

Premenopausal Osteoporosis

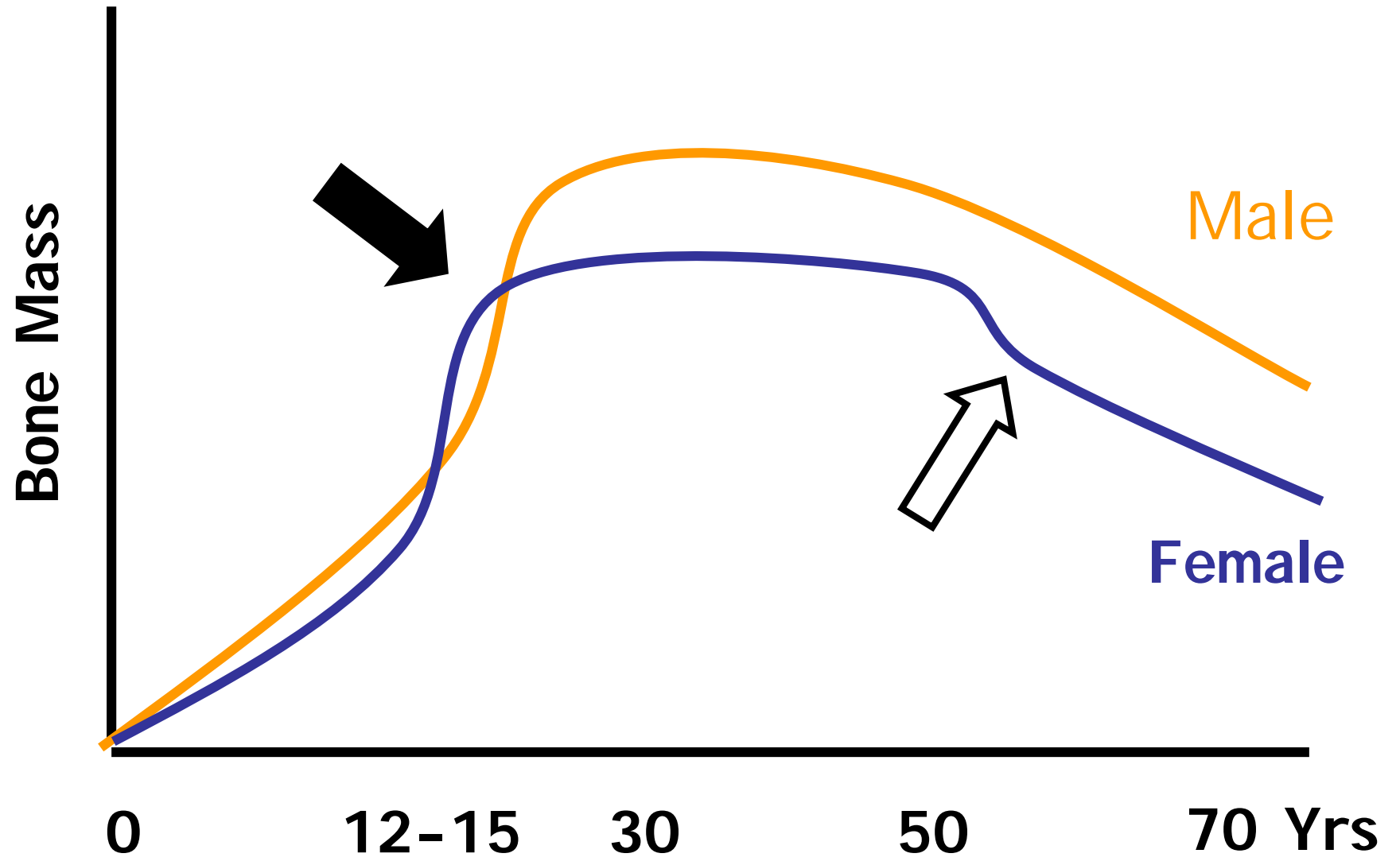
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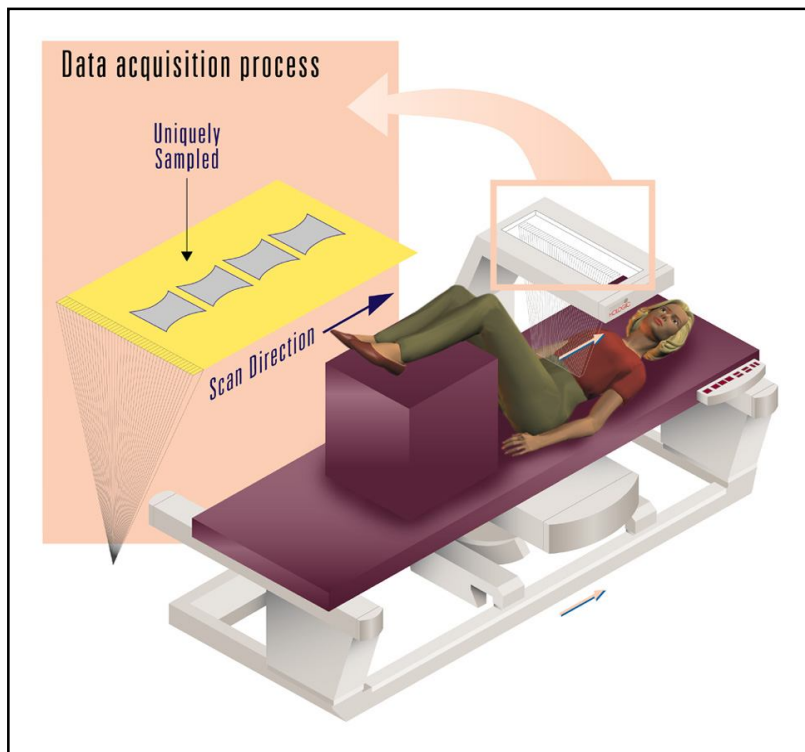
Belgian Menopause Society - November 13th, 2010

