Update on diagnosis and treatment of osteoporosis

Prof. Dr. Evelien Gielen

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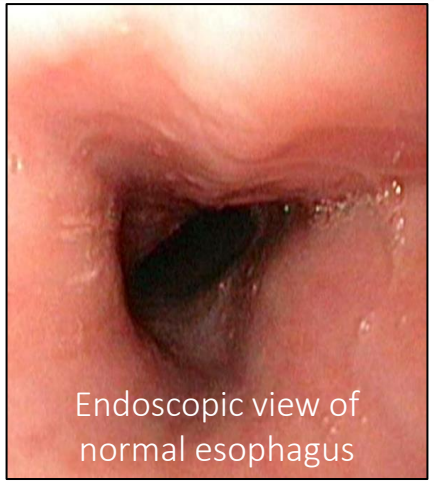
President of the Belgian Bone Club (BBC) & Board member of the Belgian Ageing Muscle Society (BAMS)

Prof. Dr. Steven Boonen

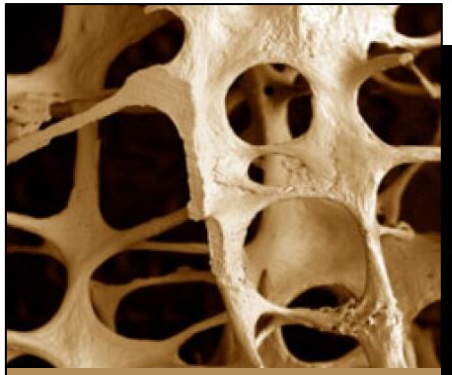
Old age isn’t so bad, when you consider the alternative

- Maurice Chevalier -

Prof. Dr. Steven Boonen



Endoscopic view of normal esophagus



Osteoporotic bone

Van: Steven Boonen <steven.boonen@uzleuven.be>
Verzonden: woensdag 17 oktober 2012 10:48
Aan: Evelien Gielen <evelien.gielen@uzleuven.be>
Onderwerp: RE: Vitamine D - IOF cursus Geneva 2013

Bedankt Evelien – schitterend!

Van: Evelien Gielen
Verzonden: maandag 15 oktober 2012 14:21
Aan: Steven Boonen
Onderwerp: RE: Vitamine D - IOF cursus Geneva 2013

In bijlage document aangevuld met opgegeven referenties, alsook andere recente referenties.

Evelien

Van: Steven Boonen
Verzonden: dinsdag 9 oktober 2012 9:21
Aan: Evelien Gielen
Onderwerp: Vitamine D - IOF

Beste Evelien,

Bel je me even?

Bedankt,

Steven

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Fracture Risk and Zoledronic Acid Therapy in Men with Osteoporosis

Steven Boonen, M.D., Ph.D., Jean-Yves Reginster, M.D., Ph.D., Jean-Marc Kaufman, M.D., Ph.D., Kurt Lippuner, M.D., Jose Zanchetta, M.D., Bente Langdahl, Ph.D., D.M.Sc., Rene Rizzoli, M.D., Stanley Lipschitz, M.B., B.Ch., Hans Peter Dimai, M.D., Richard Witvrouw, M.D., Erik Eriksen, M.D., D.M.Sc., Kim Brixen, M.D., Ph.D., Luis Russo, M.D., Ph.D., Frank Claessens, Ph.D., Philemon Papanastasiou, Ph.D., Oscar Antunez, M.D., Guoqin Su, Ph.D., Christina Bucci-Rechtweg, M.D., Josef Hruska, M.D., Elodie Incera, M.S., Dirk Vanderschueren, M.D., Ph.D., and Eric Orwoll, M.D.

t so bad, when you consider th

- Maurice Chevalier -

Prof. Dr. Steven Boonen

1

JOURNAL OF THE AMERICAN GERIATRICS SOCIETY

Safety and Efficacy of Risedronate in Reducing Fracture Risk in Osteoporotic Women Aged 80 and Older: Implications for the Use of Antiresorptive Agents in the Old and Oldest Old

Steven Boonen MD, PhD, Michael R. McClung MD, Richard Eastell MD, Ghada El-Hajj Fuleihan MD, MPH, Ian P. Barton BSc, Pierre Delmas MD, PhD

First published: 26 October 2004 | https://doi.org/10.1111/j.1532-5415.2004.52506.x | Citations: 131

2

JOURNAL OF THE AMERICAN GERIATRICS SOCIETY

Safety and Efficacy of Teriparatide in Elderly Women with Established Osteoporosis: Bone Anabolic Therapy from a Geriatric Perspective

Steven Boonen MD, PhD, Fernando Marin MD, PhD, Dan Mellstrom MD, PhD, Li Xie MS, Durisala Desaiah PhD, John H. Krege MD, Clifford J. Rosen MD

First published: 02 May 2006 | https://doi.org/10.1111/j.1532-5415.2006.00695.x | Citations: 99

3

JCEM THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

Treatment with Denosumab Reduces the Incidence of New Vertebral and Hip Fractures in Postmenopausal Women at High Risk FREE

S. Boonen ✉, J. D. Adachi, Z. Man, S. R. Cummings, K. Lippuner, O. Törring, J. C. Gallagher, J. Farrerons, A. Wang, N. Franchimont ... Show more

4

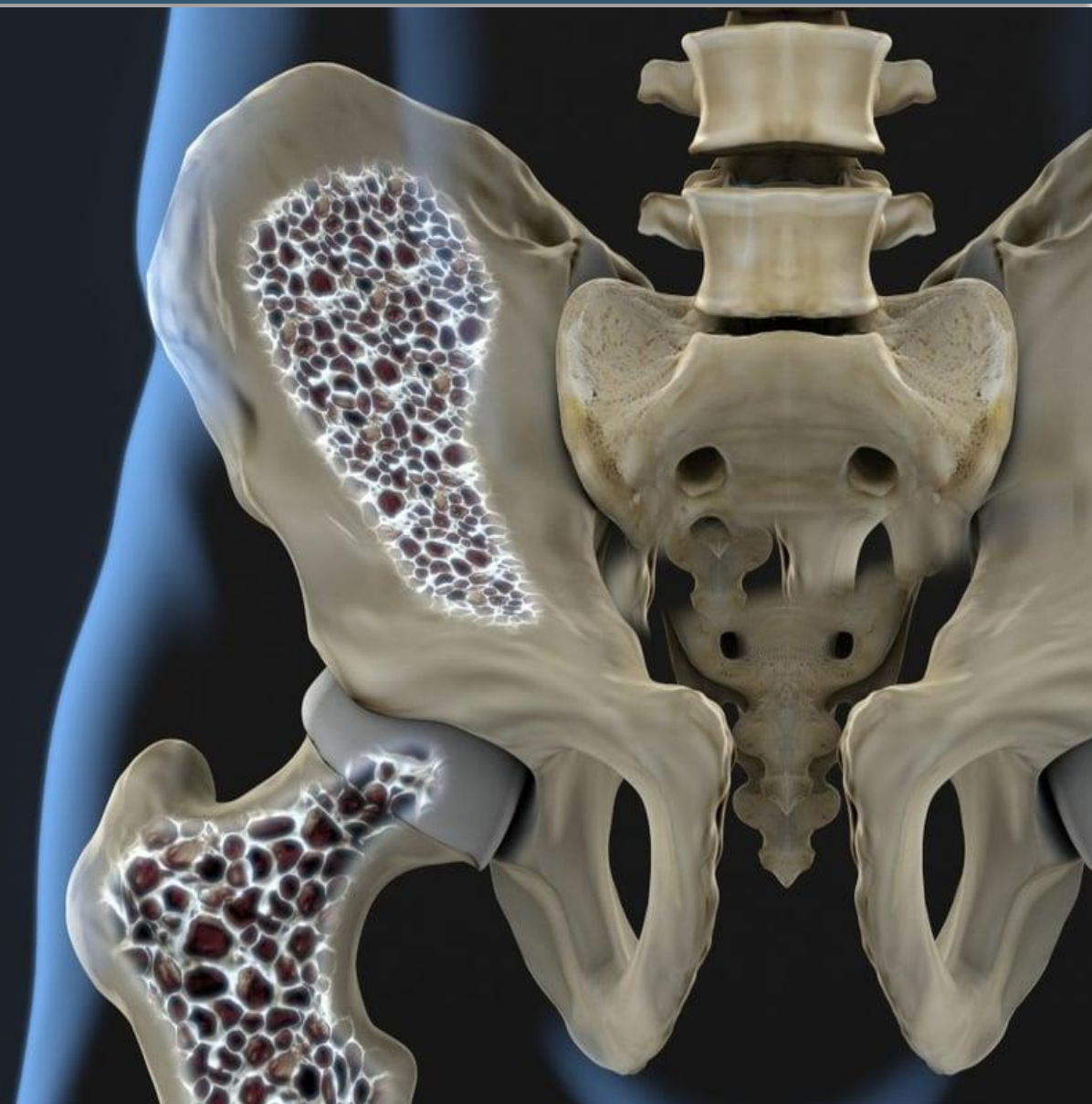
JOURNAL OF THE AMERICAN GERIATRICS SOCIETY

Efficacy and Safety of a Once-Yearly Intravenous Zoledronic Acid 5 mg for Fracture Prevention in Elderly Postmenopausal Women with Osteoporosis Aged 75 and Older

Steven Boonen MD, PhD, Dennis M. Black PhD, Cathleen S. Colón-Emeric MD, MHSc, Richard Eastell MD, Jay S. Magaziner PhD, Erik Fink Eriksen MD, DMSc, Peter Mesenbrink PhD ... See all authors

[1]Boonen. J Am Geriatr Soc 2004; 52: 1832; [2]Boonen. J Am Geriatr Soc 2006; 54: 782; [3]Boonen. Clin Endocrinol Metab 2011; 96: 1727; [4]Boonen. J Am Geriatr Soc 2010; 58:292

Update on osteoporosis



Wat is uw ***gemiddelde*** inname van ...?
(graag ingevuld meebrengen op uw volgende raadpleging metabole botziekten)

1) **Melk**, een glas of tas? (150 ml)
Zowel volle, halfvolle of magere melk; ook karnemelk, chocomelk, calciumverrijkte sojadrink, enz.

..... keer per ..... (=> per dag of per week)

2) **Yoghurt, pudding of platte kaas**, een potje? (125 g)
Zowel volle, halfvolle of magere natuur- of fruityoghurt; ook chocolade of vanillepudding, enz.

..... keer per ..... (=> per dag of per week)

3) **Kaas of kaasgerecht**, een snede of portie? (30 g)
Ook b.v. een quiche, lasagne of pizza met kaas, ...

..... keer per ..... (=> per dag of per week)

4) Fles- of kraantjeswater: ..... glazen per dag (200ml)
Contrex/Hépar water: ..... glazen per dag

5) Appelsienen: ..... stuks per dag

6) Kan u heel weinig eten? (bv. door een ernstige ziekte) NEE / JA

7) Eet u (bijna) dagelijks groenten, fruit én bruin/grijs brood? NEE / JA

8) Gebruikt u andere calciumrijke voeding, bijvoeding, etc? NEE/ JA:
.....

9) Gebruikt u **<u>calcium supplementen</u>**? NEE/ JA, namelijk :

- ○ 500 mg 1x/dag
- ○ 500 mg 2x/dag
- ○ 1000 mg 1x/dag
- ○ Calx Plus® ..... keer/dag
- ○ Andere, namelijk: ..... (soort, dosis)

<u>Puntentelling</u> (in te vullen door assistent)

1) **<u>Melk</u>**: Minder dan 3x/week 0 punten
3-4 keer **per week** 1 punt
.... keer **per dag**, x2 punten = ... punten

2) **<u>Yoghurt</u>**: Minder dan 3x/week 0 punten
3-4 keer **per week** 1 punt
.... keer **per dag**, x2 punten = ... punten

3) **<u>Kaas</u>**: aantal per week x 0.5 punten = ... punten

4) **<u>Water</u>**:1 glas/dag 0 punten
2-3 glazen/dag 0.5 punt
4-5 glazen/dag 1 punt
6-8 glazen/dag 1.5 punt
9-10 glazen/dag 2 punten
Meer, namelijk ..... glazen/dag x 0.222... punten = afgerond...

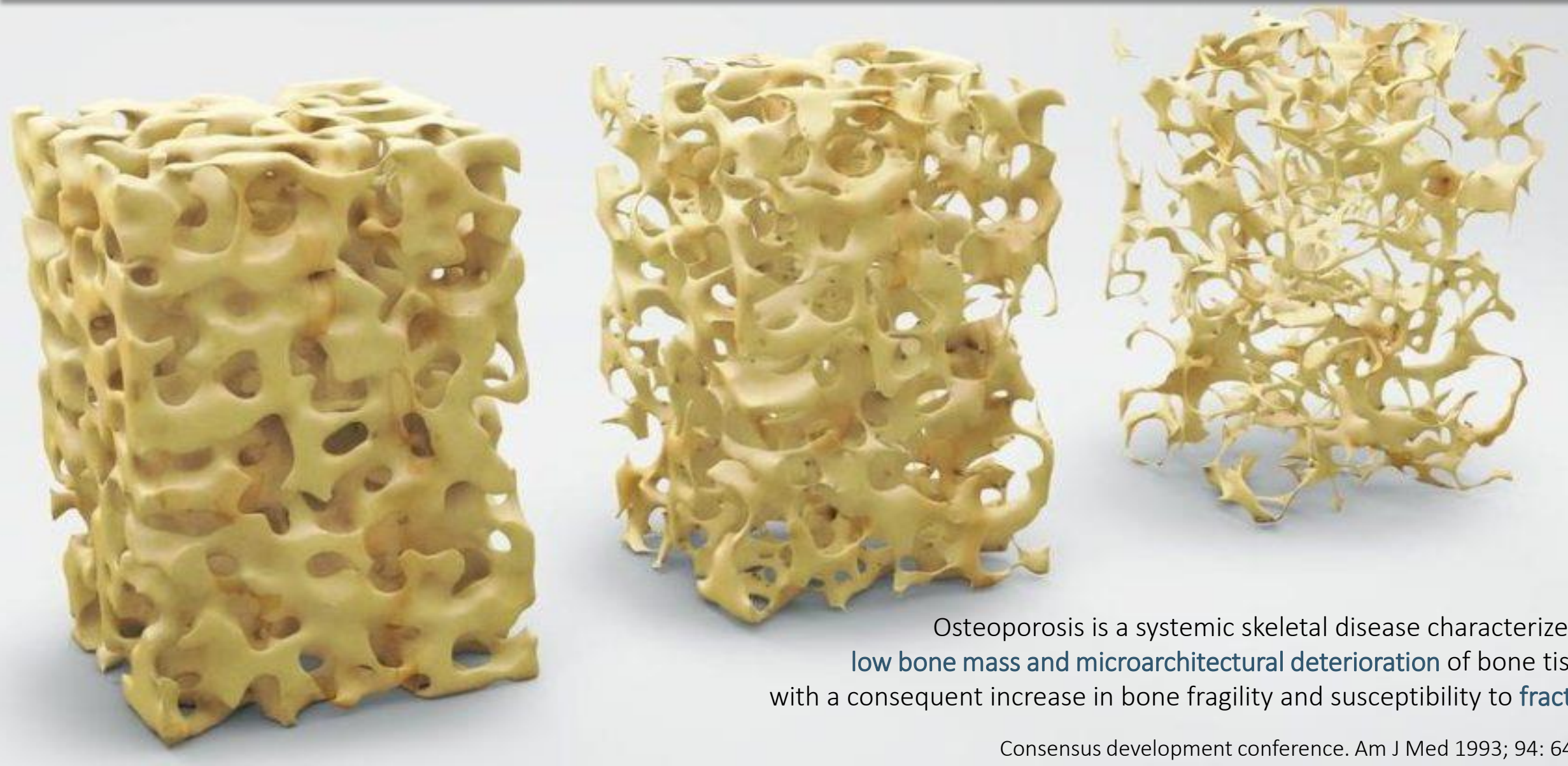
<u>Contrex/Hépar</u>: .... glazen/dag x 1 punt = ... punten

5) **<u>Appelsienen</u>**: .... stuks/dag x 0.5 punt = ... punten

6) **<u>Weinig eten</u>**: Indien NEEN
7) **<u>Groenten, fruit & bruin/grijs brood</u>**: Indien JA
+3 punten **<u>als</u>** beiden voldaan
8) Indien JA => calciumcontent opzoeken, zoniet onderschatting
9) **<u>Calcium supplementen</u>**:
500 mg = 5.5 punten
1000 mg of 2x500 mg = 11 punten
Calx plus® = ... bonbons x 6.5 punten = ... punten

Totale score: .....

