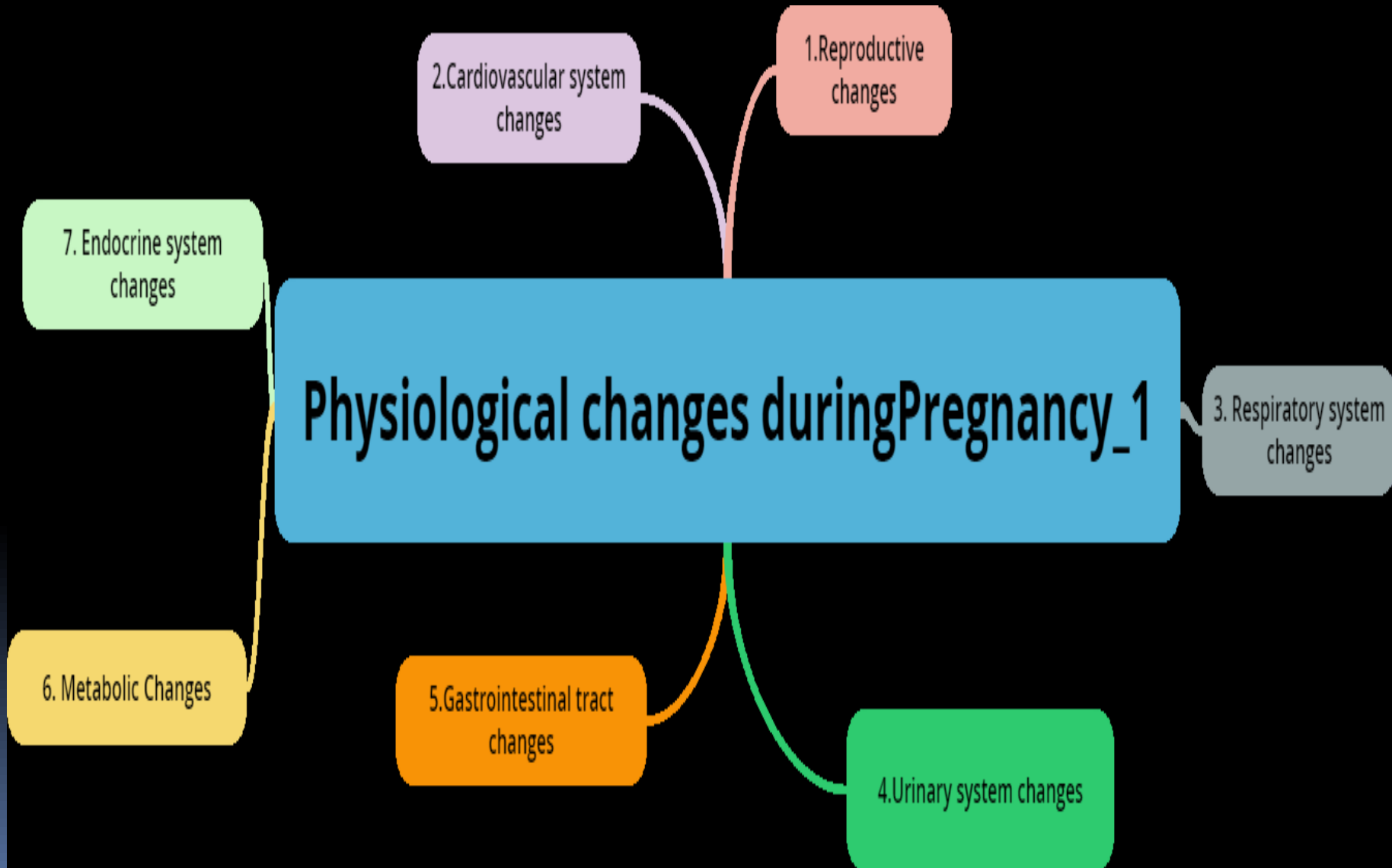


Physiological changes during pregnancy



Uterus ■

Size: increases to 20 times of its non-pregnant size due to hyperplasia and hypertrophy. ■

