

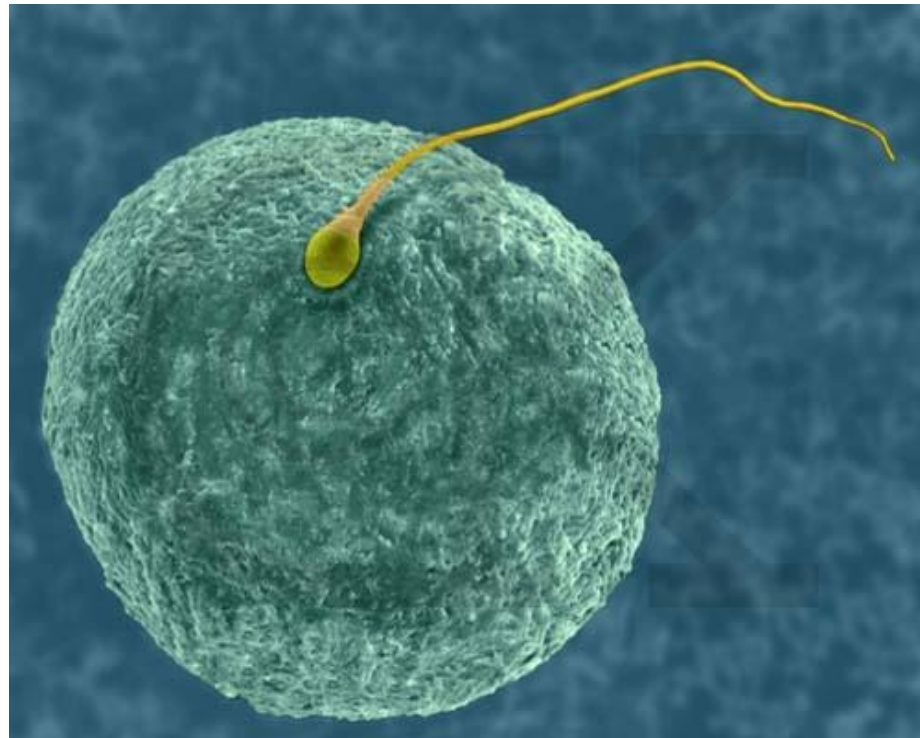
Normal pregnancy and its care

NORMAL PREGNANCY AND CARE



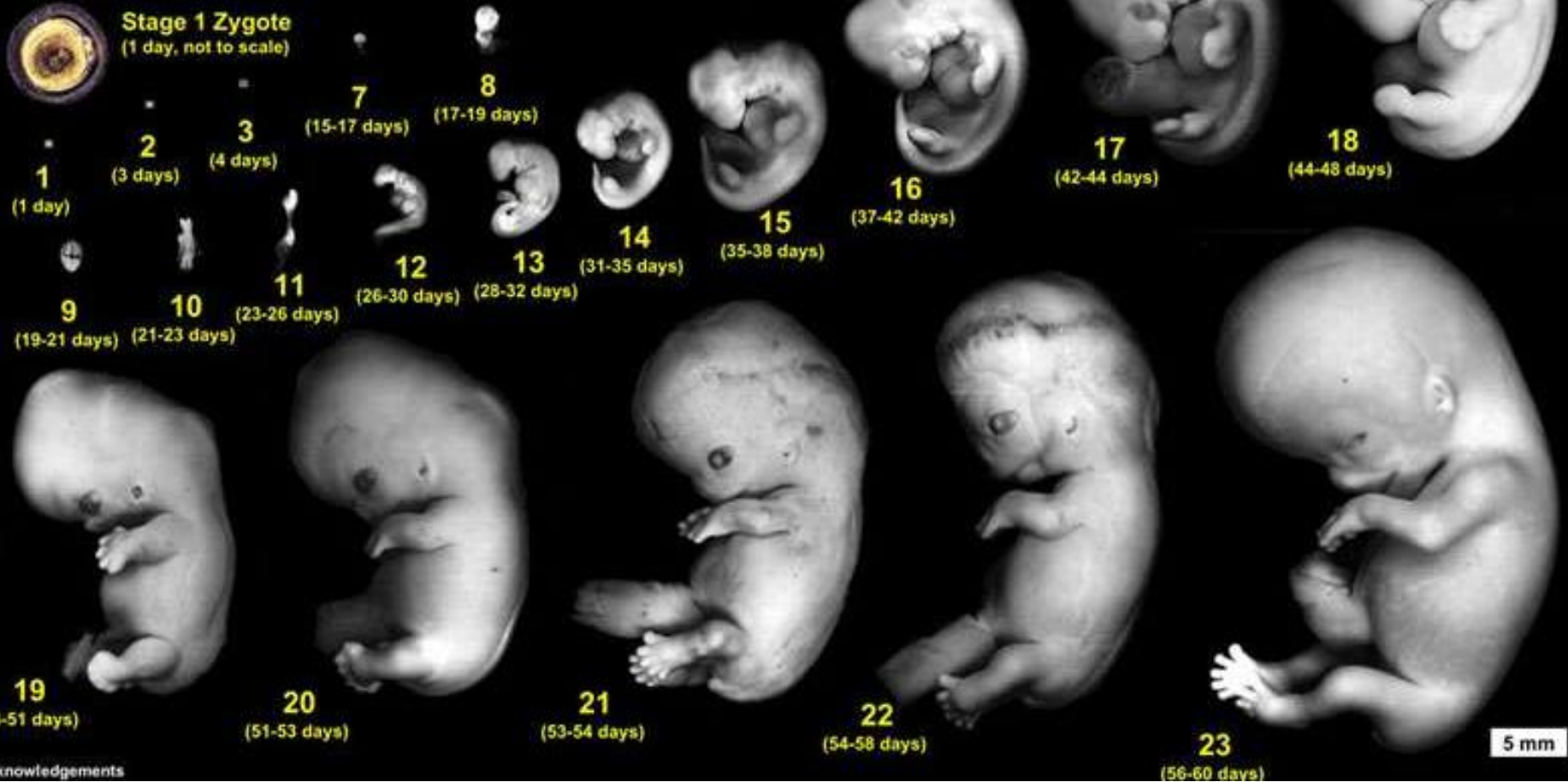
Fertilization/Conception

The union of the egg and sperm that takes place in the fallopian tubes ■



Carnegie Stages of Human Development