Osteoporosis

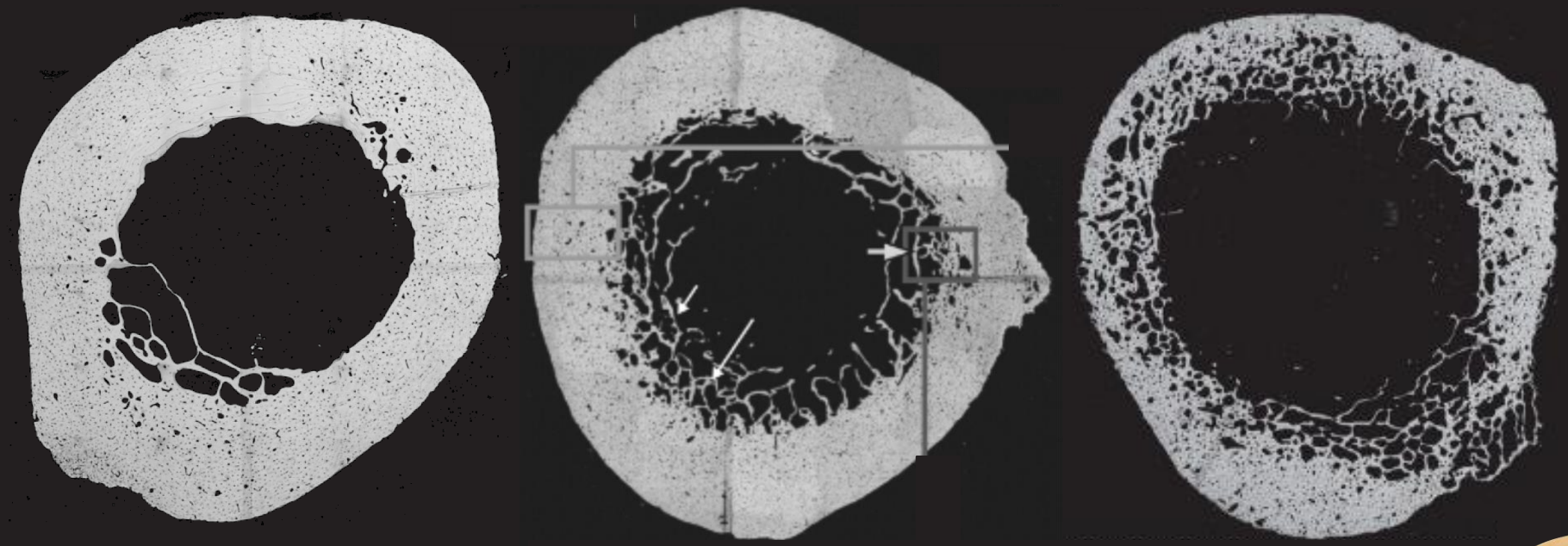


Osteoporosis is a systemic skeletal disease characterized by low bone mass and microarchitectural deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture.

Consensus development conference. Am J Med 1993; 94: 646-50

Osteoporosis

Age-related bone loss and cortical porosity



29 years

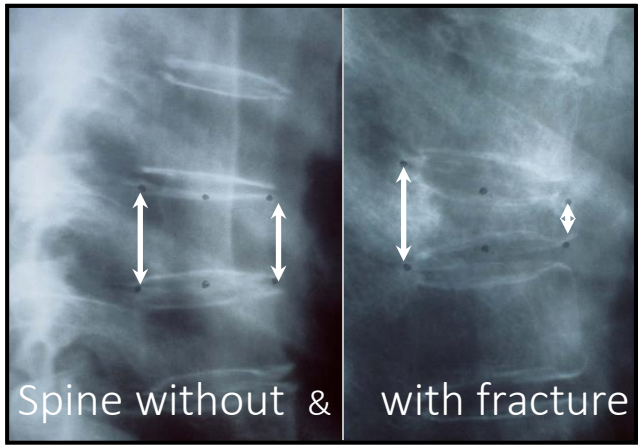
78 years

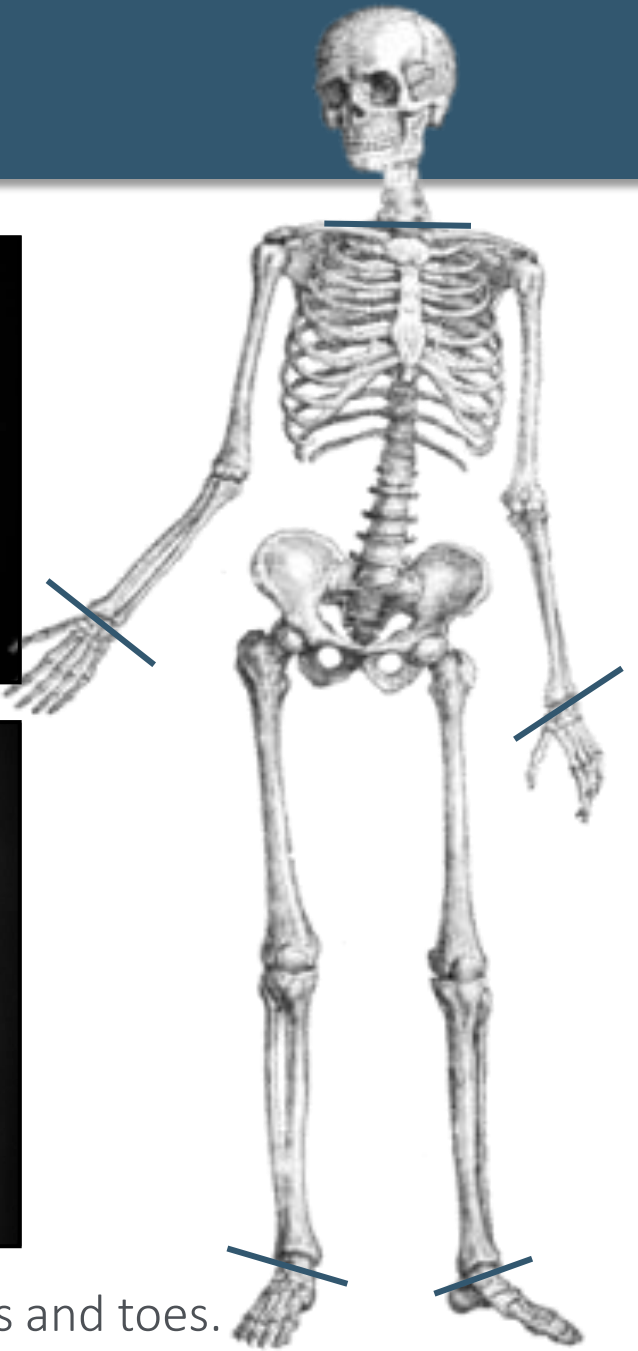
90 years

Post-mortem femur specimens of women

Zebaze. Lancet 2010; 375: 1729-1736

Osteoporotic fractures





Osteoporotic fractures may affect **any part of the skeleton** except face, skull, fingers and toes.

Consequences of osteoporotic fractures

Hip fractures

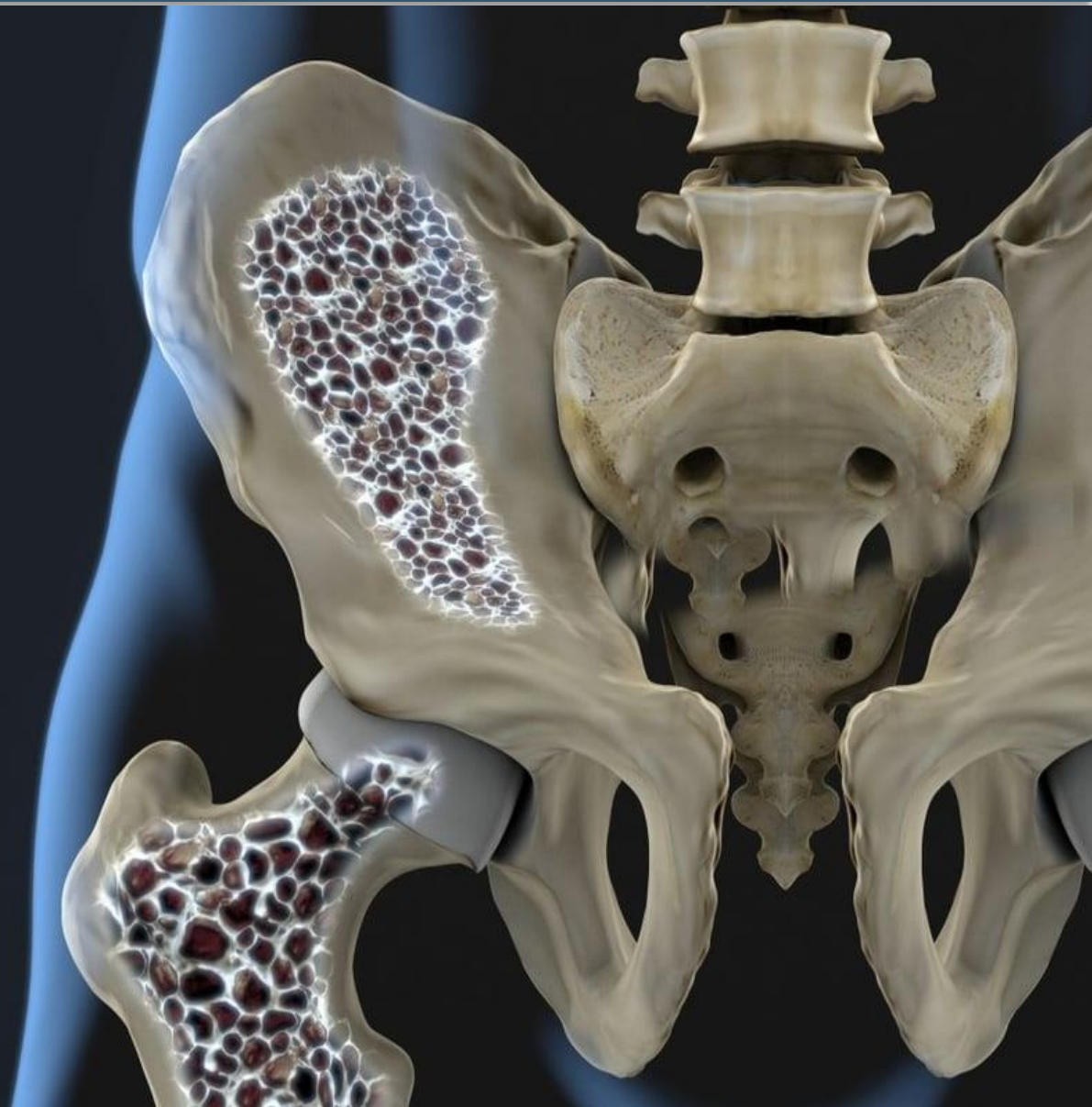
- **Functional decline**: 80% of hip fracture patients still have problems with activities of daily living (ADL) after 1 year
- **Mobility**: >40% of previously independent hip fracture patients are not able to walk independently after 1 year
- **Institutionalization:** 10-20% of hip fracture patients newly institutionalized over 1 year (up to 35% in ≥ 90 years)
- **Quality of life**: significant loss in all domains of the SF-36 at hospital discharge and at 1 year
- **Mortality**: 19% of hip fracture patients over 1 year versus 3% in age- and residence-matched controls (in men: 30%)

Boonen. Osteoporos Int 2000; 11: 373-80; Haentjens. J Bone Surg Am 2001; 83: 493-500; Boonen. Osteoporos Int 2004; 15: 87-94; Cooper. Am J Med 1997;103:12S-19S; Keene. BMJ 1993;307:1248-50; Cole. Current Rheum Reports 2008;10:92-6; Vokó. J Eval Clin Pract 2017;23:1375-1380; Griffin. Bone Joint J 2015;97-B: 372-382

What is osteoporosis?