Premenopausal osteoporosis

- Physiology
- Definitions & risk assessment
- Pathophysiology
 - Idiopathic osteoporosis
 - Secondary causes of osteoporosis
 - Situations of interest to gynaecologists



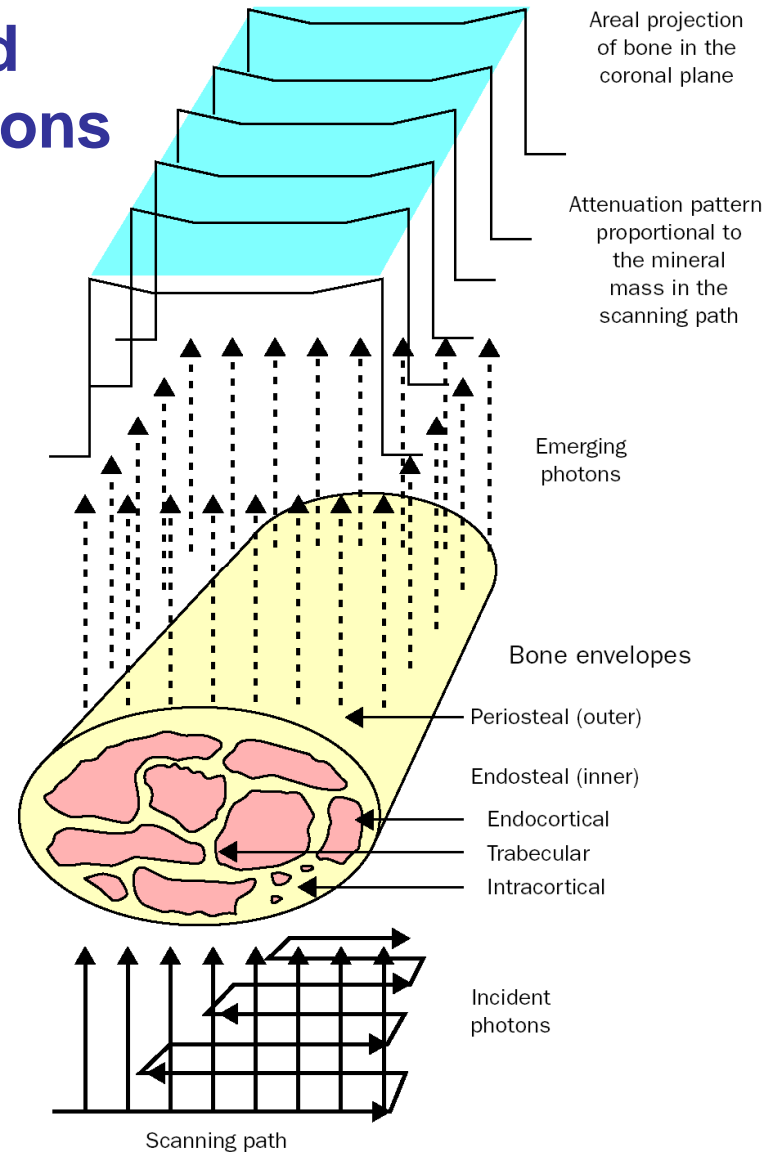
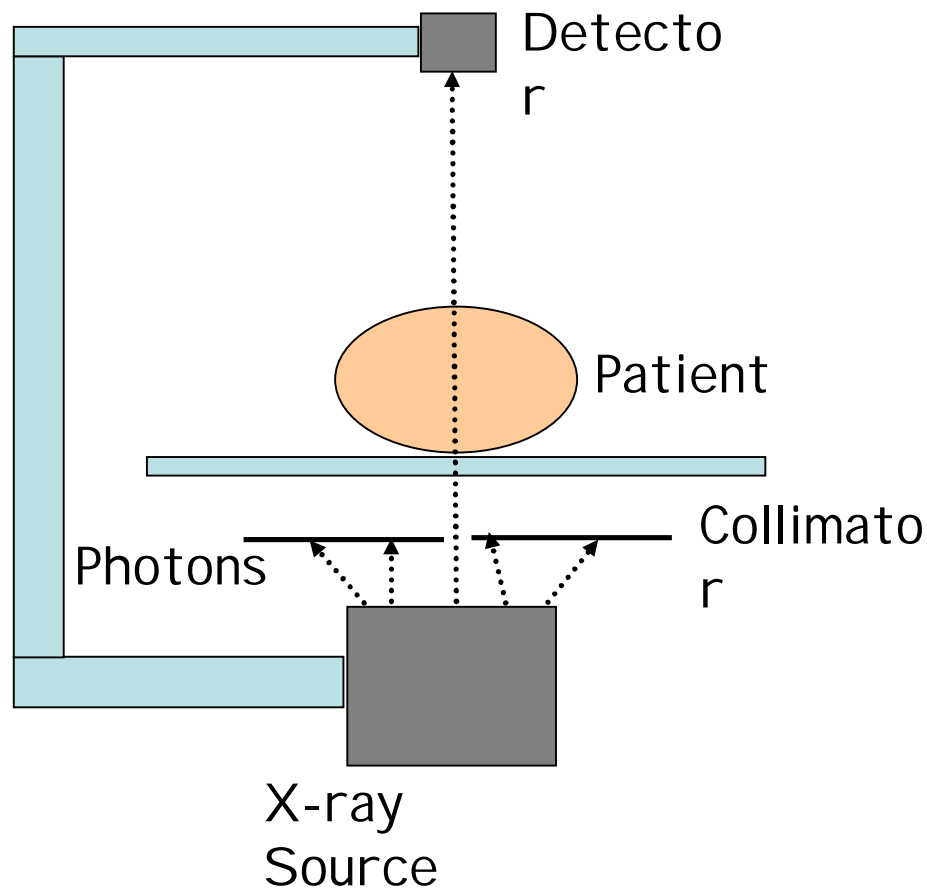
Dual X-ray Absorptiometry



