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BIOMEDICAL ENGINEERING

18/ENG08/024

PHS 212

PYHSIOLOGY

PHYSIOLOGICAL CHANGES:

changes in pregnancy are the adaptations during pregnancy that a woman's body undergoes to accommodate the

growing embryo or fetus. These physiologic changes are entirely normal, and include behavioral (brain), cardiovascular (heart and blood vessel), blood, metabolic, kidney, posture, and respiratory changes. Increases in blood sugar, breathing, and cardiac output are all expected changes that allow a pregnant woman's body to help the proper growth and development of the embryo during the pregnancy.

- Breast size: Changes in breast size during pregnancy may be related to the sex of the infant, as mothers of female infants have greater changes in breast size than mothers of male infants. A woman's breasts grow during pregnancy, usually 1 to 2 cup size and potentially several cup sizes. A woman who wore a C cup bra prior to her pregnancy may need to buy an F cup or larger bra while nursing. A woman's torso also grows and her bra band size may increase one or two sizes. An average of women wear the wrong bra size, and mothers who are preparing to nurse can benefit from a professional bra fitting from a lactation consultant. Once the baby is born up to about 50–73 hours after birth, the mother will experience her breasts filling with milk (sometimes referred to as “the milk coming in”).
  Once lactation begins, the woman's breasts swell significantly and can feel achy, lumpy and heavy (which is referred to as engorgement). Her breasts may increase in size again by an additional 1 or 2 cup sizes, but individual breast size may vary depending on how much the infant nurses from each breast.
- Cardiovascular: The heart adapts to the increased cardiac demand that occurs during pregnancy The heart rate increases, but generally not above 100 beats/ minute. Total systematic vascular resistance decreases by 20% secondary to the vasodilatory effect

of progesterone. the systolic and diastolic blood pressure drops 10–15 mm Hg in the first trimester and then returns to baseline in the second half of pregnancy, The heart rate increases, but generally not above 100 beats/ minute. Total systematic vascular resistance decreases by 20% secondary to the vasodilatory effect of progesterone. Overall, the systolic and diastolic blood pressure drops 10–15 mm Hg in the first trimester and then returns to baseline in the second half of pregnancy.

- Renal reproductive tract: Progesterone causes many changes to the genitourinary system. A pregnant woman may experience an increase in the size of the kidneys and ureter due to the increase blood volume and vasculature. Later in pregnancy, the woman might develop physiological hydronephrosis and hydroureter, which are normal Progesterone causes vasodilatation and increased blood flow to the kidneys.
- Blood volume: During pregnancy the plasma volume increases by 40-50% and the red blood cell volume increases only by 20–30%.These changes occur mostly in the second trimester and prior to 32 weeks gestation. Due to dilution, the net result is a decrease in hemoglobin, which are measures of red blood cell concentration. A pregnant woman will also become hypercoagulable, leading to increased risk for developing blood clots and embolisms, such as deep vein thrombosis and pulmonary embolism. Women are 4-5 times more likely to develop a clot during pregnancy and in the postpartum period than when they are not pregnant
- Body weight: Some degree of weight gain is expected during pregnancy. The enlarging uterus, growing

fetus, placenta, amniotic fluid, normal increase in body fat, and increase in water retention all contribute weight gain during pregnancy.

- Nutrition: omen require a caloric increase of 350 kcal/day and an increase in protein to 70 or 75 g/day. There is also an increased folate requirement from 0.4 to 0.8 mg/day (important in preventing neural tube defects). On average, a weight gain of 20 to 30 lb (9.1 to 13.6 kg) is experienced.