

# Prevention, Clinical Assessment and Therapy of **OSTEOPOROSIS**

## for Women after Menopause, for Men after Age 60

(for pre-menopausal women and men younger than 60 only individual decisions are possible at present)

Executive Summary and Full-text Version:  
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## I. Prevention of Osteoporosis and Falls by Nonpharmacological Therapies

### I.1 Coordination, Muscle Strength, Falls

- encourage regular physical activity aiming at the improvement of muscle strength and coordination (B-D), avoid immobilisation (C)
- if age is > 70 years → perform an annual fall history (D), in case of high fall risk → evaluate causes and risks → treat avoidable fall causes, encourage practice of strength and coordination, reevaluate drugs, avoid an increased risk of falls due to vitamin D shortage, if applicable, supply adapted aids including hip protectors (A-D)

### I.2 Nutrition and Lifestyle

- make sure that nutrition is sufficient (aim: body mass index > 20), evaluate causes of underweight (A-D)
- recommend nutrition rich in calcium (1200-1500 mg calcium per day); (D), supplement calcium if necessary (e.g. often shortage if older than >70 years) (A-D)
- recommend sufficient (at least 30 minutes per day) exposure to the sun in order to allow for sufficient vitamin D synthesis; (D), if nec. supplement with 400-1200 IE vitamin D oral, (e.g. often shortage if older than > 70 years) (A-B)
- discourage smoking (A-D)

### I.3 Medication supporting Falls or Osteoporosis

- reevaluate the necessity and individual dose on a regular basis (e.g. antiepileptics (C), drugs causing sedation or orthostatic hypotension (B), oral glucocorticoids (A)), in case of L-Thyroxin therapy ensure that TSH is > 0.3 mU/L (exception thyroid cancer) (B-D)

## II. Diagnostic Assessment of Fracture Risk

Woman	Man	Assess fracture risk in case of one or more of the following findings (if risk cannot be eliminated):
50-60 years	60-70 years	<ul style="list-style-type: none"> <li>• One or more vertebral fracture(s) (A)</li> <li>• One or more peripheral fracture(s) as individual decision (C)</li> </ul>
60-70 years	70-80 years	<ul style="list-style-type: none"> <li>• One or more vertebral fracture(s) (A)</li> <li>• One or more peripheral fracture(s) (A)</li> <li>• Hip fracture in a parent (B)</li> <li>• Underweight (BMI &lt; 20) (A)</li> <li>• Smoking (A)</li> <li>• Multiple falls (A)</li> <li>• Immobility (A-B)</li> </ul>
>70 years	>80 years	<ul style="list-style-type: none"> <li>• All, if therapeutic consequences should or can be taken (A)</li> </ul>

Risk assessment in secondary osteoporosis: Consider diagnostic assessment in case of diseases / circumstances with increased fracture risk (A-D): e.g. hypogonadism, hypocortisolism, primary hyperparathyroidism, systemic glucocorticoids, severe renal insufficiency, type 1 diabetes mellitus, malassimilation, antiepileptics, anorexia nervosa. The main focus is here on the therapy of the underlying disease. Behold that the diagnostic assessment and therapy often differ from those for primary osteoporosis. Consult an expert for further diagnostic assessment, if necessary.

At present no diagnostic assessment is recommended beyond these constellations (D). In case of the need for consultation due to technical findings beyond the recommendations of the DVO being bone density measurement procedures, quantitative ultrasound or bone marker it is referred to the full-text version with regard to risk assessment and the possible necessity of pursuing a diagnostic assessment.

## III. Diagnostic Assessment

### III.1 Specific Medical History and Findings

- Evaluate acute back pain and functional limitations. Assess general health.
- Take a history of fractures and falls, diseases or drugs with influence on the skeleton or falls
- Evaluate fracture risks. Assess whether all nonpharmacological measures for fracture prevention given under I are being implemented
- Measure body height and weight. Search for any clinical findings that might indicate secondary osteoporosis or malignant disease
- Perform the „timed-up-and-go“ or “chair rising” test, if necessary perform a geriatric assessment

**III.2 Osteodensitometry** Initiate DXA measurements of the total lumbar spine and total femur. Use the lower of the two measurements for the below fracture risk assessment. In case of radiographically apparent multiple vertebral fractures typical of osteoporosis it might be possible to skip a bone density measurement before starting antiosteoporotic drug treatment (A-D)