Computerized Algorithm

Data acquisition
X-ray Fan beam

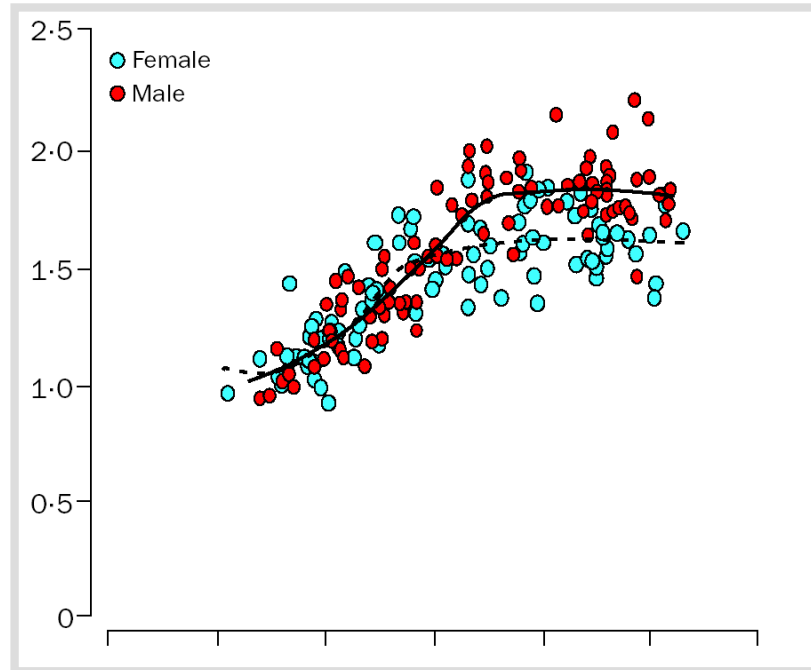
DXA is a projection technique and accounts for only 2 bone dimensions



Seeman JCEM 2001;86:4576

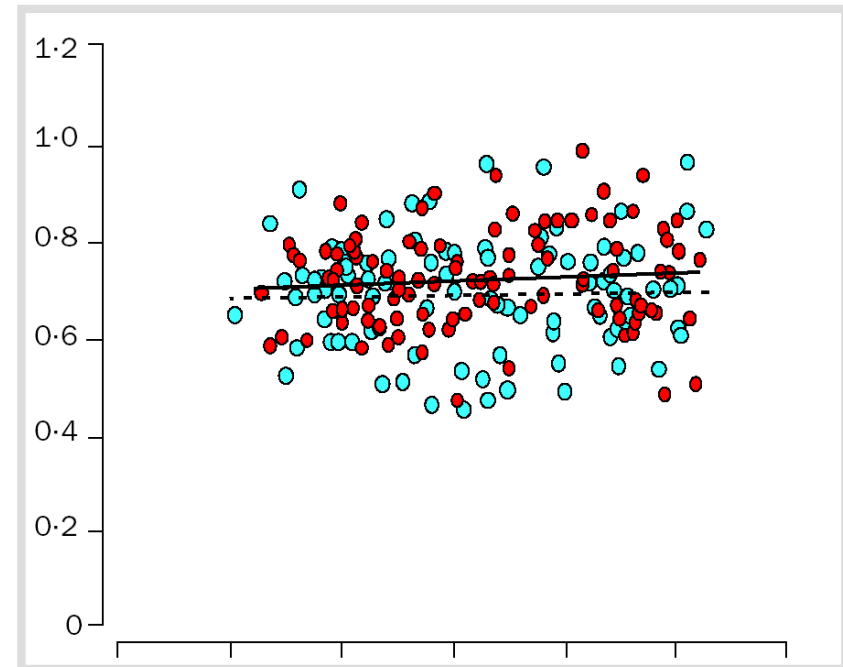
Femoral Neck areal BMD versus volumetric BMD