Wall: changes from almost a solid globe to a hollow vessel. ■

Weight: increases from 50 grams -1000 grams. ■

Volume: increases from less than 10 ml to 5000 ml, ■

Contractions: Braxton Hicks (irregular, painless contraction). ■

Shape: changes from that of an inverted pear to that of soft globe. ■

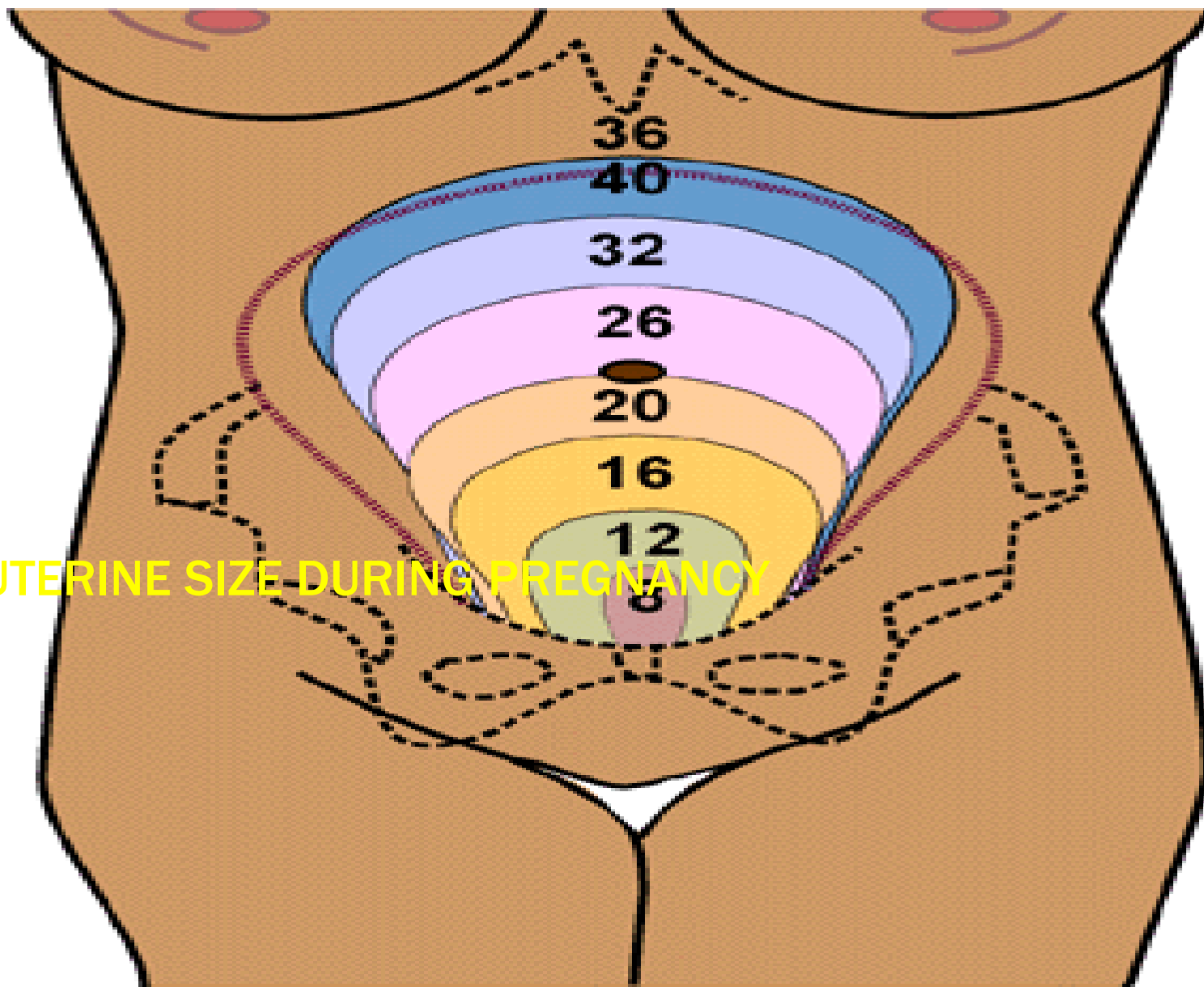
Endometrium: consists of 3 layers: ■

Decidua basalis: uterine lining beneath implantation. ■

Decidua capsularis: portion of the decidua that covers the embryo. ■

Decidua vera: all of the uterine lining that is not in contact with the fetus. ■

UTERINE SIZE DURING PREGNANCY



Cervix ■

Goodell's sign: softening of the cervix, formation of operculum (mucous plug). ■

■

Ovaries and Fallopian Tubes ■

Involution due to suppression of follicle stimulating hormone (FSH). ■

■

Vagina ■

Chadwick's sign: bluish discoloration of vagina. ■

Hypertrophy and hyperplasia. ■

Leukorrhea, acid pH 3.5 to 6. ■



Vulva ■

Increased vascularity. ■

Fat deposition causes labia majora to close ■
and partially cover introitus.