Update on osteoporosis

①	Diagnosis of osteoporosis	DXA	fracture & fracture risk
②	Treatment of osteoporosis	One size fits all	Individualized approach
③	Treatment of osteoporosis	Antiresorptive therapy	Osteoanabolic therapy
④	Treatment of osteoporosis	Supplement of 1g Ca & 800 IU vit D for all OP pts	Personalized intake



Update on osteoporosis

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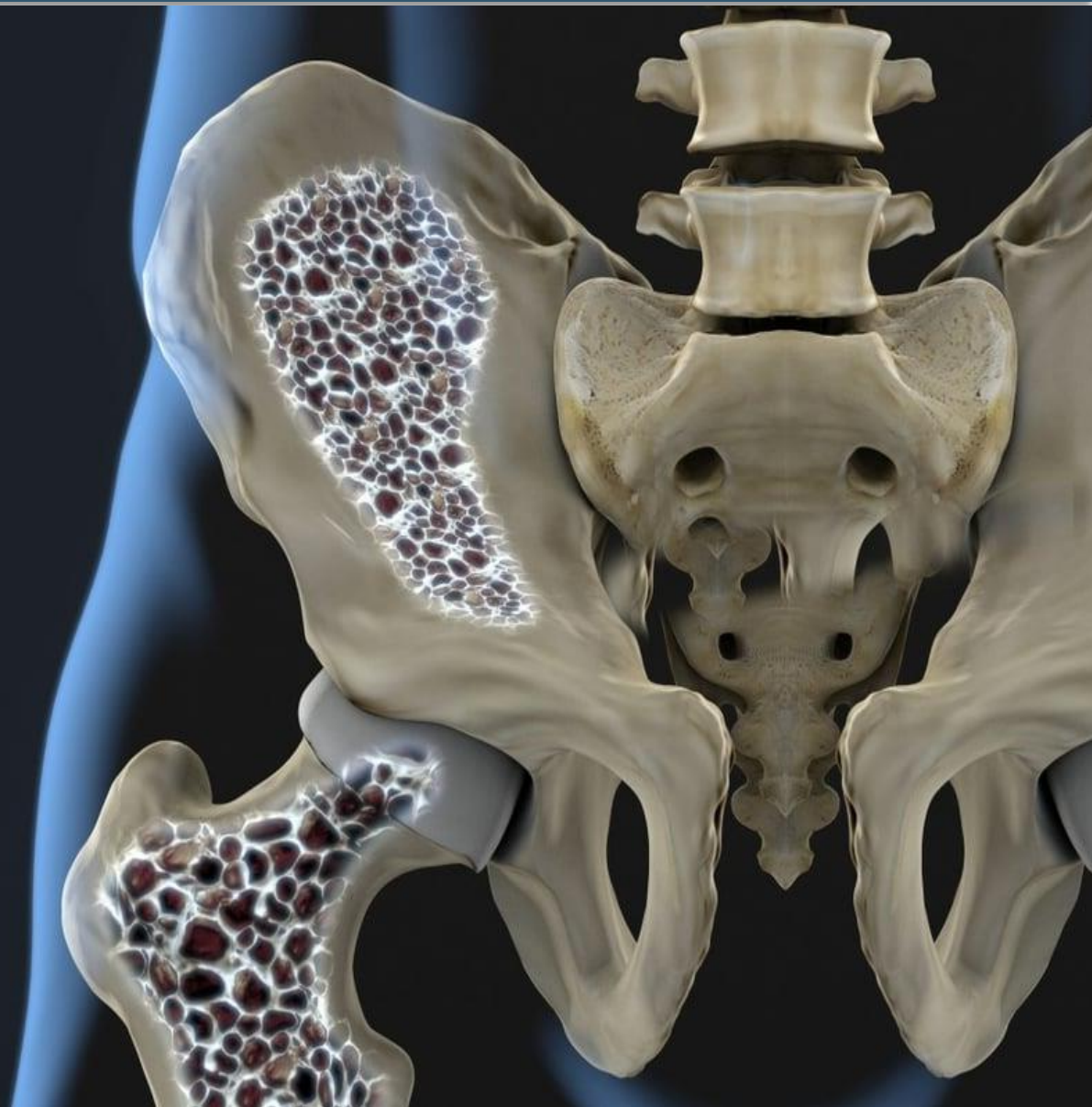
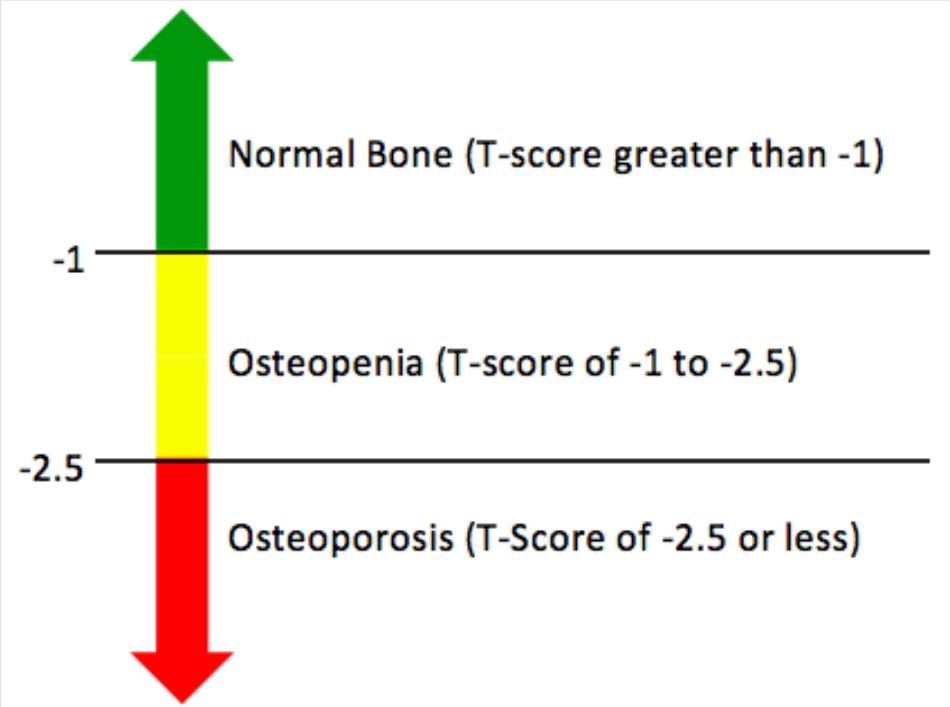


① Diagnosis of osteoporosis: from DXA to fracture or fracture risk

1. WHO BMD-based definition of osteoporosis

- T-score ≤ -2.5 at total hip, femoral neck or lumbar spine (L1-L4)
- Even without prior fragility fractures

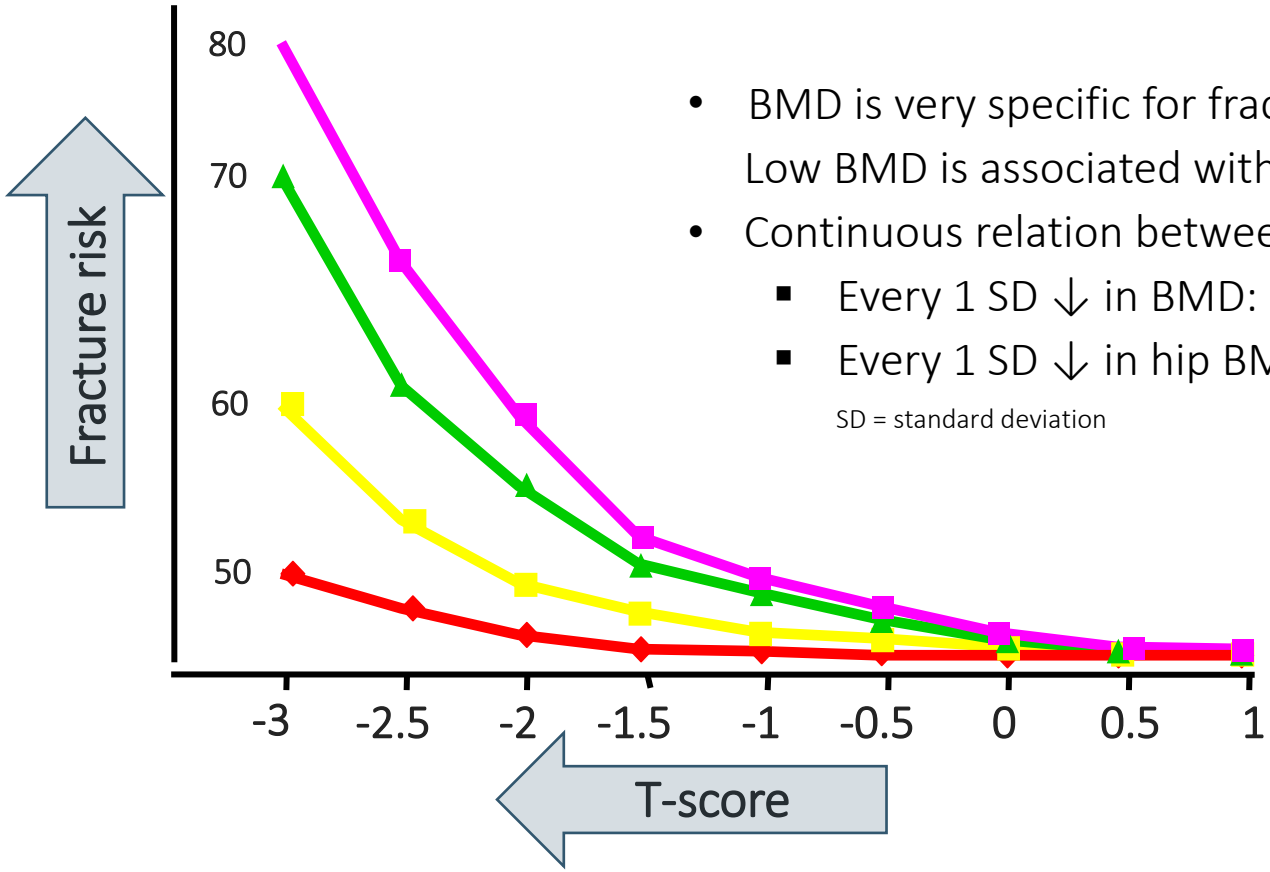


Kanis. J Bone Miner Res 1994; 9: 1137-41

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk

1. WHO BMD-based definition of osteoporosis

BMD strongly correlates with fracture risk

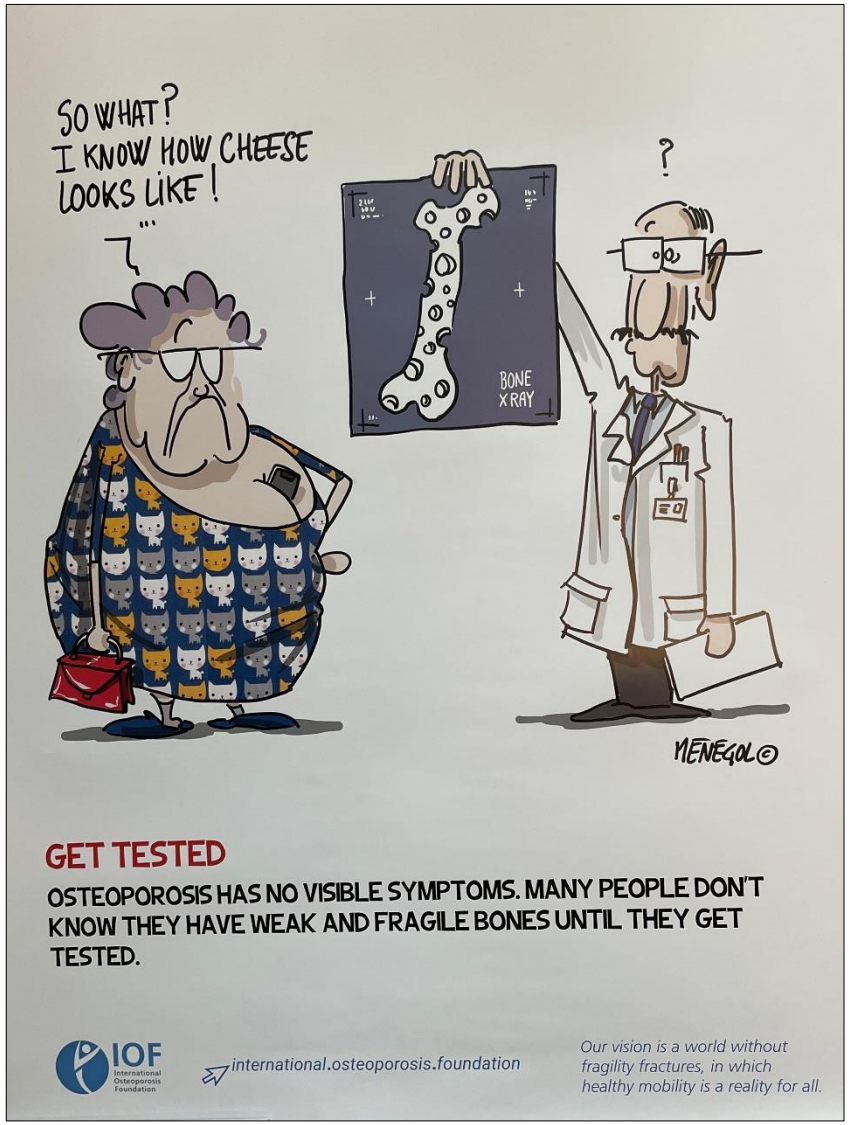


- BMD is very specific for fracture risk
  Low BMD is associated with increased risk of fracture
- Continuous relation between BMD and fracture risk
  - Every 1 SD ↓ in BMD: fracture risk x 1.5-2
  - Every 1 SD ↓ in hip BMD: hip fracture risk x 2.5

SD = standard deviation

Kanis. Osteoporos Int 2001; 12: 989-95; Marschall. BMJ 1996; 312: 1254-59; Johnell. J Bone Min Res 2002; 20: 1185-94

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk



Maturitas 139 (2020) 69–89

Contents lists available at ScienceDirect

Maturitas

journal homepage: www.elsevier.com/locate/maturitas

The Belgian Bone Club 2020 guidelines for the management of osteoporosis in postmenopausal women

D. Sanchez-Rodriguez[a,b,*], P. Bergmann[c], J.J. Body[d], E. Cavalier[e], E. Gielen[f], S. Goemaere[g], B. Lapauw[g], MR Laurent[h], S. Rozenberg[i], G. Honvo[a], C. Beaudart[a], O. Bruyère[a]

