OSTEOS
Lebanese Society for Osteoporosis & Metabolic Bone Disorders

FRAX Based Lebanese Osteoporosis Guidelines 2013

Second Update for Lebanese Guidelines for Osteoporosis Assessment and Treatment

These guidelines were developed by Dr. Ghada El-Hajj Fuleihan, with members of the Lebanese National Task Force for Osteoporosis and Metabolic Bone Disorders, and expert input from Drs. John Kanis, Michael McClung, Bill Leslie and Angela Cheung.

These guidelines are endorsed by the following Lebanese Scientific Societies and Associations: Lebanese Society of Endocrinology Diabetes and Lipids, Lebanese Society of Rheumatology, Lebanese Society of Obstetrics and Gynecology, Lebanese Association of Orthopedics, Lebanese Society of Radiology, Lebanese Society of Internal Medicine, Lebanese Society of Family Medicine, Lebanese Society of General Practitioners.

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Who to Test?

FRAX Based Lebanese Osteoporosis Guidelines 2013

Definite indications in men and women

- >65 years: age as a risk factor (20% of women >65 have VFx, 13% of men)
- Presence of vertebral deformity or fragility fracture
- Radiologic evidence of demineralization
- Chronic corticosteroid therapy (>3-6 months)
- **Aromatase Inhibitors and androgen deprivation therapy**

Less definite indications in PM women and Older men/ Use FRAX Risk Factors to decide on BMD-If overall FRAX risk calculated using risk factors is approaching 10% then do BMD

Who to Treat?
FRAX Based Lebanese Osteoporosis Guidelines 2013

- Patients with fragility fractures: Spine, Hip , or more than 2 other fragility fractures

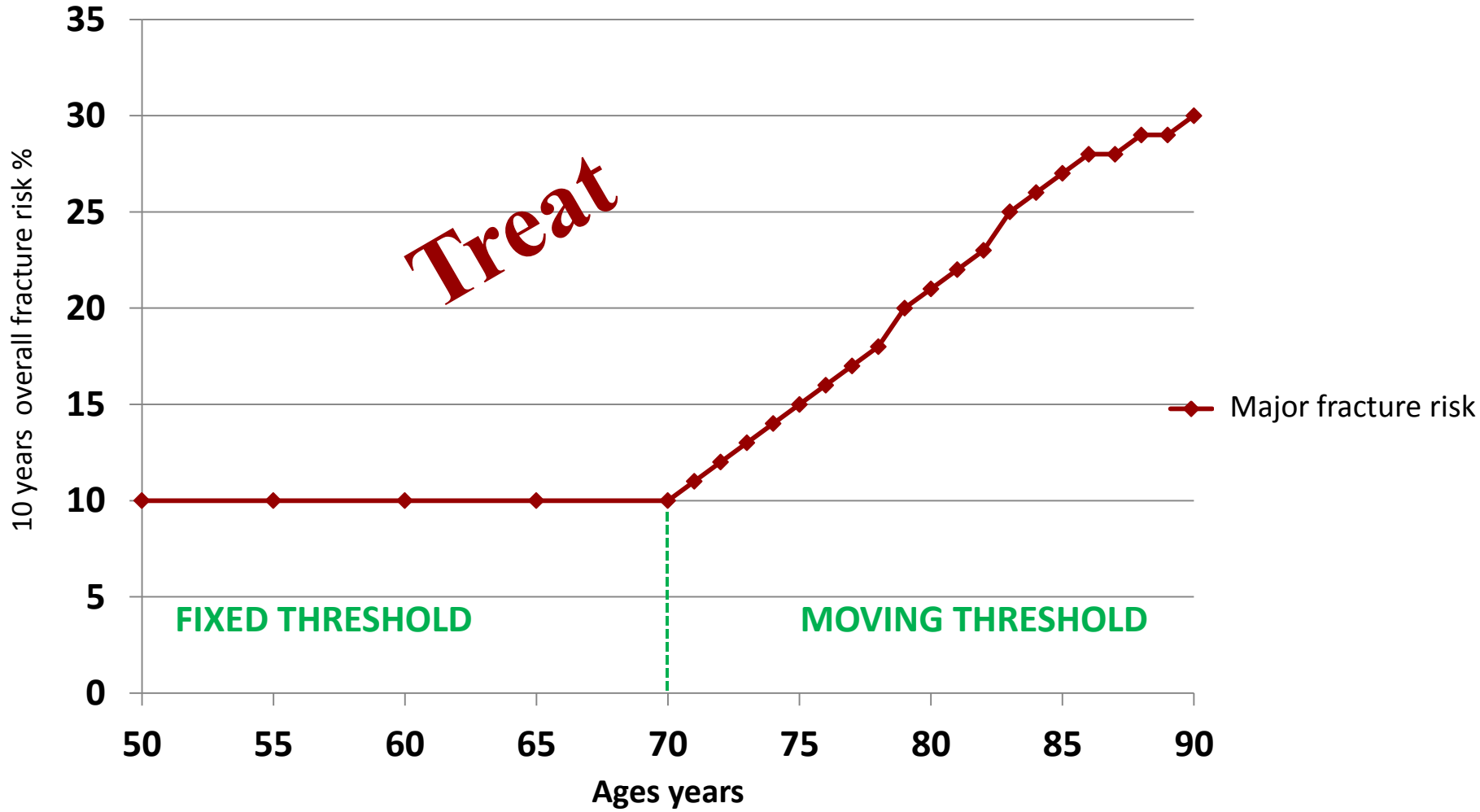
- All others use FRAX Calculation and adjust taking into consideration some limitations of FRAX, and additional Risk Factors
  - Under 70 years 10 year FRAX risk ≥ 10%
  - More than 70 years: moving thresholds: 15%, 21%, 27%, 31% (GRAPH helper)