Hegar's sign (softening of the lower uterine segment). **6-8 weeks** ■

Goodell's sign (softening of the cervix, uterus, and vagina during pregnancy.). **4-6 weeks** ■

Ballottement. **dropping and rebounding of the fetus in its surrounding amniotic fluid in response to a sudden tap on the uterus** ■

Positive pregnancy test. ■

Braxton hicks contractions. **more frequently felt after 28 weeks. They usually disappear with walking or exercise.** ■

-Oslander's sign (pulsation of fornices)





Breasts ■


3-4 weeks: prickling, tingling sensation. ■

6 weeks: developing ducts and glands. ■

8 weeks: bluish surface veins are visible. ■

8-12 weeks: Montgomery's glands become more prominent, primary areola become darker. ■

16-18 weeks: colostrum expresses. Secondary areola appears. ■





Cardiovascular System ■

Slight enlargement of myocardium. ■

Shift in chest contents: Heart is displaced upwards and to the left. ■

Heart rate increases by 10 to 15 beats/minute. ■

Blood volume increases 40-50% physiological anemia. ■

Increase in clotting factors. ■

Hemoglobin and hematocrit decrease in relation to increased plasma volume. ■

Cardiac output increases by 30% during the first and second trimesters. ■



Respiratory System ■

Estrogen causes edema of mucous ■
membranes of upper respiratory tract →
epistaxis.

Enlarged uterus prevent the lungs from ■
expanding → shortness of breath.

Basal metabolic rate increases and oxygen ■
requirement increases by 30 to 40 ml/min.



Urinary System ■

Frequency of micturition due to pressure of the growing uterus. ■


Decreased bladder capacity and bladder tone. ■

Renal Function Changes ■

Changes occur to accommodate an increased workload while maintaining stable electrolyte balance. ■

Increased glomerular filtration rate. ■

Glucosuria may occur (may not be abnormal, warrants further evaluation). ■





Gastrointestinal System ■

Mouth and Teeth ■

Gums become hyperemic and have a tendency to bleed. ■

Ptyalism is seen in some women. ■

Gastrointestinal Tract ■

Smooth muscle relaxation occurs related to increased progesterone production. This can cause: ■

Decreased peristalsis and constipation. ■

Heartburn, slowed gastric emptying and esophageal regurgitation. ■

Hemorrhoids from the pressure of the gravid uterus. ■

Appetite usually increases, after a temporary decrease due to nausea and vomiting. ■




Musculoskeletal System ■

Alteration in posture can result in lordosis ■
(waddling gait occurs due to increased level of progesterone and relaxation hormone),

Relaxation and increased mobility of joints ■
occur because of the relaxing hormone and steroid sex hormones.


■



Integumentary System (Cutaneous Changes) ■

Chloasma is the brownish" mask of pregnancy". ■

Linea nigra (abdomen). ■



Nipples, areolae, axillae, vulva and perineum all darken. ■

Striae gravidarum (stretch marks) appear on the breasts and abdomen. This is caused by increased fragility of the connective tissue. ■

LINEA NIGRA



A close-up photograph of a person's face, focusing on the forehead and cheek area. The skin is light brown and shows significant hyperpigmentation, specifically large, irregular, brownish-grey patches on the forehead and cheek, characteristic of melasma. The person's nose and part of their mouth are visible on the right side of the frame. The background is a solid blue color.

**CHLOASMA OR
MELASMA GRAVIDARUM**




Metabolic Changes ■

Increase metabolic rate. ■

Increase the demands for carbohydrate, ■
protein, and minerals.

Weight gain of 9-11 kg. ■



Water requirement is increased to supply ■
fetus, placenta and amniotic fluid.



Endocrine System ■

FSH and LH production is suppressed. ■

Human placental lactogen production is suppressed. ■

Thyroid gland enlarges, resulting in increased iodine metabolism. ■

Pancreas: Insulin production is increased throughout pregnancy to compensate for placental hormone insulin antagonism. ■

Ovaries produce: ■

Estrogen. ■

Progesterone. ■

Relaxing hormone. ■

■



Immunological System ■

Resistance to infection is decreased. ■

Maternal IgG levels are decreased. ■

Maternal IgM levels remain unchanged. ■



Pregnancy Signs and Symptoms

Presumptive Evidence

Signs:

- Amenorrhea.
- Breast changes.
- Chadwick's sign.
- Chloasma and linea nigra.
- Abdominal enlargement and striae.

Symptoms:

- Nausea and vomiting.
- Urinary frequency.
- Weight gain.
- Constipation.
- Fatigue.
- Quickening.
- Breast tenderness, tingling, and heaviness.



Probable Evidence ■

Hegar's sign. ■

Goodell's sign. ■

Positive pregnancy test. ■

■

Positive Evidence ■

Hearing of fetal heart rate. ■

Feeling of fetal movement. ■

Fetal parts felt by examiner. ■

Ultrasonography to confirm fetal outline. ■

Thank you ■