

# Osteoporosis

<b>General</b>	age, female, lack of exercise (chronic immobilization), sun restriction
<b>Nutrition</b>	food poor in calcium, food rich in phosphate and protein, anorexia, repeated diets
<b>Life style</b>	high nicotine consumption, benzodiazepine use etc.
<b>Medication</b>	glucocorticoids, high doses of heparin, thyroxin, laxatives, anticonvulsives, lithium
<b>Genetics</b>	familial osteoporosis
<b>Endocrine</b>	hypogonadism in women and men, long-lasting primary and secondary amenorrhea, premature ovarian functional decline without substitution
	operation, chemotherapy, GnRH-analogs, Cushing syndrome, hyperparathyroidism, hyperthyroidism
<b>Malignant disorders</b>	plasmocytoma, myelo- and lymphoproliferative disorders
<b>Gastrointestinal</b>	stomach partial resection, cirrhosis of the liver, M.Crohn, colitis ulcerosa
<b>Collagen metabolism</b>	osteogenesis imperfecta, Marfan syndrome

Practicable basic program	Parameter
blood	ESR, blood differential
serum	calcium, phosphate, alkaline phosphatase (AP), creatinine, urea, total protein, protein electrophoresis, Vitamin D25-OH
urine	calcium, phosphate, creatinine, urea, total protein (24 hour urine)

Extended program if indicated	Parameters
suspicion of androgen deficiency in men	in the morning blood collection for testosterone and sex hormone binding globulin (SHBG).
in women with normal cycle	estradiol, LH and FSH, Inhibin B, AMH on the 4 <sup>th</sup> cycle day
in women with cycle disturbances	gynecological clarification, estradiol, LH and FSH (Inhibin B, AMH) on the 4 <sup>th</sup> cycle day.
in postmenopausal women	estradiol levels under 10 ng/ml are found, some show 10 and 20 ng/ml. During substitution with estrogens (HRT), levels of 30-60 ng should/ml be achieved.
in Cushing syndrome	3 x blood collection for cortisol profile.
for the exclusion of hyperthyroidism	define basal TSH
in restricted kidney function	intact parathormone (PTH), 25, -OH and 1,25-dihydroxy vitamin D, aluminum.
suspicion of gastro-enterological causes	25-OH-vitamin D, iron, ferritin, transferrin, coagulation status, elastase-1 in stool, eventually xylose test, endoscopy of stomach and intestine and small intestine biopsy.
suspicion of multiple myeloma or monoclonal gammopathy	immunofixation, quantitative immunoglobulin in serum, Bence Jones protein or light chains in urine, possible

	bone biopsy.
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Further lab parameters for the recognition of osteoporosis	Parameters
<b>Bone formation</b>	osteocalcin, pro-collagen I-carboxyterminal propeptide (PICP)
<b>Bone resorption</b>	pyridinum crosslinks (pyridinoline, deoxypyridinoline), hydroxyproline, collagen I-telopeptide

For complete list of laboratory test offered at Freiburg Medical Laboratory, please visit <http://www.fml-dubai.com/parameter-listings/>