Areal BMD



0 5 10 15 20 25 30yrs

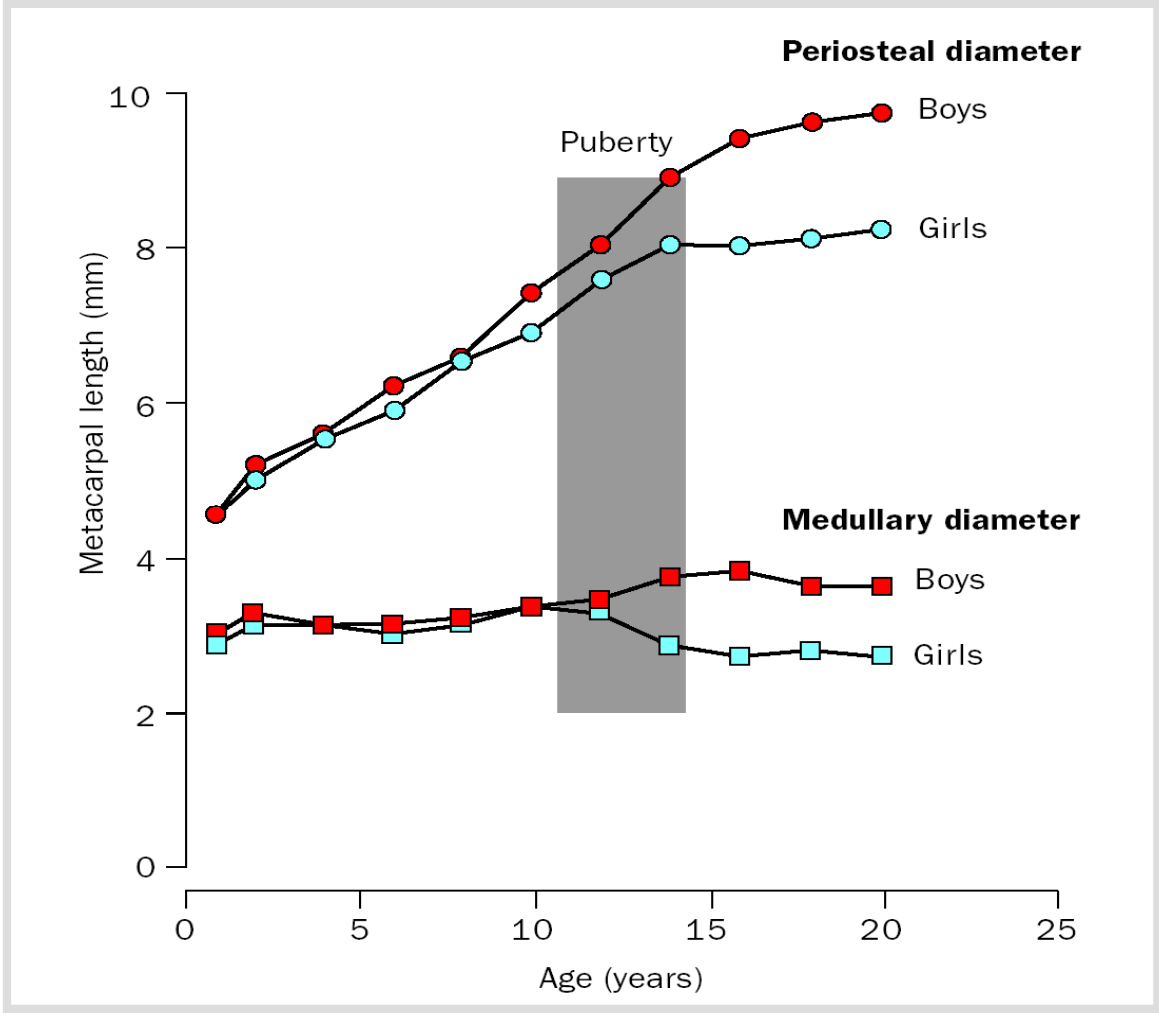
Volumetric BMD



0 5 10 15 20 25 30yrs

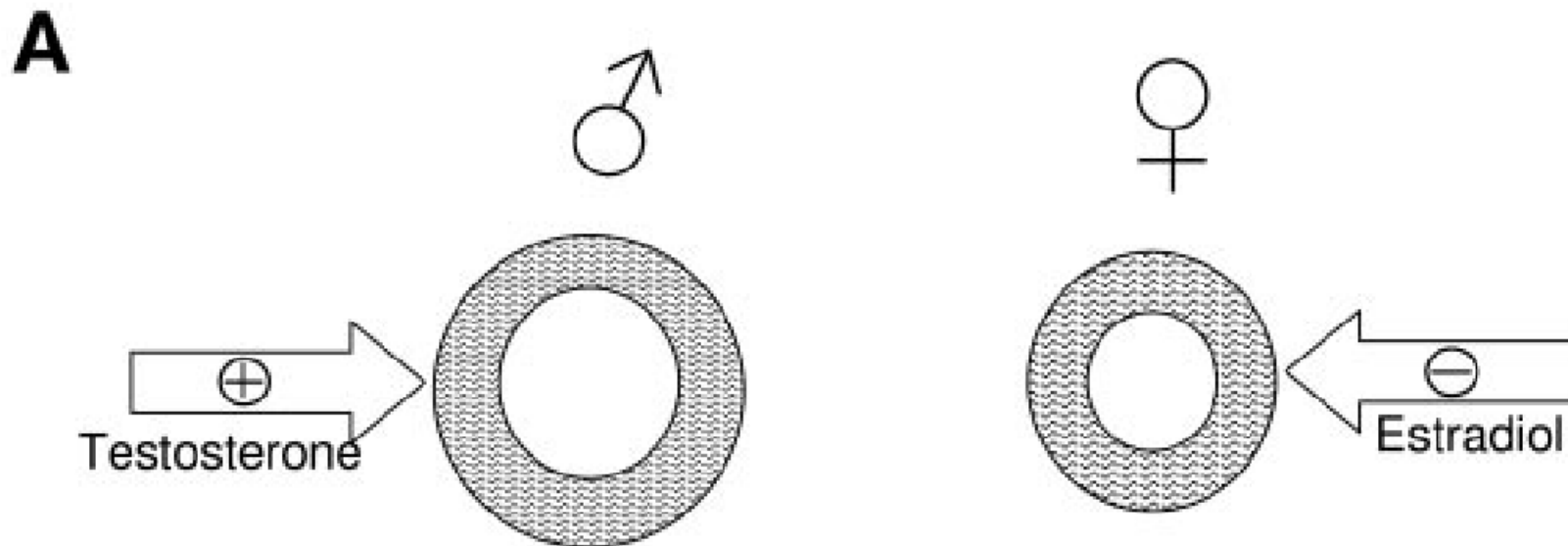
Lu et al., J Clin Endocrinol Metab 1996; 81:1586-90

