Labor management

Ephrem Yohannes (MSc In maternity and neonatology)

Learning objectives

- Define labor
- List the stages of labor
- Mention the managements of each stage of labor
- Discuss the abnormal labor

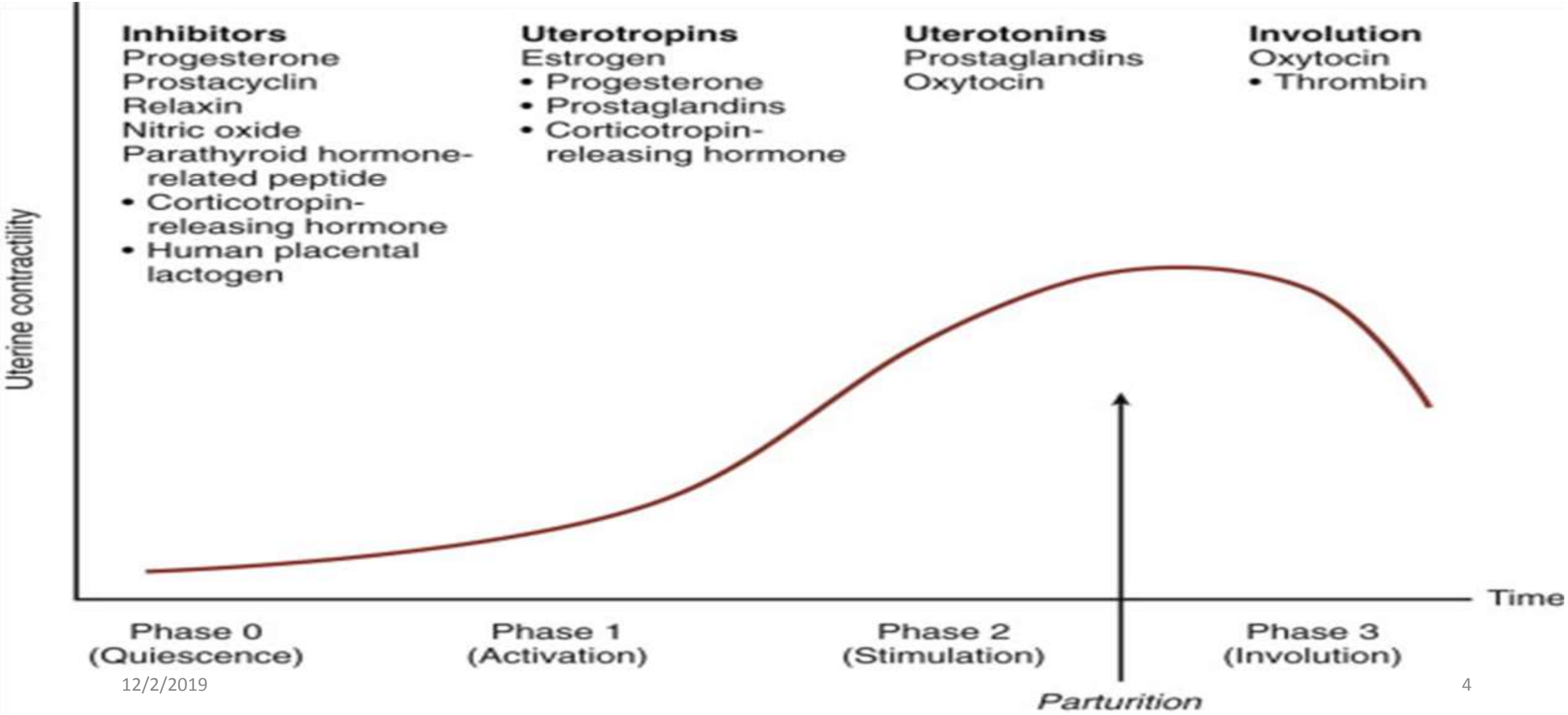
Terminology

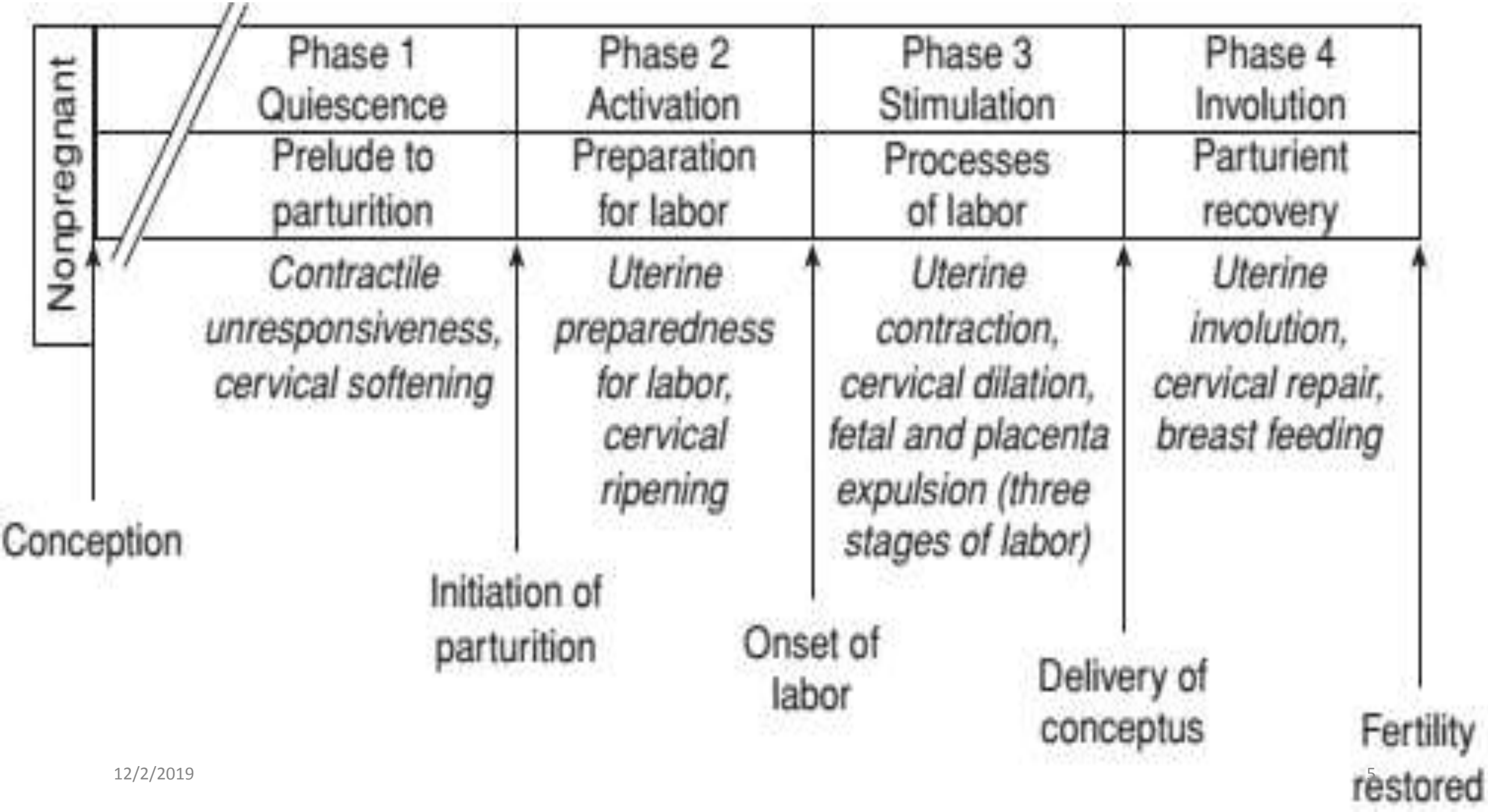
Labor: physiologic process of painful uterine contraction leading to cervical effacement & dilatation with expulsion of the fetus, placenta & membrane.

Parturition: Is bringing forth of young & requires well orchestrated transformations in both uterine & cervical function.

Parturition: Arbitrarily divided into four overlapping phases that correspond to the major physiological transitions of the myometrium & cervix during pregnancy

Four phases of parturition from quiescence to involution



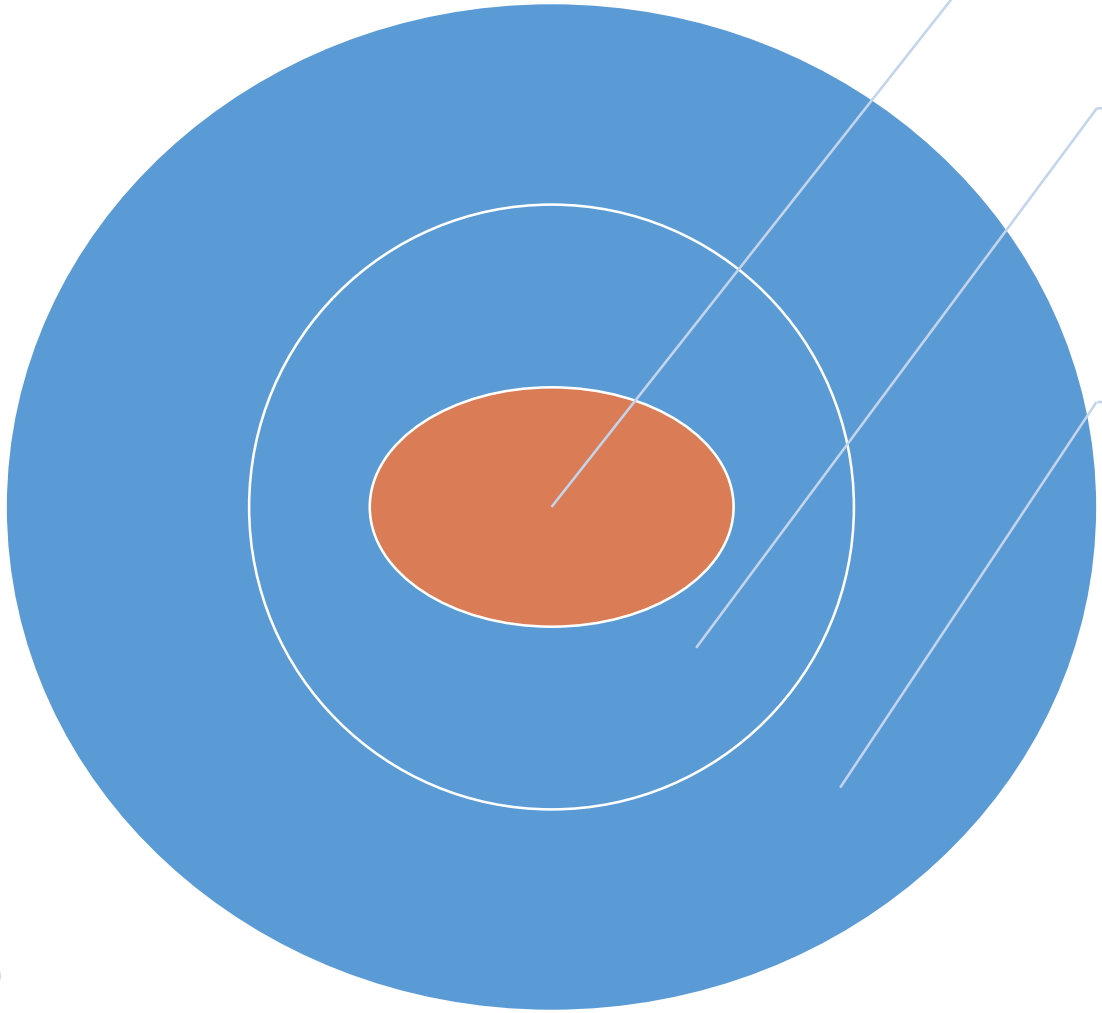

Nonpregnant
Phase 1
Quiescence
Phase 2
Activation
Phase 3
Stimulation
Phase 4
Involution
Prelude to parturition
Preparation for labor
Processes of labor
Parturient recovery
Contractile unresponsiveness, cervical softening
Uterine preparedness for labor, cervical ripening
Uterine contraction, cervical dilation, fetal and placenta expulsion (three stages of labor)
Uterine involution, cervical repair, breast feeding
Conception
Initiation of parturition
Onset of labor
Delivery of conceptus
Fertility restored

Physiologic preparations of labor

- **Lightening:**
  - ❖ The settling of the fetal head into the pelvic brim.
- **Braxton Hicks contractions:**
  - ❖ During the last 4–8 weeks of pregnancy irregular, generally painless uterine contractions occur with slowly increasing frequency.
  - ❖ The intensity may increase during the last weeks of pregnancy
- **Bloody show**:
  - ❖ Passage of a small amount of blood-tinged mucus from vagina, as the cervix begins to soften, efface, and dilate.
  - ❖ May precede the onset of labor by as much as 72 hours

Labor:

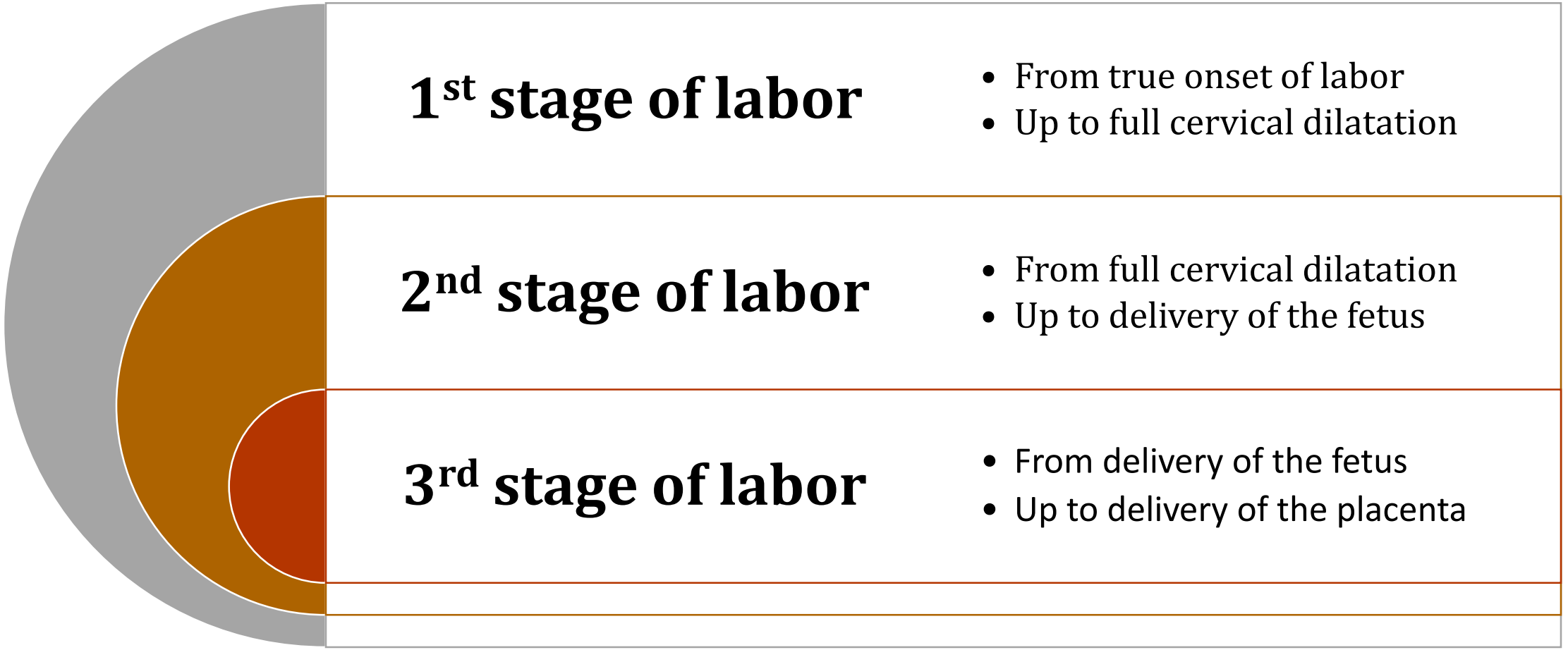
It starts with the onset of regular uterine contraction & ends with delivery of the newborn & expulsion of placenta.



