Executive Summary- Lebanese FRAX-Based Osteoporosis Guidelines 2013

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WHO To TEST:

Definite indications in both men and women:
- >65 years: age as a risk factor (1/5 women >65 have vertebral fracture, 13% of men)
- Presence of vertebral deformity or fragility fracture
- Radiologic evidence of demineralization
- Chronic corticosteroid therapy (>3-6 months)
- Aromatase inhibitors or androgen deprivation therapy

All other indications in postmenopausal women and older men

Use FRAX Risk Factors to decide on BMD.
If FRAX risk estimate based on risk factors is close to 10%, measure BMD to further refine risk assessment.

WHO To TREAT:

Definite indications: regardless of FRAX and BMD
- Postmenopausal women and men (≥50 years) with history of fragility fracture: Spine or Hip or with two or more (≥2) other fragility fractures.

All Other conditions LISTED BELOW: use FRAX and treat at age-specific cut-offs
- Postmenopausal women and men ≥ 65 years
- Women and men -2.5 ≤ T ≤ - 1.5 with/without risk factors including GIOP
- Women and men with T ≤ -2.5
- To reassure younger women and men about low risk despite low BMD (and/or with history of fractures)

Risk Stratification: FRAX overall fracture risk

Cut-offs for treatment
Below age 70 years: Intervention threshold 10%.
Age ≥ 70 years moving threshold as per Table:

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Intervention threshold (10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>10</td>
</tr>
<tr>
<td>75</td>
<td>15</td>
</tr>
<tr>
<td>80</td>
<td>21</td>
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<tr>
<td>85</td>
<td>27</td>
</tr>
<tr>
<td>90</td>
<td>30</td>
</tr>
</tbody>
</table>

Treat anyone with calculated 10 year overall fracture risk that fall above red line for corresponding age

- FIXED THRESHOLD
- MOVING THRESHOLD

Major fracture risk
WHAT to TREAT WITH?

I-Prevention treatment:
- General measures to all as originally recommended in the 2002 (1) and 2007 (2) endorsed Lebanese guidelines and reemphasized in the upcoming 2013 vitamin D guidelines: (http://www.aub.edu.lb/FM/CMOP/Pages/LebaneseGuidelines.aspx)
  
  - Regular weight-bearing exercise.
  - Fall prevention.
  - Avoid tobacco use and excess alcohol intake.
  - Elemental calcium (including dietary intake) at 1200 mg/day.
  - Vitamin D supplementation:
    - Desirable range 30-60 ng/ml.
    - The recommended vitamin D intake, as a maintenance regimen, is:
      - Children-adolescents: 15–25 μg (600–1000 IU) daily.
      - Adults under 50 years of age: 15–25 μg (600–1000 IU) daily.
      - High-risk* and older adults: 20–50 μg (1000–2000 IU) daily.
  
*High risk individuals are those with osteoporosis on pharmacologic therapy, with fractures, or conditions known to affect vitamin D metabolism or action: steroids, anticonvulsants, malabsorption, bypass surgery, cirrhosis and patients with secondary hyperparathyroidism.

A recent meta-analysis showed that calcium and vitamin D supplementation (in combination) reduce hip fractures by 19% (3).

II-Pharmacologic therapy targeted to high risk individuals:
According to the 2013 Lebanese FRAX-based osteoporosis guidelines high risk individuals are:
- Postmenopausal women and men ≥ 50 years with history of fragility fracture: Spine or Hip or ≥2 other fragility fractures.
- Individuals defined by the Lebanese guidelines based on age specific FRAX threshold. (http://www.aub.edu.lb/FM/CMOP/Pages/LebaneseGuidelines.aspx)

The below recommendations for pharmacologic interventions are based on the original 2002 Lebanese guidelines (1), incorporating additional information based on the following references (4-7).

- Postmenopausal osteoporosis (PMO):
  - For menopausal women requiring treatment of osteoporosis, alendronate, risedronate, zoledronic acid and denosumab can be used as first-line therapies for prevention of hip, nonvertebral and vertebral fractures.
  - For women 65 years or older with severe osteoporosis defined as a low BMD (T-score ≤–2.5) and a prevalent vertebral fracture, teriparatide can be used as a first-line therapy to reduce vertebral fracture risk.
  - Other potential candidates for teriparatide include:
Postmenopausal women with very low BMD (T-score ≤ -3.5).
- Postmenopausal women who sustain > 2 fragility fractures despite an adequate trial of bisphosphonates (1-year period).
- For early postmenopausal women (< 65 years of age) requiring treatment of osteoporosis, raloxifene can be used as a first-line therapy for prevention of vertebral fractures.
- For early postmenopausal women (< 60 years of age) requiring treatment of osteoporosis in combination with treatment for vasomotor symptoms, hormone therapy can be used as a first-line therapy for prevention of hip, nonvertebral and vertebral fractures.

**-Osteoporosis in men:**
- For men requiring treatment of osteoporosis, alendronate, risedronate and zoledronic acid can be used as first-line therapies for prevention of fractures.
- Teriparatide should be considered as a second-line therapy for men 65 years or older who have severe osteoporosis and prevalent fragility fractures.
- Testosterone is only indicated in men with a definite diagnosis of hypogonadism and under close expert medical supervision due to various complications.