**III.3 Laboratory studies:** Examine blood count; ESR/C-reactive protein; serum calcium, phosphate, creatinine, AP, γGT, TSH; and serum protein electrophoresis (B-D)

**III.4 X-ray:** Consider lateral and anteroposterior radiographs of the thoracic and lumbar spine for fracture assessment (B)

## IV. Therapy

### IV.1 Encourage Implementation of all Nonpharmacological Measures given under I.

### IV.2 in case of fractures: ensure sufficient analgetic treatment and take measures to improve functional deficiencies

- provide analgetic treatment according to the WHO-scheme, mobilize the patient as quickly as possible (B), provide stabilisation by orthosis if necessary (B)
- consider inpatient/outpatient rehabilitation, initiate physical therapy and functional treatment (B), provide psycho-social care, encourage the participation in qualified self-aid group (D)
- Consider vertebro/kyphoplasty: in the context of an interdisciplinary team decision in the case of insufficient pain reduction after more than 3 months of multimodal analgetic treatment for an acute vertebral fractures (D)

### IV.3 if necessary initiate further work up and therapy of secondary causes in case of clinical and/or laboratory findings suspect of secondary causes of an increased fracture risk. Consult an expert, if applicable (B-D)

### IV.4 if necessary initiate medical therapy according to the following table if no changes of the risk are to be expected by IV.1 or IV.3

Recommendations for a specific medical therapy <sup>1,2</sup>						
without vertebral fracture age (years)		T-score (only applicable to DXA values)				
Woman	Man	-2.0 to -2.5	-2.5 to -3.0	-3.0 to -3.5	-3.5 to -4.0	< -4.0
50-60	60-70	no	no	no	no	yes
60-65	70-75	no	no	no	yes	yes
65-70	75-80	no	no	yes	yes	yes
70-75	80-85	no	yes	yes	yes	yes
>75	>85	yes	yes	yes	yes	yes
with vertebral fracture		Yes – Rapid treatment initiation important because of high subsequent risk of vertebral fractures!				

1. In case of one or more of the following risk factors lower the therapy threshold by max. 1 T-score (i.e. start therapy with a T-score of max. -2.5 instead of -3.5 for example):

**A. peripheral fracture, B. hip fracture in a parent, C. smoking, D. multiple falls, E. immobility**

2. Depending on the clinical overall situation a therapy threshold of max. one T-score lower is acceptable (i.e. therapy for example starting from a T-score of max. -3.5 instead of -2.5)

	Pharmacological Treatment (second-line treatment see executive summary and full-text version)
Woman	Alendronate, Ibandronate, Oestrogen**, Raloxifene, Risedronate, Strontium Ranelate, Teriparatide*  for all antiosteoporotic drugs a reduction of vertebral fractures has been proved (A) for alendronate (A), oestrogen (A), risedronate (A), strontium ranelate (A) and teriparatide (B) in addition a reduction in peripheral fractures has been proved *approval only in case of established osteoporosis; ** in general only if vasomotoric symptoms are the main reason for intake
Man	Alendronate*, Teriparatide (Switzerland only) *Reduction of vertebral fractures proved (A)

Duration of medical therapy: Continue treatment for at least 3-5 years (A-B), afterwards reevaluate the fracture risk based on the guideline and decide about therapy continuation due to existing risk (D).

In case of teriparatide duration of therapy is limited to 18 months.

## V. Follow-up in case of increased fracture risk in the initial evaluation

**V.1 Clinical Assessment** Reasses the patient after initiation of medical therapy: every 3-6 months, afterwards every 12 months (diagnostic assessment III.1) ; Check whether there are any side effects of drug treatment (D)

**V.2 Laboratory** Repeat laboratory tests that need to be monitored during follow-up (D)

**V.3 X-ray** Initiate a radiographic assessment if new fractures are suspected: (Reduction of height > 2 cm since the last examination, new, acute pain (D)

**V.4 Osteodensitometry** With few exceptions, do not reassess risk assessment without current antiosteoporotic drug treatment before 2 years have passed (B);  
Be aware that osteodensitometry is of limited value for monitoring antiosteoporotic drug treatment

