

# NORMAL OBSTETRICS

## Fetal Development

**Fertilization** - occurs in fallopian tube about 2 – 4 days after ovulation

**Implantation** – attachment of blastocyst to uterine wall about 6 – 8 days after fertilization

**Placenta** – formed of fetal (chorionic villi) and maternal (deciduas basalis) parts; fully developed by end of 3<sup>rd</sup> month of pregnancy; nutritive, respiratory, excretory, & endocrine functions

**Umbilical cord** – 1 vein carrying oxygen & nutrients from mom to fetus; 2 arteries carrying fetal waste away from the fetus back to the mother

**Organogenesis** – Embryo = 1<sup>st</sup> 8 weeks; rapid growth & development so most susceptible to maternal pathologies & teratogens

## Maternal Changes

### Hormones:

**Estrogen & progesterone** - increase (from corpus luteum, then from placenta)

**Human chorionic gonadotropin (hCG)** - from embryological/fetal chorion, detectable in mom's blood by 3<sup>rd</sup> week gestation → maintains corpus luteum

**Relaxin** – from placenta → relaxes pelvis so fetus can get out

**Human chorionic thyrotropin (hCT)** – elevates mom's basal metabolic rate

## Nutrition

Average weight gain of 25 – 35 lbs, but pattern of weight gain is more important than actual amount of weight.

Must consider cultural, economic & psychological needs in assessing diet

**Increase:**     about 300 calories/day  
                   protein for growth demands  
                   vitamins & minerals to prevent anemia  
                   calcium to meet fetal needs, preventing maternal hypocalcemia  
                   folic acid to prevent neural tube defects  
                   fluids & fiber to prevent constipation

**Avoid:** dieting - decreasing calories or fluids

              decreasing Na+, unless doctor recommends, as the fetus needs Na+

## Signs of Pregnancy

**Presumptive Signs** – subjective, could be a lot of other things

Amenorrhea, nausea, urinary frequency, breast or pigmentation changes, fatigue

**Probable Signs** – more objective, but still could be caused by something other than pregnancy

Chadwick's sign – purple hue to vagina

Goodell's sign – cervical softening

Hegar's sign – softening of lower uterine segment

Braxton-Hicks contractions

Positive pregnancy test

Enlargement of uterus

Ballottement – feeling fetal outline

**Positive Signs** – objective and only produced by a developing fetus

- Fetal heart beat
- Fetal outline felt by examiner
- Ultrasound shows fetal heart beat
- Ultrasound shows fetus

**Estimated Date of Delivery**

Nagele's Rule – 1st day of last menstrual period; add 7 days; subtract 3 months; add 1 year.

Example: If 1st day of last period = June 10, 2001 → + 7 = 17<sup>th</sup>, June – 3 months = March  
→ EDD = March 17<sup>th</sup>, 2002.

Fundal height (measure from pubic symphysis to top of fundus) will rise 1 cm per week (with a single fetus in residence). At 20 weeks, it should be at the umbilicus; at 36 weeks it should be at the xiphoid process.

## **The Antepartum Period**

### **Physiological Changes in Mom**

#### **Cardiovascular**

Physiologic anemia 45 – 50% increase in blood volume, more plasma than RBC

Cardiac output increases 25 – 50% with peak at 28 – 32 weeks

Heart rate increases 10 – 15 bpm in 2<sup>nd</sup> half of pregnancy

Supine hypotensive syndrome = vena caval syndrome – lie on back → uterus presses on vena cava → decrease CO → hypotension

Varicose veins – legs, perianal (hemorrhoids)

Edema of extremities last 6 weeks R/T blood stasis

Risk for thrombophlebitis as clotting factors increase

#### **GI**

Progesterone relaxes smooth muscle → Decreased gastric motility & relaxed esophageal sphincter → heartburn, nausea/vomiting, constipation

Morning sickness caused by increasing hCG and progesterone levels

Excessive salivation caused by estrogen

Softening of gums → gingivitis

#### **Respiratory**

3<sup>rd</sup> trimester, big uterus pushes on diaphragm → dyspnea until lightening at 38 weeks

Nasal congestion R/T estrogen

Hyperventilation so mom can blow off extra CO<sub>2</sub> from fetus

#### **Integument**

Melasma – mask of pregnancy

Linea nigra – on abdomen

Striae on abdomen & legs

Darkening of areola

#### **Excretory**

Urinary frequency R/T increased waste management increasing urinary output & uterus pressing on urinary bladder in early & late pregnancy

Increased urinary output → decreased specific gravity with glycosuria

Bladder tone decreased R/T progesterone

Enlarged uterus presses on right ureter & kidney → dilation of those structures

#### **Skeletal**

Joints loosen R/T relaxin & estrogens

Hypocalcemia → leg cramps

## Risks

### Iron Deficiency Anemia

Increased RBC production → need increased iron for production of hemoglobin

Loss of iron in sweat, feces, hair, (menstruation)

Characteristics:

Microcytic, hypochromic RBCs

smooth tongue

pica

### Erythroblastosis Fetalis = Hemolytic Disease of the Newborn

Rh incompatibility: Rh negative mom pregnant with Rh positive fetus. First fetus OK as mom is not exposed to baby's blood until birth (unless microtears in placenta allow fetal blood to mix with mom's). But if next fetus is also Rh+ & mom has been "inoculated" with Rh+ blood from 1<sup>st</sup> pregnancy, so now she has anti-Rh antibodies that can cross the placenta to attack the next fetus. This is prevented if mom receives RhoGAM (passive immunity) in the 28<sup>th</sup> week & within 72 hours of delivery.

