

Osteoporosis

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| General | age, female, lack of exercise (chronic immobilization), sun restriction |
| Nutrition | food poor in calcium, food rich in phosphate and protein, anorexia, repeated diets |
| Life style | high nicotine consumption, benzodiazepine use etc. |
| Medication | glucocorticoids, high doses of heparin, thyroxin, laxatives, anticonvulsives, lithium |
| Genetics | familial osteoporosis |
| Endocrine | 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 |
| Malignant disorders | plasmocytoma, myelo- and lymphoproliferative disorders |
| Gastrointestinal | stomach partial resection, cirrhosis of the liver, M.Crohn, colitis ulcerosa |
| Collagen metabolism | osteogenesis imperfecta, Marfan syndrome |

| Practicable basic program | Parameter |
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| 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 |
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| 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 th cycle day |
| in women with cycle disturbances | gynecological clarification, estradiol, LH and FSH (Inhibin B, AMH) on the 4 th 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 |

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| | bone biopsy. |
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| Further lab parameters for the recognition of osteoporosis | Parameters |
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| Bone formation | osteocalcin, pro-collagen I-carboxyterminal propeptide (PICP) |
| Bone resorption | 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/>