- BMD FN T-score ≤ -2.5 alone is NOT an indication to treat in the absence of risk factors

Who To Treat: Hybrid Model

FRAX Based Lebanese Osteoporosis Guidelines 2013

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



FRAX fracture probabilities were calculated using WHO Fracture Risk Assessment Tool accessed online at: http://www.shef.ac.uk/FRAX/tool.jsp on 14/09/13

Road Map

- Burdd FRAX based guidelines: US and UK
- FRAX-Based Lebanese Guidelines Full Presentation:
  - Who to test
  - When to treat
- Conclusion

Who to Test?
Lebanese Guidelines for OP 2002 & 2007

Definite indications in PM women:

- >65 years: age as a risk factor (1/5 women >65 have VFx)
- Presence of vertebral deformity or fragility fracture
- Radiologic evidence of demineralization
- Chronic corticosteroid therapy (>3-6 months)

Less definite indications in PM women:

- Medical conditions known to cause bone loss
- Other risk factors for bone loss: Low BMI, positive Family Hx of hip fractures

No indications:

- Healthy cycling premenopausal women
- Men < 65 years

For full details on the www questions go to
http://www.osteofound.org/health_professionals/guidelines/guidelines_list.html

Who to Test?

FRAX Based Lebanese Osteoporosis Guidelines 2013

Definite indications in men and women

- >65 years: age as a risk factor (20% of women >65 have VFx, 13% of men)
- Presence of vertebral deformity or fragility fracture
- Radiologic evidence of demineralization
- Chronic corticosteroid therapy (>3-6 months)
- **Aromatase Inhibitors and androgen deprivation therapy**

Other i.e. Less definite indications in PM women and Older men/ Use FRAX Risk Factors to decide on BMD-If overall FRAX risk calculated using risk factors is approaching 10% then do BMD

When to Treat?
Lebanese Guidelines 2002 & 2007

Definite indications

- Postmenopausal women with fragility fracture
- Postmenopausal women T ≤ -2.5
- Postmenopausal women on CS and T ≤ 1.5

Less definite indications

- T- score between -1 and -2.5 (with/without risk factors)

