Osteoporosis
Assessment & Management

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Diagnosis

Osteoporosis - low bone mass and micro deterioration of bone tissue

Status	**DXA Scan T-score**
Normal	+2.5 to −1.0, inclusive
Osteopenia	Between −1.0 and −2.5
Osteoporosis	**≤−2.5**
Severe osteoporosis	≤−2.5 + fragility fracture

WHO, Geneva 1994.

Fragility Fractures

- Fractures occurring following a force that would not normally cause a fracture
- Including Vertebral fractures occurring during normal daily activities
- Common: 1 in 3 Women, 1 in 5 men

National Guidance Updated 2017

- NICE Quality Standard for Osteoporosis (2017)
- NICE CG 146 Osteoporosis: Assessing the risk of fragility fracture (2012)
- NICE TA 464 Treatment with Bp (2017)
- NOGG Clinical Guideline for the prevention and treatment of Osteoporosis (2017)
- Local WSFPF Guidelines (2014)

Overview

- Identify at-risk patients
- Assess 10 year risk of fracture
- DXA if indicated
- Consider FRAX with T score (NOGG)
- If osteoporosis rule out other causes
- Treat for 5 years
- Review at 1 and 5 yrs

Assessment Tools

- FRAX score www.shef.ac.uk/FRAX

  Calculates 10 year probability of a major osteoporotic fracture or of hip fracture. Links to NOGG Guidance – recommends intervention thresholds. 40 to 90- yrs.

- Q Fracture http://www.qfracture.org/

  Estimates the 1-10 year cumulative incidence of hip or major osteoporotic fracture. 30-99 yrs.

  Advise from SIGN: If > 10% - DXA.

Who needs risk assessment?

- Those with risk factors
  - Prior fragility fracture
  - History of falls
  - Current glucocorticosteroids
  - BMI < 18.5kg/m2
  - Smoking
  - Alcohol intake > 3 units a day
  - Parental history hip fracture
  - Causes of secondary osteoporosis
- All women ≥ 65 years, men ≥75 years (NICE 2017)

RAX - WHO Fracture Risk Assessment Tool - Microsoft Internet Explorer

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http://www.sheffield.ac.uk/FRAX/tool.jsp?locationValue=1

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HOME CALCULATION TOOL PAPER CHARTS FAQ REFERENCES Select a Language

Calculation Tool

ight Conversion:

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Country : UK **Name / ID :** About the risk factors

Questionnaire:

1. Age (between 40-90 years) or Date of birth

Age: 75 Date of birth: Y: M: D:

2. Sex Male Female

3. Weight (kg) 60

4. Height (cm) 165

5. Previous fracture No Yes

6. Parent fractured hip No Yes

7. Current smoking No Yes

8. Glucocorticoids No Yes

9. Rheumatoid arthritis No Yes

10. Secondary osteoporosis No Yes

11. Alcohol 3 more units per day No Yes

12. Femoral neck BMD

Select

Clear Calculate

BMI 22.0

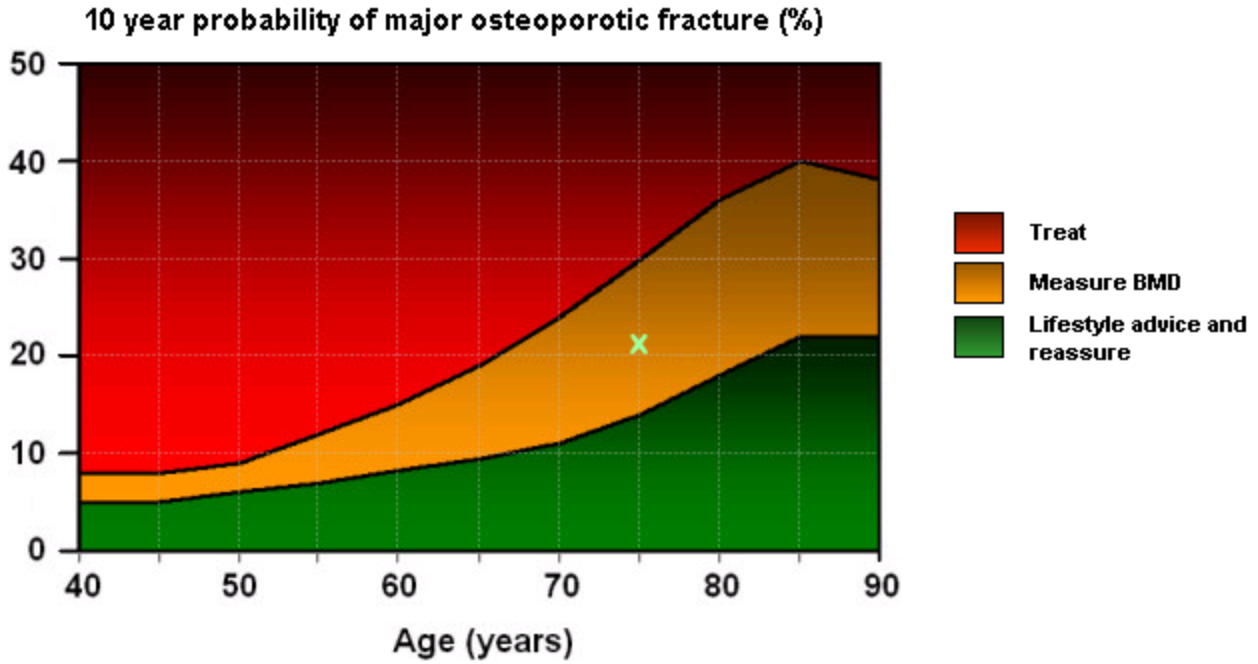
The ten year probability of fracture (%)

