, 60 mm) and tubing (2)  
Unsterile - bottle, gauge, pump with tubing

Support stand: A stool, box or chair. It must be lower than the delivery table/bed.

#### Purpose of Procedure

The purpose of this procedure is to aid in the delivery of a baby when any one of the following occur:

- a delay at the end of first stage of labour (refer to Stage 1)
- a delay during the second stage of labour (refer to Stage 2)
- a delay in the descent of the second twin (refer to Multiple Pregnancy)
- transverse arrest of the head (refer to Abnormal Presentation)
- occipito-posterior position of the vertex (refer to Abnormal Presentation)

The main value lies in the termination of the second stage of labour for either maternal or foetal indications, or/and Stage 2 has exceeded 30 minutes (multiparous) or one hour (primiparous).

Steps in Procedure (Refer to Warnings)

Step 1: Patient evaluation (refer to Examination of a Pregnant Woman at Term) to identify the following required conditions present to perform vacuum extraction.

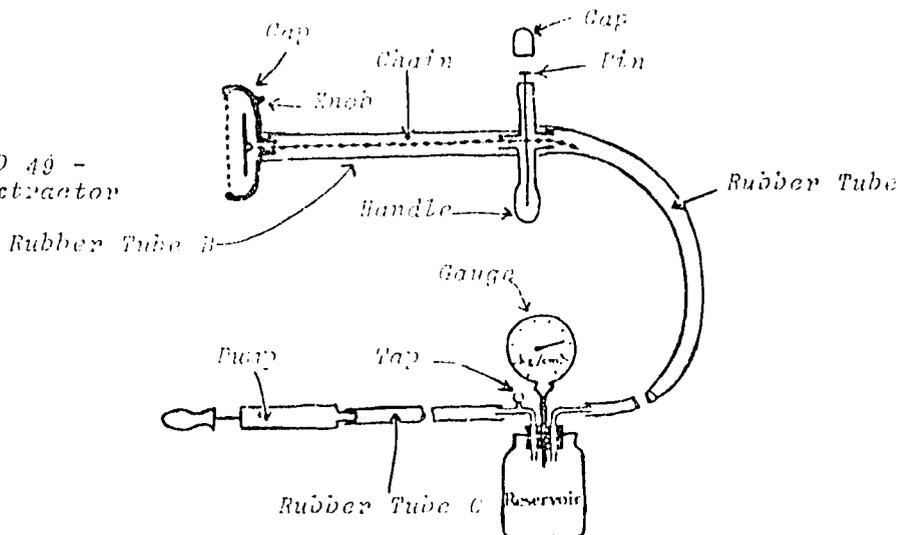
- term pregnancy
- adequate, regular contractions
- head is engaged
- membranes are ruptured
- cervix more than  $\frac{1}{2}$  dilated

Step 2: The delivery table is prepared as in a normal delivery. In addition, the assistant must place the requested size sterile cup and tubing on the delivery table and assemble the unsterile parts of the vacuum extractor: Place the suction bottle on the support stand and attach the hand pump to the section bottle with the rubber tubing (C) to the tap. (See Figure LD 49.)

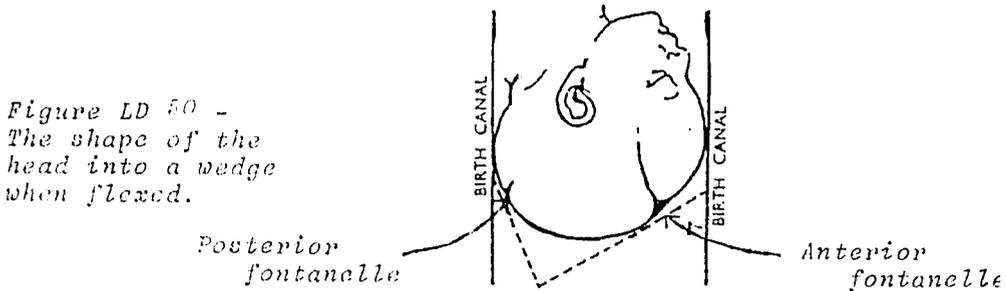
Step 3: The nurse clinician scrubs for the delivery and assembles the sterile units of the vacuum extractor:

- unscrew the cap for the pin
- remove the pin
- pull the chain tight
- fasten with the pin and then replace cap
- insert handle in the long rubber tubing (A)
- hand the end of tubing (A) to the assistant to attach to the bottle

Figure LD 49 -  
Vacuum Extractor



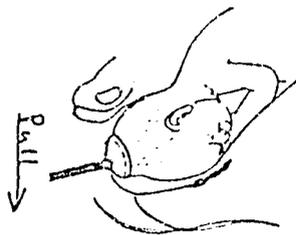
- Step 4: Test the vacuum extractor by applying cup to the palm of the hand.  
Explain to the woman what is going to happen and ask her to empty bladder.
- Step 5: The woman should lie with her buttocks at the edge of the table or bed, and her feet supported or placed on chairs.
- Step 6: If unable to void, a catheter is passed and the vulva and thighs are scrubbed.
- Step 7: A vaginal examination is repeated for position (identify the anterior and posterior fontanelles).  
See Vaginal Exam of Woman in Labour.
- Step 8: The vacuum extraction is performed.
- Step 8A: Lubricate the cup with sterile water.
- Step 8B: Between contractions, insert the cup into vagina sideways (like a pessary).
- Step 8C: Place cup on the posterior part of the head (between the anterior and posterior fontanelles) to help the head bend forward (flex). This flexion will allow the smallest part of the head to lead the way creating a wedge effect (See Figure LD 50), refer to Mechanisms of Delivery.



- Step 8D: Ask the assistant to pump the vacuum extractor until the gauge registers 0.2 kg/cm.
- Step 8E: Make sure there is no vaginal or cervical tissue caught between the cup and the scalp by guiding your finger around the entire cup.

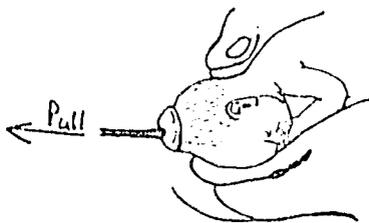
- Step 8F: Wait  $1\frac{1}{2}$ -2 minutes, then pump another 0.1 kg/cm, repeat the process until in about 10 minutes the pressure reaches 0.8 kg/cm. The scalp is sucked into the cup and a caput succedaneum is produced. After each individual increase in pressure, check that the vaginal/cervical rim has not been sucked into the cup. If the vacuum is applied too quickly (less than  $1\frac{1}{2}$ -2 minute intervals) suction will be poor and the cup will come off.
- Step 8G: If you are right handed, press two fingers of the left hand against the cup onto the head and, at the same time, push the head towards the sacrum.
- Step 8H: Pull on the handle firmly at a right angle to the cup when the woman has a contraction and, at the same time, encourage the woman to push. The direction of the pull is altered as the head descends to conform with the curved birth canal. See Figures LD 51, 52, and 53.
- Pull towards the floor when the head is high

Figure LD 51

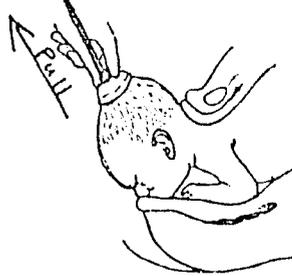


- Pull horizontally when the head is under the symphysis

Figure LD 52



- Episiotomy is done now, if indicated. Refer to Episiotomy.
- Pull up when the head is on the perineum (see Figure LD 53).



*Figure LD 53 -  
Pull up when  
head is crowning.*

- Step 9: Between contractions continue steady traction on the handle, but do not attempt to advance the baby until the next contraction. Encourage the patient to breathe deeply and relax.
- Step 10: When the head is crowning, ask the assistant to release the suction by loosening the tap (refer to tap in LD 49).
- Step 11: Remove the cup and complete delivery as in normal delivery.

#### Warnings

- A vacuum extractor in capable hands is much safer for both the mother and child than a prolonged delay in the delivery, or/and a long journey to a larger delivery unit.
- Make sure there is no vaginal or cervical tissue caught between the cup and the scalp.
- If the vacuum of 0.6-0.8 kg/cm is applied too quickly (less than two minutes), the suction will be poor and the cup will come off, possibly resulting in repeated applications.
- A vacuum of more than 0.8 kg/cm may injure the head of the baby.