Gender specific differences in bone development



Seeman, Lancet 2002; 359:1841-50

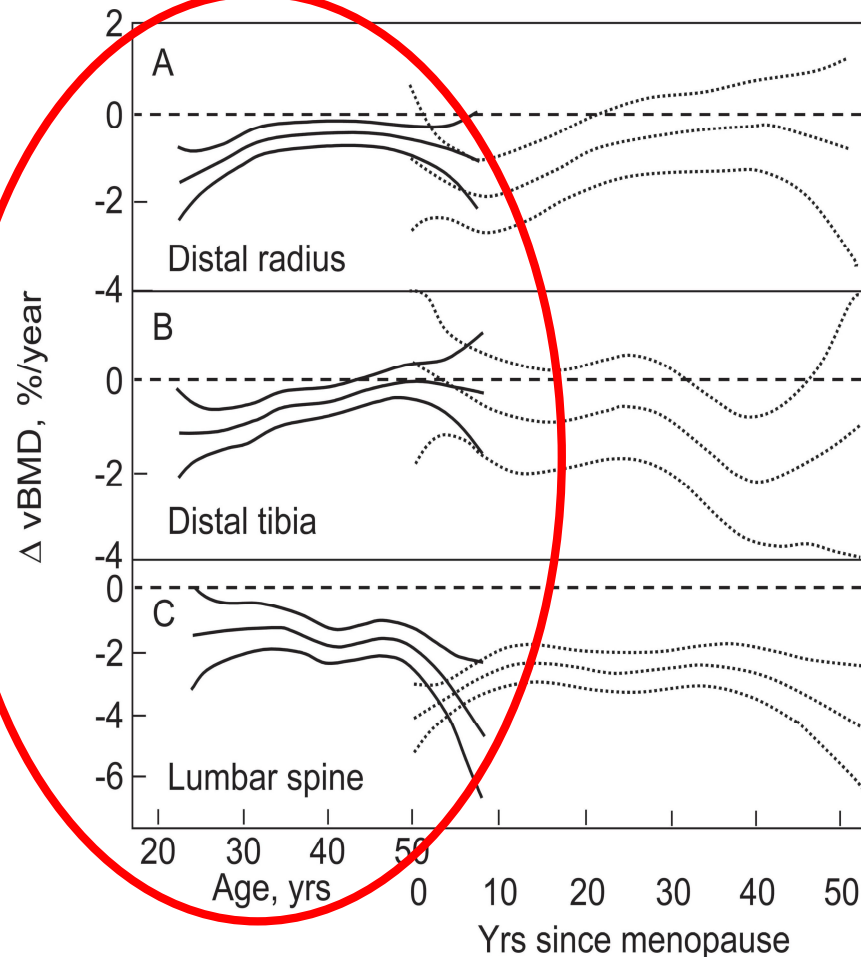
Sex steroids and the periosteum: traditional concept



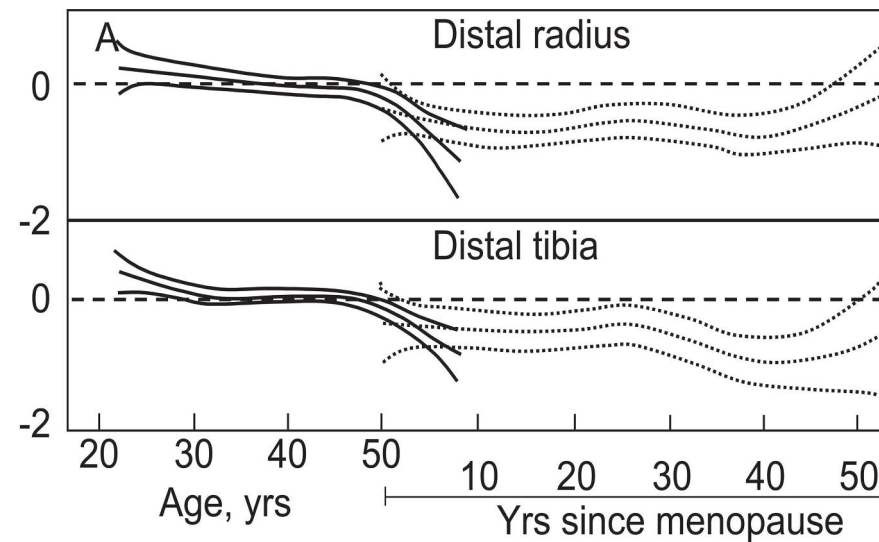
Vanderschueren et al J Clin Endocrinol Metab 91:378;2006

A Population-Based Assessment of Rates of Bone Loss at Multiple skeletal Sites: Evidence for Substantial Trabecular Bone Loss in Young Adult Women and Men

