Kuwait Osteoporosis Guidelines

2022

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Assessment of Fracture Risk

Postmenopausal women and men aged ≥ 50 years

No history of fragility fracture

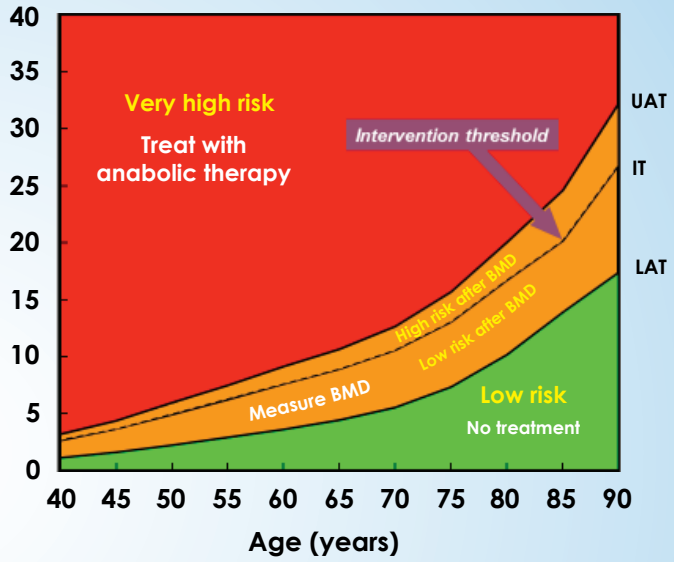
Apply FRAX
(see fracture probability table)

- **Below lower assessment threshold** → **Low Risk** Reassure and repeat FRAX after 5 years or when clinical condition changes
- **Between assessment thresholds** → **Risk Not Determined Perform DXA** → **Reassess probability**
  - **Below intervention threshold** → **Low Risk** Reassure and repeat FRAX & DXA after 3 years
  - **Between intervention threshold and upper assessment threshold** → **High Risk** Treat with antiresorptive therapy
  - **Above upper assessment threshold** → **Very High Risk** Treat with anabolic therapy
- **Above upper assessment threshold** → **Very High Risk** Treat with anabolic therapy ± DXA

History of fragility fracture
(Spine, hip or ≥ 2 other fractures)

Very High Risk
Treat with anabolic therapy ± DXA

Ten year probability of Major Osteoporotic Fracture (%)



FRAX Score Enhancers

Risk Enhancers

Percentage adjustment of MOF risk based on clinical evaluation noted from history or DXA scan evaluation

Item	Risk	Percentage Adjustment (%)
Lumbar spine discordance	1 SD = 10 % increase in risk	FRAX score x 1.SD discordance 1 SD discordance = score x 1.1 2 SD discordance = score x 1.2
T2DM	Risk = Rheumatoid Arthritis	1) Rheumatoid Arthritis ✅ 2) FN BMD ↓ -0.5 SD 3) Age ↑ by 10 years
Androgen deprivation therapy	Risk = Rheumatoid Arthritis	Rheumatoid Arthritis ✅

Glucocorticoids Dose

Percentage adjustment of 10-year probabilities of a MOF according to dose of glucocorticoids

Dose	Prednisolone Equivalent (mg/day)	Correcting factor
Low	< 2.5	0.8
Medium	2.5 - 7.5	No adjustment
High	≥ 7.5	1.15

Recent fracture

Adjusting conventional FRAX estimates of fracture probability according to the recency of sentinel fractures

Age (Years)	Correcting Factors Based on Site of Fracture	
	Recent Humerus	Recent Forearm Fracture
40	4.7	3.5
50	1.9	1.5
60	1.5	1.16
70	1.4	1.1
80	1.25	1.0
90	1.1	0.82

Treatment

INITIAL EVALUATION

- History and physical examination
- Height and weight measurements
- Lab tests: CBC + ESR, RFT, LFT, bone profile, ALP, PTH-I, TFT, 25OH Vitamin D, urine calcium/creatinine
- Additional tests: Gonadal hormones, celiac screen, 24hr urine for calcium, sodium and creatinine