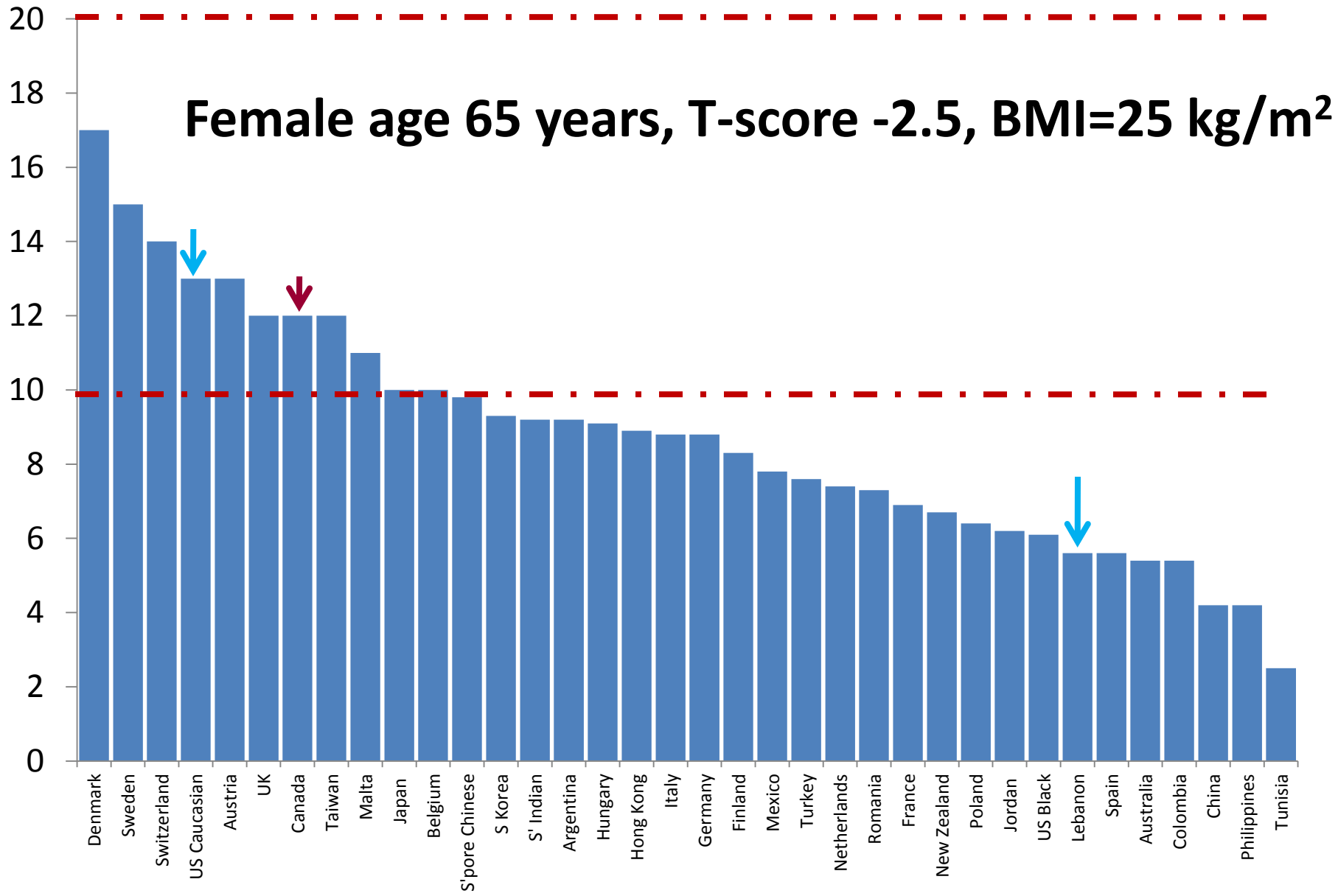
No indications

- T- score > -1
- Pre-menopausal normally cycling healthy women

http://www.osteofound.org/health_professionals/guidelines/guidelines_list.html

El-Hajj Fuleihan G et al J Clin Densitom 2005; 8: 148-163

FRAX Calculated 10 year Overall Fracture Risk



Who to Treat?
FRAX Based Lebanese Osteoporosis Guidelines 2013

BMD T-score ≤ -2.5, in absence of RF is NOT an indication to intervene: for a woman