Dr Mark Hill, Cell Biology Lab, School of Medical Sciences (Anatomy), UNSW

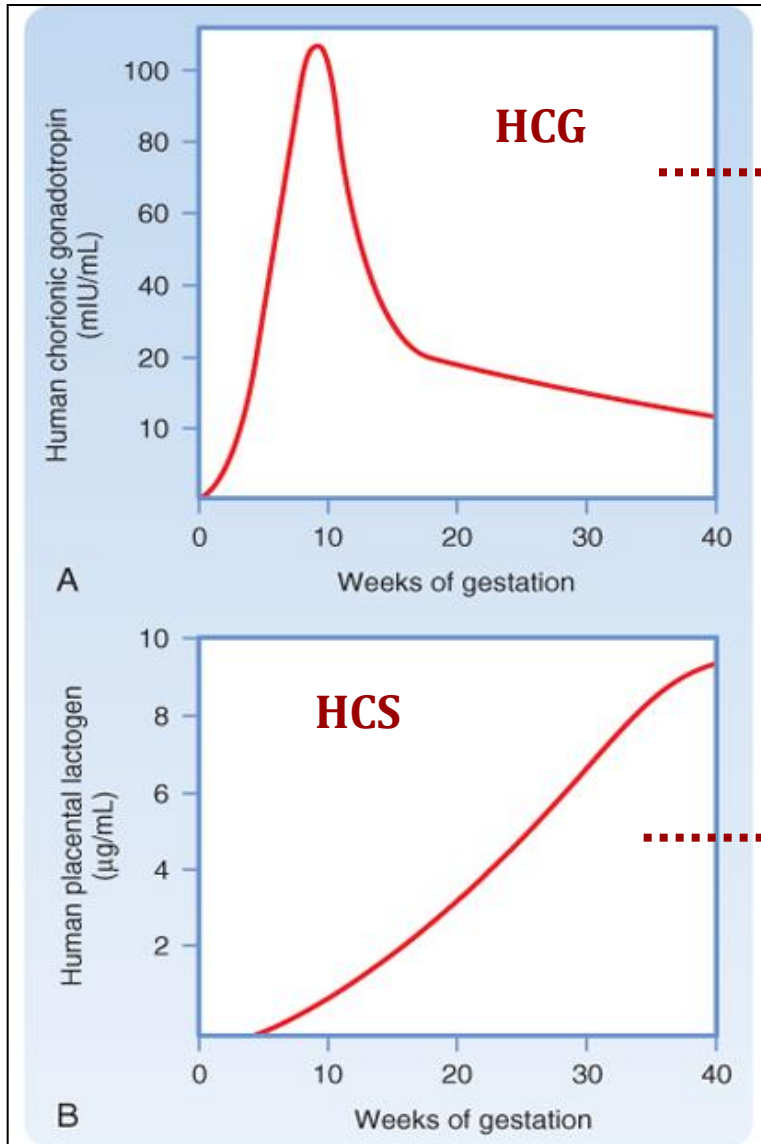


Acknowledgements

Symptoms of Pregnancy



Hormonal changes



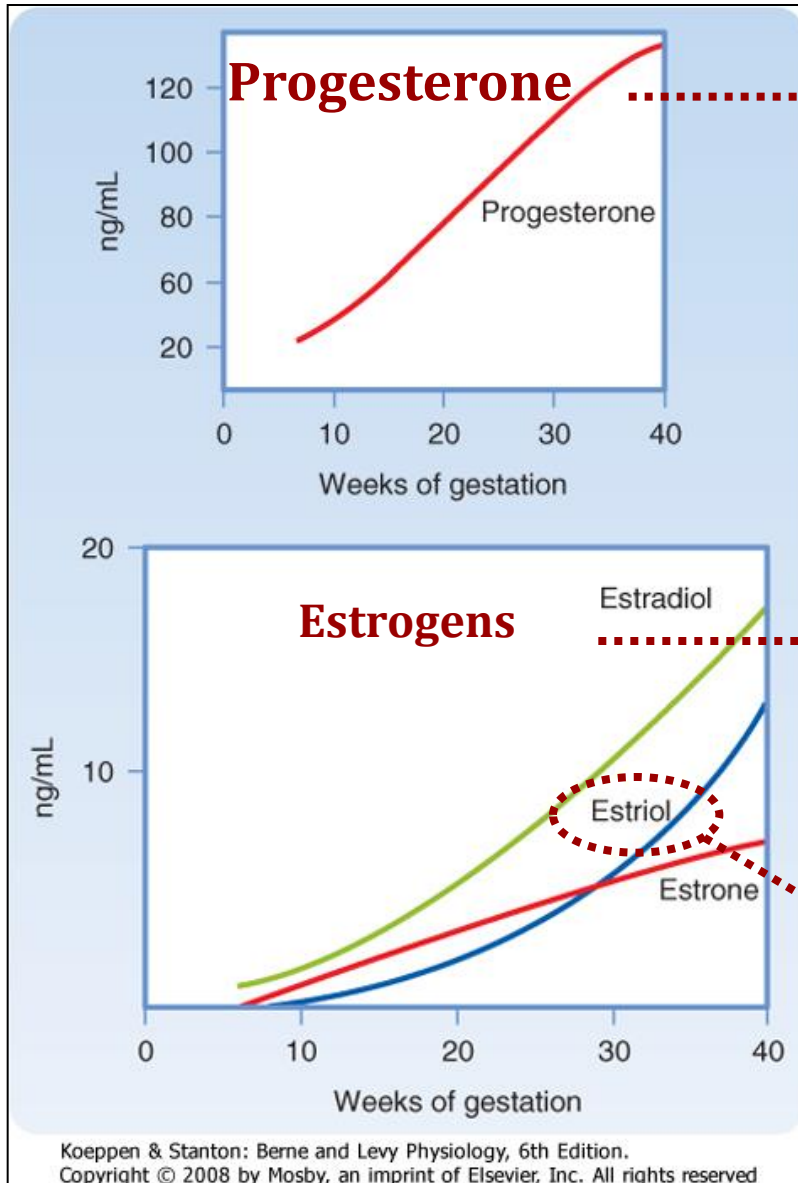
Human Chorionic Gonadotropin

- prevent involution of CL (progesterone, estrogen)
- effect on the testes of male fetus - development of sex organs

Human Chorionic Somatomammotropin

- effect on lactation (HPL) ?
- growth hormone effects
- decreases insulin sensitivity - more glucose for the fetus
- low levels - placental insuff.