High risk | **Very High risk**

NON-PHARMACOLOGICAL:

1) Smoking and alcohol cessation and limitation of caffeine to < 3 cups/day.
2) Weight-bearing exercises 30 minutes/day (walking, jogging, dancing, strength/resistance training), balance training and stretching exercises
3) Measures to reduce the risk of falling including physical therapy

PHARMACOLOGICAL:

1) Treat vitamin D deficiency if present and maintain on an equivalent dose of 1000-2000 IU/day of vitamin D3 (cholecalciferol) to achieve serum total 25-OH Vit D level between 75-150 nmol/L.
2) Maintain a calcium intake of 1000-1200 mg/day, preferably through diet, if not then through supplements.
3) One-alfa should only be used in cases of chronic renal impairment and hypoparathyroidism

High Risk → **Antiresorptive Agents**

- **Alendronate (Fosamax)** → Treat for 5 yrs then reassess risk:
  - Low risk: Drug holiday
  - High risk: Continue for 10 yrs
- **Zoledronate (Aclasta)** → Treat for 3 yrs then reassess
  - Low risk: drug holiday
  - High risk: Continue for 6 yrs
- **Denosumab (Prolia)** → Continue until the patient is no longer high risk & ensure transition into another antiresorptive

Progression of bone loss or fracture → **Anabolic Agents**

Very High Risk → **Anabolic Agents**

- **Teriparatide (Forteo)**
  - Contraindications:
    - Hypercalcemia
    - Hyperparathyroidism
    - Skeletal malignancy
    - Paget's disease
    - Radiation therapy
  - Treat for 24 m Once in a lifetime
- **Romosozumab (Evenity)**
  - Contraindications:
    - Recent MI, CVA within the last 1 year
    - High risk for CVD
  - Treat for 12 m

Sequential therapy with Antiresorptive Agent → **Antiresorptive Agents**

Treatment Monitoring

- Repeat DXA every 2 years on same machine &, if possible, with same technologist.
- Monitor changes at lumbar spine, total hip BMD. Compare BMDs and not T-scores.

Treatment Assessment

Treatment Failure

1) Declining BMD
2) Occurrence of >1 fragility fracture

Rule out:

- Nonadherence
- Scan issues
- Secondary causes including medications

Treatment Success

1) Stable or increasing BMD
2) Absence of fragility fractures

Management of Glucocorticoids Induced Osteoporosis

INITIAL EVALUATION

- History and physical examination
- Height and weight measurements
- Lab tests: CBC + ESR, RFT, LFT, bone profile, ALP, PTH-I, TFT, 25OH Vitamin D, urine calcium/creatinine
- Additional tests: Gonadal hormones, celiac screen, 24hr urine for calcium, sodium and creatinine

GENERAL MEASURES

- Reduce dose and/or change route of GC when possible and consider GC sparing therapy.
- Measures to reduce the risk of falling including physical therapy.
- Smoking and alcohol cessation and limitation of caffeine to < 3 cups/day.
- Weight-bearing exercises 30 minutes/day (walking, jogging, dancing, strength/resistance training), balance training and stretching exercises
- Treat Vitamin D deficiency if present and maintain on an equivalent dose of 1000-2000 IU/day of vitamin D3 (cholecalciferol) to achieve serum total 25-OH Vit D level between 75-150 nmol/L.
- Maintain a calcium intake of 1000-1200 mg/day, preferably through diet, if not then through supplements.

Postmenopausal women and men ≥ 50 years exposed to systemic glucocorticoids

Treatment ≥ 3 months

Any of below risk factors available?

