Nutrition for pregnancy

Pregnancy is a time when appetite is altered and nutritional needs change. The first advice should ideally be communicated before pregnancy, when a woman decides to try to have a baby. Pregnancies in women who are overweight, have anorexia nervosa, or whose growth is not completed are more difficult, and these women need extra nutritional care. A good intake of folate is important in preventing neural tube defects and some other malformations in the fetus of a minority of women. The stage when this vitamin is most needed is the first 28 days after conception so supplementation or high folate diet. The supplement dose is 400 or 500µg/day. During pregnancy extra nutrients are required, especially from 20 weeks, for the growing fetus and for the placenta.

where pre-pregnant food intake may be marginally adequate , food intake may—and should—increase in pregnancy. For most nutrients like protein the small extra amounts required are covered adequately by a normal diet. But intakes are more critical for the other nutrients in the table showing recommended daily intakes.

Recommended daily intakes* for six critical nutrients in pregnancy

	Addition for pregnancy	Non-pregnant women	Total
protein (g)	+10	50	60
Folate(µgtotal folate)	+ 220	180	400
Calcium (mg)	+ 400	800	1200
Iron (mg)	+ 15	15	30

Zinc (mg)	+ 3	12	15
Iodine (µg)	+ 25	150	175

* United States recommended dietary allowances, 1989

Folate is the only vitamin, and iron the only nutrient element whose requirements double in pregnancy. Extra folate is needed for the first month and again for the last trimester. Serum and red cell folate concentrations decline in pregnancy and, if looked for, some degree of megaloblastic change can be found in substantial minorities of women in late pregnancy. Such changes have been reported in 6-25% of women not taking supplements. Whole grain cereals, nuts, and legumes are good sources of folate. The vitamin is largely destroyed by prolonged boiling.

The trace mineral iron plays a major role in the health of the mother and fetus and therefore appears first in the discussion. Other minerals of special concern in pregnancy are calcium, iodine, fluoride, and zinc. During pregnancy, the mother's plasma volume increases by about 45% to 50% by the 34th week of gestation, and her red cell mass increases by about 33%.

Besides supporting the mother's increased blood volume, iron supports the red blood cells in the fetus, placenta, and umbilical cord. Even moderate iron deficiency anemia (IDA) is associated with twice the risk of maternal death.

The fetus receives all iron stores from the mother, with 600 mg coming from maternal dietary intake and 400 mg coming from maternal stores . IDA in the first trimester is associated with greater than a twofold increase in the risk of LBW or preterm delivery . Long-term IDA during pregnancy may cause permanent damage to the brain, which negatively affects intelligence, cognitive abilities, and behavior later in life . Fortunately, the body adjusts to

limited or abundant iron sources, and iron absorption is enhanced in the second and third trimesters of pregnancy.

Rates of iron absorption vary so that women who begin pregnancy:

- with adequate iron stores, absorb about 10% of ingested iron;
- with low iron stores, absorb about 20%; and
- anemic, absorb about 50%.

Maternal haemoglobin concentration declines by about 10% because of physiological haemodilution; and serum iron concentration, transferrin saturation, and ferritin concentration all go down. Even when she takes supplements, a woman's hemoglobin and hematocrit should be monitored regularly. Lower values are expected during the first and second trimesters because expanding blood volume dilutes the concentration of red blood cells. Prescribed iron supplements may not be taken. Economic factors or side effects, such as nausea, cramps, gas, and constipation, may influence intake.

Although oral iron preparations are best absorbed if taken 1 hour before or 2 hours after meals, individualizing the schedule is better than the client choosing to eliminate the supplement altogether. Iron supplements should be taken as directed.

Throughout pregnancy, approximately 30 grams of calcium are transferred to the fetus, most of it in the third trimester. Fetal calcium deposition typically peaks to 350 milligrams per day in the third trimester and maternal absorption increases to meet that demand . More calcium is absorbed by the intestine during pregnancy because of increased maternal vitamin D to meet the fetus's needs . Maternal bone loss that occurs to support the demands of pregnancy and lactation are recovered by 1 year postpartum. Without any change of vitamin D intake or exposure to the sun,

plasma concentrations of calcitriol (the active form of the vitamin converted in the kidney) are increased. Some of this extra conversion takes place in the placenta. The easiest way of obtaining the extra calcium needed for pregnancy and lactation is from milk; 0.5 litre supplies about 600 mg calcium.

As part of thyroid hormones, iodine is essential to the control of metabolism. The RDAs for iodine are increased by 46% and 93% for pregnant and lactating women over those of other women. In the United States, a pregnant woman's usual need for iodine is met by the use of iodized salt. Severe maternal deficiency can cause cretinism in the newborn .In such areas expectant mothers should be given an injection of iodised oil, preferably before conception .

The fetus begins to develop teeth at the 10th to 12th week of pregnancy. Fluoride crosses the placenta so that the concentration in fetal circulation is one-fourth that of the mother; fluoride is found in fetal bones and teeth. The American Academy of Pediatric Dentistry (2012) does not support the use of prenatal fluoride supplements. The AI for pregnancy and lactation is the same as for nonpregnant women.

Zinc is not mobilized from the mother's tissues. To provide for the fetus, the mother needs regular intake. Well-balanced diets provide the RDA for women who are pregnant and lactating, and supplementation is not recommended . The RDAs for pregnant and lactating women are about 50% higher than those for other women. Lean meat from beef chuck roast, 3 gram , would provide these RDAs.

What are pregnant women thinking about their food?

• "Eating the right foods", for example plenty of meat, fish, eggs, milk and fresh vegetables

• "Watching weight", taking care how much weight is gained