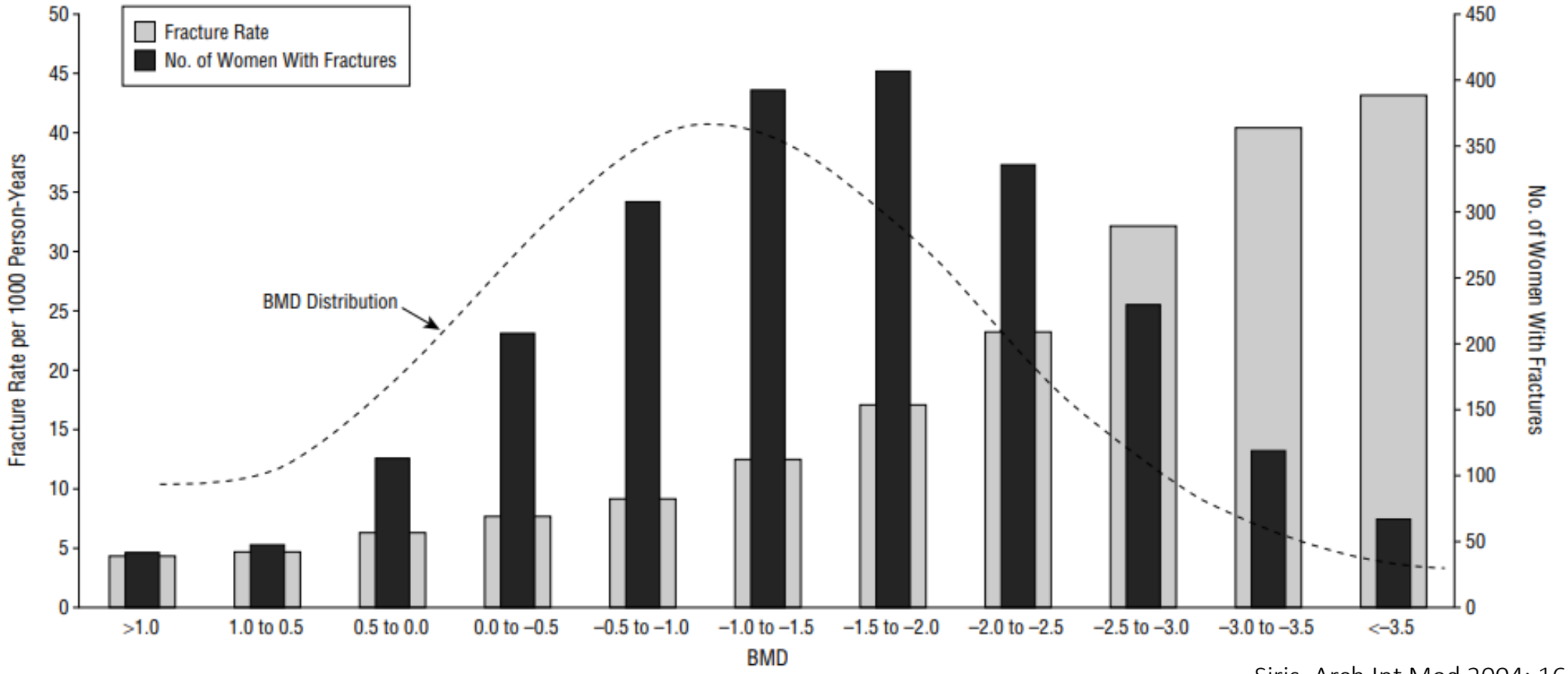
All women aged ≥ 65 years should undergo a formal fracture risk evaluation, including DXA

Sanchez-Rodriguez. Maturitas 2020; 139: 69-89

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk

1. WHO BMD-based definition of osteoporosis

Majority of osteoporotic fractures occur in individuals with T-score > -2.5



Siris. Arch Int Med 2004; 164: 1108-1112

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk

1. WHO BMD-based definition of osteoporosis

Majority of osteoporotic fractures occur in individuals with T-score > -2.5

Fracture type	T-score at femoral neck < -2.5
Vertebral fractures	27 %
Hip fractures	46 %
Wrist fractures	17 %
All non-vertebral fractures	25%

54% of hip fracture patients have hip T-score > -2.5

Rotterdam Study, 7806 ♀ & ♂ ≥ 55y
mean follow-up 6.8 years

Schuit. Bone 2004;34:195-202; Wainwright. J Clin Endocrinol Metab 2005; 90: 2787-93

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk

1. WHO BMD-based definition of osteoporosis

- T-score ≤ -2.5 at TH, FN or LS

2. Previous low-energetic fracture

- In postmenopausal women or men > 50 years
- Other causes excluded (e.g. Kahler's disease)
- Even without T-score ≤ -2.5

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3. Increased fracture risk based on clinical risk factors?

- e.g. FRAX®

Siris. Osteoporos Int 2014; 25: 1439-43; https://frax.shef.ac.uk/frax/

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk

FRAX® Fracture Risk Assessment Tool

Home | Calculation Tool | Paper Charts | FAQ | References

Calculation Tool

Please answer the questions below to calculate the ten year probability of fracture with BMD.

Country: Belgium Name/ID: About the risk factors

Questionnaire:

1. Age (between 40 and 90 years) or Date of Birth
   Age: Date of Birth: Y: M: D:
2. Sex ○ Male ○ Female
3. Weight (kg)
4. Height (cm)
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 or more units/day ◉ No ○ Yes
12. Femoral neck BMD (g/cm^2)

Select BMD

Clear | Calculate

BMI:
The ten year probability of fracture (%)
without BMD

Major osteoporotic	
Hip Fracture	

- https://frax.shef.ac.uk/frax/
- PollEv.com/eveliengiele858

ADDITIONAL NOTES ON RISK FACTORS	
Age	The model accepts ages between 40 and 90 years. If ages below or above are entered, the program will compute probabilities at 40 and 90 year, respectively.
Previous fracture	A previous fracture denotes more accurately a previous fracture in adult life occurring spontaneously, or a fracture arising from trauma which, in a healthy individual, would not have resulted in a fracture.
Glucocorticoids	Enter yes if the patient is currently exposed to oral glucocorticoids or has been exposed to oral glucocorticoids for more than 3 months at a dose of prednisolone of 5 mg daily or more (or equivalent doses)
Secondary osteoporosis	Enter yes if the patient has a disorder strongly associated with osteoporosis. These include type I (insulin dependent) diabetes, osteogenesis imperfecta in adults, untreated long-standing hyperthyroidism, hypogonadism or premature menopause (<45 years), chronic malnutrition, or malabsorption and chronic liver disease

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk

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Select BMD

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BMI:
The ten year probability of fracture (%)
without BMD

Major osteoporotic	
Hip Fracture	

- https://frax.shef.ac.uk/frax/
- PollEv.com/eveliengiele858

What is your FRAX® score?

A. For persons aged < 70 years:
FRAX for MOF ≥ 20% and/or FRAX for hip: ≥ 3%

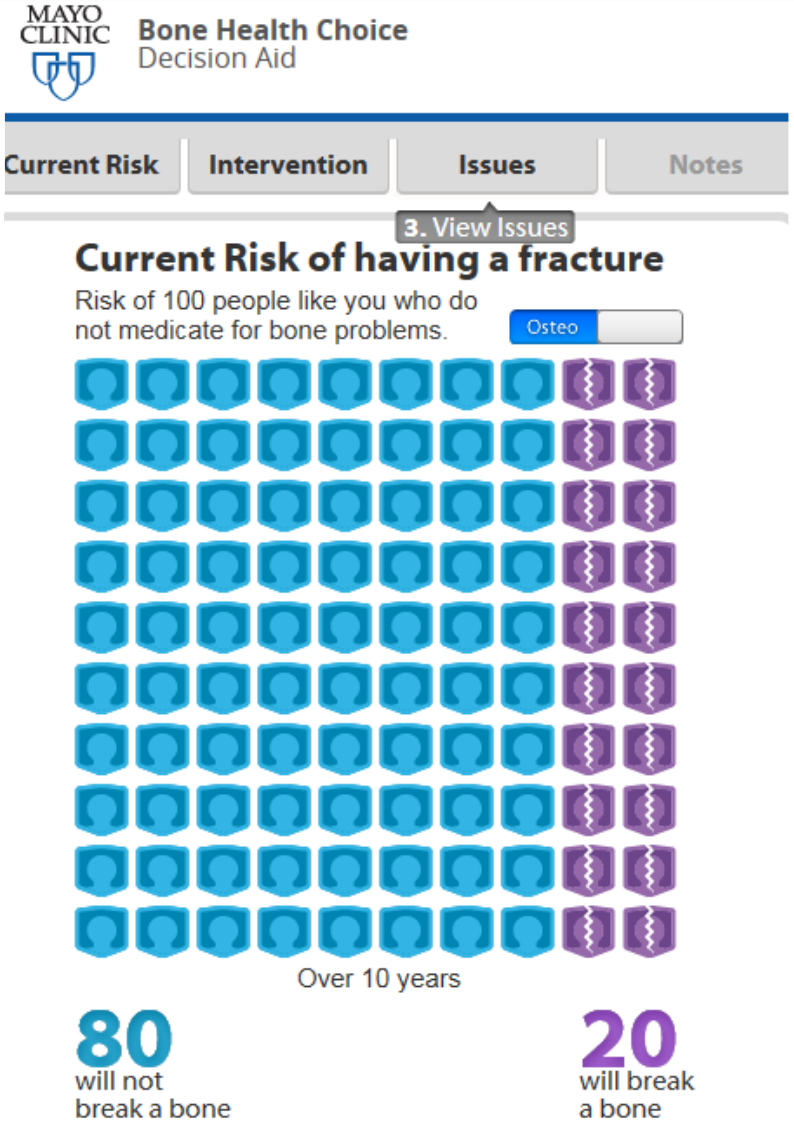
B. For persons aged < 70 years:
FRAX for MOF < 20% and FRAX for hip: < 3%

C. For persons aged ≥ 70 years:
FRAX for MOF ≥ 20% and/or FRAX for hip: ≥ 5%

D. For persons aged ≥ 70 years:
FRAX for MOF < 20% and FRAX for hip: < 5%

https://frax.shef.ac.uk/frax/

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk



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D. For persons aged ≥ 70 years:
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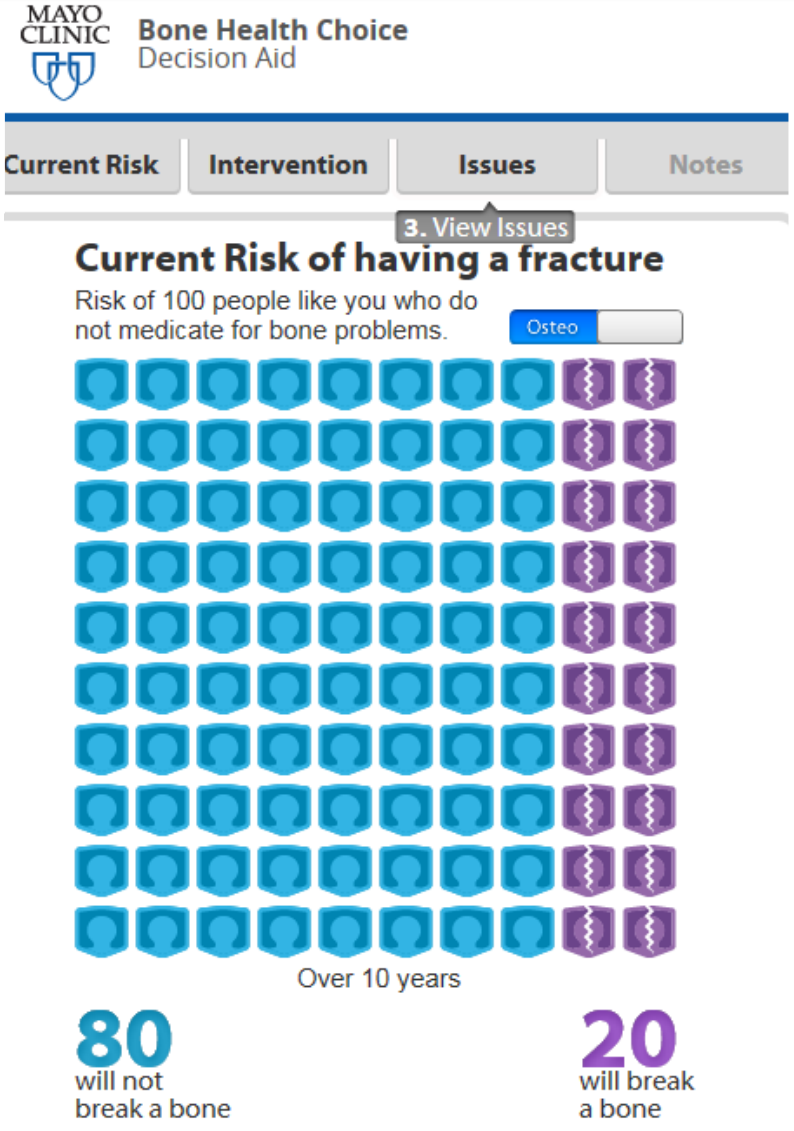
Maraka. BMJ. 2015;351:h3783; https://frax.shef.ac.uk/frax/

① Diagnosis of osteoporosis: from DXA to fracture or fracture risk



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High fracture risk:

10-year FRAX® probability of fracture

- ≥ 20 % for MOF
- ≥ 3 % for hip fracture (age < 70 years)
  ≥ 5 % for hip fracture (age ≥ 70 years)

Maraka. BMJ. 2015;351:h3783; https://frax.shef.ac.uk/frax/; Sanchez-Rodriguez. Maturitas 2020; 139: 69-89

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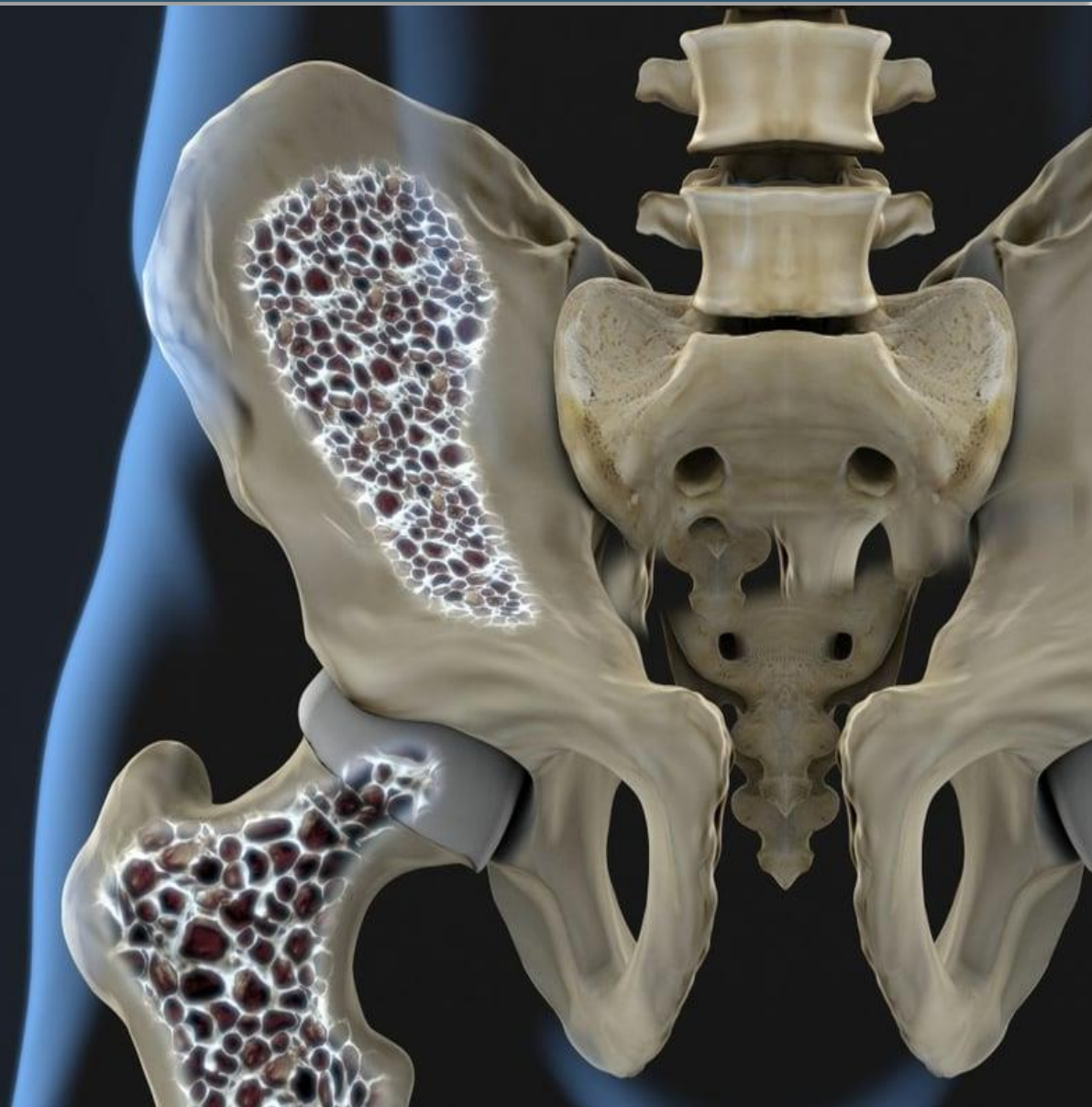