Complications

- Baby
- necrosis of scalp
  - intracranial haemorrhage
  - haematoma beneath scalp
- Mother
- cervical laceration or haematoma from the cup
  - excessive blood loss from premature episiotomy

REFER IF: Cup comes off two times

Cup has been applied for 20 minutes and/or four strong contractions, without any descent identified.

Vacuum extractor fails (i.e., needs referred, then surgical intervention rather than forceps should be the method of choice for the delivery).

## REVIEW QUESTIONS

MANAGEMENT SKILL: Vacuum Extraction

1. List the five required conditions in order to perform vacuum extraction.
  - 1)
  - 2)
  - 3)
  - 4)
  - 5)
2. What is the purpose of a vacuum extraction and give three examples of women needing a vacuum extraction assisted delivery.

3. The gauge of the vacuum extractor must reach 0.6-0.8 kg/cm to obtain good suction. TRUE or FALSE?
4. If vacuum is applied too slowly, the suction will be poor and the cup will come off. TRUE or FALSE?
5. The direction of the pull on the vacuum extractor is altered as the head descends to conform \_\_\_\_\_  
\_\_\_\_\_
6. The nurse clinician is using the vacuum extractor and the cup pulls off two times. What should she do?
7. What possible complications are there to the mother and to the baby when using the vacuum extractor?

### URINARY RETENTION

It is mandatory that the bladder be kept from being distended with urine during labour and delivery. The woman in labour should empty her bladder at least every three hours during labour. It definitely must be emptied at the end of the first stage/beginning of the second stage labour. As little as 100 cc of urine can be seen and felt above the symphysis pubis during labour. It will have a soft, fluctuating consistency. At times it will produce a bulge with a distinct upper margin that looks like the depressed ridge of obstructed labour that indicates rupture of the uterus is likely. Always palpate and percuss for the bladder when descent of the foetus is slower than normal. If the woman is unable to pass her urine then catheterization is required. If passage of the catheter is made difficult because of the foetal presenting part, using a sterile glove put the forefinger of the left hand along the anterior wall in the vagina pushing the presenting part away and the catheter can be passed parallel to the finger.

One of the first things to check in a woman brought to you after prolonged labour is the condition of the bladder. Often catheterization to empty the bladder is all that is required to cause the delivery to proceed normally.

### RUPTURE OF UTERUS

This is a very serious potential complication. It may occur following obstructed labour, trauma, uterine massage during labour, or during labour following previous caesarean section. The woman usually notes that her strong contractions stop and their pain is no longer felt. She may note that it feels as if "something has given way". She feels faint and rapidly goes into shock. Foetal distress is noted. You may note sudden stopping of strong labour, foetal distress, and signs of shock.

The only treatment that will save any of these patients is immediate referral to the hospital for hysterectomy. If the rupture is not extensive this may be possible. If it is extensive, exsanguination will rapidly occur. Treatment for shock will be required. (See section on treatment of shock, Emergency Module).

## THERAPEUTIC SKILL

## Urinary Bladder Catheterization

- Adult Female Patient -

Suppliessterile:

Rubber or plastic catheter,  
size 14 French  
Two basins or glass jars  
Water soluble lubricant  
Kelly Clamp  
Forceps  
Gloves  
Cotton balls or swabs soaked  
in antiseptic solution  
Specimen bottle (if necessary)

non-sterile:

Protective sheet or towels  
Good light source  
(flashlight or lamp)  
Waste container  
Container for boiling instruments

Purpose of Procedure

The purpose of this procedure is to relieve urinary retention.

Steps in Procedure

Prior to catheterization, examine the patient's abdomen to assure that the bladder is distended. Then put the patient at ease by explaining why the procedure is necessary and the steps you will take while performing this procedure. You should also explain to the patient that she will feel a little discomfort during the actual catheterization, and that she should try to relax as much as possible.

Catheterization is a sterile procedure. You must observe strict asepsis during the whole procedure to avoid introducing disease causing germs into the urethra and bladder.