- History of fragility fracture (spine, hip or ≥ 2 other fractures)
- FRAX above upper assessment threshold (adjust for GC use & dose)
- Intended dose equivalent to Prednisone >7.5mg/day
- Age ≥70 years

No

FRAX above intervention threshold (adjust for GC use & dose)

No → No active treatment, refer to general guidelines

Yes → Alendronate, Zoledronic acid, Denosumab[1]

Yes → Alendronate, Zoledronic acid, Denosumab[1], Teriparatide[2]

Treatment < 3 months

Any of below risk factors available?

- History of fragility fracture (spine, hip or ≥ 2 other fractures)
- Age ≥70 years

Yes → Alendronate, Zoledronic acid, Denosumab[1], Teriparatide[2]

No → Refer to general guidelines

Adult (age ≥18 years) premenopausal women and men younger than 50 years using systemic steroids treatment ≥ 3 month

Age < 40 years Need to do DXA Scan

Any of below risk factors available?

- History of fragility fracture
- Z-score < -3 at hip or spine
- > 10%/year BMD loss at hip or spine
- Very high dose GC (Prednisone > 30 mg/day and a cumulative dose of > 5 gm in the past year)

No → Monitor with DXA scan every 2-3 years depending on risk factors

Yes → Women with childbearing potential (not planning pregnancy in treatment period)

- DXA scan if not done
- Treatment recommended:
  - Alendronate
  - Denosumab[1]
  - Teriparatide[2]

Age ≥ 40 years Need to do DXA Scan

Any of below risk factors available?

- History of fragility fracture
- FRAX (GC & DXA scan-adjusted) 10-year risk for major osteoporotic fracture > intervention threshold
- Very high dose GC (Prednisone > 30 mg/day and a cumulative dose of > 5 gm in the past year)

Yes → Women with childbearing potential (not planning pregnancy in treatment period)

- DXA scan if not done
- Treatment recommended:
  - Alendronate
  - Zolendronic acid
  - Denosumab[1]
  - Teriparatide[2]

No → Monitor with DXA scan every 2-3 years depending on risk factors

FOLLOW UP MEASURES

- Measure DXA scan at the initiation of the steroid use, and after 1 year. If BMD stable or improved, then measure DXA scan every 2-3 years.
- Height measurement every 6-12 months with prospective height loss ≥ of 2 cm, consider vertebral fracture assessment (VFA) or plain x-rays.
- Vitamin D measurements every 6-12 months.
- Assessment of new fractures (ribs and vertebrae).
- Active pharmacological treatment should be continued until no further exposure to glucocorticoid.

(1) Preferred drug in renal insufficiency (Clcr < 35 ml/min) and in women with childbearing potential
(2) Preferred drug in cases with fragility fracture

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INDICATIONS FOR VERTEBRAL IMAGING

Consider vertebral imaging tests, by Vertebral Fracture Assessment (VFA) or lateral thoracic and lumbar spine x-ray, in the following individuals:

- In all women age 70 and older and all men age 80 and older.
- In women and men age >50 with specific risk factors:
  - Low trauma fracture
  - Historical height loss of 4 cm or more
  - Prospective height loss of 2 cm or more
  - Recent or ongoing long term glucocorticoid treatment

Adopted from the National Osteoporosis Federation 2013

Fracture Probability Table

The ten year Probability of Major Osteoporotic Fracture MOF (%)

Age (years)	Intervention threshold (IT)	Lower assessment threshold (LAT)	BMD	Upper assessment threshold (UAT)
40	2.3	1.0		2.8
43	2.8	1.3		3.4
45	3.2	1.4		3.8
47	3.6	1.7		4.3
50	4.3	2.0		5.1
53	5.0	2.3		6.0
55	5.4	2.5		6.5
57	5.8	2.8		7.0
60	6.5	3.1		7.8
63	7.2	3.5		8.6
65	7.6	3.8		9.1
67	8.2	4.1		9.8
70	9.0	4.7		11
73	10	5.5		12
75	11	6.2		13
77	12	7.0		14
80	14	8.5		17
83	17	10		20
85	19	12		23
87	20	13		24
90	23	14		27

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