② Treatment of osteoporosis: from “one size fits all” to individualized approach

1. WHO BMD-based definition of osteoporosis

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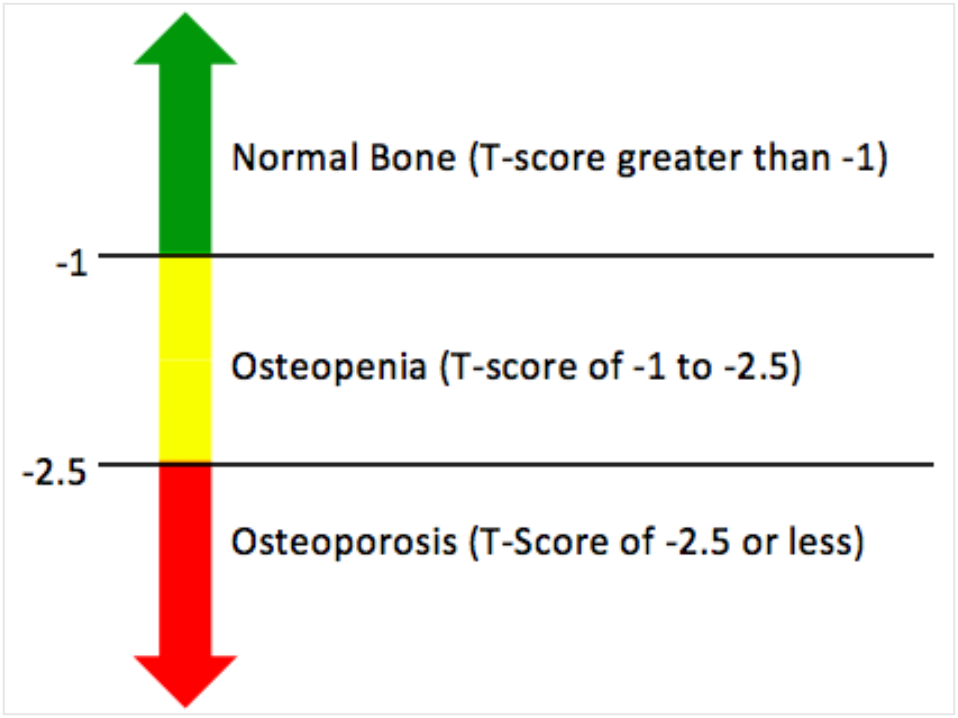
- Even without fractures

➔ Primary fracture prevention



Not to treat?

To treat

Majority of osteoporotic fractures occur in individuals with T-score > -2.5

Fracture type	T-score at femoral neck < -2.5
Vertebral fractures	27 %
Hip fractures	46 %
Wrist fractures	17 %
All non-vertebral fractures	25%

54% of hip fracture patients have hip T-score > -2.5

Rotterdam Study, 7806 ♀ & ♂ ≥ 55y
mean follow-up 6.8 years

② Treatment of osteoporosis: from “one size fits all” to individualized approach

1. WHO BMD-based definition of osteoporosis

- T-score ≤ -2.5 at TH, FN or LS
  - ➔ Primary fracture prevention

2. Previous low-energetic fracture

- In postmenopausal women or men > 50 years
- Other causes excluded (e.g. Kahler’s disease)
- Even without T-score ≤ -2.5
  - ➔ Secondary fracture prevention

3. Increased fracture risk based on clinical risk factors

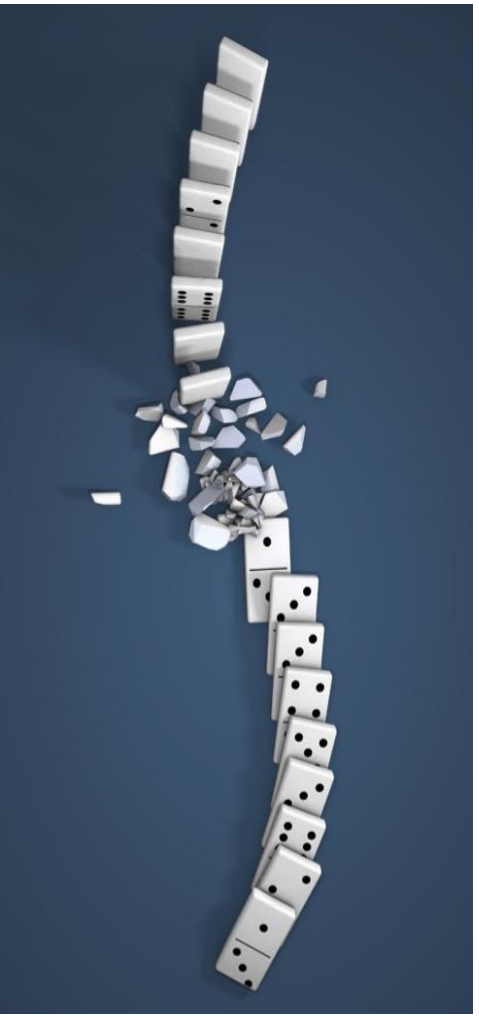
- e.g. FRAX®

<u>High fracture risk by FRAX® according to BBC:</u>

10-year FRAX® probability of fracture

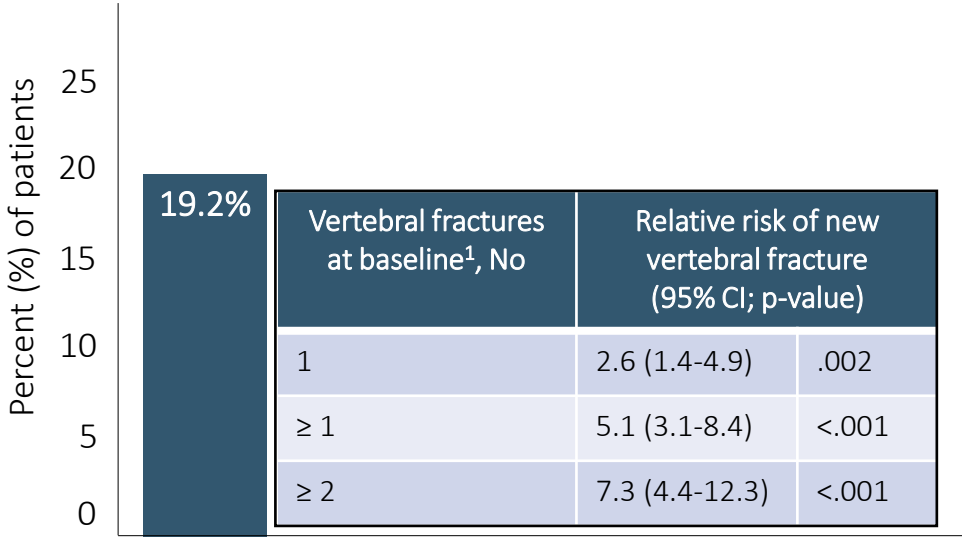
- ≥ 20 % for MOF
- ≥ 3 % for hip fracture (age < 70 years)
  ≥ 5 % for hip fracture (age ≥ 70 years)

❖ Previous fragility fracture as threshold for intervention



Vertebral (spinal) fractures

Women who develop a vertebral fracture
are at substantial risk for additional fracture



Vertebral fractures at baseline[1], No	Relative risk of new vertebral fracture (95% CI; p-value)	
1	2.6 (1.4-4.9)	.002
≥ 1	5.1 (3.1-8.4)	<.001
≥ 2	7.3 (4.4-12.3)	<.001

1 in 5 postmenopausal women will
have a new vertebral fracture within 1 year[1]

[1]Lindsay. JAMA 2001; 285: 320-23; [2]Lindsay. Osteoporos Int 2005; 16: 78-85; [3]Black. JBMR 1999; 14: 821-828

❖ Previous fragility fracture as threshold for intervention

Hip fracture

	Hip fracture admissions, by sex	
	Men, n (%)	Women, n (%)
Number	97	251
Any prior fracture	29 (30%)	113 (45%)
Prior hip fracture	8 (8%)	47 (19%)

All hip fracture admissions in 2 hospitals (Sydney, AU) were identified retrospectively from medical records over 12 months

dS De Standaard Meest recent Binnenland Buitenland Opinie Biz Cultuur Sport Life&Style

Koningin Paola met succes geopereerd

Koningin Paola is vrijdagochtend geopereerd, nadat ze bij een val haar heup had gebroken. De operatie is zeer goed verlopen, zo werd vernomen bij het paleis.

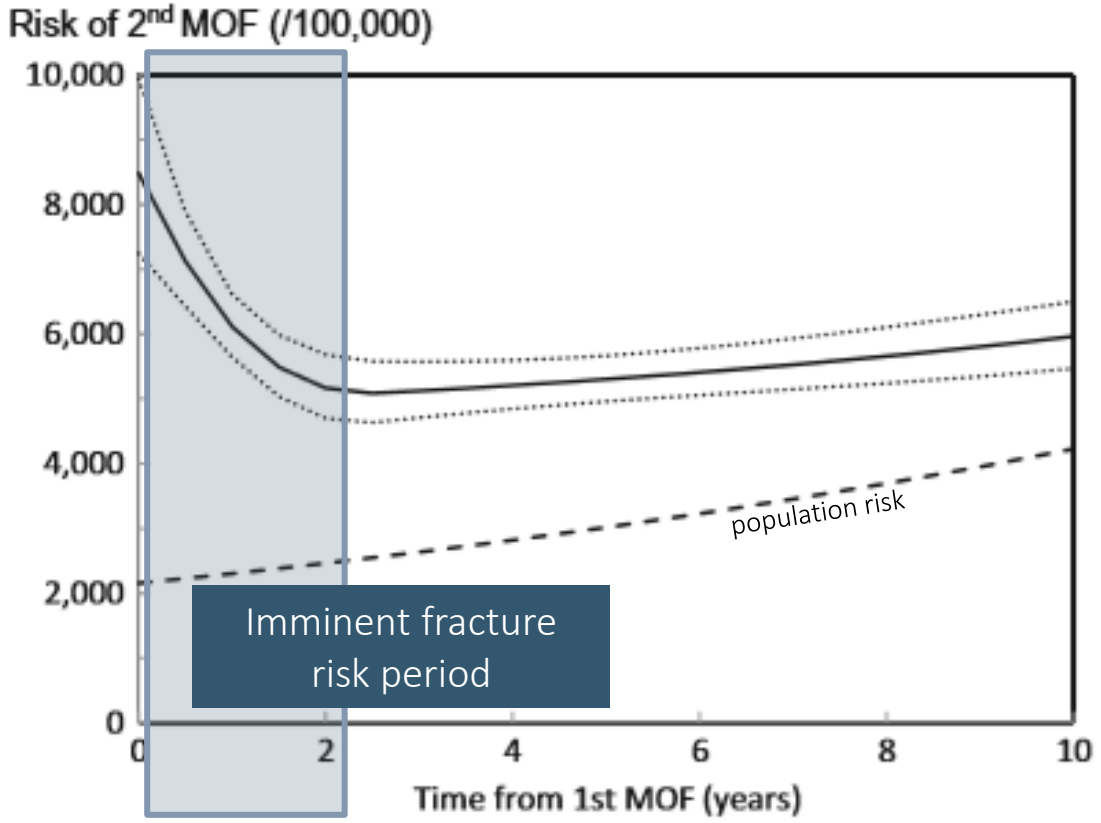
De 79-jarige Paola kwam ten val in haar woning, het kasteel Belvedère dat zich recht tegenover het koninklijk paleis van Laken bevindt. De koningin werd meteen afgevoerd naar het ziekenhuis Saint-Luc in Brussel, waar ze vrijdag werd geopereerd.

Paola lag rond de jaarwisseling al een week in het Brusselse ziekenhuis, nadat ze bij een val een wervelfractuur had opgelopen. Die breuk had geen neurologische complicaties.