## Intrapartum – Labor

### Pelvic anatomy

Want broad pubic arch, curved sacrum, blunt ischial spines, and moveable coccyx

True pelvis – fetus must pass through this

pelvic inlet – from sacral promontory to top of pubic symphysis

pelvic outlet – from bottom of sacrum to bottom of pubic symphysis

Ischial spines = ground zero in staging fetus

Diameters:

Pelvic inlet:

True conjugate = anterior/posterior diameter – from sacral promontory to top of pubic symphysis

Pelvic outlet:

Diagonal conjugate – from sacral promontory to bottom of pubic symphysis

Transverse – from ischial tuberosity to ischial tuberosity

**Attitudes** - Relationships of fetal parts to each other

**Lie** – Relationship of long axis of fetus to long axis of mother

Longitudinal or vertical

**Presentation** – the body part of fetus that engages in true pelvis

Cephalic: vertex, brow, face

Breech: frank (hips flexed, knees extended, butt engaged), complete (knees & hips flexed, butt engaged), single or double footling (1 or both feet folded under buttocks at pelvic inlet)

Shoulder: C-section would be needed

**Position** – relationship of presenting parts to mom’s pelvic quadrants.

Letters:

1<sup>st</sup>: R or L = mom’s right or left

2<sup>nd</sup>: O (occiput), M (mentum – chin), S (sacrum) - fetal part

3<sup>rd</sup>: A, P, or T = mom’s anterior, posterior, or transverse (side)

Ex: ROA = fetal head is presenting with occiput facing forward on mom’s right

**Station** – relationship between presenting part & ischial spines

Floating – fetal parts above true pelvic inlet

Engaged – suboccipitobregmatic diameter fixed in pelvic inlet

Station 0 = presenting part at level of ischial spines this is why the ischial spine are important

Stations –1, -2, -3 are cm above ischial spines

Stations +1, +2, +3 are below ischial spines

### Changes Before Labor

Lightening – fetus drops into true pelvis so mom can breathe better

Braxton-Hicks contractions – practice labor that doesn’t progress

Increased vaginal secretions

Cervical ripening (softens)

Rupture of Membranes (ROM) – Now mom’s risk of infection is high. Check with nitrazine paper

(turns dark blue because fluid is alkaline)

Bloody show – loss of mucus plug in cervix

### The Process of Labor

Contractions increase in frequency, strength, & duration

Effacement – thinning of cervix

Progressive dilation of cervix

### Stages of Labor

First Stage

Latent Phase – cervix dilates 0 – 3 cm; mom happy

Active Phase – cervix dilates 4 – 7 cm; contractions 5 min apart; Keep mom relaxed & comfortable

Transition Phase – cervix dilated 7 – 10 cm; contractions strong & 1 – 2 min apart; mom irritable

Second Stage Starts when the cervix is dilated to ten and fully effaced

Expulsion of infant

Perineum bulges; may have bowel movement

Mom focused

Third Stage

Expulsion of placenta (afterbirth)

Occurs within 30 minutes of birth

Check “dirty Duncan” or “shiny Shultz”

Fourth Stage

1 – 2 hours post partum

Fundus firm at umbilicus

Lochia rubra

Mom tired, thirsty, chilled, may be nauseous

## Watch Outs During Labor

Mom:

- Supine hypotension
- Hyperventilation
- Hemorrhage - bright red bleeding
- Increased pulse rate or elevated temperature → = infection?
- Uterine tetany – If mom is on an oxytocin drip, stop it ASAP!
- Uterine atony → hemorrhage
- Bladder distention → hemorrhage

Fetus/Infant:

- Fetal heart rate (FHR) should be 120 – 160 bpm
- Early deceleration – early in contraction – 100 bpm = head compression, normal → no worries
- Late decelerations – after peak of contraction – 60 - 100 bpm = uteroplacental insufficiency = bad
- Variable decelerations – changes in duration, intensity, & time = cord compression = bad
- Meconium-stained amniotic fluid – indicated fetal distress; check vocal folds for aspiration

## Normal Postpartum

### Normal Psych of 1<sup>st</sup> 2 – 3 days:

- Taking in phase – ponder new role as mom, but self-focused; not into taking care of baby
- Taking hold phase – mom begins to start doing for herself & new baby
- Letting go phase – New mom redefines new role, accepting reality of baby & her being the mom
- Post-partum Blues

## Assessments

### Uterus

Involution stages:

- 1<sup>st</sup> hour post delivery: fundus at level of umbilicus where stays for 24 hours
- Decreases 1 cm per day --> by 10 day postpartum into pelvis so can't palpate
- Must have empty bladder when measure as bladder keeps uterus from contracting
- Delay of uterine involution by: multiparity, prolonged labor, multiple fetuses, hydramnios, full bladder

### Lochia

- Lochia rubra – red – day 1 – 3
- Lochia serosa – pink/brown – days 3 – 10
- Lochia alba – creamy white – days 10 – 14

### Perineum

Episiotomy      Hemorrhoids

### Breasts

- Colostrum – start secreting mid-way through pregnancy; secrete 1<sup>st</sup> 2 days postpartum
- Oxytocin release during suckling --> helps uterine involution
- Breast-feeding versus Not Breast feeding

### Circulation

- Orthostatic Hypotension
- Thrombus formation
- Rh Sensitivity – RhoGAM

### Urinary

- Urinary Output increases – massive shift of excess fluid (up to 3L/day) out so that by 1<sup>st</sup> or 2<sup>nd</sup> week post partum have normal blood volume
- Diaphoresis adds to rapid loss of fluid