Hormonal changes

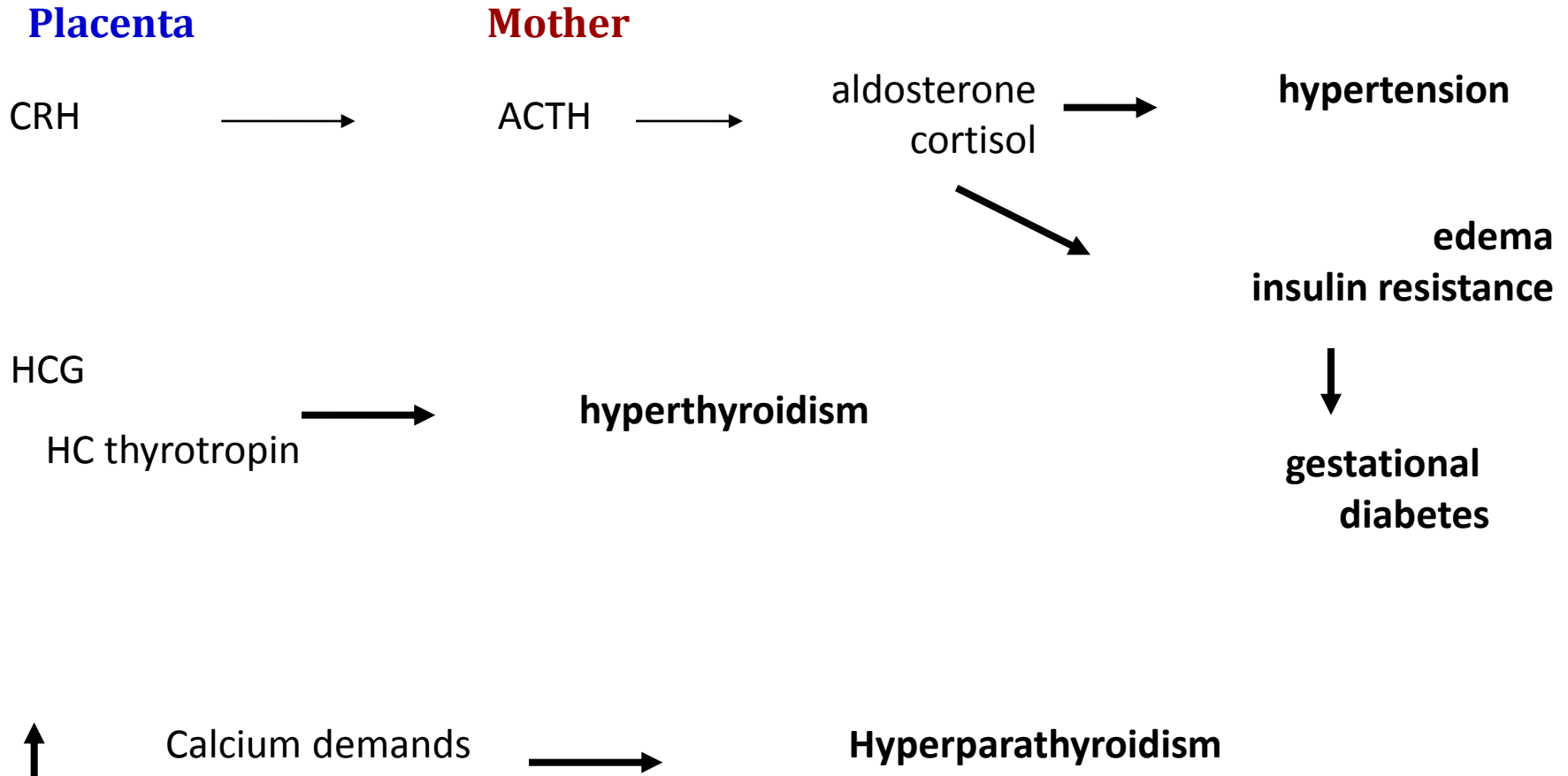


- development of decidual cells •
- decreases uterus contractility •
- preparation for the lactation •

- enlargement of uterus •
- breasts development •
- relaxation of ligments •

- estriol level - indicator of •
- vitality of the fetus

Hormonal changes



Umbilical Cord

A hollow rope-like tube that connects the ■
embryo to the placenta

The placenta carries nutrients and oxygen to the ■
baby and takes waste away



Pregnancy literally means (being with the child).•

Normal pregnancy average duration is counting from first day of last•
menstrual period is about 280 days and 10 lunar months or 40 weeks.

