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Elucidate the physiological adaptations to the female to pregnancy

Maternal physiological changes in pregnancy are the adaptations during pregnancy, that a woman's body undergoes to accommodate the growing embryos or fetus. These physiologic changes are entirely normal, and include behavioral (brain), cardiovascular (heart and blood vessel), hematologic (blood), metabolic, renal (kidney), posture, and respiratory (breathing) changes. Increases in blood sugar, breathing, and cardiac output are all expected changes that allow a pregnant woman's body to facilitate the proper growth and development of the embryo or fetus during the pregnancy. The pregnant woman and the placenta also produce many other hormones that have a broad range of effects during the pregnancy.

After conception, the corpus luteum, placenta, and developing embryo release hormones, growth factors, and other substances into the maternal circulation. These substances trigger a cascade of events that transform the functioning of the maternal cardiovascular, respiratory, and renal systems, which in turn alter the physicochemical determinants of  $[H(+)]$ . Following implantation, maternal adaptations fulfill 4 important functions that support fetal growth. Increased availability of substrates and precursors for fetal-placental metabolism and hormone production is mediated by increases in dietary intake, as well as endocrine changes that increase the availability of glucose and low-density lipoprotein (LDL) cholesterol. Transport capacity is enhanced by increases in cardiac output, facilitating the transport of substrates and precursors to the placenta, and fetal waste products to maternal organs for disposal. Maternal-fetal exchange is regulated by the placenta after 10-12 weeks gestation, but it may occur through histiotrophic mechanisms before this time. Disposal of additional waste products (heat, carbon dioxide, and metabolic byproducts) occurs through peripheral vasodilation and increases in skin blood flow, ventilation, and renal filtration.