Trabecular sites



Cortical sites



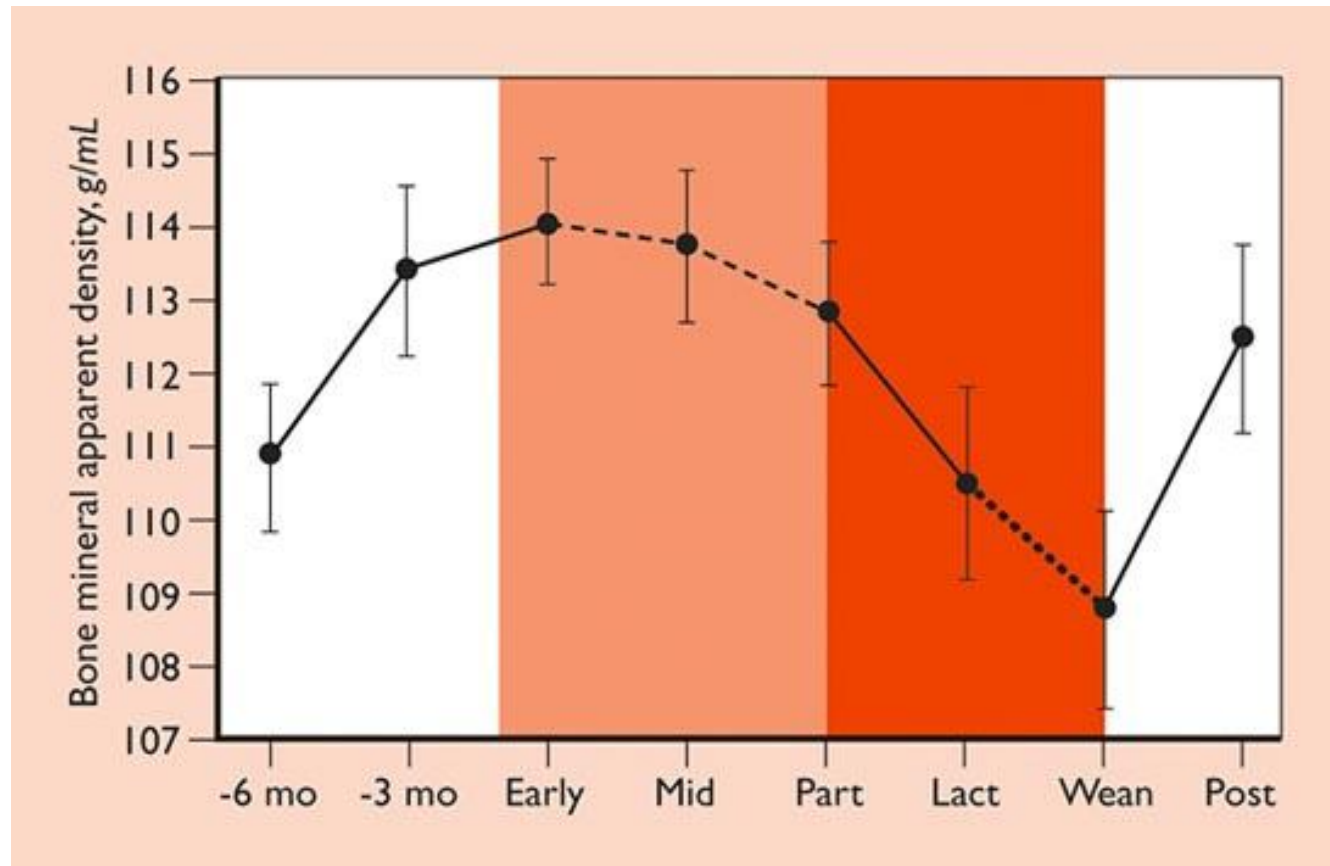
Riggs et al
J Bone Miner Res 2008;23:205–214

Calcium, pregnancy and lactation

- ❑ Calcium transfer during pregnancy from the mother to the foetus:
 - ❑ ~ 2,5 – 3 % of the calcium content of the mother
- ❑ Calcium transfer during one lactation period to the baby:
 - ❑ up to > 6 - 9 % of the calcium content of the mother
- ❑ => up to more than 12% of the total calcium content of the mother