Ovulation delivery interval is 267 days (as ovulation occurs on 13th or•
14th day in 28 days cycle.

The EDD (Expected date of delivery) is calculated by counting back•
3 months and adding 7 days or by counting forward 9 months and 7
days. This rule is known as NAEGELE'S rule.

Delivery taking place before and after 280 days is termed as preterm•
and post term delivery respectively.

MATERNAL PHYSIOLOGY IN PREGNANCY

Uterus:-

Enormous increase in size.(6.5 cm long, 30gms weight normal) •
30 cm long 1000gms weight at term.

Hypertrophy and Hyperplasia of uterine muscle fibers (5 times to 10 times) due to the action of estrogen and progesterone in first 3 months then in later months distention is mainly mechanical due to expanding products of conception. •

Original pear shaped uterus changes to globular form and spherical at third month then to oval. •

Two types of contractions are manifested in uterus in pregnancy: •

a) Braxton-Hicks contractions (irregular).

b) Uterine contractions (regular).

These contractions increase at the time of labor facilitating delivery.

CHANGES IN CERVIX

Softening of cervix due to increased vascularity and oedema, hyperplasia•
of cervical glands.

Bluish coloration•

CHANGES IN OVARIES AND TUBES

Corpus leuteum increases if pregnancy occurs and ovulation ceases. •

Ovarian blood vessels increases enormously•

CHANGES IN VAGINA

Increased vascularity •

Violet coloration and increase secretion•

Hypertrophy of neucosa and muscle layer •

Vaginal secretions becomes acidic to prevent infections. (Doderlien Baccili)•

CHANGES IN BREASTS

Tenseness and tingling in breasts in early months especially in primi gravida. •
(Hormonal)

They become nodular with engorgement of veins. •

Nipples become larger, erectile and discharges yellowish thin fluid in later •
months. (Colostrum)

Areola becomes larger, pigmented and darker. •

Sebaceous glands hypertrophies and form glands of montgomry. •

METABOLIC CHANGES

Weight gain:-

Average total weight gain in pregnancy is about 11 kgs(24 pounds).•
half of it increases in 2nd trimester, half in second and 1kg in first.
weight gain in last trimester is about half kg in one week.

Few days before delivery there is slight decrease in weight. •

Water Metabolism:-

In pregnancy there is water retention, water content of fetus, placenta, •
amniotic fluid is about 3.5 Lt. and approx. 3.5 Lt. of water accumulates
due to increase in blood volume and size of uterus and breasts.

Total amount is 6.5 Lt. and mostly in last two trimesters. •

There is increase in sodium retention; Water retention. •

BASAL METABOLIC RATE:-

BMR ranges between 5% to 25%.•

Larger the foetus greater is the BMR.•

PROTIEN METABOLISM:-

There is increased secretion of amino acids due to increased •
glomerulo filtration rate.

Carbohydrate Metabolism:-

Circulating insulin level increases in pregnancy. •
resulting in to low fasting levels of blood sugar below 60mg%.

FAT METABOLISM:-

Blood lipids increase during pregnancy. (reason not known)•

MINERALS:-

Demand of Iron increases. •

BLOOD ELECTROLYTES

Respiratory Alkalosis results
lowering P_{CO_2} of blood •

K and Na also decreases. •

Ca and Mg also decreases. •

HAEMATOLOGICAL CHANGES

Blood volume increases by 30-50% of normal to fulfill the demand of •
enlarging uterus.

It safeguards the mother against the adverse effects of blood loss at •
parturition.

Hb% below 10gms percent during pregnancy is pathological. 1 gm •
of Hb contains 3.4 gms. of iron. (Iron deficiency anaemia develops)

Average iron requirement in pregnancy is about 3 mg per day. •

Hematologic changes

- plasma volume increases (50%)•
- erythropoiesis (RBC) increases (25%)•
- decreased Hb, hematocrite•**

- Iron requirements increases significantly•
- Iron supplements needed•**



Leucocytes normal is 5000 to 12000/ml increases during labor and in early puerperium to levels of 20000 or more.

Fibrinogen increases resulting into increased ESR.

Blood coagulation factor increases from 300 mg to 450 mgms. In later months of pregnancy.