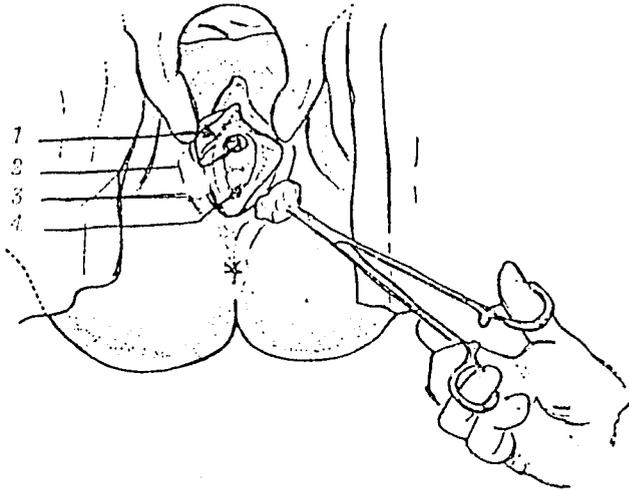
Unless sterile supplies are already available, disposable or otherwise, two basins (or glass jars), gloves (with the cuffs turned up), forceps, Kelly clamp, and (if required) the specimen bottle must be first boiled for ten minutes. Keep the handle of the forceps upright, so that you can remove it from the water without contaminating the other equipment. All sterile equipment must be handled with the forceps.

While the equipment is being boiled, you can position and drape the patient. Make sure the patient has complete privacy while this procedure is being done. If the nurse clinician is a male, a woman assistant should be present during this procedure. Have the patient disrobe from the waist down. Position the patient on her back with her legs spread apart and the knees slightly bent. Position the lamp to illuminate the genital area. If a lamp is not available, have an assistant illuminate the genital area with a flashlight. Wash your hands with soap and water. Place a towel or protective sheeting under the patient's buttocks. If a clean drape is available, drape the inside of the legs leaving the genital area exposed. Wash the patient's genital area with soap and water.

Using the forceps, withdraw one of the basins which has been boiled. In this basin, again using the forceps, place the catheter and the Kelly clamp. In the first basin, drip some water soluble lubricant near the tip of the catheter. Try to avoid getting the lubricant on the handle of the Kelly clamp. Do not touch any part of the basin with the tube containing the lubricant, or the basin will be contaminated. Using the forceps, withdraw the second basin. Into the second basin pour antiseptic solution. Do not touch any part of the basin with the cotton balls. Open sterile package containing the antiseptic solution without touching the cotton balls with your fingers, or the container with the wrapping. Remove the specimen bottle, if a urine specimen is required, with the forceps from the container in which it was boiled. Tip the specimen bottle so the water drains out of it, but not so that the water runs down the forceps and then back into the bottle when it is placed upright. At this time, only the pair of rubber gloves should be left in the container used for boiling the equipment.

Wash your hands with soap and water for the second time. If you are right-handed, you will glove the left hand first. Using the forceps, remove the left hand glove by picking up the middle finger. Hold the glove with the forceps, cuff downwards, for a few seconds so excess water can drain out. Place your fingers as far into the glove as possible without touching any part of the outside of the glove. Release the forceps.

Grasp the folded edge of the cuff with the thumb and index finger of your right hand and pull the rest of the cuff onto the left hand. Using the forceps (do not pick up the forceps with the gloved hand) pick up the right hand glove. Allow excess water to drain. Slip the tips of the gloved hand between the inside of the cuff and the palm side of the glove. The end of the cuff may be held with the thumb of the gloved hand. Pull on the right glove, but do not touch any part of the ungloved hand or wrist with the gloved left hand.



*Figure LD 54 - Catheterization of the Female: 1) Labia minora; 2) Urethral opening (urinary meatus); 3) Labia majora; 4) Vaginal opening. When cleansing, use strokes from above downward. Start from the meatus and work outwards.*

If you are right-handed do not touch the genital area with your right hand. Separate the vulva with the thumb and forefinger of your left hand. Remember, your left is no longer sterile and should not touch any of the sterile equipment. Cleanse the urethral opening (meatus) and labia, starting from the meatus and working outward, and with your clean right hand using the Kelly clamp to hold the cotton balls soaked in the antiseptic solution. Use strokes from above downward. (See Figure LD 54)

Each cotton ball is used for only one downward cleansing stroke. Dispose of each used cotton ball in the waste container, not in the basin. Since the Kelly clamp will not be used to insert the catheter, it can be placed in the basin containing the antiseptic solution when the cleansing of the genital area has been completed. Keep your left hand in position until the catheter is inserted.