Age 50 years 10 year overall FRAX is 1.9%

Age 60 years 10 year overall FRAX is 3.9%

Age70 years 10 year overall FRAX is 7.6%

Age 80 years 10 year overall FRAX is 14%

Age 90 years 10 year overall FRAX is 17%

All above risks that are well below Lebanese intervention thresholds

Lebanese Guidelines 2013

T score ≤-2.5 w/o RF cannot be Used as a Cut-off for Intervention in Lebanese

- Both in men and women estimated FRAX risk with a T-score≤-2.5, in the absence of risk factors, is vey low, that is < 10%
  - up to age 70 yrs in women
  - Up to age 90 years in men

2013 Lebanese 2nd Update
Suggested Osteoporosis Guidelines Using FRAX

Definite indications: regardless of FRAX and BMD

- Postmenopausal women and men ≥ 50 years with fragility fracture (Spine and Hip, two or more other fragility fractures)

Use FRAX Lebanon: for all others (with or without BMD) to calculate FRAX RISK

Need to decide on FRAX Risk cut-off at which to treat

Moving threshold: i.e. NOGG UK Model ?

Fixed threshold: Examples

Possible treatment at an overall 10 yrs fracture risk of 10-20% Canada

Definite treatment: at an overall 10 yrs fracture risk > 20% USA and Canada, and a 10 year hip fracture risk of 3% (USA only)

http://www.shef.ac.uk/FRAX/tool.jsp?country=21

Should We Use a Hybrid Model ?

- Moving thresholds over treats in young < 70 yrs with very low risk

(1.8% at 50 and 4.4% at 60 years), and would treat a large proportion of subjects, 30% of Lebanese women across all age groups, which is too taxing, not affordable

- Fixed thresholds under treats the young and over treats at older age groups

- Hybrid model is best compromise
  - Fixed threshold in younger subjects up to 70 yrs
    Moving NOGG like threshold above age 70 yrs

FRAX Based Lebanese Osteoporosis Guidelines 2013

Definite indications: **regardless of FRAX and BMD**

- Postmenopausal women and men ≥ 50 years with fragility fractures: Spine, Hip, or ≥ 2 other Fragility Fractures.

Use FRAX Lebanon for all others -FRAX based risk threshold:

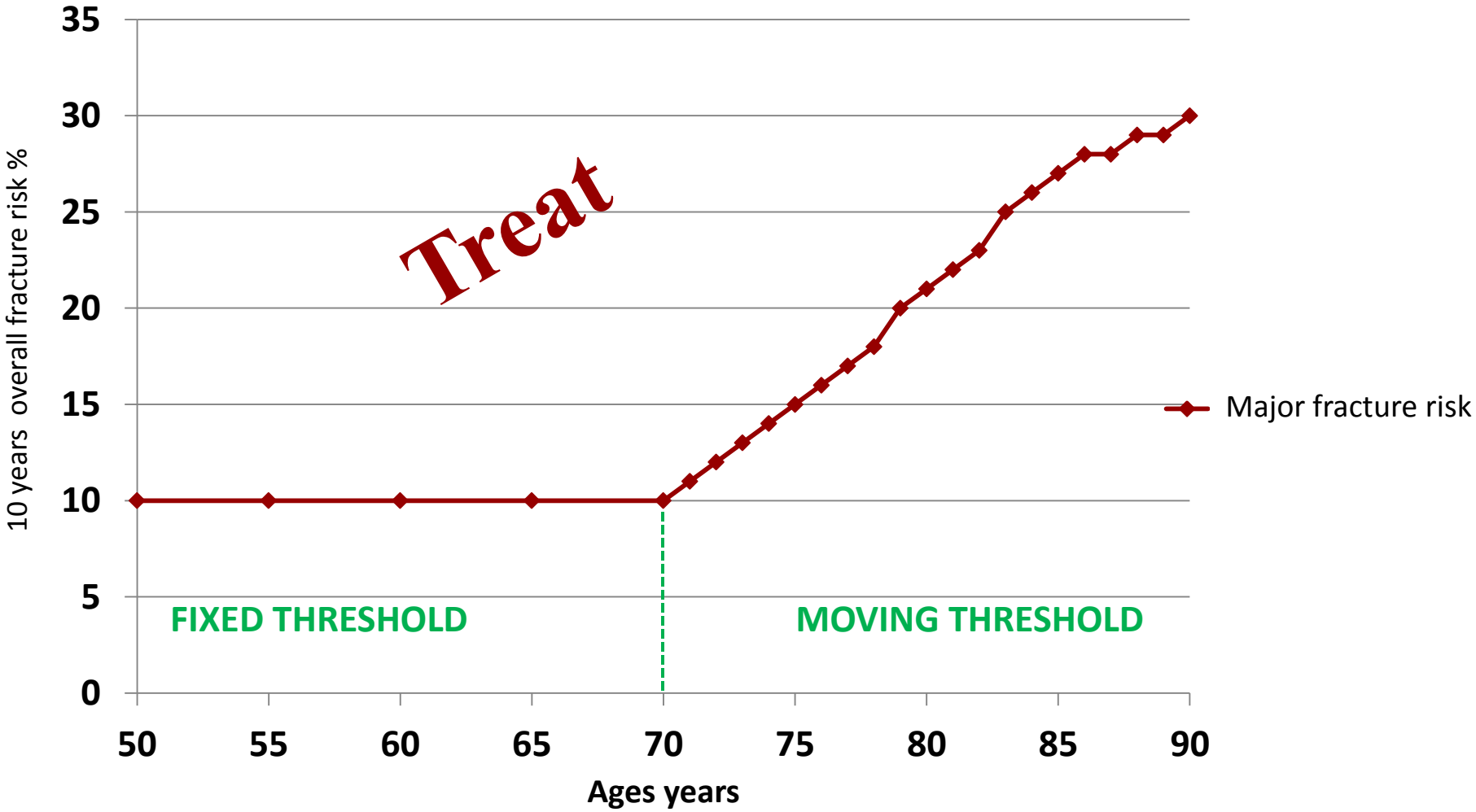
- If below 70 years: treat all with ≥ 10% overall fracture risk
- If above 70 years : use Tables or GRAPH

http://www.shef.ac.uk/FRAX/tool.jsp?country=21

Who To TREAT: Hybrid Model

FRAX Based Lebanese Osteoporosis Guidelines 2013

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



FRAX fracture probabilities were calculated using WHO Fracture Risk Assessment Tool accessed online at: http://www.shef.ac.uk/FRAX/tool.jsp on 14/09/13

Intervention Thresholds and Proportions of Women Treated

Age (years)	Intervention threshold (%)	Proportions above threshold (%)	
	Fixed at 10 %	**10%**	**20 %**
50	**10**		
52	**10**	**0.11**	**0.00**
55	**10**		
57	**10**	**1.3**	**0.04**
60	**10**		
62	**10**	**5.7**	**0.44**
65	**10**		
67	**10**	**18.8**	**2.8**
	NOGG Model		
70	**10**		
72	**12**	**30**	**30**
75	**15**		
77	**17**	**30**	**30**
80	**21**		
82	**23**	**28**	**28**
85	**27**		
87	**28**	**25**	**25**
90	**30**		

Who to Treat?
FRAX Based Lebanese Osteoporosis Guidelines 2013

- Patients with fragility fractures: Spine, Hip, or ≥ 2 Fragility Fractures

- All others use FRAX Calculation and adjust taking into consideration some limitations of FRAX, and additional Risk Factors
  - Under 70 years 10 year FRAX risk ≥ 10%
  - More than 70 years: moving thresholds: 15%, 21%, 27%, 31% (GRAPH helper)

- BMD FN T-score ≤ -2.5 alone is NOT an indication to treat in the absence of Risk Factors

Who to Treat?

FRAX Based Lebanese Osteoporosis Guidelines 2013

Definite indications: regardless of FRAX and BMD, older men postmenopausal women with fragility fractures, Spine, Hip, or ≥ 2 other fragility fractures.