It has four stages of labor.

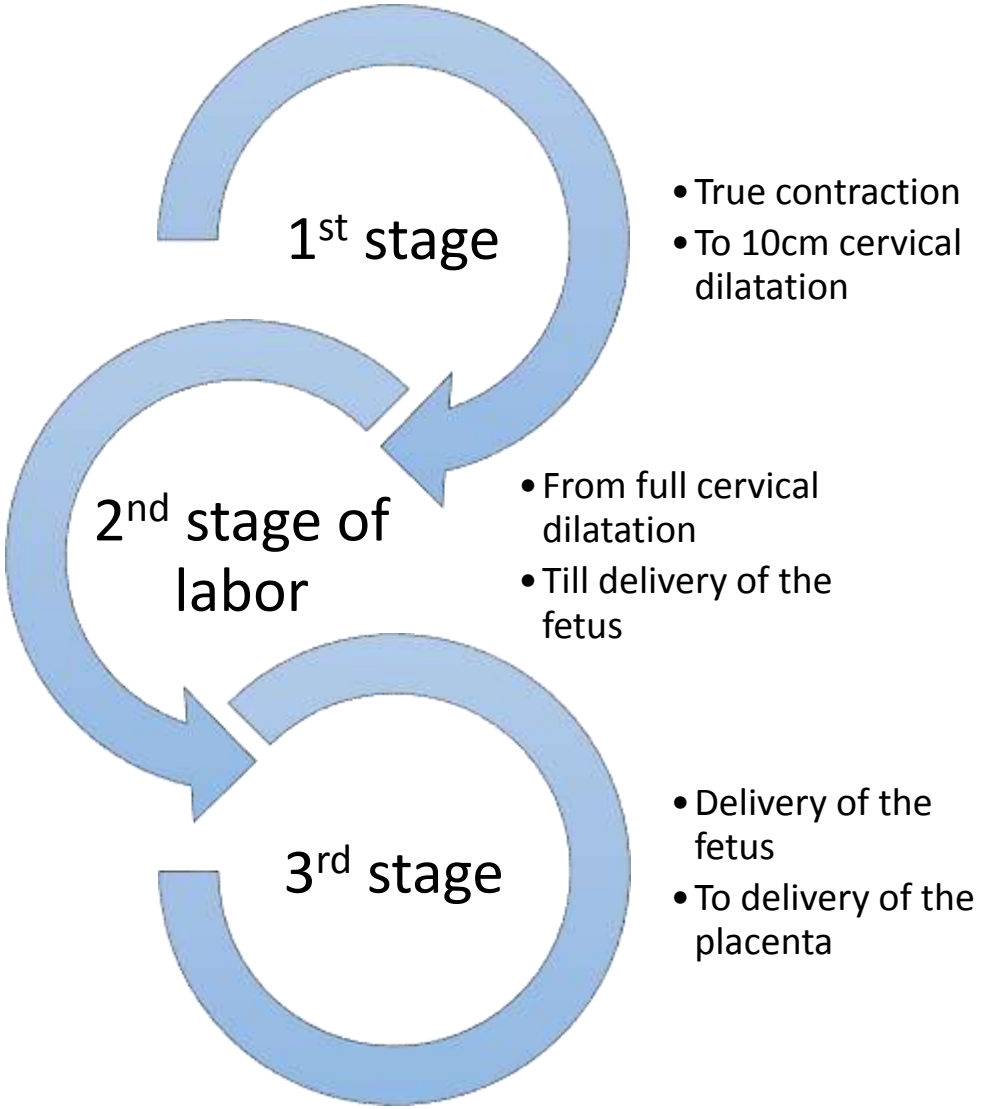
Labor can be normal and abnormal

Stage of labor



4th stage of labor:

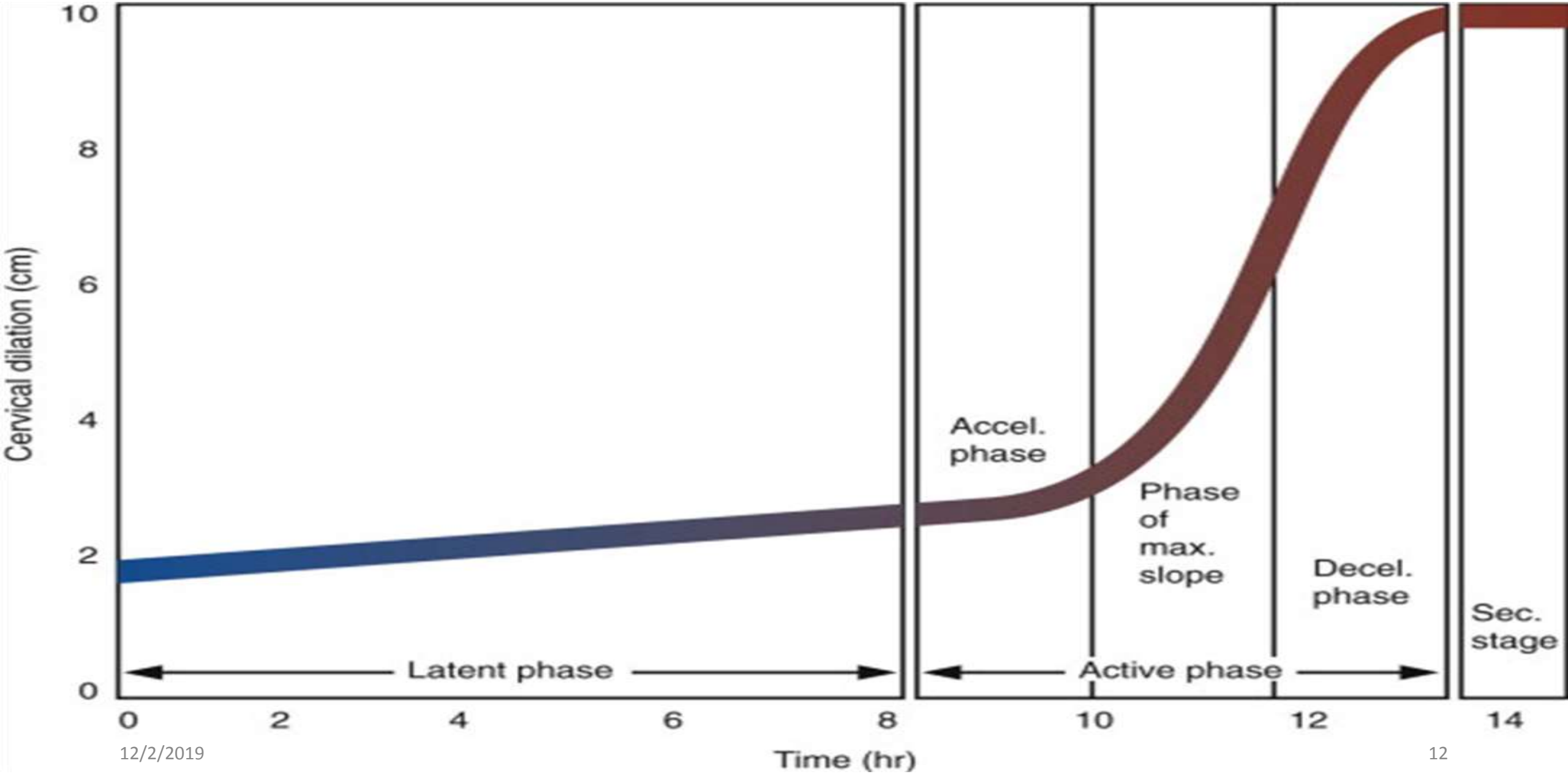
- One to two hours after delivery of the placenta.
- Because PPH is common @ this stage of labor


1st stage
True contraction
To 10cm cervical dilatation
2nd stage of labor
From full cervical dilatation
Till delivery of the fetus
3rd stage
Delivery of the fetus
To delivery of the placenta

First stage of labor:

- It has two phases(active and latent)
- Latent phase – onset of labor with slow cervical dilation to 4-6 cm and variable duration
- Active phase – faster rate of cervical change, 1.2 and 1.5 cm /hour in primi & multi respectively, regular uterine contractions

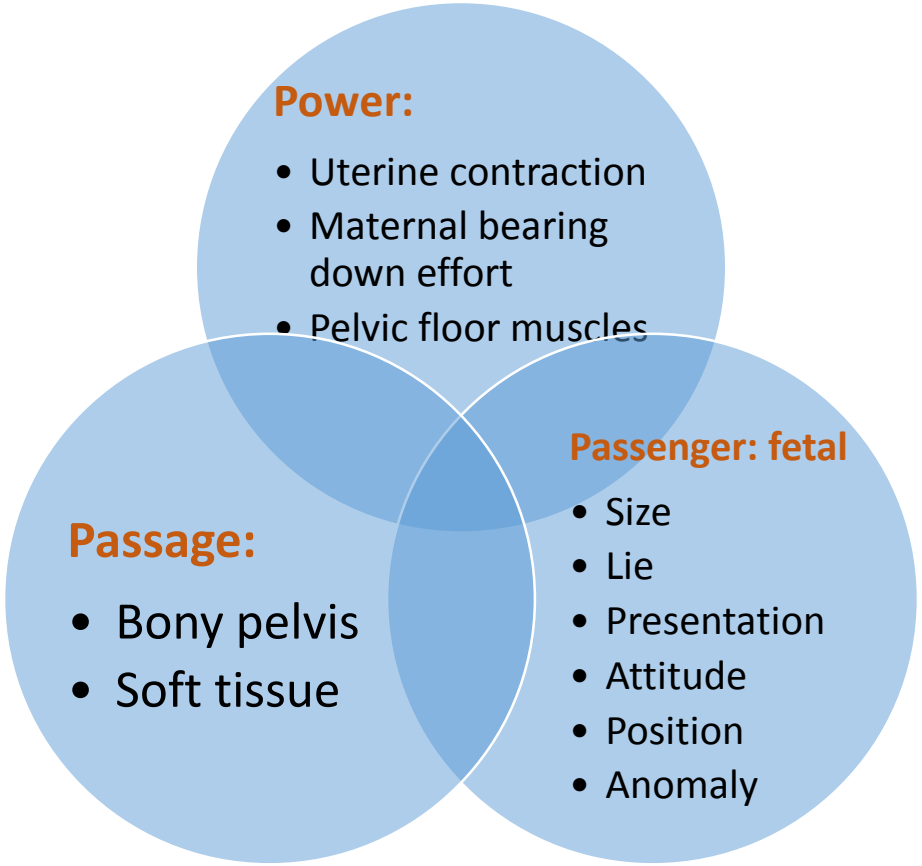
Freidman's curve



Admission criteria for labor

- All women with diagnosis of **labor** (latent and active) with:
  - *Ruptured membranes*, or
  - Known risk factor
- All women with diagnosis of **active labor** with/without presence of rupture of membranes or risk factor.