Port. Osteoporos Int 2013; 14: 780-784

❖ Previous fragility fracture as threshold for intervention

Imminent fracture risk



- Population based cohort N=18.872 ♀ & ♂
- Followed for 510.265 person years
  - N=5039: ≥ 1 MOF
  - N=1919: second MOF

Time dependency of re-fracture after index fracture
Dashed line is risk of first MOF in whole population for a ♀ 75 years at baseline

MOF= major osteoporotic fracture

Johansson. Osteoporos Int 2017; 28: 775-80

② Treatment of osteoporosis: from “one size fits all” to individualized approach

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  ➔ Primary fracture prevention

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- e.g. FRAX®

Maturitas 139 (2020) 69–89

Contents lists available at ScienceDirect

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journal homepage: www.elsevier.com/locate/maturitas

The Belgian Bone Club 2020 guidelines for the management of osteoporosis in postmenopausal women

D. Sanchez-Rodriguez[a,b,*], P. Bergmann[c], J.J. Body[d], E. Cavalier[e], E. Gielen[f], S. Goemaere[g], B. Lapauw[g], MR Laurent[h], S. Rozenberg[i], G. Honvo[a], C. Beaudart[a], O. Bruyère[a]

10-year FRAX® probability of fracture

- ≥ 20 % for MOF
- ≥ 3 % for hip fracture (age < 70 years)

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Sanchez-Rodriguez. Maturitas 2020; 139: 69-89

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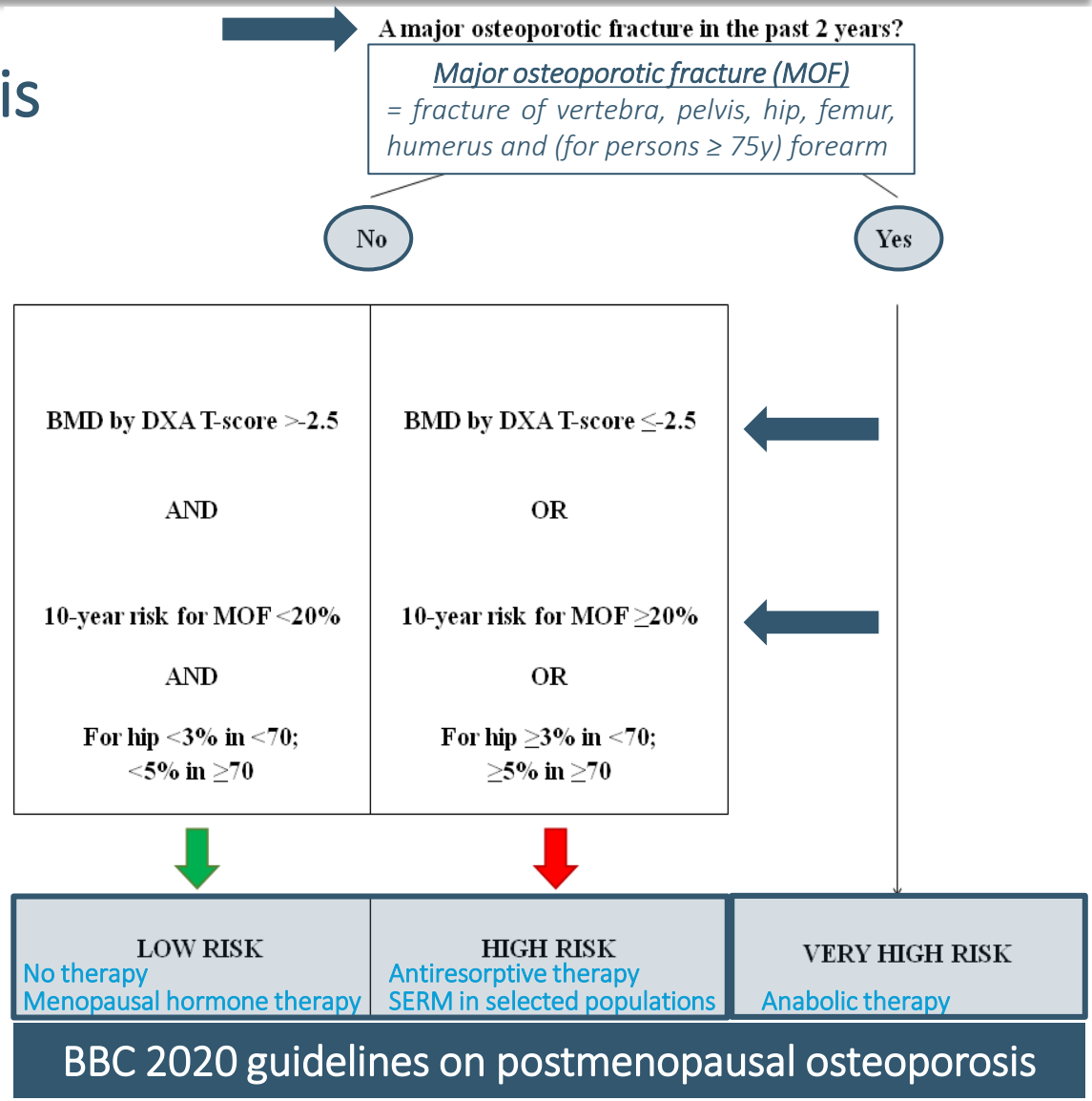
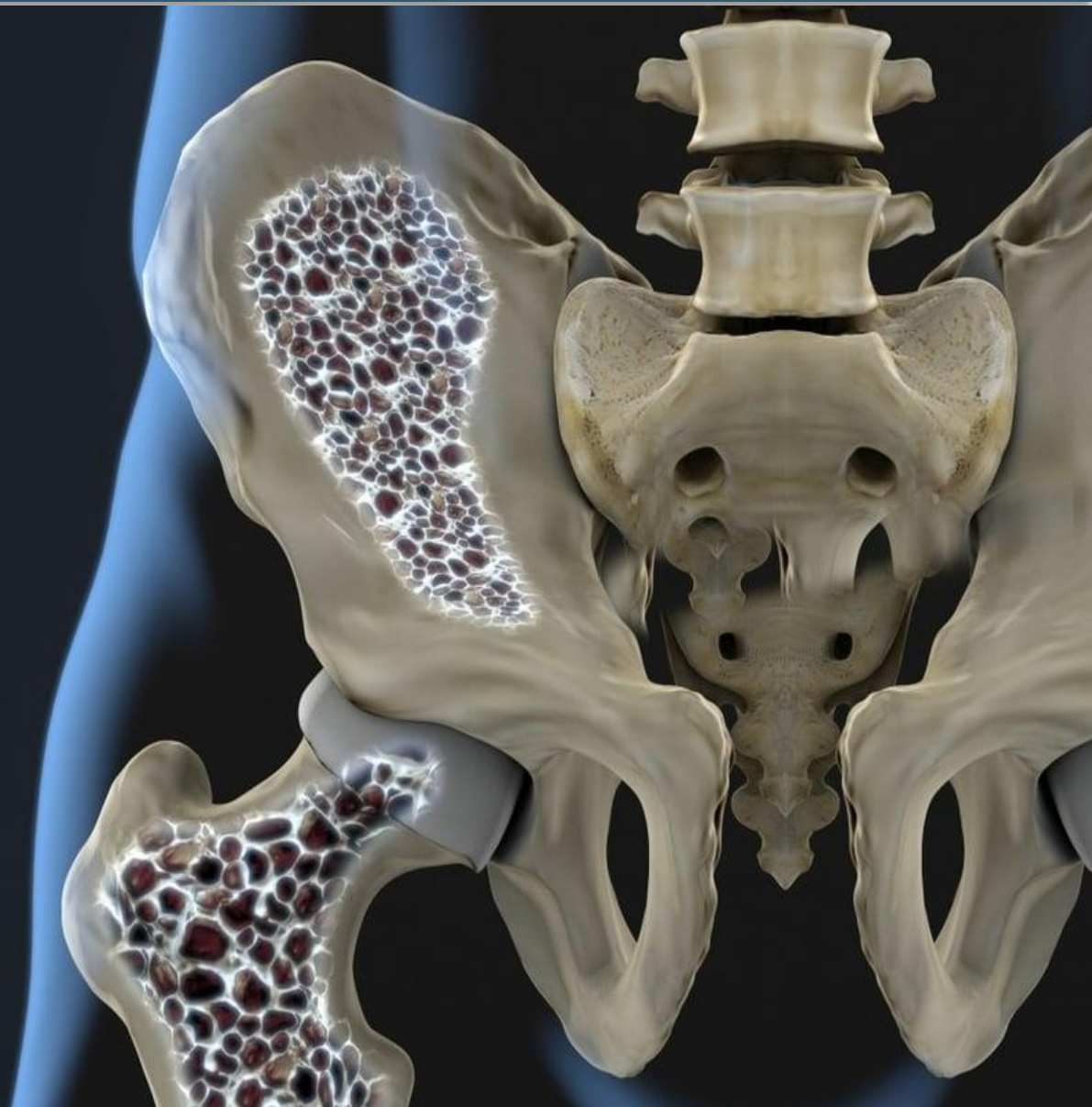


Sanchez-Rodriguez. Maturitas 2020; 139: 69-89

Update on osteoporosis

①	Diagnosis of osteoporosis	DXA	fracture & fracture risk
②	Treatment of osteoporosis	One size fits all	Individualized approach
③	Treatment of osteoporosis	Antiresorptive therapy	Osteoanabolic therapy
④	Treatment of osteoporosis	Supplement of 1g Ca & 800 IU vit D for all OP pts	Personalized intake



③ Treatment of osteoporosis: from antiresorptive therapy to anabolic therapy

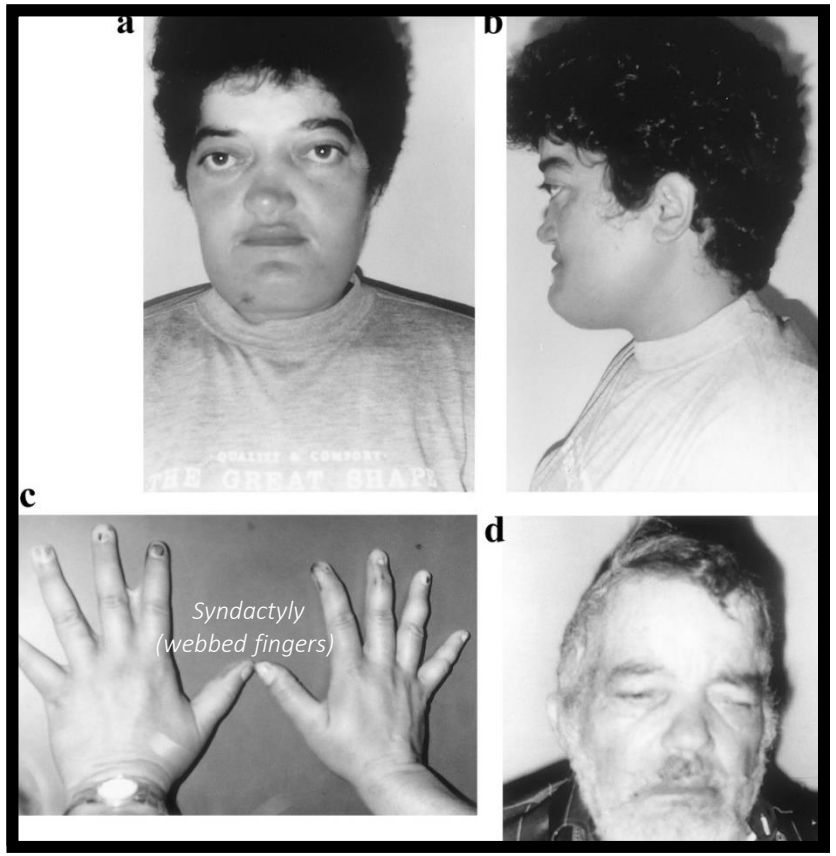
Overview of drugs for osteoporosis*

- **Antiresorptive medication**
  - Selective-estrogen receptor modulator
  - Bisphosphonates (e.g. Fosamax®, Aclasta®)
  - Denosumab (Prolia®)

- **Anabolic medication**
  - Teriparatide (Forsteo®)
  - Romosozumab (Evenity®) ← available in Belgium as of December 1st, 2021

* EMA approved

Sclerosteosis
(Truswell-Hansen disease)

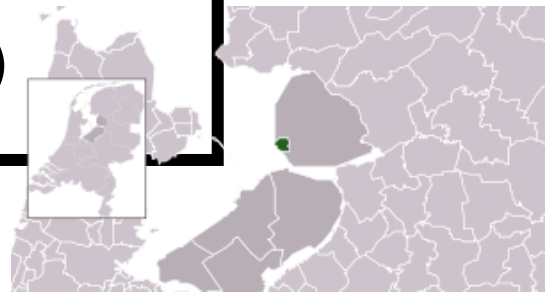


- First described in 1958
- Autosomal recessive disorder
- Most prominent in Afrikaner population in South Africa
- Progressive bone overgrowth, most pronounced in the skull and mandibule
- Increased intracranial pressure and entrapment of cranial nerves (eg. N. II, VII, VIII)
- Variable syndactyly, usually digit II and III
- Fractures have never been reported

Appelman-Dijkstra. In: GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2002; Appelman-Dijkstra. Endocrine 2016;52: 414-26

van Buchem disease
(Hyperostosis Corticalis Familaris Generalisata)

- Autosomal recessive disorder
- Described by prof. van Buchem in 1955
- Clinical features similar to sclerosteosis, but generally milder & no syndactyly
- Patients almost never fracture (very rarely after high-energetic trauma)
- Mainly in Urk (Flevoland, NL)



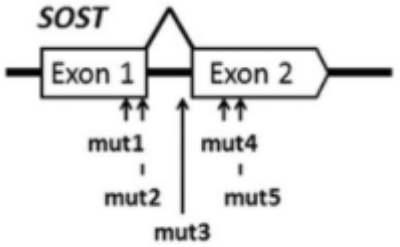
Appelman-Dijkstra. In: GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993-2002; Appelman-Dijkstra. Endocrine 2016;52: 414-26

Progressive bone overgrowth due to mutation in SOST gene

Mandibula in van Buchem disease

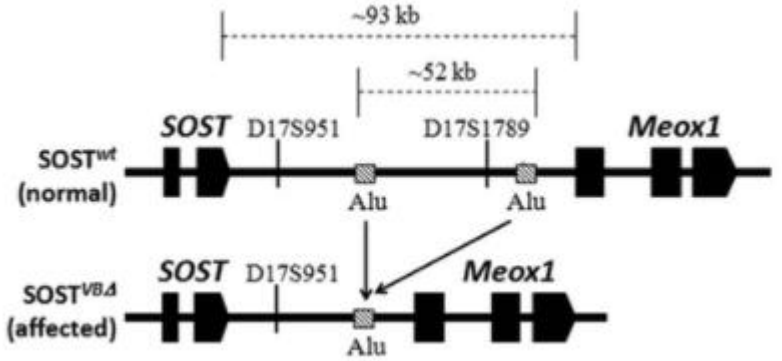
Normal mandibula

Sclerosteosis

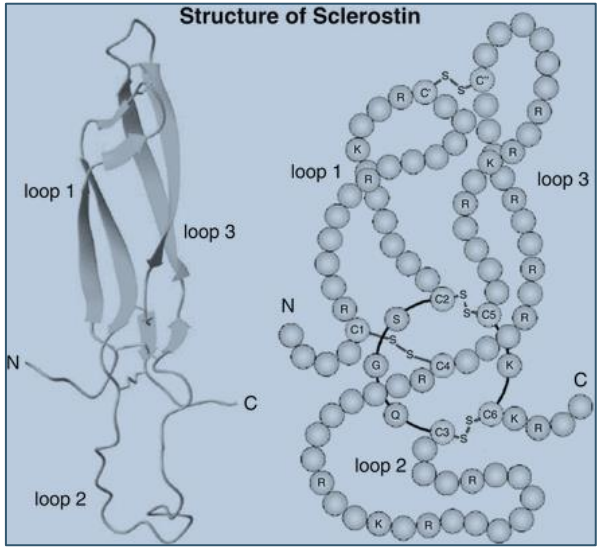


loss of function mutations in SOST gene
➔ *no sclerostin is synthesized*

Van Buchem disease



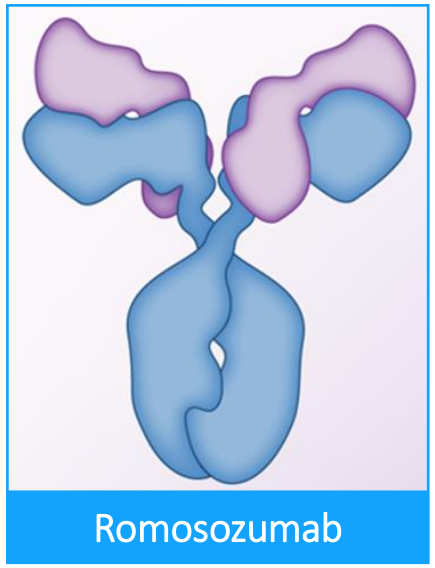
52 kb deletion downstream of SOST gene
➔ *reduced sclerostin production*