Use FRAX Lebanon for all others –FRAX Threshold:

Below 70 years: Fixed cut-off , overall fracture risk ≥ 10%

Above 70 years : moving NOGG threshold adapted to Lebanon

Women Overall FRAX risk

≤ 70 years 10%

75 years 15%

80 years 21%

85 years 27%

90 years 30%

BMD T-score ≤ -2.5, in absence of RF is NOT an indication to intervene: age 50 years 10 year overall FRAX is 1.9%, 60 years 3.9%, 70 years 7.6%, 80 years 14%, 90 years 17% , all risks that are well below Lebanese intervention thresholds, detailed above

What to Treat with?
FRAX Based Lebanese Osteoporosis Guidelines 2013

I-Prevention treatment:

- General measures:
  - 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)
  - (I didn t put doses)

What to Treat with?
FRAX Based Lebanese Osteoporosis Guidelines 2013

II-Pharmacologic therapy targeted to high risk individuals:

A-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.

What to Treat with?
FRAX Based Lebanese Osteoporosis Guidelines 2013

II-Pharmacologic therapy targeted to high risk individuals:

A-Postmenopausal osteoporosis (PMO):

- 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).

What to Treat with?
FRAX Based Lebanese Osteoporosis Guidelines 2013

II-Pharmacologic therapy targeted to high risk individuals:

A-Postmenopausal osteoporosis (PMO):

- 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.

What to Treat with?
FRAX Based Lebanese Osteoporosis Guidelines 2013

II-Pharmacologic therapy targeted to high risk individuals:

B-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.

What to Treat with?
FRAX Based Lebanese Osteoporosis Guidelines 2013

II-Pharmacologic therapy targeted to high risk individuals:

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- For men requiring treatment of osteoporosis, alendronate, risedronate and zoledronic acid can be used as first-line therapies for prevention of fractures.
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What to Treat with?
FRAX Based Lebanese Osteoporosis Guidelines 2013

II-Pharmacologic therapy targeted to high risk individuals:

C-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 :

	Daily Dose	Treatment [1,2]
Postmenopausal women and men ≥ 50	≥7.5 mg for > 3 months	Regardless of FRAX
	<7.5 mg for > 3 months	Medium/high FRAX risk*
	FRAX≤10%	If dose >7.5mg for > 3 months*
	FRAX>10%	Treat all*
Premenopausal women and men <50	Treat ONLY if history of FRAGILITY fracture Others no recommendation was made by ACR	
Men and non-childbearing women	>5 mg for 1-3 months >3 months regardless of dose	Treat
Childbearing women	≥7.5 mg	Treat
	1-3 months or <7.5 mg	No consensus*

*ACR.

[1]FDA approved therapies for GIOP: alendronate, risedronate, zoledronic acid and teriparatide.

[2]Teriparatide 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

What to Treat with?
FRAX Based Lebanese Osteoporosis Guidelines 2013

II-Pharmacologic therapy targeted to high risk individuals:

B-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 .

Fracture Risk Reduction in postmenopausal osteoporosis

Medication	Spine	Hip
Estrogen	✓	✓
Estrogen +Bazedoxifene	✓	✓
Raloxifene	✓	
Tibolone	✓	
Alendronate	✓	✓
Risedronate	✓	✓
Ibandronate	✓	
Zoledronic acid	✓	✓
Calcitonin	✓	
Denosumab	✓	✓
Strontium ranelate	✓	✓[1]
Teriparatide (PTH1-34)	✓	
PTH 1-84	✓	

[1]Only approved by EMEA (not FDA); post hoc analysis in high risk postmenopausal women ≥ 74 years and femoral neck T-score ≤-3 SD.

FDA-Approved Medications:

Drug	PMO		GIO		Men
	Prevention	Treatment	Prevention	Treatment	
Estrogen	✓				
Calcitonin		✓			
Alendronate	✓	✓		✓	✓
Risedronate	✓	✓	✓	✓	✓
Ibandronate	✓	✓			
Zoledronic acid	✓	✓	✓	✓	✓
Raloxifene	✓	✓			
Denosumab		✓			
Teriparatide		✓		✓	✓

- *The potential benefits and risks of the prescribed agents should be discussed before therapy is initiated, to support informed decision-making.*