without BMD

Major osteoporotic	21
Hip fracture	12

View NOGG Guidance

Assessment threshold - Major fracture



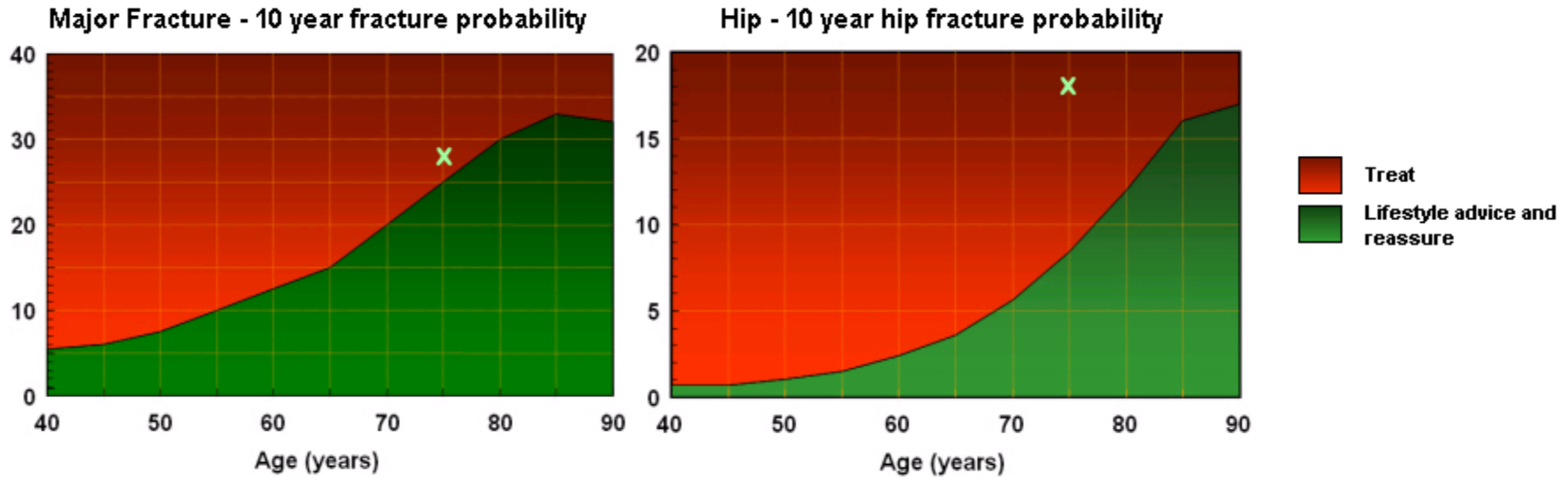
Interpretation

Following the assessment of fracture risk using FRAX® in the absence of BMD, the patient may be classified to be at low, intermediate or high risk.

- Low risk – reassure, give lifestyle advice, and reassess in 5 years or less depending on the clinical context.
- Intermediate risk - measure BMD and recalculate the fracture risk to determine whether an individual's risk lies above or below the intervention threshold.