Sebastian. Bone 2017; 96: 76-84

Romosozumab (Evenity®)

- Monoclonal antibody that uncouples bone formation and resorption
- Quickly and strongly increases BMD and decreases the risk of subsequent fractures
- Superior to Alendronate in treatment-naive (ARCH) and Teriparatide in pre-treated (STRUCTURE) patients
- Effective and similar safety profile in postmenopausal women with mild-to-moderate chronic kidney disease
- Is contraindicated in patients with history of stroke or myocardial infarction



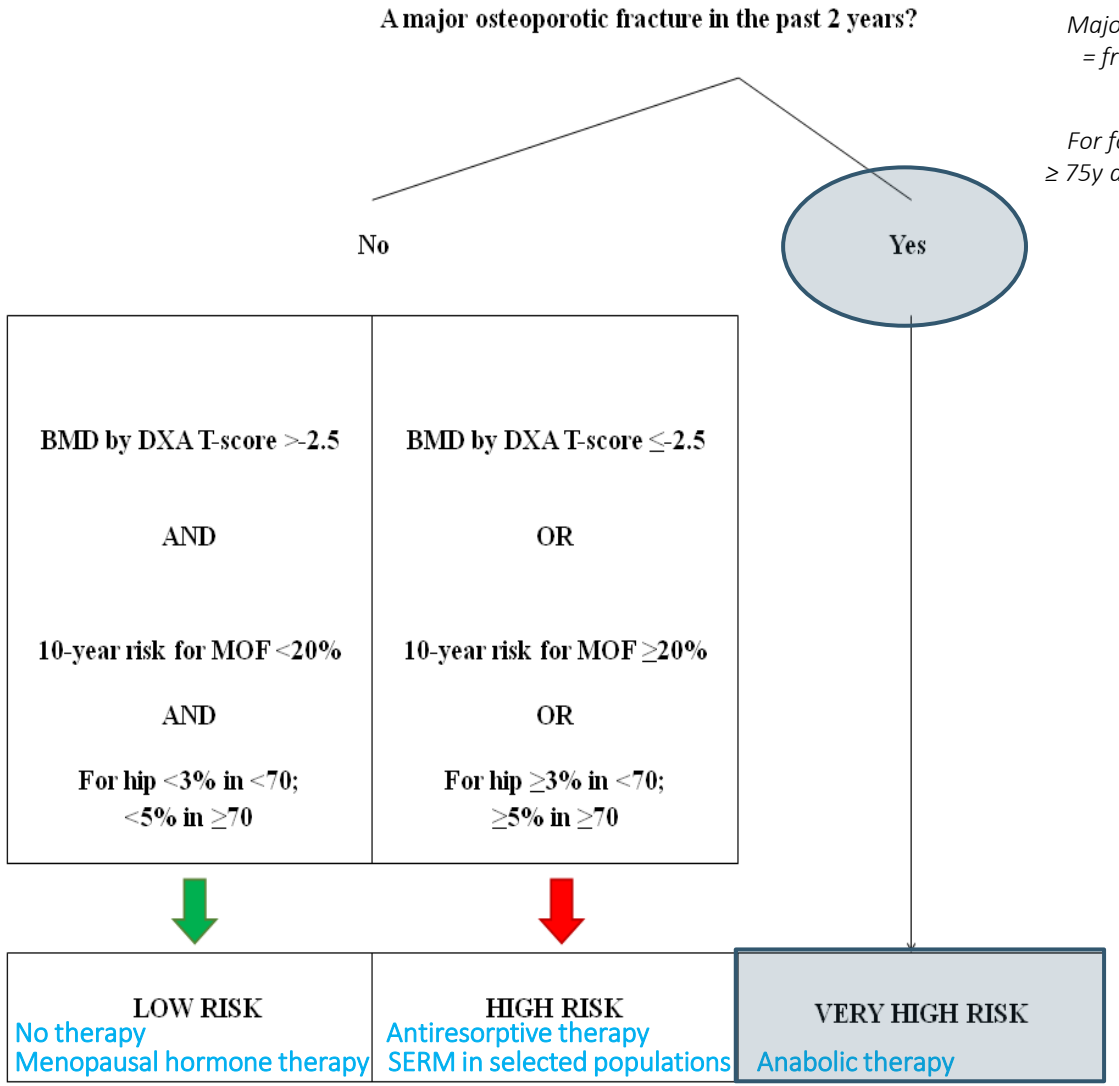
Romosozumab

- Is available for patients with recent major osteoporotic fractures defined by the 2020 BBC guidelines
- Is reimbursed in treatment-naive patients or patients on prior antiresorptive therapy

Saag. N Engl J Med 2017; 377: 1417-27; Langdahl. Lancet 2017;390:1585-94; Miller. J Bone Miner Res 2022; 37: 1437-45

Belgian Bone Club 2020 guidelines for the management of osteoporosis in postmenopausal women

Identification of persons at low, high and very high fracture risk

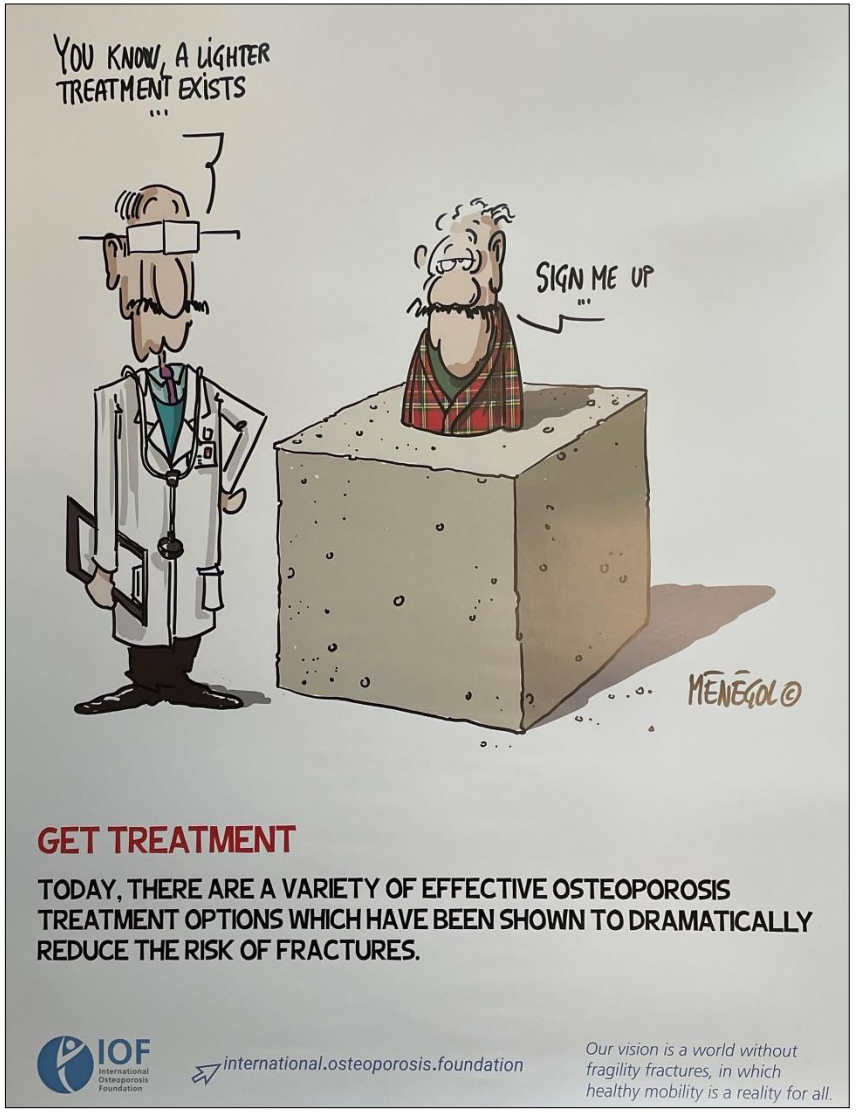


Major osteoporotic fracture (MOF) = fracture of vertebra, pelvis, hip, femur, humerus and forearm

For forearm fractures, only persons ≥ 75y are considered at very high risk

Sanchez-Rodriguez. Maturitas 2020; 139: 69-89

③ Treatment of osteoporosis: from antiresorptive therapy to anabolic therapy



75j of ouder met een heup, wervel, bekken, femur, humerus of pols fractuur

Secundaire Fractuur Preventie Vrouwen

Evaluatie nood aan calcium-vitamin D supplement via calcium vragenlijst

Verwijs naar geriatrische dagziekenhuis voor: anamnese + biochemische evaluatie + RX WZ

VG CVA of AMI?

NEE

JA

- Als **eGFR C-G ≥ 35 ml/min**: zoledronaat (Aclasta ®) 5 mg 1x/y i.v voor 5 jaar
- Als **eGFR C-G < 35 ml/min EN wervelfractuur** (≥25% en ≥4mm): Start Denosumab (Prolia®) door HA
- Als **eGFR C-G < 35 ml/min en GEEN wervelfractuur**: Plan DXA en suggereer start Prolia®sc 1x6md levenslang door HA

Bijkomende wervelfractuur (≥25% en ≥4mm)?

JA

NEE

Start Evenity® + Plan botraadpleging over 12 maanden

DXA

T-score <-2,5

T-score ≥-2,5

- **Heupfractuur** en eGFR C-G ≥35 ml/min: zoledronaat (Aclasta®) 5 mg 1x/y i.v voor 5 jaar
- **Initieel wervelfractuur**: zowel Aclasta® 5 mg 1x/y i.v voor 5 jaar als Prolia®sc 1x6md levenslang, mogelijk
- **Niet-heup, niet-wervelfractuur:** overweeg start generisch bisfosfonaat indien eGFR C-G ≥30ml/min

③ Treatment of osteoporosis: from antiresorptive therapy to anabolic therapy

Osteoporose : state of the art

In onze reeks "10 jaar De Specialist" is deze maand het gespreksonderwerp osteoporose. We hebben twee vooraanstaande specialisten uitgenodigd om hun persoonlijke kijk te geven op de ontwikkelingen binnen dit domein en op de uitdagingen voor de toekomst: Prof. Jean-Yves Reginster (Université de Liège) en Prof. Steven Boonen (Katholieke Universiteit Leuven).

Figuur 1. *Professor Steven Boonen*

"De toekomst voor osteoporosebehandeling ligt in de ontwikkeling van gebruiksvriendelijke en veilige maar ook krachtige botopbouwende medicatie."

Prof. Steven Boonen

De Specialist 2011

③ Treatment of osteoporosis: from antiresorptive therapy to anabolic therapy

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Romosozumab in Postmenopausal Women with Low Bone Mineral Density

Michael R. McClung, M.D., Andreas Grauer, M.D., Steven Boonen, M.D., Ph.D.,*
Michael A. Bolognese, M.D., Jacques P. Brown, M.D., Adolfo Diez-Perez, M.D., Ph.D.,
Bente L. Langdahl, Ph.D., D.M.Sc., Jean-Yves Reginster, M.D., Ph.D.,
Jose R. Zanchetta, M.D., Scott M. Wasserman, M.D., Leonid Katz, M.D.,
Judy Maddox, D.O., Yu-Ching Yang, Ph.D., Cesar Libanati, M.D.,
and Henry G. Bone, M.D.

ma 20-5-2013 10:04
Steven Boonen <steven.boonen@mac.com>
Fwd: 337 GP referral initiative
Aan Herman Borghs; Evelien Gielen
Cc Steven Boonen

Beste Herman en Evelien,

Vanuit (koud) Lissabon even meegeven dat ik met het Amgen-team heb samengezeten. Alle inspanningen van jullie kant heb ik nog eens internationaal kunnen toelichten, en men is daar ook heel dankbaar voor.
Ik ben deze week nog alleen woensdagvoormiddag tussen 9:00 en 11:00 beschikbaar. Zou dan even met jullie beiden willen samenzitten, om een nieuw initiatief te bespreken die onze recrutering in FRAME moet vooruithelpen.
Graag dus 30 minuten uittrekken voor gezamelijk overleg nu woensdag, ik stel voor om 9:00. Is erg belangrijk. Wil bijgevoegde documenten driemaal uitprinten en meebrengen.