Factors that affect the success of labor: 3p's



Power

Uterine contraction can be assessed by:

- Observation
- Palpation
- External tocodynamometer
- Internal pressure catheter

Adequate contraction is:

- 3-5contraction/in 10 minutes/each staying for 40-60seconds
- 200-250 Montevideo

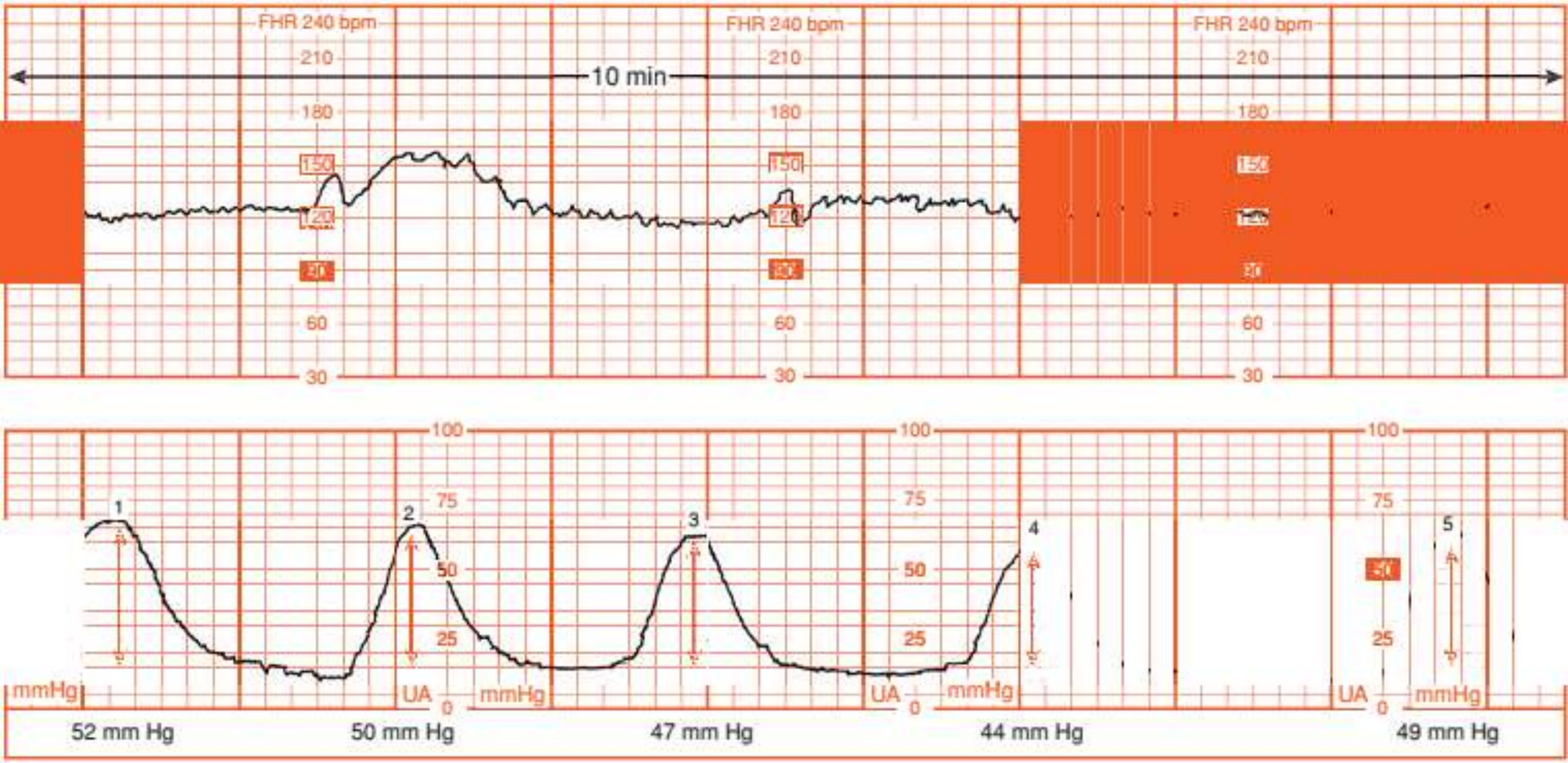
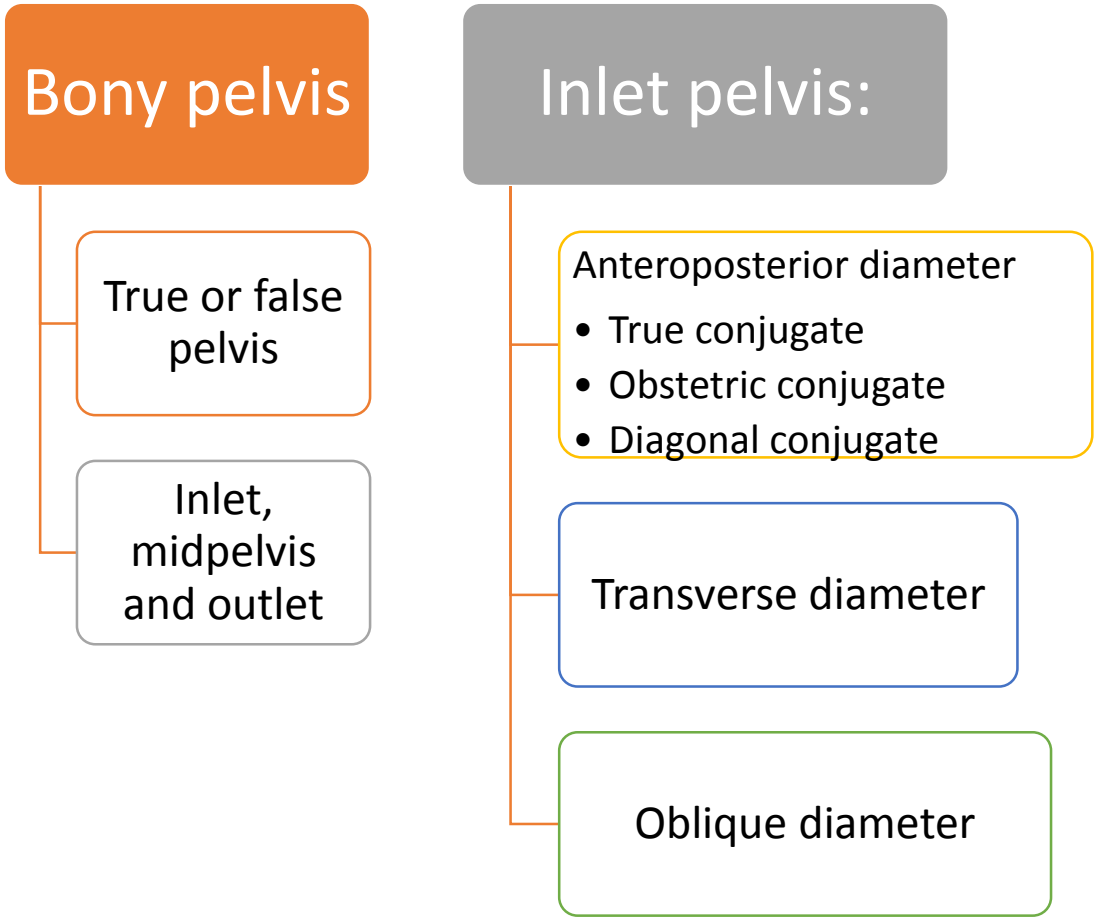
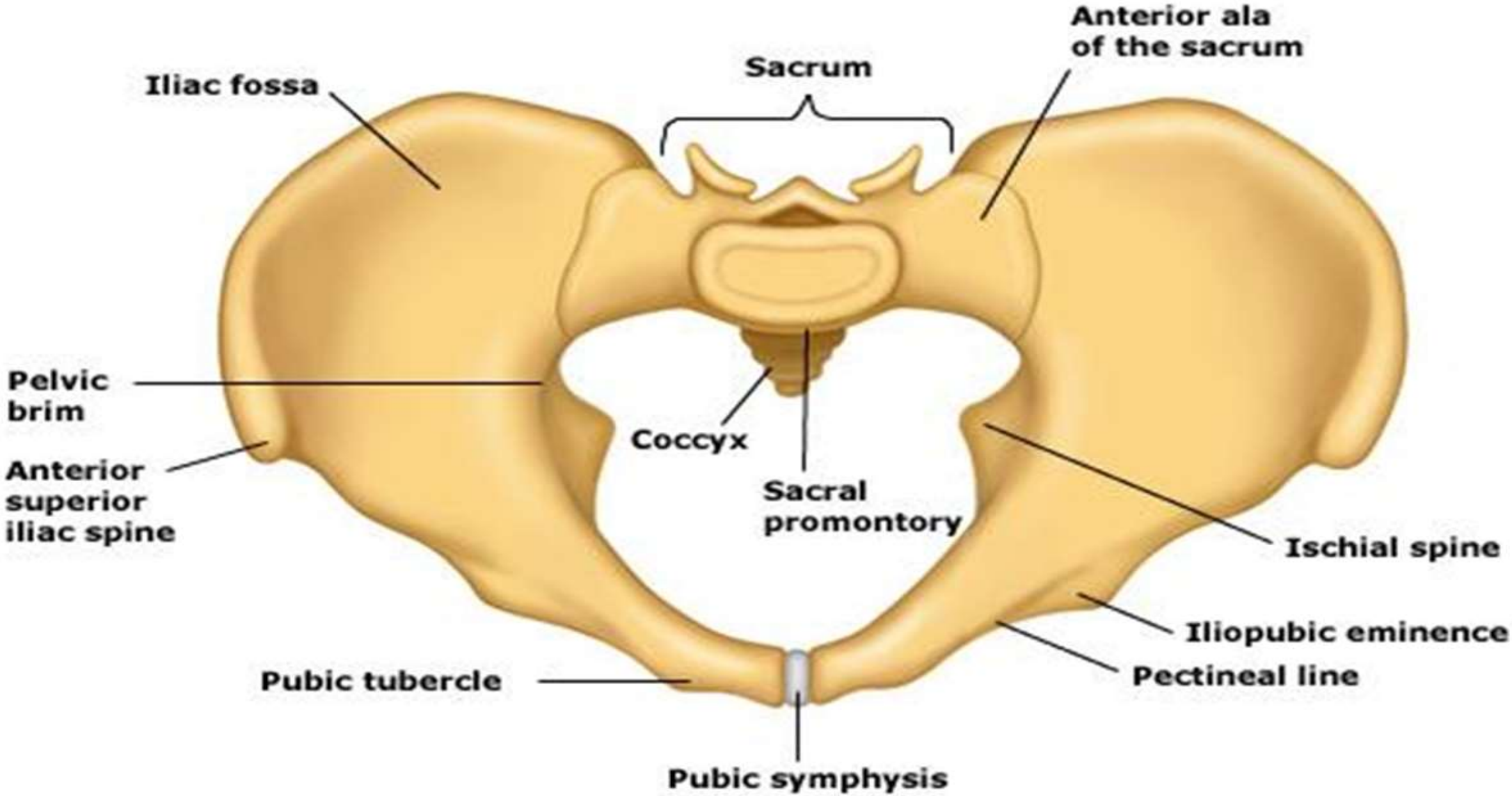


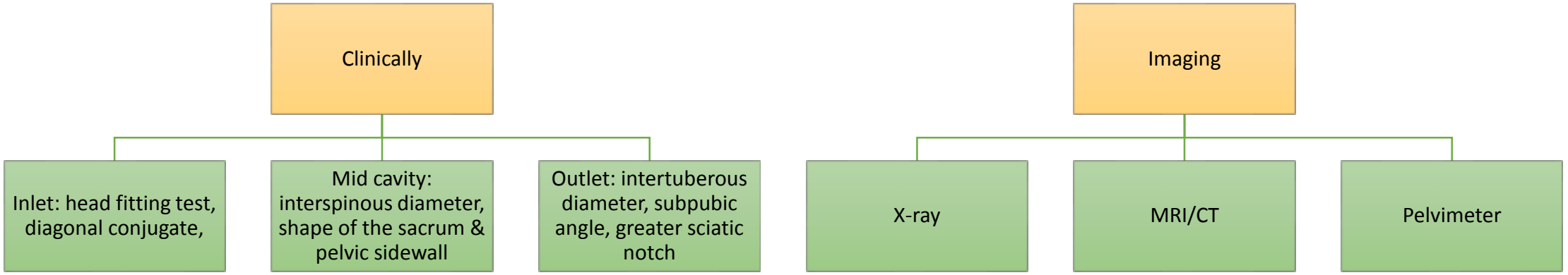
FIGURE 23-3 Montevideo units are calculated by subtracting the baseline uterine pressure from the peak contraction pressure for each contraction in a 10-minute window and adding the pressures generated by each contraction. In the example shown, there were five contractions, producing pressure changes of 52, 50, 47, 44, and 49 mm Hg, respectively. The sum of these five contractions is 242 Montevideo units.

Passage: Bony pelvis & soft tissue

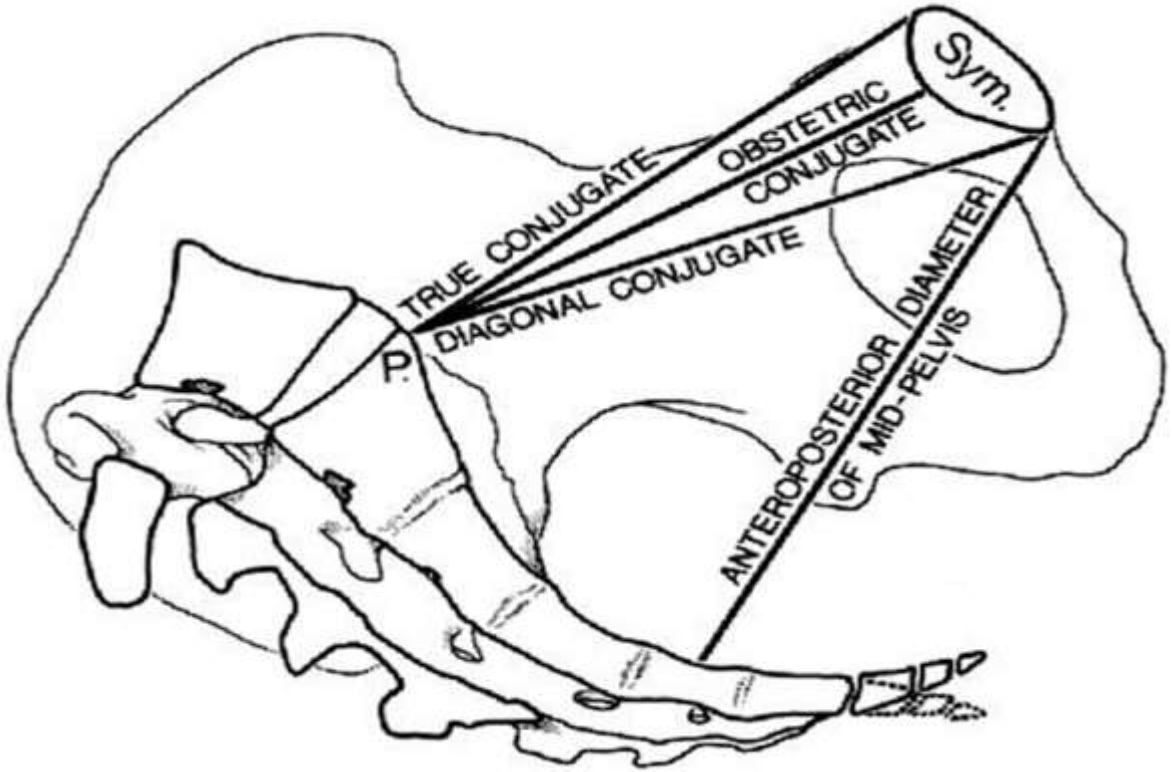


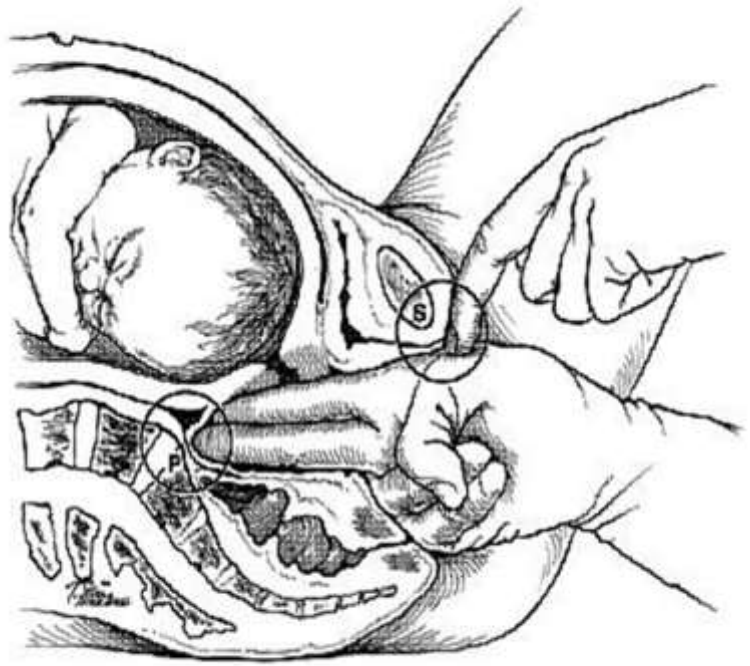

Anterior ala
of the sacrum
Sacrum
Iliac fossa
Pelvic
brim
Coccyx
Anterior
superior
iliac spine
Sacral
promontory
Ischial spine
Iliopubic eminence
Pectineal line
Pubic tubercle
Pubic symphysis