**-Glucocorticoid induced osteoporosis (GIOP):**
- Recommendations are based on the American College of Rheumatology (ACR) 2010 guidelines (4) and Osteoporosis Canada guidelines (5) and summarized as below:

<table>
<thead>
<tr>
<th>Postmenopausal women and men ≥ 50</th>
<th>Daily Dose</th>
<th>Treatment</th>
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<tbody>
<tr>
<td>≥7.5 mg for &gt; 3 months</td>
<td>Regardless of FRAX</td>
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<tr>
<td>&lt;7.5 mg for &gt; 3 months</td>
<td>According to FRAX risk*</td>
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<tr>
<td>FRAX≤10%</td>
<td>If dose &gt;7.5mg for &gt;3 months*</td>
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<tr>
<td>FRAX&gt;10%</td>
<td>Treat all regardless of dose*</td>
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| Premenopausal women and men <50 | If no previous fragility fracture, no recommendation was made by ACR |
|----------------------------------| if history of FRAGILITY fracture AND |
| A-Men and non-childbearing women | - >5 mg for 1-3 months |
|                                  | - >3 months regardless of dose |
| B-Childbearing women             | ≥7.5 mg |
|                                  | 1-3 months or <7.5 mg |
|                                  | Treat |
|                                  | No consensus* |

*ACR 2010 guidelines
1FDA approved therapies for GIOP: alendronate, risedronate, zoledronic acid and teriparatide.
2Teriparatide is indicated in high risk individuals. High risk individuals are defined as postmenopausal women and men ≥ 50 years with high FRAX estimate as defined by FRAX Lebanon treatment thresholds,
or premenopausal women and men < 50 years who have a history of fragility fracture and on a prednisone dose ≥7.5 mg daily for more than 3 months.

**-Aromatase inhibitors and androgen deprivation therapy patients:**
For women who are taking aromatase inhibitors and men who are undergoing androgen deprivation therapy, bisphosphonates (alendronate, risedronate, ibandronate, zoledronic acid) or Denosumab should be considered.

<table>
<thead>
<tr>
<th>Postmenopausal Osteoporosis</th>
<th>Fracture Risk Reduction</th>
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<tr>
<td>Prevention</td>
<td>Treatment</td>
<td>Men</td>
<td>GIO a</td>
<td>Vertebral fracture</td>
<td>Hip fracture</td>
<td>Non Vertebral fracture</td>
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<tr>
<td><strong>ANTI-REMODELING AGENTS</strong></td>
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</tr>
<tr>
<td>Alendronate</td>
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<td>✓</td>
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<td>✓</td>
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<td>PMW</td>
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<tr>
<td>Ibandronate</td>
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<td>✓</td>
<td>-</td>
<td>-</td>
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<tr>
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<tr>
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<td>✓</td>
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<td>✓</td>
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<tr>
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<td>✓</td>
<td>-</td>
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<td>PMW and M g</td>
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<td>Estrogen h</td>
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<td>PMW</td>
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<td>Conjugated estrogen/ Bazedoxifene i</td>
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<td>Calcitonic j</td>
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<td>Tibolone d</td>
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<tr>
<td>Teriparatide</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>PMW and M k</td>
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<td><strong>OTHERS</strong></td>
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<tr>
<td>Strontium ranelate d, l</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
<td>PMW</td>
<td>PMW m</td>
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</table>
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PMW=Post-menopausal women; M=Men

a GIOP fracture data: One Alendronate and one Residronate trial each showed a significantly reduction in vertebral fractures compared to placebo; one trial showed that Teriparatide significantly reduced vertebral fractures compared to Alendronate One trial compared zoledronic acid compared to placebo and showed no significant difference in vertebral fracture reduction; There are no studies comparing Zoledronic acid or Teriparatide to Placebo.
b Post hoc analysis, in women with FN BMD T-score <-3.
c Same study included men and women and there was no treatment by gender interaction; there was a lack of a statistically significant fracture reduction in men sub-population, as the gender-based subset analysis was powered 
d Only approved in Europe.
e European Medicines Agency : drug "is used for the treatment of osteoporosis (a disease that makes bones fragile) in women who have been through the menopause. It is used in women who are at risk of fracture (broken bones)"
f Post hoc analysis.
g Trial in men with prostate cancer on androgen deprivation therapy (ADT).
h In 2003, the MHRA stated that "The risk: benefit of HRT is unfavorable for the prevention of osteoporosis as first-line use. HRT remains an option for those who are intolerant of other osteoporosis prevention therapies, for whom these are contraindicated, or for whom there is evidence of a lack of response to other therapies. In such cases the individual risk :benefit balance should be carefully assessed."
i Approval indication: FDA approval for osteoporosis prevention and European Medicines Agency approval for estrogen deficiency symptoms.
j European approval withdrawn in 2013.
k In all the study group there was a significant reduction in moderate to severe fractures in the combined group (Teriparatide 20 mcg and 40 mcg). In the subgroup of men who had prevalent fracture at baseline, there was a significant reduction in all vertebral fractures in the combined group (Teriparatide 20 mcg and 40 mcg) and a significant reduction in moderate to severe vertebral fractures in each group separately.
l Approved by EMEA with restrictions: "Strontium ranelate is now restricted to the treatment of severe osteoporosis in postmenopausal women and adult men at high risk of fracture who cannot use other osteoporosis treatments due to, for example, contraindications or intolerance. The risk of developing cardiovascular disease should be assessed before starting treatment. Treatment should not be started in people who have or have had: ischemic heart disease or peripheral arterial disease or cerebrovascular disease or uncontrolled hypertension. Cardiovascular risk should be monitored every 6–12 months. Treatment should be stopped if the individual develops ischemic heart disease, peripheral arterial disease, or cerebrovascular disease, or if hypertension is uncontrolled”.
m Subgroup of high risk post-menopausal women, age ≥74 years and femoral neck bone mineral density T score ≤-3, corresponding to ~2.4 according to NHANES reference.
The potential benefits and risks of the prescribed agents should be discussed before therapy is initiated, to support informed decision-making.
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References:


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