Bedankt,

Steven

McClung. N Engl J Med 2014; 370: 412-20

Update on osteoporosis

①	Diagnosis of osteoporosis	DXA	fracture & fracture risk
②	Treatment of osteoporosis	One size fits all	Individualized approach
③	Treatment of osteoporosis	Antiresorptive therapy	Osteoanabolic therapy
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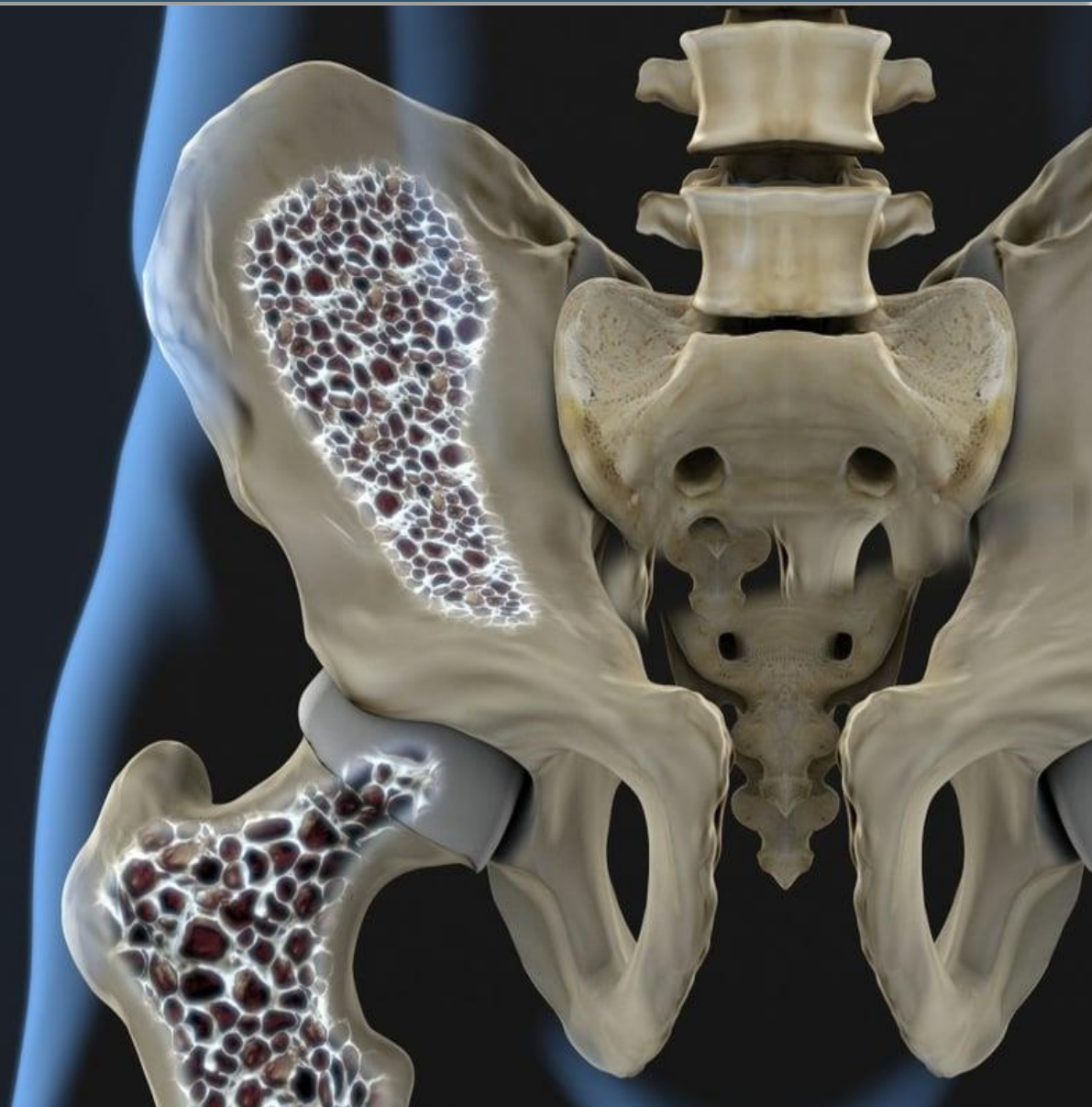
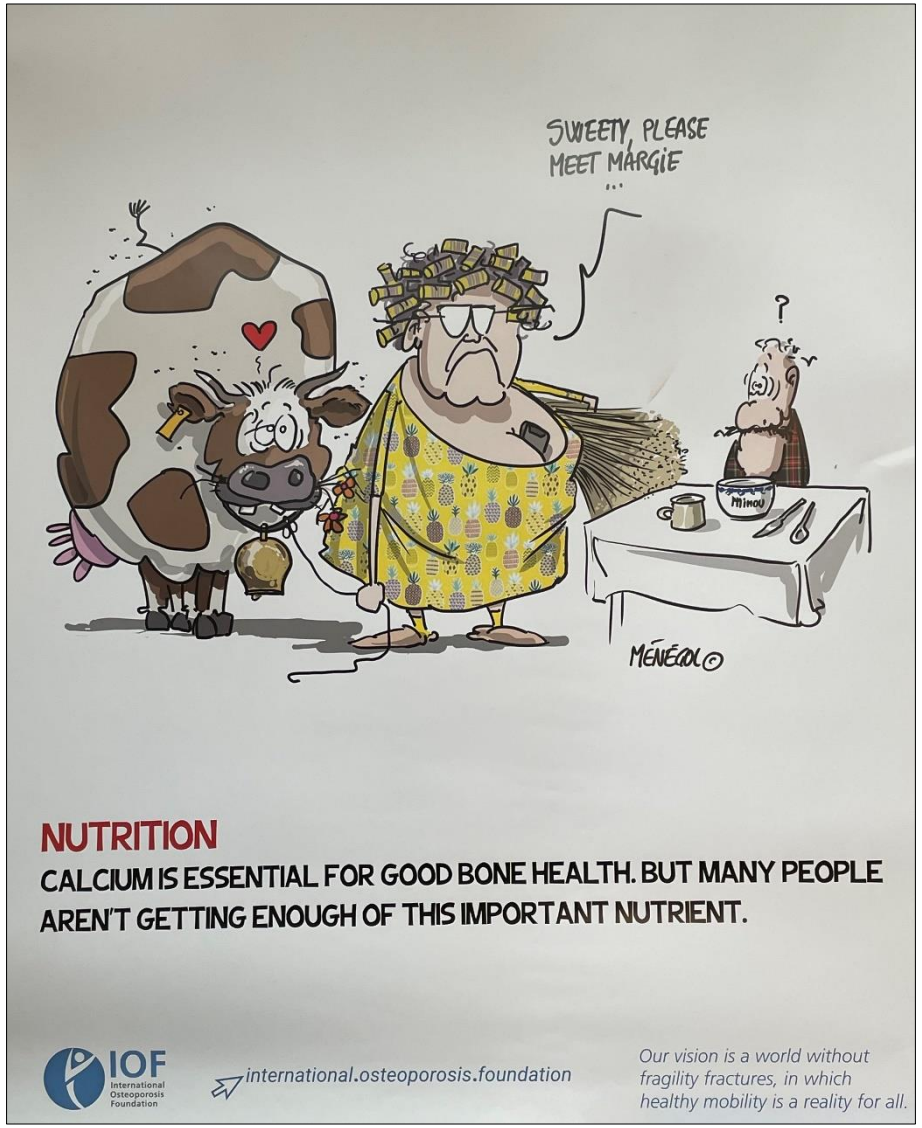


④ Treatment of osteoporosis: from 1g calcium & 800 IU vit D supplements for all patients with OP …



④ Treatment of osteoporosis: from 1g calcium & 800 IU vit D supplements for all patients with OP …

Recommended dietary allowance for calcium & vitamin D

Calcium		
	Recommended dietary allowance (mg/day)	Upper level intake (mg/day)
1-3 years	700	2500
4-8 years	1000	2500
9-13 years	1300	3000
14-18 years	1300	3000
19-30 years	1000	2500
31-50 years	1000	2500
51-70 years ♂	1000	2000
51-70 years ♀	1200	2000
> 70 years	1200	2000

Vitamin D		
	Recommended dietary allowance (IU/day)	Upper level intake (IU/day)
1-3 years	600	2500
4-8 years	600	3000
9-13 years	600	4000
14-18 years	600	4000
19-30 years	600	4000
31-50 years	600	4000
51-70 years ♂	600	4000
51-70 years ♀	600	4000
> 70 years	800 *needed to achieve 'optimal' serum 25OHD level*	4000

IOM Report 2011

④ Treatment of osteoporosis: from 1g calcium & 800 IU vit D supplements for all patients with OP …

Daily dietary calcium intake in men and women aged ≥ 65 years in Belgium		
	Men	Women
P10	324 mg	287 mg
P50	748 mg	676 mg
P90	1166 mg	1101 mg

SENECA investigators. Eur J Clin Nutr 1996, 50: S77-S85; Prof. Dr. Boonen - Osteoporose - UZ Leuven - YouTube

④ Treatment of osteoporosis:
from 1g calcium & 800 IU vit D supplements for all patients with OP …
… to personalized intake

Wat is uw ***gemiddelde*** inname van ...?
(graag ingevuld meebrengen op uw volgende raadpleging metabole botziekten)

1) **Melk**, een glas of tas? (150 ml)
Zowel volle, halfvolle of magere melk; ook karnemelk, chocomelk, calciumverrijkte sojadrink, enz.

..... keer per ..... (=> per dag of per week)

2) **Yoghurt, pudding of platte kaas**, een potje? (125 g)
Zowel volle, halfvolle of magere natuur- of fruityoghurt; ook chocolade of vanillepudding, enz.

..... keer per ..... (=> per dag of per week)

3) **Kaas of kaasgerecht**, een snede of portie? (30 g)
Ook b.v. een quiche, lasagne of pizza met kaas, ...

..... keer per ..... (=> per dag of per week)

4) Fles- of kraantjeswater: ..... glazen per dag (200ml)
Contrex/Hépar water: ..... glazen per dag

5) Appelsienen: ..... stuks per dag

6) Kan u heel weinig eten? (bv. door een ernstige ziekte) NEE / JA

7) Eet u (bijna) dagelijks groenten, fruit én bruin/grijs brood? NEE / JA

8) Gebruikt u andere calciumrijke voeding, bijvoeding, etc? NEE/ JA:
.....

9) Gebruikt u **<u>calcium supplementen</u>**? NEE/ JA, namelijk:

- ○ 500 mg 1x/dag
- ○ 500 mg 2x/dag
- ○ 1000 mg 1x/dag
- ○ Calx Plus® ..... keer/dag
- ○ Andere, namelijk: ..... (soort, dosis)

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- ○ Calx Plus® ..... keer/dag
- ○ Andere, namelijk: ..... (soort, dosis)

<u>Puntentelling</u> **(in te vullen door assistent)**

1) **<u>Melk</u>**: Minder dan 3x/week 0 punten
3-4 keer **per week** 1 punt
.... keer **per dag**, x2 punten = ... punten

2) **<u>Yoghurt</u>**: Minder dan 3x/week 0 punten
3-4 keer **per week** 1 punt
.... keer **per dag**, x2 punten = ... punten

3) **<u>Kaas</u>**: aantal per week x 0.5 punten = ... punten

4) **<u>Water</u>**:1 glas/dag 0 punten
2-3 glazen/dag 0.5 punt
4-5 glazen/dag 1 punt
6-8 glazen/dag 1.5 punt
9-10 glazen/dag 2 punten
Meer, namelijk ..... glazen/dag x 0.222... punten = afgerond...

<u>Contrex/Hépar</u>: .... glazen/dag x 1 punt = ... punten

5) **<u>Appelsienen</u>**: .... stuks/dag x 0.5 punt = ... punten

6) **<u>Weinig eten</u>**: Indien NEEN
7) **<u>Groenten, fruit & bruin/grijs brood</u>**: Indien JA
} +3 punten **<u>als</u>** beiden voldaan

8) Indien JA => calciumcontent opzoeken, zoniet onderschatting

9) **<u>Calcium supplementen</u>**:
500 mg = 5.5 punten
1000 mg of 2x500 mg = 11 punten
Calx plus® = ... bonbons x 6.5 punten = ... punten

Totale score: .....

PollEv.com/eveliengiele858
<u>What is your dietary calcium intake?</u>
A. < 7 points
B. 8 – 13 points
C. 14 – 22 points
D. ≥ 23 points

Wat is uw ***gemiddelde*** inname van ...?
(graag ingevuld meebrengen op uw volgende raadpleging metabole botziekten)

1) **Melk**, een glas of tas? (150 ml)
Zowel volle, halfvolle of magere melk; ook karnemelk, chocomelk, calciumverrijkte sojadrink, enz.

..... keer per ..... (=> per dag of per week)

2) **Yoghurt, pudding of platte kaas**, een potje? (125 g)
Zowel volle, halfvolle of magere natuur- of fruityoghurt; ook chocolade of vanillepudding, enz.

..... keer per ..... (=> per dag of per week)

3) **Kaas of kaasgerecht**, een snede of portie? (30 g)
Ook b.v. een quiche, lasagne of pizza met kaas, ...

..... keer per ..... (=> per dag of per week)

4) Fles- of kraantjeswater: ..... glazen per dag (200ml)
Contrex/Hépar water: ..... glazen per dag

5) Appelsienen: ..... stuks per dag

6) Kan u heel weinig eten? (bv. door een ernstige ziekte) NEE / JA

7) Eet u (bijna) dagelijks groenten, fruit én bruin/grijs brood? NEE / JA

8) Gebruikt u andere calciumrijke voeding, bijvoeding, etc? NEE/ JA:
.....

9) Gebruikt u **<u>calcium supplementen</u>**? NEE/ JA, namelijk:

- ○ 500 mg 1x/dag
- ○ 500 mg 2x/dag
- ○ 1000 mg 1x/dag
- ○ Calx Plus® ..... keer/dag
- ○ Andere, namelijk: ..... (soort, dosis)

<u>Puntentelling</u> **(in te vullen door assistent)**

1) **<u>Melk</u>**: Minder dan 3x/week 0 punten
3-4 keer **per week** 1 punt
.... keer **per dag**, x2 punten = ... punten

2) **<u>Yoghurt</u>**: Minder dan 3x/week 0 punten
3-4 keer **per week** 1 punt
.... keer **per dag**, x2 punten = ... punten

3) **<u>Kaas</u>**: aantal per week x 0.5 punten = ... punten

4) **<u>Water</u>**:1 glas/dag 0 punten
2-3 glazen/dag 0.5 punt
4-5 glazen/dag 1 punt
6-8 glazen/dag 1.5 punt
9-10 glazen/dag 2 punten
Meer, namelijk ..... glazen/dag x 0.222... punten = afgerond...

<u>Contrex/Hépar</u>: .... glazen/dag x 1 punt = ... punten

5) **<u>Appelsienen</u>**: .... stuks/dag x 0.5 punt = ... punten

6) **<u>Weinig eten</u>**: Indien NEEN
7) **<u>Groenten, fruit & bruin/grijs brood</u>**: Indien JA
} +3 punten **<u>als</u>** beiden voldaan

8) Indien JA => calciumcontent opzoeken, zoniet onderschatting

9) **<u>Calcium supplementen</u>**:
500 mg = 5.5 punten
1000 mg of 2x500 mg = 11 punten
Calx plus® = ... bonbons x 6.5 punten = ... punten

Totale score: .....

<u>Interpretatie:</u> <u>1 punt ≈ 90 mg calcium</u>
≤ 7 punten = ≤720 mg => 2x500 mg?
8-13 punten = 720-1170 mg => 1x500 mg?
14-22 punten = 1260-1980 mg => inname voldoende
≥ 23 punten = ≥ 2070 mg => excessieve inname?

Update on osteoporosis: conclusion

①	Diagnosis of osteoporosis	DXA	fracture & fracture risk
②	Treatment of osteoporosis	One size fits all	Individualized approach
③	Treatment of osteoporosis	Antiresorptive therapy	Osteoanabolic therapy
④	Treatment of osteoporosis	Supplement of 1g Ca & 800 IU vit D for all OP pts	Personalized intake

Update on diagnosis and treatment of osteoporosis

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