Coil the catheter in the basin and pick it up with your clean right hand about 4 inches (10 cm) from the tip. To prevent urethral trauma and the possibility of a secondary bacterial infection, liberally lubricate approximately 2 inches of the tip of the catheter. Place the open end of the catheter in the basin to catch the urine, or in the specimen jar if a urine specimen is necessary.

Do not relax your left hand. Remember, the cleansed areas must remain clean and this can only be done if the left hand remains in position.

Ask the patient to breathe deeply through her mouth. The catheter is held between the thumb and index finger and is gently advanced for 2 or 3 inches (5-8 cm) into the urethra. Urine should flow after the catheter has been inserted 3 inches (8 cm). Then advance the catheter one more inch (2.5 cm). (See Figure LD 55) When the urine ceases to flow or the amount is in excess of 1,000 cc, pinch off the catheter with your thumb and index finger, and gently remove the catheter.

Dry the patient and instruct her accordingly.

### Results

Never force the catheter if you encounter difficulty or obstruction. Withdraw the catheter, dry the patient, and refer her to a physician.

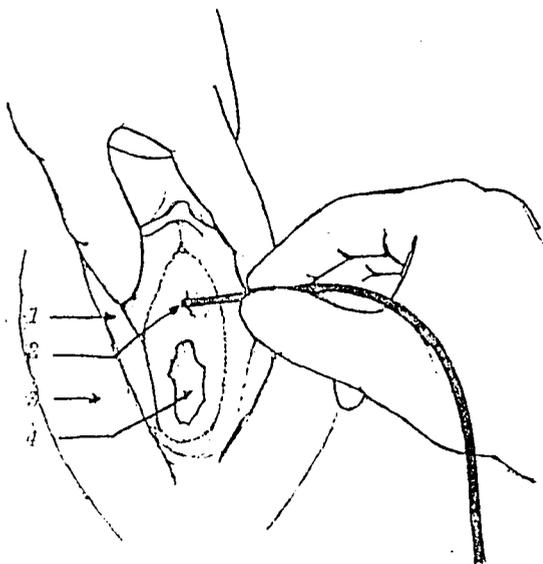


Figure LD 55 - Catheterization of the female: 1) labia minora; 2) urethral opening (urinary meatus); 3) labia majora; 4) vaginal opening. The catheter is gently advanced 2 to 3 inches (5-8 cm) into the urethra and then an additional one inch (2.5 cm) when urine starts to flow

Do not advance the catheter more than one inch (2.5 cm) into the bladder (no more than 4 inches of catheter should be inserted into the urethra) after the urine starts to flow or the bladder may be punctured by the tip of the catheter.

Do not remove in excess of 1,000 cc of urine at one time. This may result in the collapse of the walls of an overdistended bladder and the complication of shock. It is recommended that the patient be catheterized on two separate occasions if the bladder does not empty with the first catheterization and the urine passed exceeds 1,000 cc.

## MODULE PHASE

## SKILL EVALUATION

Before you are advanced to the rotation phase of training, a staff member will evaluate your mastery of the physical examination procedures and discriminations which have been identified in the modules.

You will have the opportunity to be rated on your performance of these skills at any time during the module phase that you feel prepared.

To help you prepare, the module contains a list of the skills to be evaluated. You are advised to do the following:

1. Work at perfecting your techniques of examination by practicing with another student.
2. During the clinical practice time provided, each week, practice the skills applicable to the subject being taught.
3. Have a fellow student observe and evaluate your performance.
4. When you feel you are ready, ask a trainer to observe and rate your performance.
5. If your performance is unacceptable, the trainer will give you specific comments on how to improve.
6. Practice again until you are ready for evaluation, and arrange to be rated.
7. If after two attempts you are unable to perform a skill at an acceptable level, arrange for a meeting with members of the training staff, who will help you obtain the experiences necessary for improving your performance.