1- ca is principle component of the skeleton & provide the strength & rigidity of skeleton & teeth.

2- increase perimability of cell membrane(tranismission of ions across the membrane like Na, K, Cl).

3- activate a number of enzymes including pancreatic lipase, adenosine triphosphate & protiolytic enzymes.

4- regulate the contraction & relaxation of muscles including the heart beat, & for tranismission of nerve impulse.

5- catalyse two steps in clooting blood.

6- aids in absorption of vit B12 from the illum.

7- intracellular ca has many important function including glycogen breakdown, muscle contraction, hormone secretion & cell division.

@Ca requirement:

Adults ------------------------800mg/day.

Infant(up to 1 year)--------400-600 mg/day.

Children(1-10 years)-------800 mg/day.

11-18 years-------------------1200mg/day.

Pregnant & lactating-------1200mg/day.

@Results of ca deficiency:

a- bone deformity (osteomalacia, osteoporosis, rickets)

b- tetany & muscle cramp.

c- Osteopenia of prematurity

Osteoporosis

A disease characterized by a low bone mass & micro-architectural deterioration of bone tissue, leading to enhance fragility & a consequent increase in fracture risk . it classify into :

\* primary :which is divided into : type I : postmenopausal osteoporosis ( in women within 15-20 years of menopausal without estrogen )

Type II : age associated senile osteoporosis ( around age 70 )

Secondary : result from disease process ( parathyroid disease , CRF ,chronic diarrhea , hyperthyroidism ) or from certain drugs ( phenytoin , phenobarbiton , thyroid hormone , corticosteroids , tetracycline )

Risk factors for osteoporosis :

1- age > 60 years.

2- race (white > black), female > male.

3- low body wt. < 58 kg.

4- endocrine diseases like DM, pituitary disease, thyrotoxicosis & hyperparathyroidism.

5- low ca intake for long time.

6- estrogen depletion( early menopause)

7- smoking, alcoholism, physical inactivity, excessive caffeine intake, excess fibers.

8- personal history of fracture in adult & genetic factors (there appears to be evidence for strong heredity role in the development of bone mass by the age of 25 years that is independent of the consumption patterns of ca & other minerals.

9- inflammatory disease: ankylosing spondylitis, rheumatoid arthritis & inflammatory bowel disease.

10- GI diseases: malabsorption, chronic liver disease.

11- drugs: CS , anticonvulsants.

Prevention & treatment

1- increased intake of ca by diet & supplementation , increased vit D intake.

2- estrogen replacement most effective when use in 1st 5-8 years within menopause.

3-encorregment of exercise

4- reduce the likelihood of factors associated with bone loss(smoking, alcohol abuse, certain drugs).