Assessing Pelvic adequacy



Anteroposterior diameter

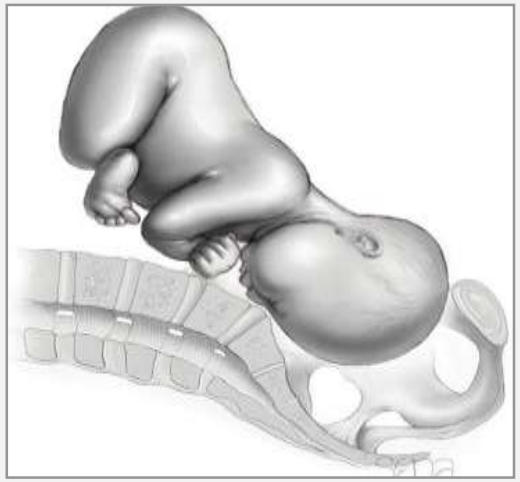




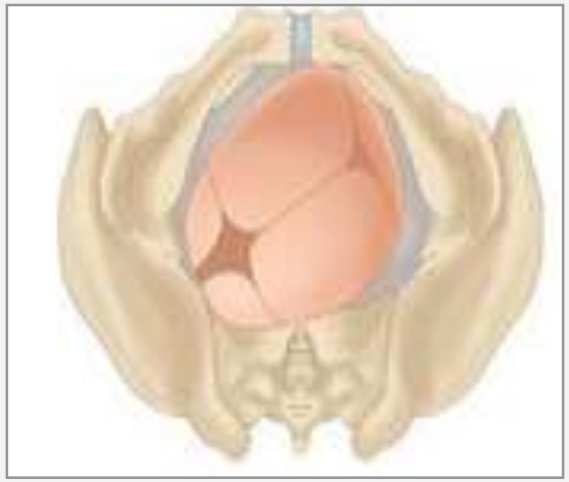
Types of Pelvic bone

	Gynecoid	Anthropoid	Android	Platypelloid
				
Pelvic inlet Transverse diameter		Narrow		
AP diameter		Wide		Narrow
Forepelvis	Wide	Divergent	Narrow	Straight
Pelvic midcavity Side walls	Straight	Narrow	Convergent	Wide
Inclination of sacrum		Wide	Forward	Narrow
Pelvic outlet Subpubic arch	Wide		Narrow	Wide

Passenger



Presentation



Position

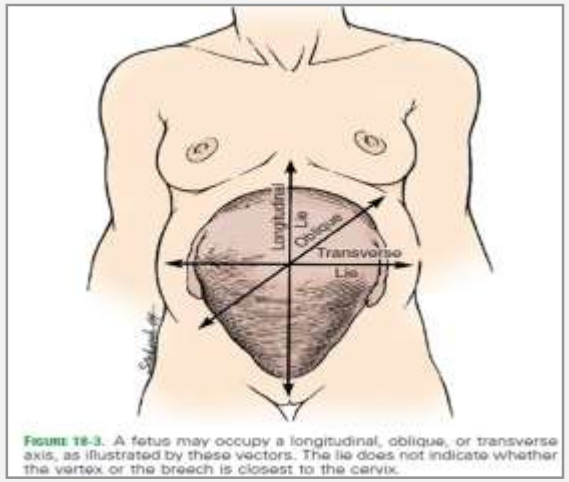
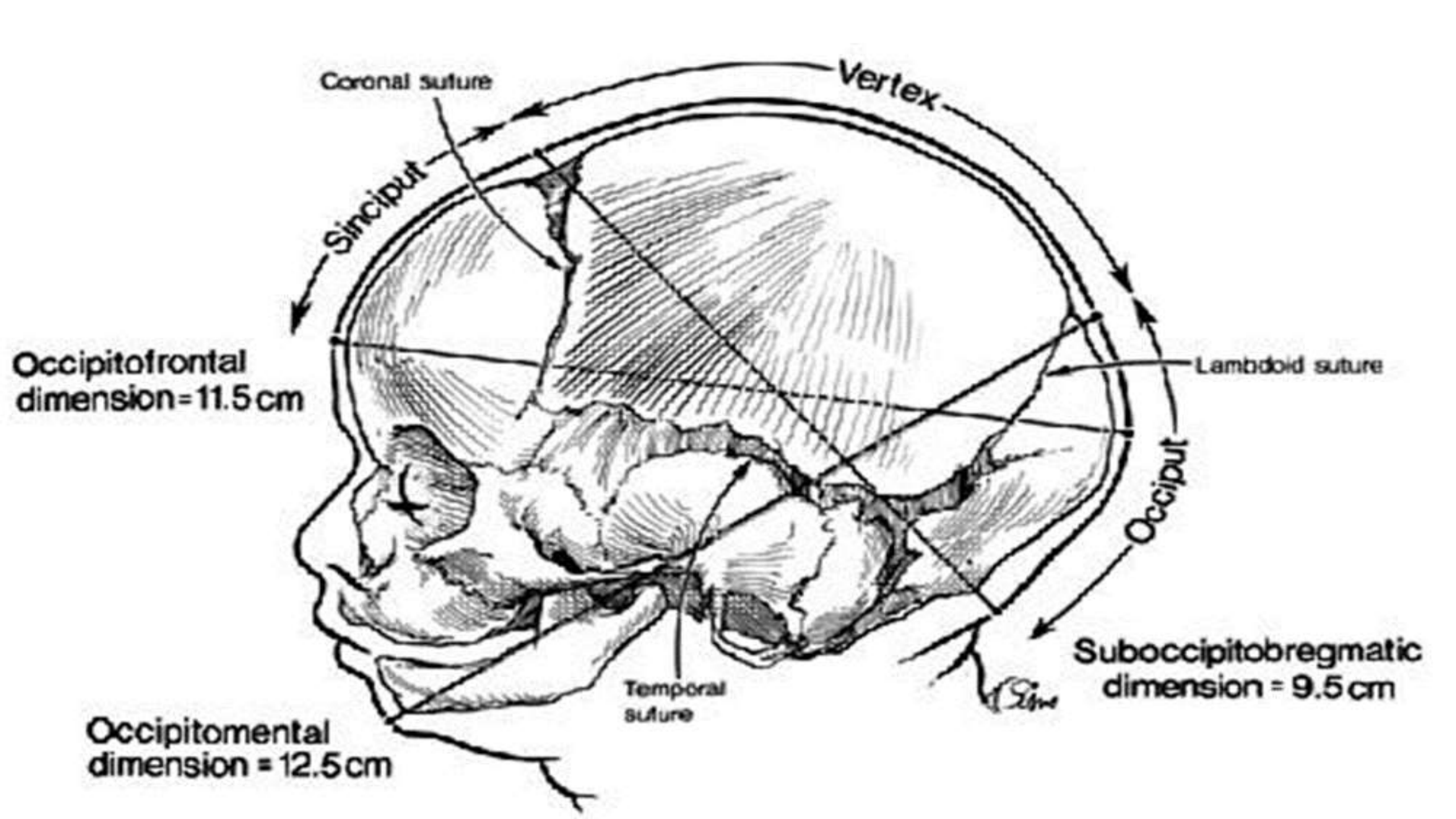
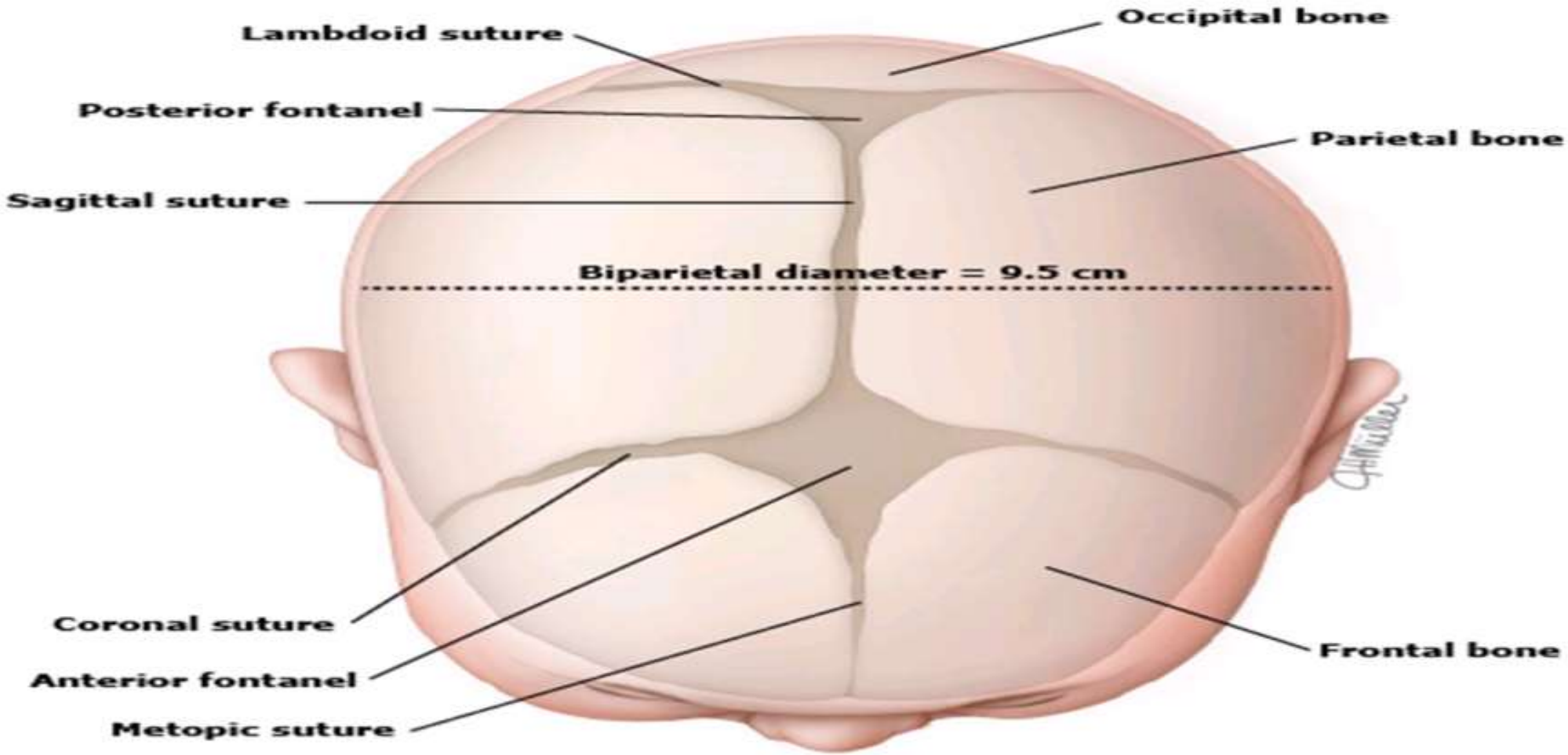


FIGURE 18-3. A fetus may occupy a longitudinal, oblique, or transverse axis, as illustrated by these vectors. The lie does not indicate whether the vertex or the breech is closest to the cervix.

Lie


Coronal suture
Vertex
Sinciput
Occipitofrontal
dimension = 11.5 cm
Lambdoid suture
Occiput
Suboccipitobregmatic
dimension = 9.5 cm
Temporal
suture
Occipitomental
dimension = 12.5 cm

Fetal head at term showing fontanelles, sutures, and biparietal diameter



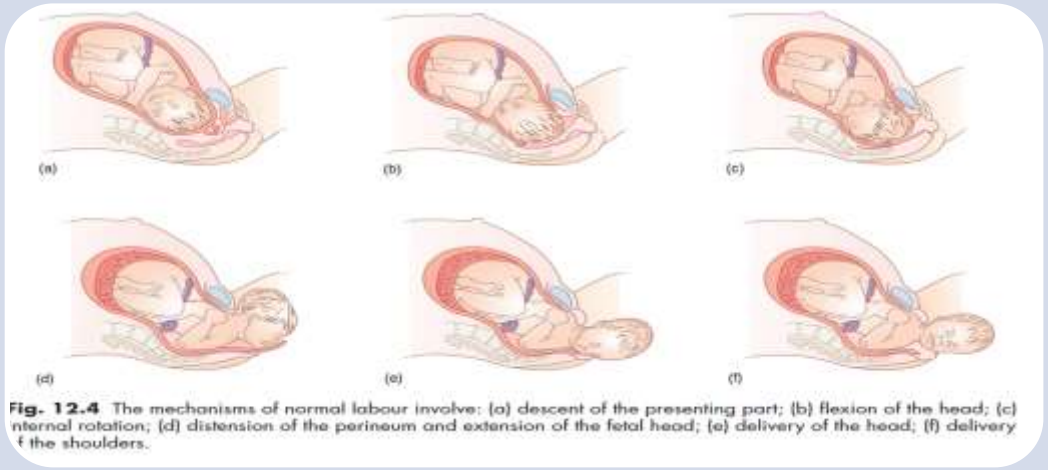


Fig. 12.4 The mechanisms of normal labour involve: (a) descent of the presenting part; (b) flexion of the head; (c) nternal rotation; (d) distension of the perineum and extension of the fetal head; (e) delivery of the head; (f) delivery f the shoulders.

Mechanism of labor

- Known as the cardinal movements, involve changes in the position of the fetus's head during its passage in labor.
- Described in relation to a vertex presentation.