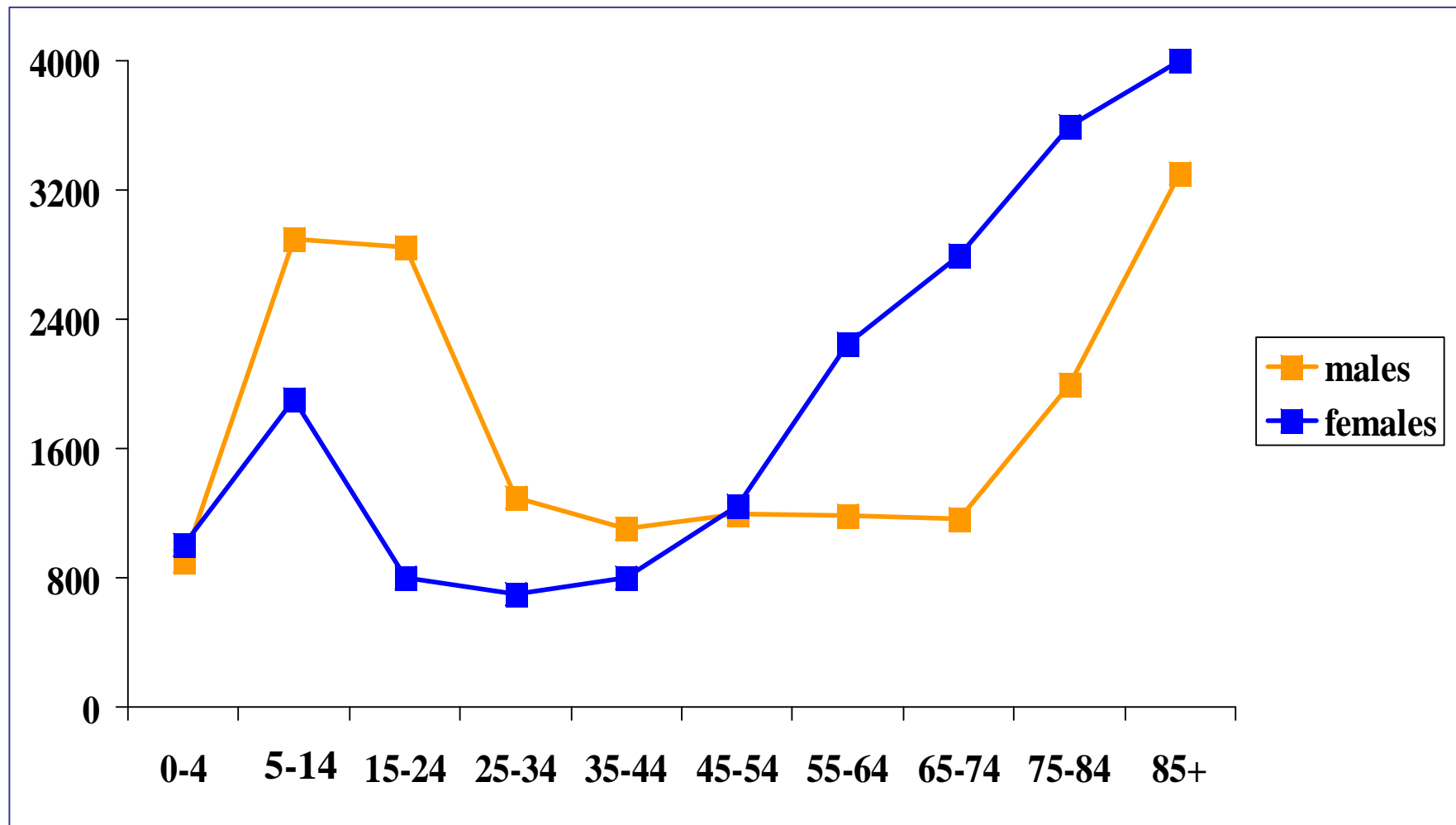
Kovacs, CS. Calcium and bone metabolism during pregnancy and lactation. J MAMMARY GLAND BIOL NEOPLASIA. 2005. Bocca B et al. TALANTA 2000. 53: 295-303. Ward KA et al. Bone status during adolescence, pregnancy and lactation. CURRENT OPINION IN OBSTETRICS & GYNECOLOGY 2005. Heaney et al. Calcium metabolism in normal human pregnancy. J Clin Endocrinol Metab 1971;33:661-670. Henry Wormser, lectures.

Bone mineral density in pregnancy and lactation



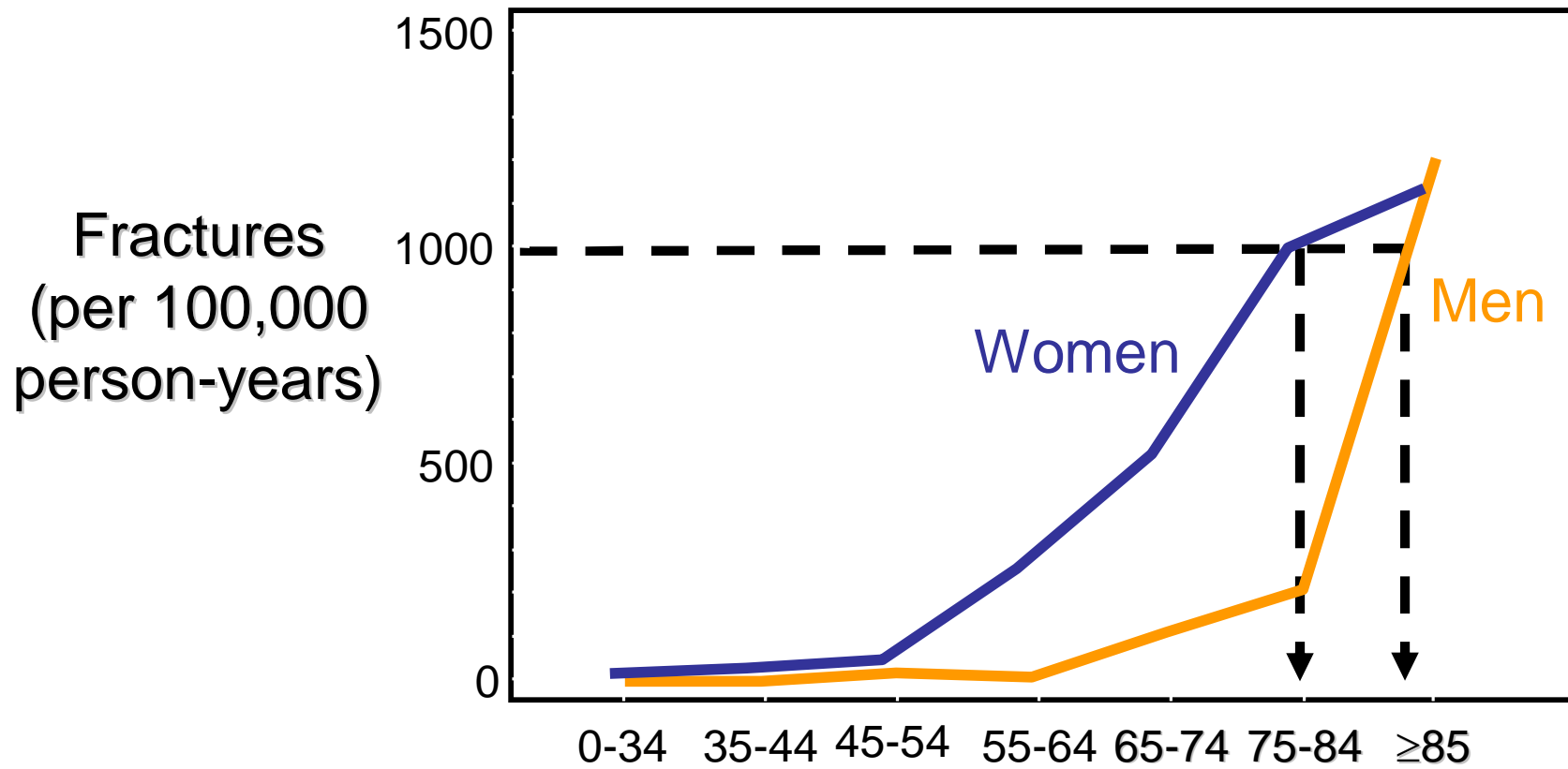
Ott SM, Lipkin EW, Newell-Morris L, Bone physiology during pregnancy and lactation in young macaques. *J Bone Miner Res* 1999 14 1779-1788