Graphs

Intervention Threshold

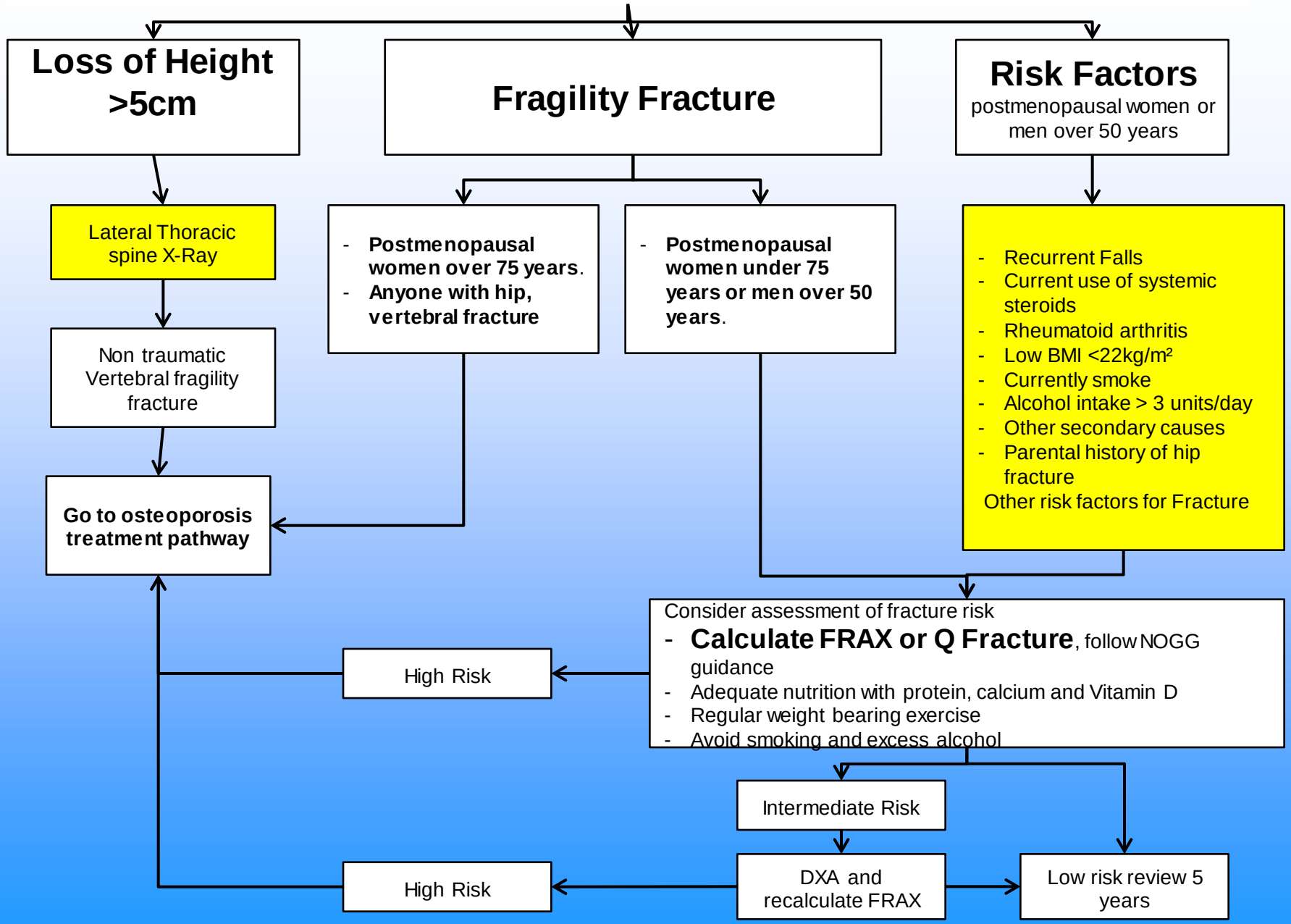


Interpretation

Following the recalculation of fracture probability with the additional input of femoral neck BMD, the individual may lie above or below the intervention thresholds for major osteoporotic fracture and/or hip fracture.

- In individuals with probabilities of a major osteoporotic fracture and/or hip fracture above the intervention threshold, treatment should be strongly considered.