Cardinal movements:

- Engagement
- Descent
- Flexion
- Internal rotation
- Extension
- Restitution and external rotation
- Expulsion

True labor vs. False labor

True labor pain	False labor pain
Regular	Irregular
Increase progressively	not
Lower abdomen & back	Lower abdomen
Dilatation & effacement of cervix	No effect on cervix
Not relieved by sedatives & antispasmodics	Relieved

First stage of labor

- **Two phases**: latent and active
  - ❖**Latent phase**: onset of labor to 3 cm cervical dilatation.
  - ❖**Active phase**: 4cm – 10 cm cervical dilatation.
- Rate of cervical dilatation is 1.2cm/hr in primi & 1.5 cm/hr for multi during active phase.
- Active phase of first stage of labor has three phases:
  - ❖Acceleration,
  - ❖Phase of maximal slope, and
  - ❖Deceleration phases.

➢Average duration of first stage is 12 hrs in primi and 6 hrs in multi.

Second stage of labor

SECOND STAGE OF LABOR	THIRD STAGE OF LABOR:	FOURTH STAGE:
• From 10cm of cervical dilatation to delivery • Lasts an hour in primi & 20 minutes in multi. • Rate of descent is 1cm/ hr in primi & 2cm/hr for multi.	• Average duration is 15 minutes for both(placenta delivery)	• First one to two hours where PPH is high. • This stage is a critical time for monitoring of vital signs and observe for blood loss & uterine contractility.

Events in first stage of labor

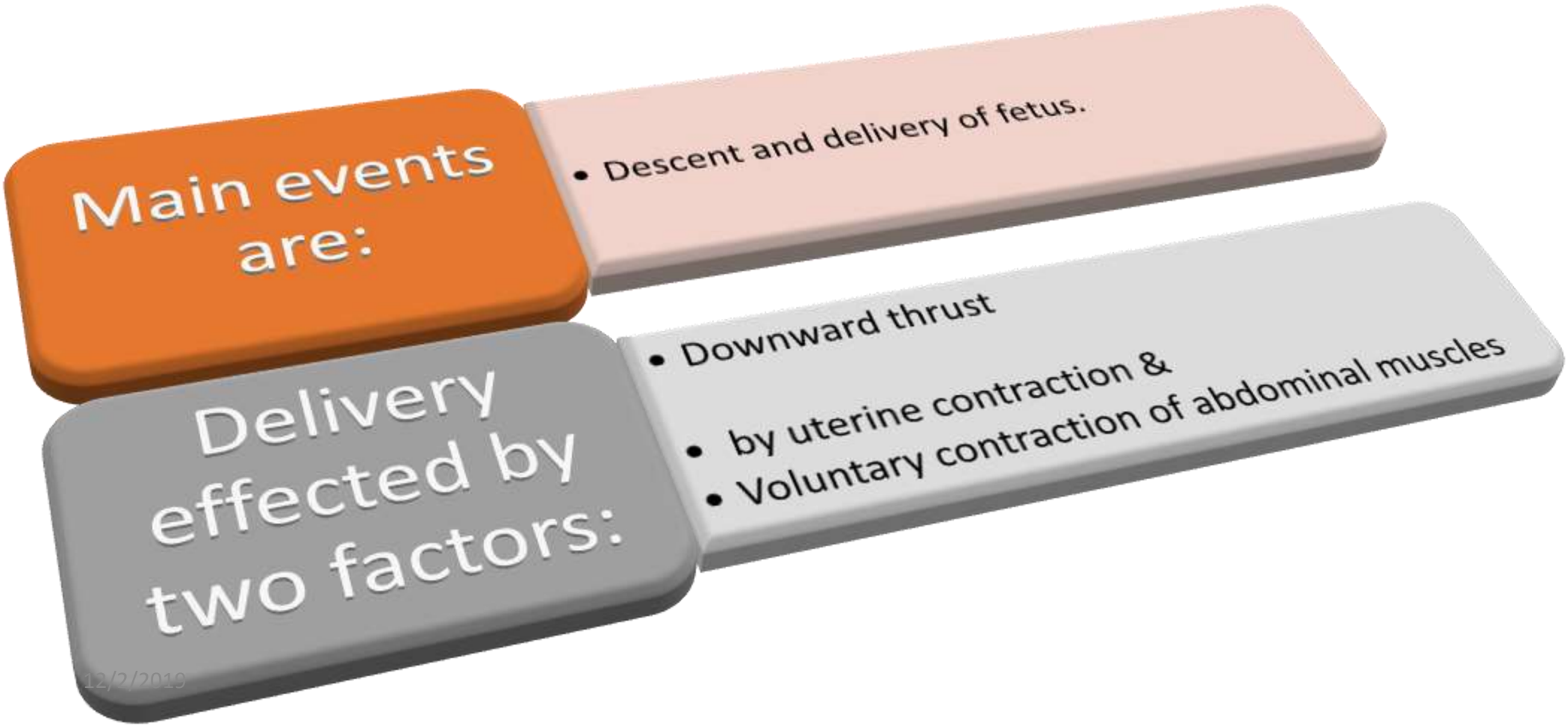
Main events are:

- Dilatation and effacement of cervix
- Full formation of lower uterine segment(LUS)

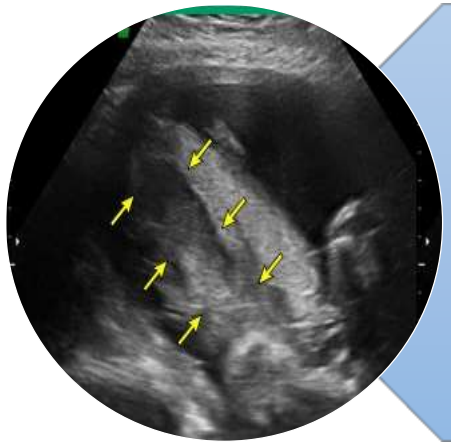
Factors responsible for dilatation:

- Uterine contraction & retraction
- Bag of waters
- Fetal axis pressure in the proper direction
- Pressure by the presenting part.

Events in second stage

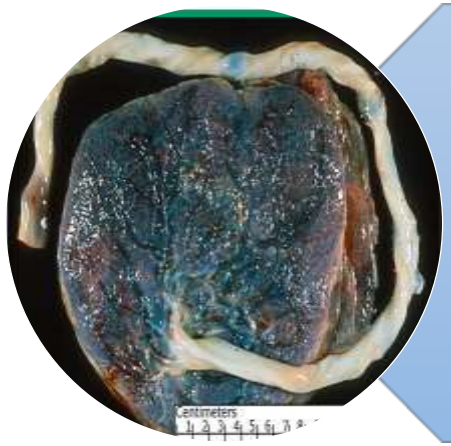


Events in third stage of labor



Main events: have 4 phases

- Latent phase
- Contraction phase
- Detachment phase
- Expulsion phase



Two types of placental separation

- **Central separation (Schultze):**
  - Retroplacental clot
  - Most common(80%)
  - Less blood loss
- **Marginal separation (Mathews-Duncan):**
  - Separation starts at the margin
  - Gush of blood as sign of separation

Abnormal labor

Latent phase disorder:

- Prolonged latent phase

Active phase disorders:

- Protraction disorders
- Arrest disorders

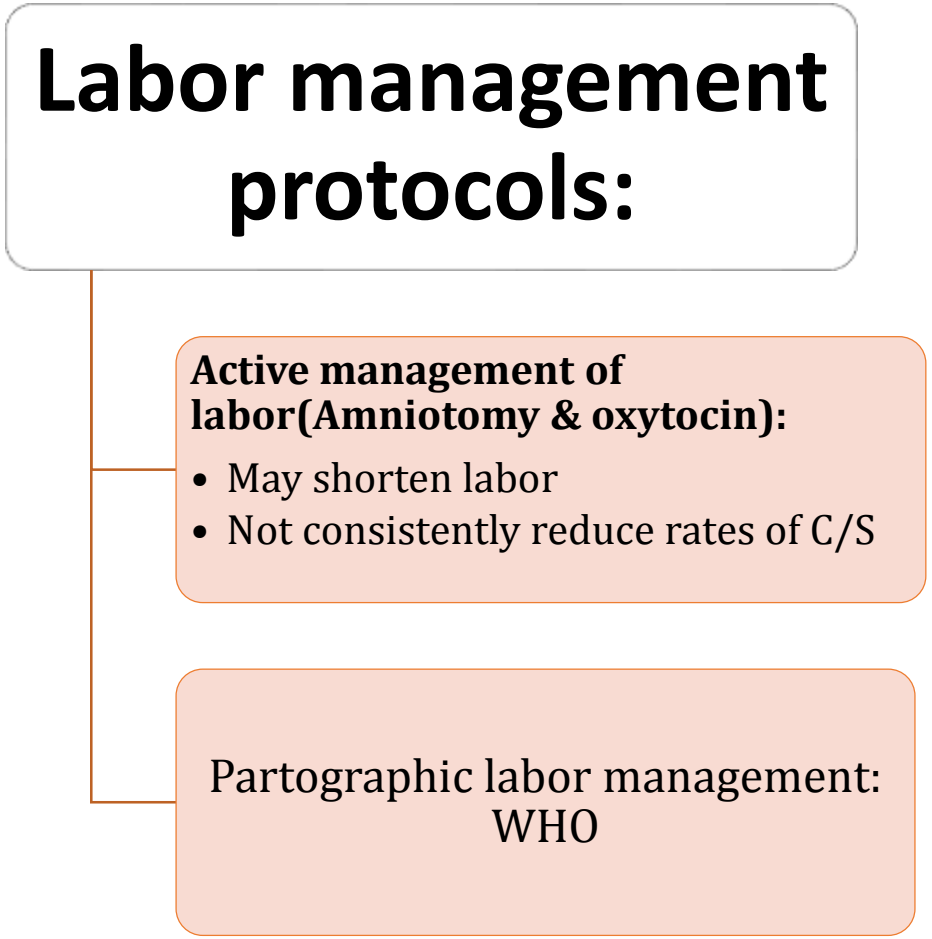
Active Phase Labor Protraction and Arrest

Active-phase disorders may be divided into *protraction* and *arrest* disorders.

Protraction disorders reflect slower than normal progress

Arrest disorders consist of complete cessation of progress

Labor management



Labor management

Psychosocial issues

- 1. **Preparation**: child birth education classes
- 2. **Support**: emotional support
  - Lower intrapartum analgesic requirements
  - Decrease operative delivery, how?
  - Increase patient satisfaction
- 3. **Communication**: It Involves
  - Identifying clinicians who participate in her care
  - Explaining the procedures
  - Inform about maternal & fetal conditions.

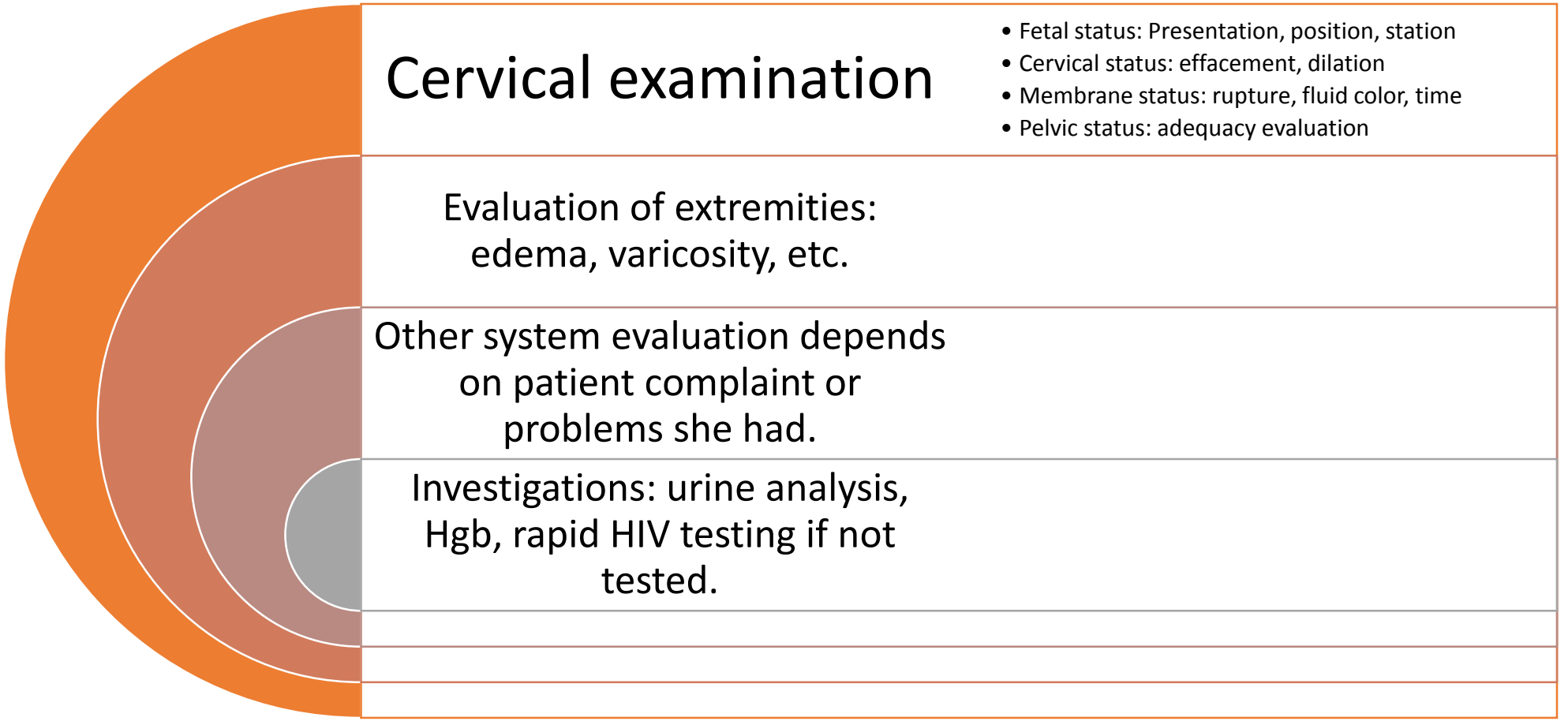
Labor management

Labor management

Initial examination: On admission, record

- Record pertinent history
- Review the ANC chart
- Physical examination: BP, PR, Wt, Temp., RR
  - Obstetric palpation
  - Uterine contraction
  - Fetal heart beat

Labor management



Labor management

Patient preparation:

- No routine enema & perineal shaving
- No routine catheterization

Position:

- Can assume any position except supine.