Other factors of clotting also increases.

CARDIOVASCULAR SYSTEMS:

Heart enlarges by 10% in pregnancy due to hypertrophy or dilatation or both.

Cardiac output increases to 40%.

Pulse rate increases.

Stroke volume also increases.

Blood pressure should not increase in normal pregnancy. If it increases by 30% of previous BP, it is indicative of PET.

RESPIRATORY TRACT

Pregnancy induces hyperventilation. •

Respiratory rate increases. •

Tidal volume increases. •

Pco₂ decreases. •

Vital capacity and breathing capacity are not altered. •

Diaphragm is elevated in later months due to enlargement of uterus. •

Functional residual capacity of lungs reduces. •

GIT

Stomach and intestine are displaced due to enlarging uterus resulting in heart burn due to gastric secretions (excess)

Gums are hypertrophic and softening occurs.

Haemorrhoids may develop.

Liver functions are altered:

- a) Alkaline phosphates activity increases.
- b) Albumin globulin ratio decreases.
- c) Total serum proteins reduces.

URINAL TRACT

Kidneys:- GFR increases by 50%.

Glycosuria may occurs but not usually pathological.

Hyperplasia of bladder and ureter resulting into increased frequency of urine.

ENDOCRINE GLANDS

Pituitary, thyroid, parathyroid and adrenals hypertrophy due to increased Estrogen and progesterone in blood.

NERVOUS SYSTEM

Emotional disturbances•

Abnormal cravings. (Pica)•

SKIN

Striae gravidarum on abdomen and thighs. •

Pigmentation of nipples and areola. •

Skin in midline of abdomen darkens.(Linea Nigra)•

Brownish patches on face. (Chloasma) •

Vascular spiders may develop. •

MUSCULAR SKELETAL SYSTEM

Progressive Lordosis- compensatory. •

Increased mobility of sacroiliac, sacrococcygeal, and pubic joints. •

DIAGNOSIS OF PREGNANCY

Probable signs:

Enlargement of abdomen (gradual), corresponding to the period of •
amenorrhoea.

Change in size, shape and consistency of uterus and cervix. •
(Hegar's sign)

Braxton-hicks contractions; irregular painless contractions. •

Ballottement (Mid-pregnancy). •

Palpable foetal parts in later halves of pregnancy. •

Increased level of HCG in urine in early pregnancy. •

Changes in breasts. •

Pigmentation of skin. •

Morning sickness, bladder irritability, quickening. •

POSITIVE SIGNS

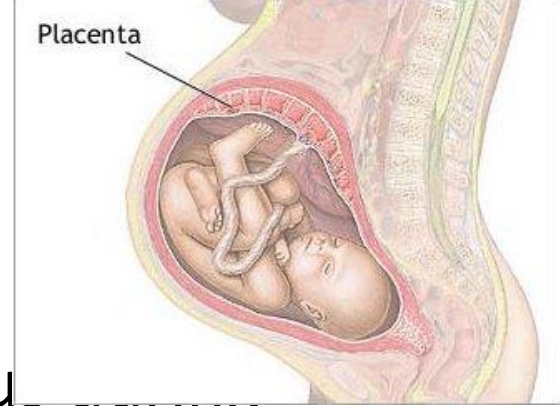
Foetal movements •

FSH •

X-ray, ultrasound. •

A sexually matured female may be married or unmarried coming to you with Amenorrhoea must be investigated for pregnancy.

Placenta



An organ that develops in the uterus during pregnancy

The placenta provides nourishment and oxygen to the growing baby and removes waste

Some refer to it as the afterbirth because it is excreted from the body following the birth of the baby