Primary Care Case Finding People at High Risk of Fragility Fracture WSFPF 2015



Considerations on Diagnosis

- Investigations – FBC, ESR/CRP, U&E, LFT, Bone Profile, TFT, T4, Testosterone (men)
- If indicated Coeliac screen/myeloma screen, PTH, amongst others
- History and Physical Examination
- If not already done consider DXA

Management

- Lifestyle advice
- Patient Education
- Falls assessment
- Suitability for bone sparing medications

Anti-fracture efficacy of approved treatments for postmenopausal women with osteoporosis when given with calcium and vitamin D

Treatment *	Vertebral #	Non-vert #	Hip #
Alendronate	A	A	A
Ibandronate	A	A**	nae
Risedronate	A	A	A
Zolendronate	A	A	A
Denosumab	A	A	A
HRT	A	A	A
Raloxifene	A	nae	nae
Teriparatide	A	A	nae
Human Parathyroid Hormone	A	nae	nae

** = post hoc subset nae = not adequately evaluated

National Osteoporosis Guidelines Group (NOGG 2017)

Denosumab
NICE TA 204 (2010)

An option for the primary and secondary prevention of osteoporotic fragility fractures in postmenopausal women for whom bisphosphonates are unsuitable

For primary prevention certain other criteria are required (i.e. 'T' score needs to be below a specified level, depending on age and BMD)

Needs close calcium monitoring

Fracture risk increases quickly if stopped

Duration & Monitoring of Bisphosphonate Treatment

- Patients are reviewed at
  - 5 years: alendronate, risedronate, ibandronate
  - 3 years: zolendronic acid

  If continued on treatment Review again to consider cessation of treatment at 10 yrs

Longer term treatment

Can generally be recommended in the following situations:

- age 75 years or more
- previous history of a hip or vertebral fracture
- low trauma fractures during treatment
- current treatment with oral glucocorticoids ≥7.5 mg prednisolone/day

5 Year Review cont.

- Others, consider 2 to 3 year break in treatment
- DXA helpful at 5 yr rev. – if previous T score < -2.5
- Consider T&L spine/VFA if stopping treatment
- DXA and recalculate FRAX after a break in treatment.

Calcium

- Advised a daily Calcium intake 700mg/d to 1,200 mg/d for prevention and treatment
- If on Bone medicines, and cannot obtain dietary 700mgs/d, then supplement
- Links to CVD not clear
- Adequate calcium in addition to Vit D supplements may reduce fractures in elderly

Vitamin D Guidance

- Vitamin D and bone health: a practical clinical guideline for patient management National Osteoporosis Society (2013)
- Vitamin D Deficiency in Adults – Treatment and prevention NICE (2016)
- Local CCGs Prescribing Clinical Network Recommendations

Serum Vitamin D Levels

(Optimum Vitamin D level in Autumn)

<30nmol (<10ng/ml)	Deficiency:
30-50nmol/l (10-20 ng/ml)	Insufficient for many
50-75nmol/l (20-30ng/ml)	Adequate for most

Who do we treat? (NOS 2013)

- Vit D level <30nmol/L
- Vit D 30-50 in the following:
  - Fragility fracture, OP or high risk #
  - Treatment with Bone sparing medications
  - Symptoms deficiency
  - Increased risk of becoming deficient (reduced sunlight) – recommend OTC
  - Medicated with antiepileptics/steroids (antiretrovirals, aromatase inhibitors)
  - Conditions associated with malabsorption.

Oral Vit D Colecalciferol

For patients at risk of fracture:

- Routine treatment: 800-2,000 IU/day
- Rapid treat (specific instances) – 300,000 IU over 6 to 10 weeks (Monitor Ca^{++} at 1M)

In general - Treat not test

Vitamin D3 advised

UK FLS Clinical Standards (2014)

- National Standards/key objectives of a Fracture Liaison Service (FLS):

  - **Identification** of at risk pts.
  - **Investigation**
  - **Information/Involve**
  - **Intervention**
  - **Integrate care**
  - **Quality**

MSK Crawley FLS

- Consults patients in their own surgery
- Receives referrals for complex patients
- Accepts referrals from Secondary care
- Initiates and modifies bone sparing medications, medication reviews.
- Follow up at 3 and 12 months
- Referrals – falls service

RCP National Audit (2010), Recommendations

All localities commission a fracture liaison service following the best-evidenced models either for acute-based services (e.g. Glasgow) or primary care based services (West Sussex)

National Osteoporosis Society

NOS Helpline:
0808 800 0035 (Freephone number),

NOS Website www.nos.org.uk

Osteoporosis Resource for Primary Care
www.osteoporosis-resources.org.uk