Diet:

- Fluid diet, intravenous hydration when indicated.

Pain control:

- Psycho-prophylaxis
- Analgesics
- Epidural anesthesia
- Spinal anesthesia
- PCA

Aminotomy:

- Not performed routinely
- For Augmentation/induction
- Fetal distress

Antibiotic prophylaxis:

- When indicated

Monitoring:

First stage:

- FHB every 30 minutes in low risk & every 15 minutes in high risk
- FHB has to be counted for a full minute just after contraction.
- Uterine contraction every 30 minutes, monitor for 10 minutes
- Pelvic evaluation every 4 hrs unless indicated.
- Maternal vital signs: BP & Temp. Q 2 Hourly

- **Second stage:** signs and symptoms include:

- Feels the desire to defecate.
- Contractions become more prolonged & painful.
- Desire to bear down during the contractions.
- Expulsive effort is accompanied by sustained expiratory grunt.
- Full dilatation of the cervix (10 cm) in between uterine contractions is the most sure sign.

Monitoring:

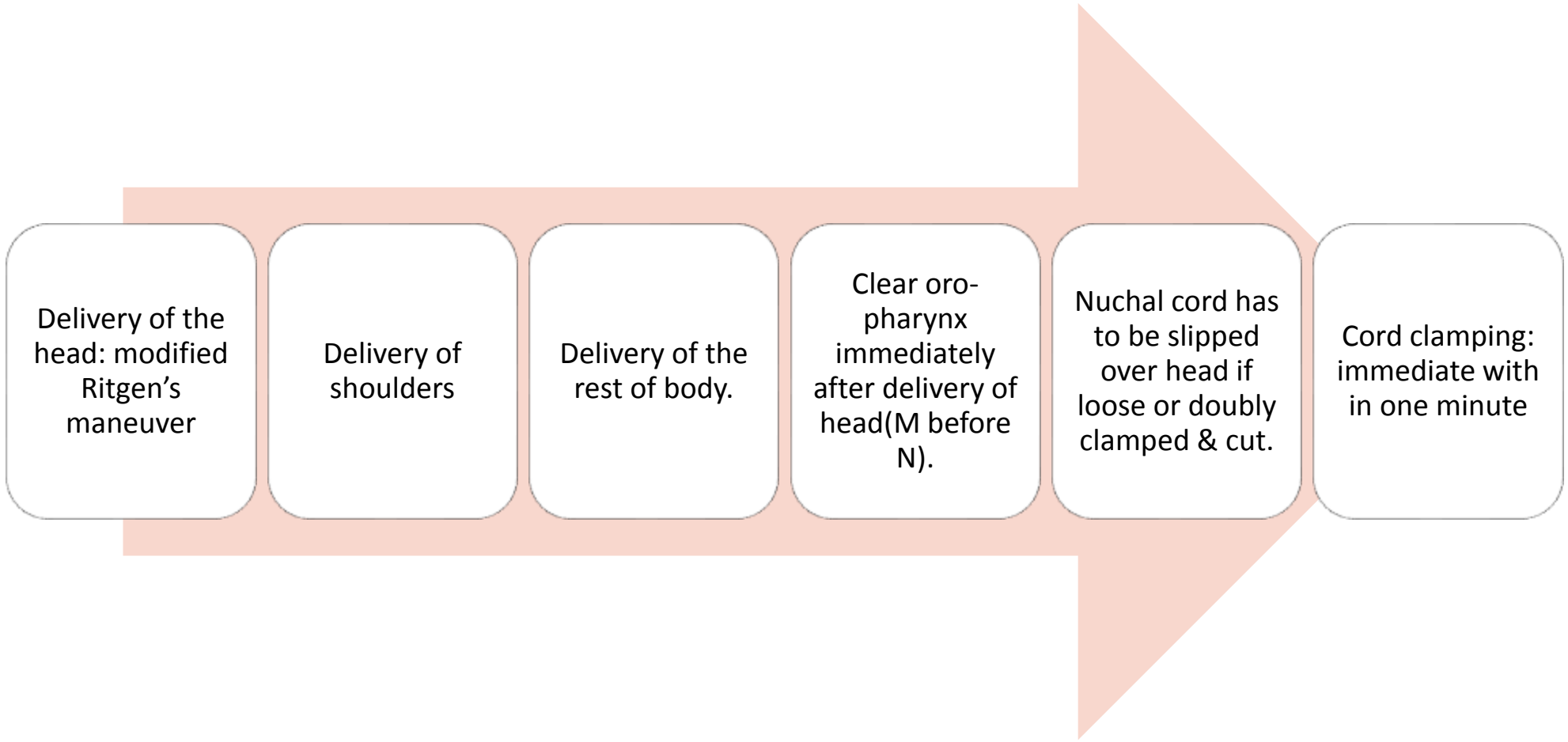
2nd stage:

- FHB every 15 minutes & 5 minutes in low risk & high risk mothers respectively
- Monitor descent hourly.

DELIVERY

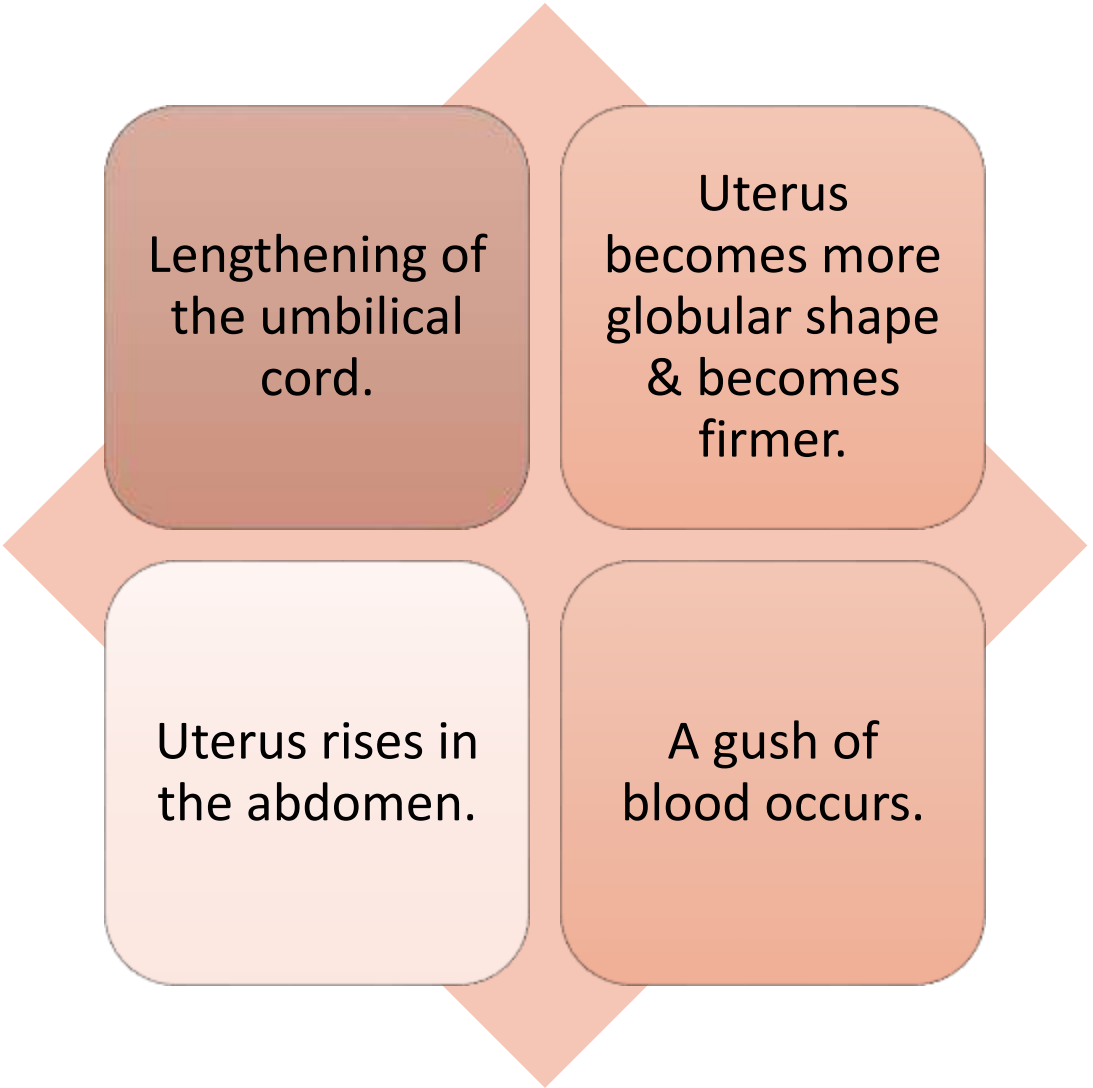
- Responsibility:
- Reduce risk of maternal perineal injury
- Prevent fetal injury
- Provide initial support to newborn
- Essential aseptic techniques
- No routine perineal massage
- Three pushes per contraction.

Management:


Delivery of the head: modified Ritgen's maneuver
Delivery of shoulders
Delivery of the rest of body.
Clear oro-pharynx immediately after delivery of head(M before N).
Nuchal cord has to be slipped over head if loose or doubly clamped & cut.
Cord clamping: immediate with in one minute

Third stage management: Two types

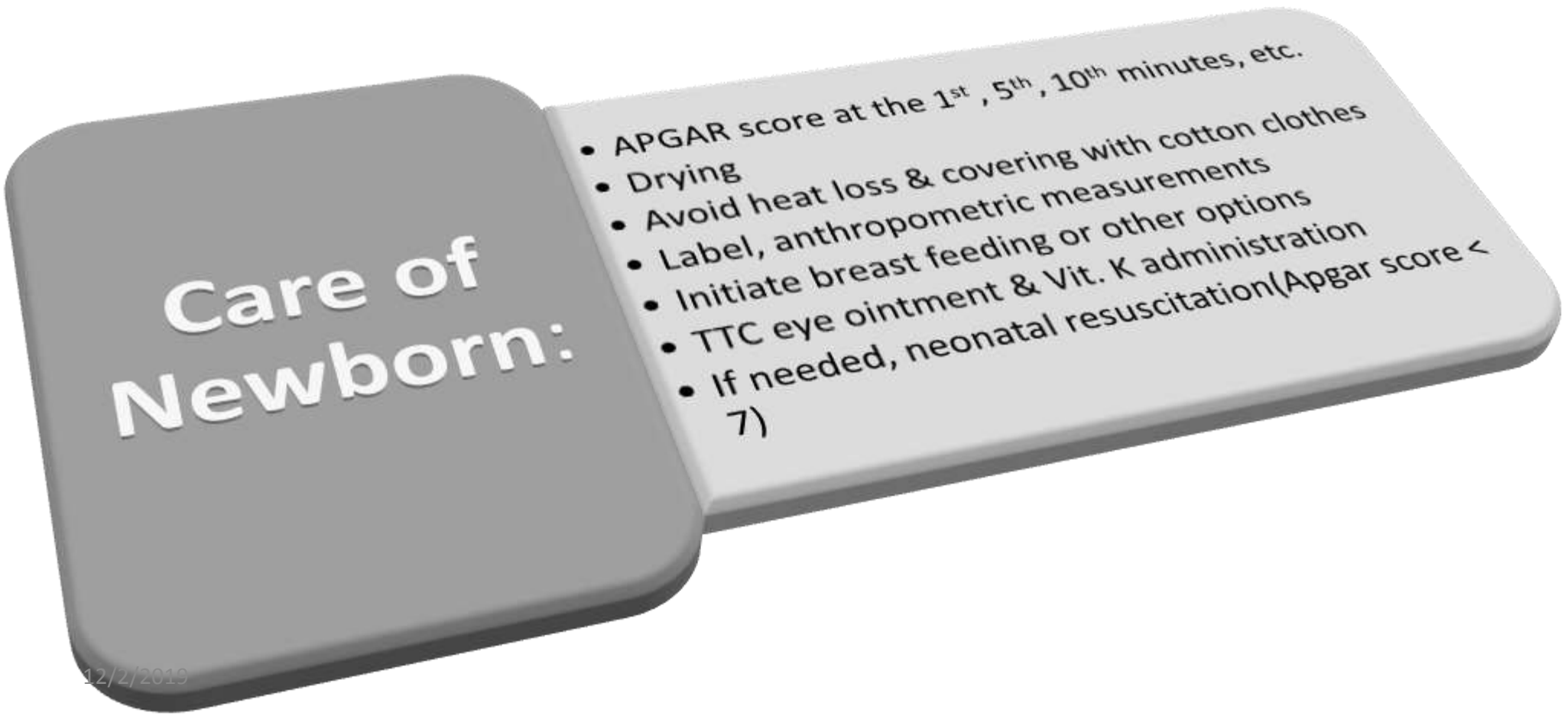
Signs of placental separation



Types of placental delivery

- Brandt-Andrews
- Crede's (not recommended)

Management


Care of Newborn:
• APGAR score at the 1st , 5th , 10th minutes, etc.
• Drying
• Avoid heat loss & covering with cotton clothes
• Label, anthropometric measurements
• Initiate breast feeding or other options
• TTC eye ointment & Vit. K administration
• If needed, neonatal resuscitation(Apgar score <
7)

Management

- Examination of genitalia
- Examination of placenta, membranes & cord
- Transfer of the parturient
- Discarding and disinfecting the equipment's.
- APGAR score

Apgar Score

Sign	0 Points	1 Point	2 Points
Heart rate(Pulse)	Absent	<100 bpm	≥100 bpm
Respiratory effort(R)	Absent	Slow, irregular	Good, crying
Muscle tone(Activity)	Flaccid	Some flexion of extremities	Active motion
Reflex irritability(Grimace)	No response	Grimace	Vigorous cry
Color(Appearance)	Blue, pale	Body pink, extremities blue	Completely pink

Partograph

Early detection & prevention of abnormal & prolonged labour

- Maternal - perinatal morbidity & mortality
- Was developed to this endeavor

It is the graphic recording of

- Progress of labour and
- Condition of the mother & fetus .