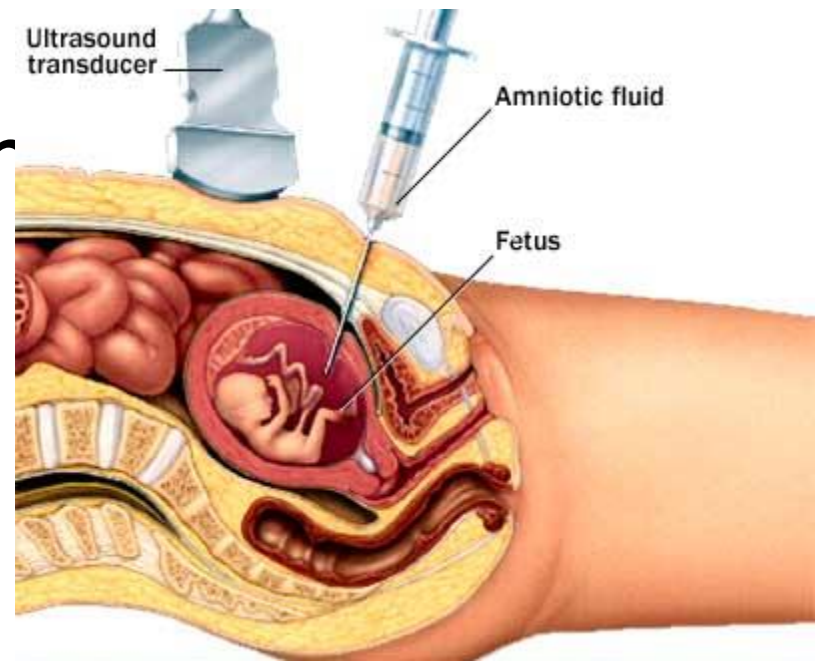
Most substances are passed from the mother through the placenta to the baby

Amniotic Fluid

- The watery substance that surrounds the growing fetus during its time in the womb
- The fluid helps to cushion the baby from outside force



Amniocentesis



■ A medical procedure used for prenatal diagnosis, in which a small amount of amniotic fluid is extracted from the amniotic fluid around a developing fetus

■ It is usually offered when there may be an increased risk for genetic defects in the pregnancy.

■ Early amniocentesis can be performed as early as 13 weeks gestation

■ Standard amniocentesis is usually performed between 15 and 20 weeks gestation

Ultrasound



used to visualize the embryo or fetus in its mother's uterus (womb) ■

The procedure is often a standard part of prenatal care, as it yields a variety of information regarding the health of the mother and of the fetus, as well as regarding the progress of the pregnancy. ■

CARE

Counsel the couple about pregnancy well before the actual conception•
takes place.

Take detailed medical, family, personal and obstetrical history to•
identify high risk factors in pregnancy. (Diabetes, heart disease,
Kidney disease, etc.)

Evaluate health level in terms of weight, B.P, etc. and treat before•
hand.

Nutritional status (Assessment of)•

Immunization (T.T, Rubella, hepatitis)•

Advice to avoid pregnancy in severe situations.•

Encourage females who are indulged in smoking, alcohol or other•
abusive drugs to be reduced or stopped.

First Trimester



- The 1st 14 weeks of pregnancy
- The most important trimester because this is when the vital structures are forming
- The embryo develops all of its organs and grows to about 1.5 inches
- The heart, brain, lungs, eyes, arms, and legs have formed – not all of them are fully functional
- The placenta and umbilical cord are also formed during this time

Second Trimester



Months 4-6 of pregnancy ■

The organs continue to develop and ■
movement can be felt by month 4

The heartbeat can be heard ■

The fetus recognized voices and it grows hair ■
and nails

By the end of the 2nd trimester the fetus is ■
about 14-15 inches long and about 2 pounds

Third Trimester

Months 7-9 of pregnancy ■

The fetus gains most of its weight during this trimester and is able to grasp objects as well as open and close its eyes ■



Special nutrition need in pregnancy

High protein diet, higher energy uptake•

Iron supplements - 300mg ferrous sulfate•

B - vitamins - erythropoiesis •

Folic acid (folate) - reduces risk of neural tube defects•

Vitamin D3 + Ca supplements•

Before parturition - K vitamin (prevention of intracranial bleeding during the labor) •

To summarize

Optimum child health is achieved through:

Adequate maternal care •

Periodic follow up of the “healthy child” •

Breast feeding and proper child nutrition •

Immunization •

Early detection and proper management •

A sanitary and safe environment •

Health education of parents. •

Screen for inheritable genetic diseases before conception. •

Investigate beforehand females with bad obstetrical history, congenital anomalies. •

Counseling and psychotherapy. •

Motivation for family planning. •

CONCLUSION

To ensure health of the mother and a healthy new born baby, pregnancy should be monitored in 3 phases.

Pre-natal (a

Natal (b

Post-natal (c

If an Obstetrician knows what is normal then only she can elicit abnormalities.

THANK YOU!