Incidence of limb fractures in Rochester, Minnesota (per 100000 person-years)



Garraway et al 1979

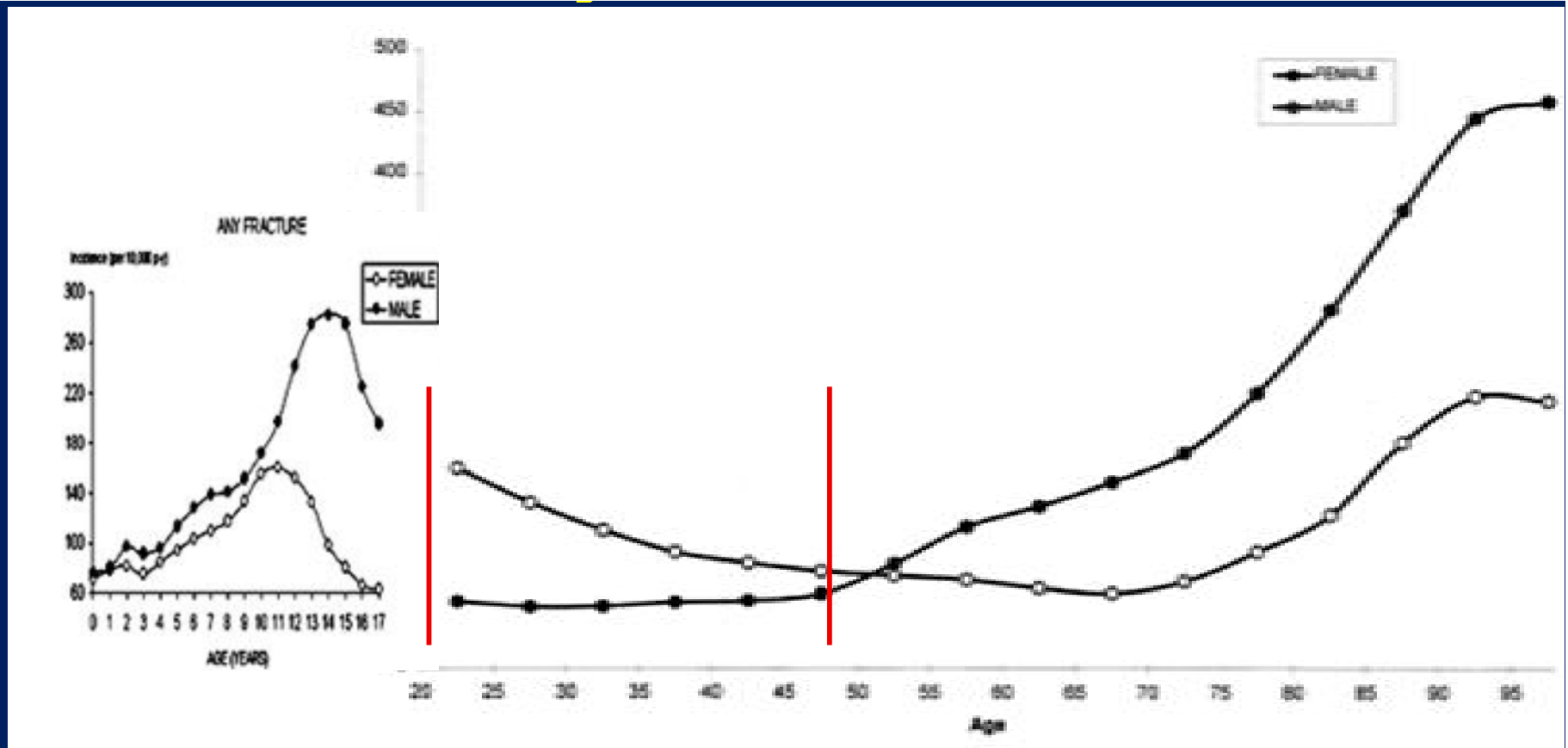
Incidence of clinical vertebral fracture



Cooper et al., 1992

Age and sex specific annual fracture incidence at any site in males and females

Incidence per 10,000 person years



Van Staa TP et al. Epidemiology of Fractures in England and Wales. Bone 2001;29:517-522.
Cooper C et al. Epidemiology of Childhood Fractures in Britain: A Study Using the General Practice Research Database. J Bone Miner Res 2004;19:1976-1981.