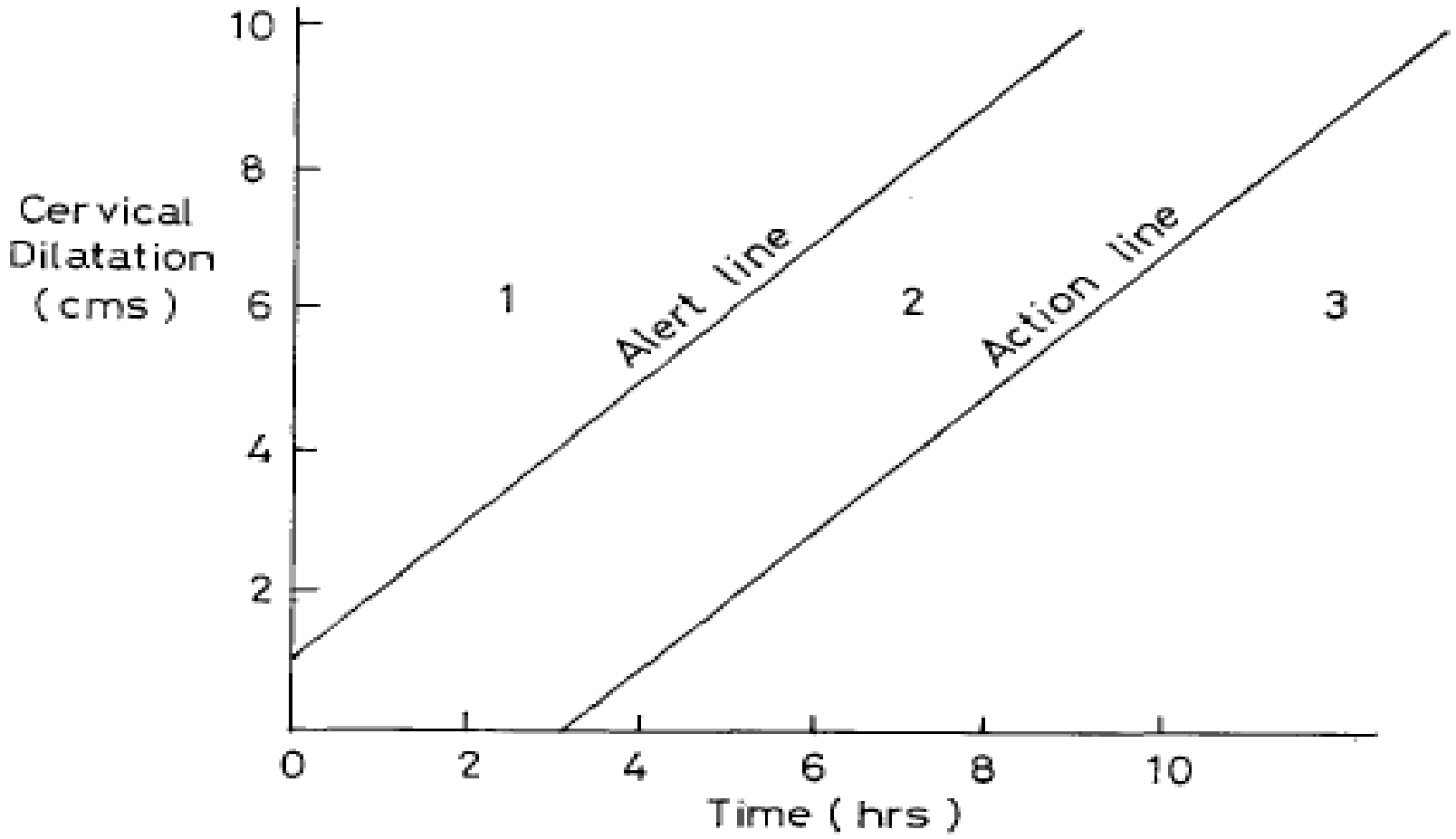
History of partograph

- In 1954 E. A. Freidman, described a normal cervical dilation
- Divided first stage in to latent phase & active phase.
- First to show plotting cervical dilation Vs time
- His work has been foundation on which others built

History of partograph

- In 1969 Hendricks et al demonstrated that:
  - ➢In the active phase of normal labour:
    - ❖Rate of dilation of the cervix in primi & multipara varies very little &
  - ➢There is no deceleration at the end of the first stage of labour.

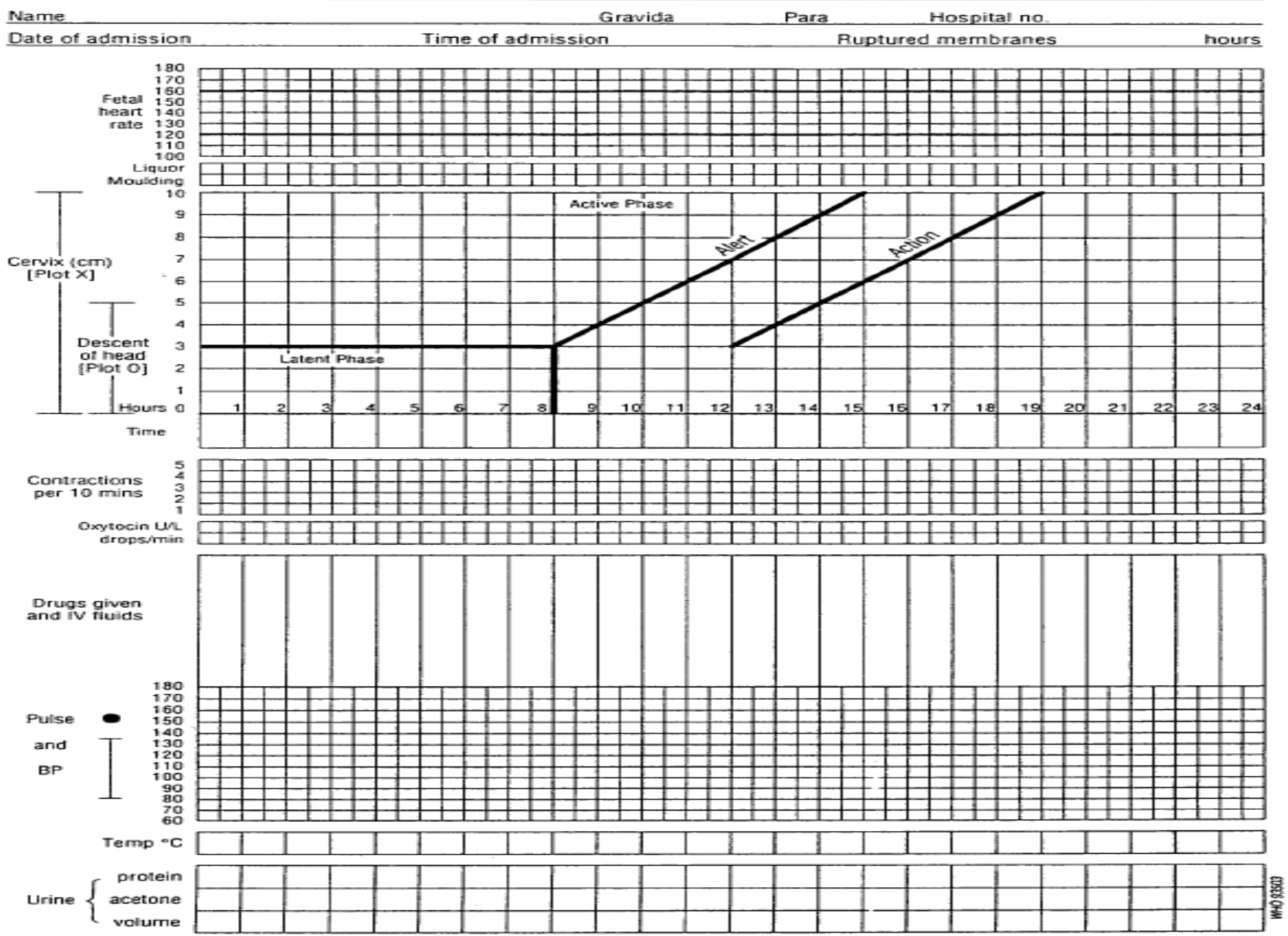
Normogram for cervical dilation



The WHO Partograph (1987)

- Devised by technical working group
- After examining most of the available work on Partograph and their design

PARTOGRAPH


Name
Gravida
Para
Hospital no.
Date of admission
Time of admission
Ruptured membranes
hours
Fetal heart rate
180
170
160
150
140
130
120
110
100
Liquor
Moulding
Cervix (cm) [Plot X]
Descent of head [Plot O]
10
9
8
7
6
5
4
3
2
1
0
Hours
Time
Active Phase
Alert
Action
Latent Phase
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
Contractions per 10 mins
5
4
3
2
1
Oxytocin U/L
drops/min
Drugs given and IV fluids
Pulse
and
BP
180
170
160
150
140
130
120
110
100
90
80
70
60
Temp °C
Urine
protein
acetone
volume
WHO 93503

The WHO partograph

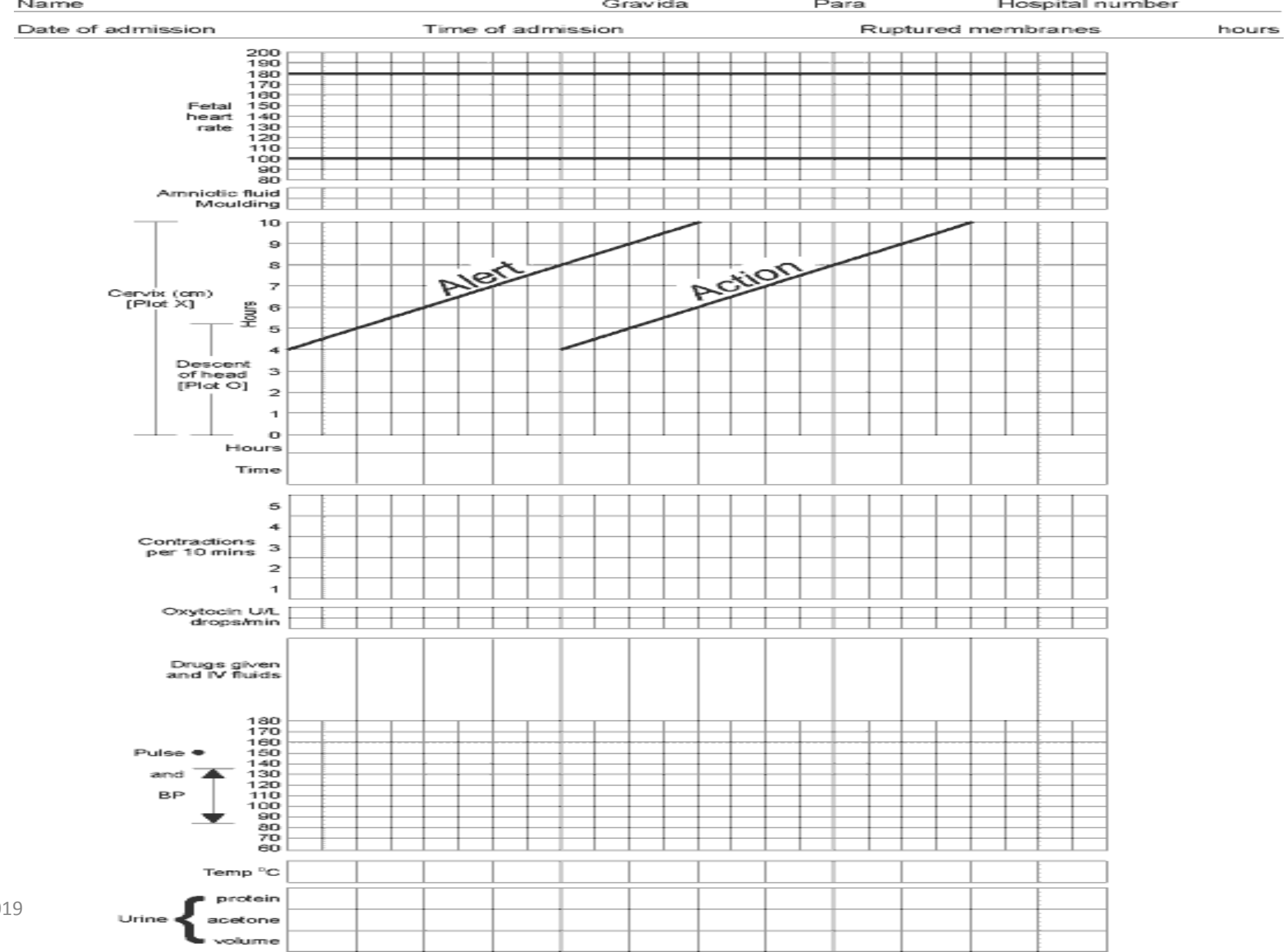
Principles:

- The active phase commences at 3 cm cervical dilation
- The latent phase should not last longer than 8 hrs
- During active phase, the rate of cervical dilation should not be slower than 1cm/hr
- Vaginal examination - infrequently as compatible with safe practice (Q 4 hrs is recommended)
- Midwives and other personnel managing labor may have difficulty in constructing alert and action line ►pre-drawn lines

Modified WHO Partograph

Modified WHO Partograph

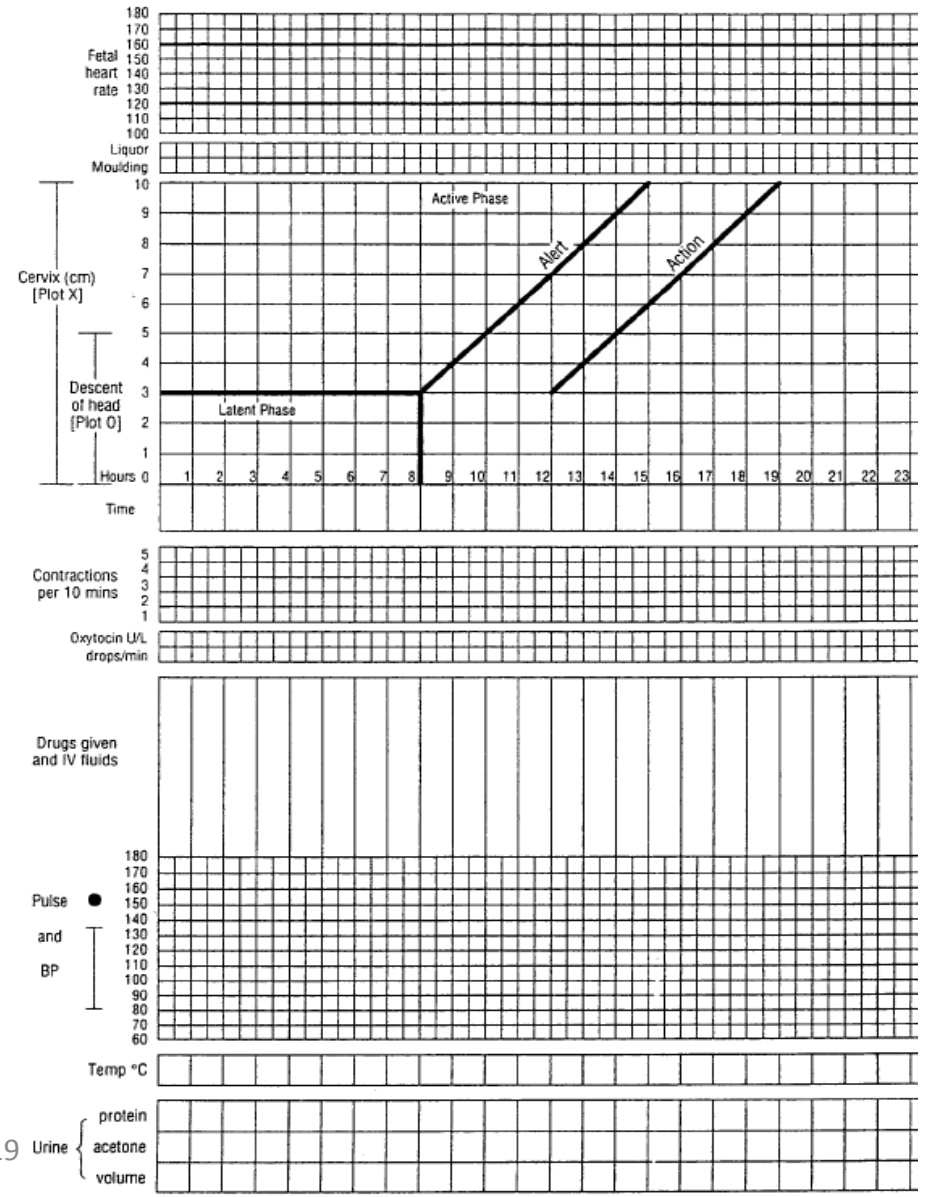
- The WHO Partograph has been modified to make it simpler and easier to use(2001)
- The latent phase has been removed and plotting begins in the active phase when the cervix is 4 cm dilated. (it was 3 cm)


Name
Gravida
Para
Hospital number
Date of admission
Time of admission
Ruptured membranes
hours
Fetal heart rate
200
190
180
170
160
150
140
130
120
110
100
90
80
Amniotic fluid
Moulding
Cervix (cm) [Plot X]
Descent of head [Plot O]
Hours
10
9
8
7
6
5
4
3
2
1
0
Alert
Action
Hours
Time
Contractions per 10 mins
5
4
3
2
1
Oxytocin U/L drops/min
Drugs given and IV fluids
Pulse
and
BP
180
170
160
150
140
130
120
110
100
90
80
70
60
Temp °C
Urine
protein
acetone
volume

PARTOGRAPH

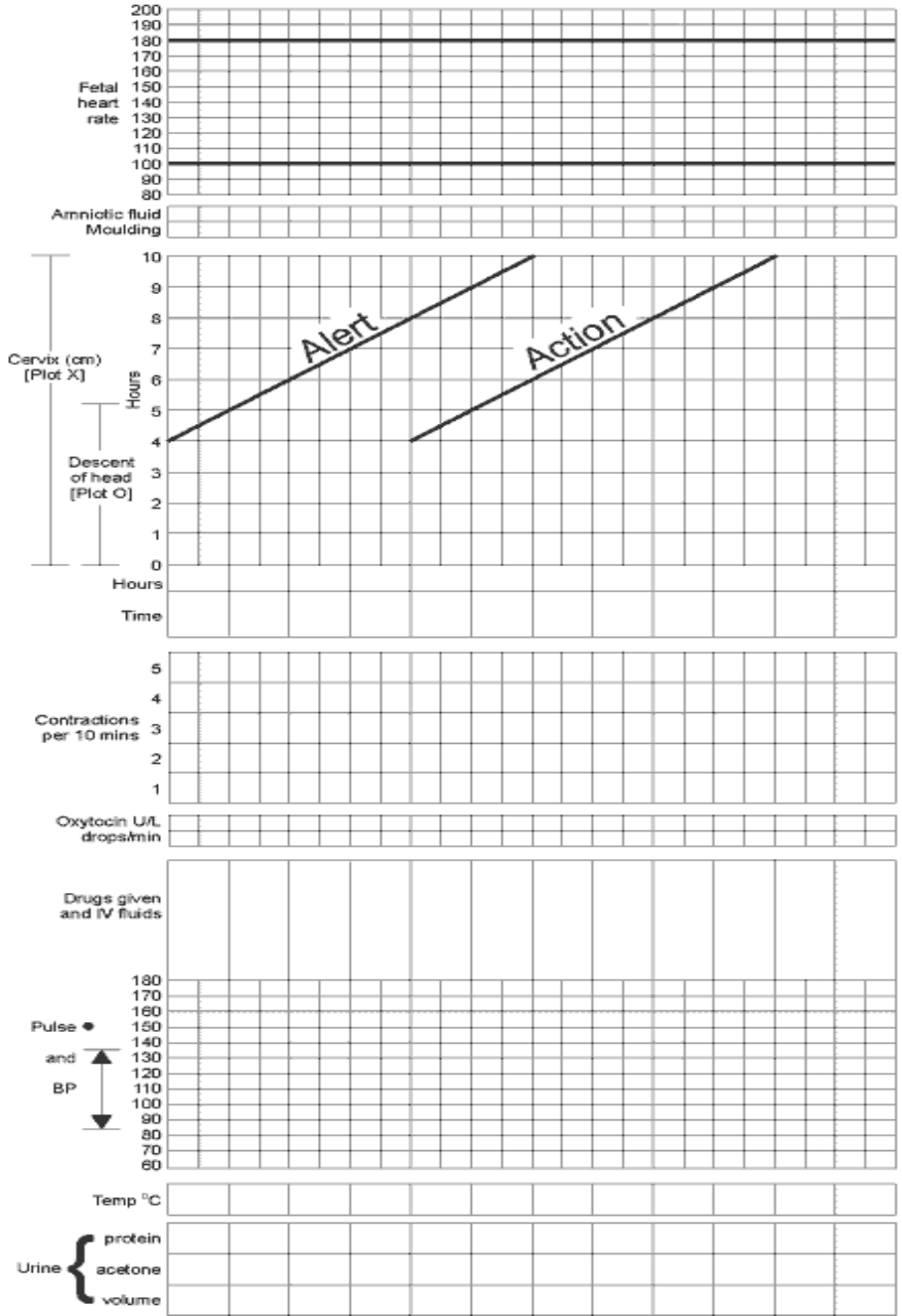
Name Gravida Para Hospital no.

Date of admission Time of admission Ruptured membranes ho

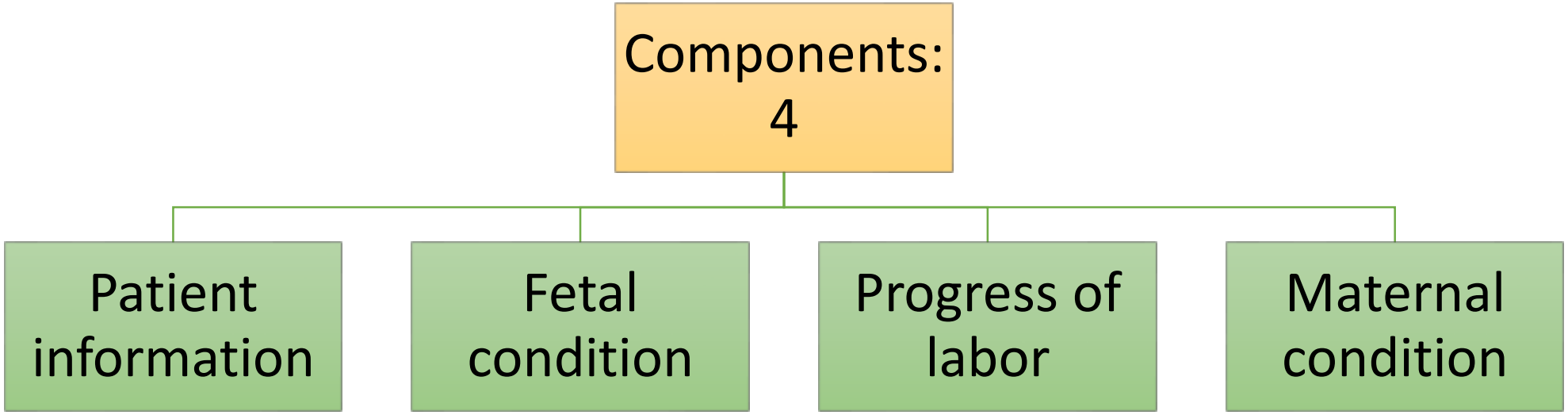


Name Gravida Para Hospital number

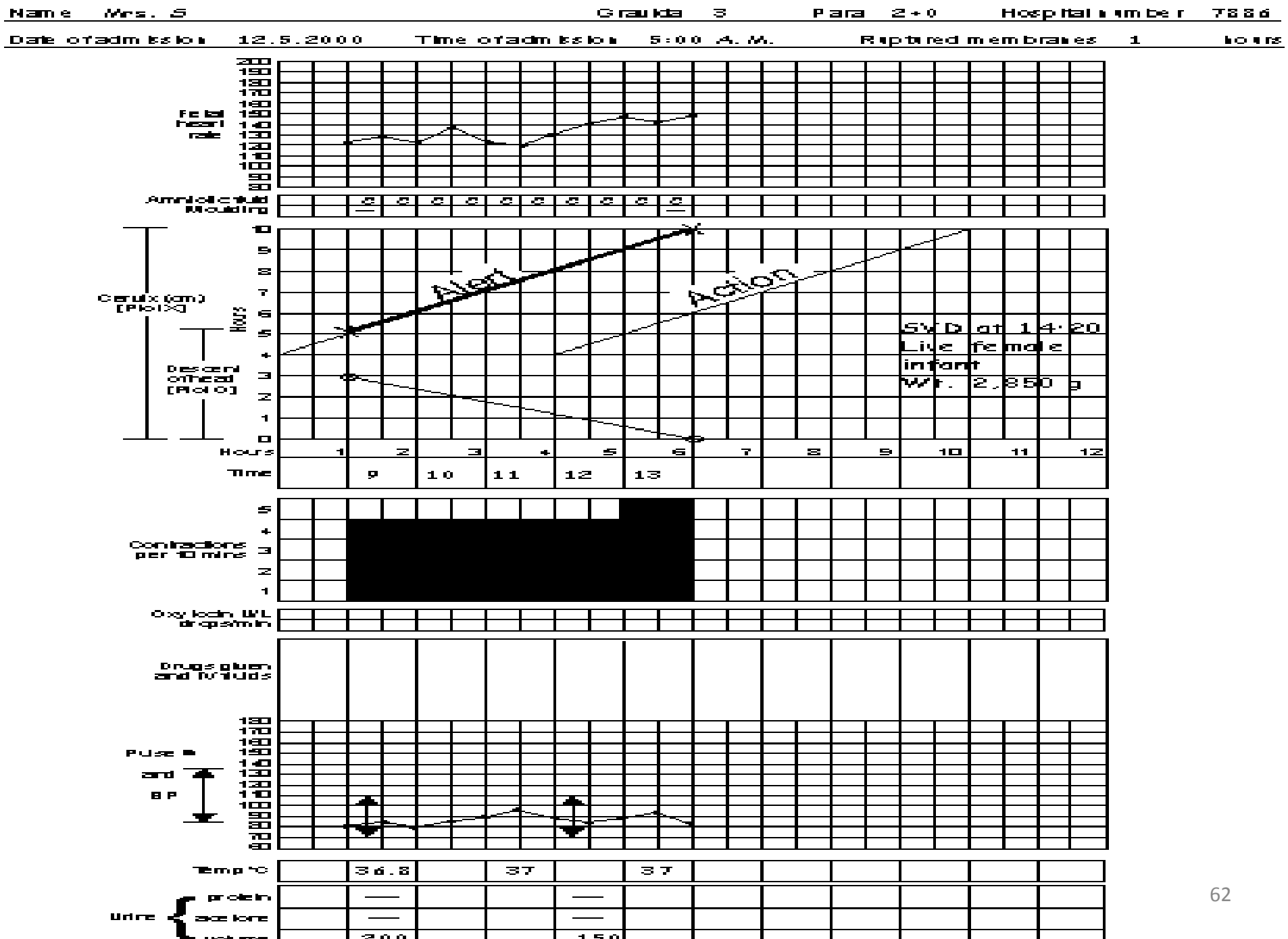
Date of admission Time of admission Ruptured membranes hours



The WHO Partograph



- Sample Partograph for Normal Labor

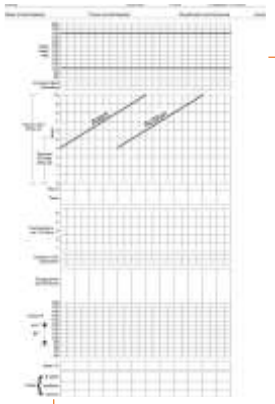


WHO partograph

For whom to use it:

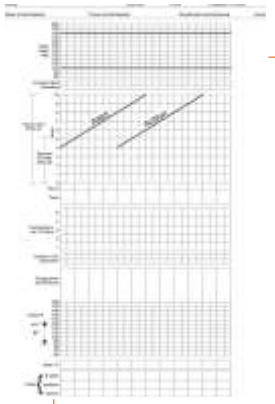
- There shouldn’t be complications of pregnancy that require immediate action.
- Make sure that the women is in labor
- It can be used for all labors in a hospital (including breech, multiple pregnancy, previous C/S)
- In the peripheral health units

Who should use it?



Health workers who are able to:

- Observe and conduct normal labour and delivery
- Perform vaginal examination in labor and assess cervical dilatation accurately
- Plot cervical dilation accurately on graph against time



Where to use it?

- No place for home delivery

Advantages of partograph

- Prevention of prolonged labor
- Avoids unnecessary use of augmentation
- Hand over of patients
  - ✓More precise and fluent
  - ✓At a glance appreciation of preceding hours of labor

Pictorial (graphic or clear) display of events of labor:

- Clarifies recordings
- Avoids lengthy written notes
- Facilitates recognition of any omissions
- Saves time → Companionship

Considerable educational value:

- All interrelated variables of labor can be seen on a single paper

Low cost, feasible

Improved out come of labor →↑Credibility (trustworthiness) of formal health sector.

THANK YOU