



Challenges of managing patients with osteoporosis during and after the COVID-19 pandemic in Europe

Treatments, bone densitometry, social distancing, self-isolation and bone health

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Disclosures

- **Fees for lectures and consultancy**

- Abbvie, Amgen, Arrow, BMS, Chugai, Expanscience, Gilead, HAC-Pharma, LCA, Lilly, Medac, MSD, Pfizer, Thuasne, TEVA and UCB

- **Research grants or investigator fees**

- Amgen, Bone Therapeutics, Chugai, HAC-Pharma, MSD, Novartis, Pfizer, and UCB

URGENCES



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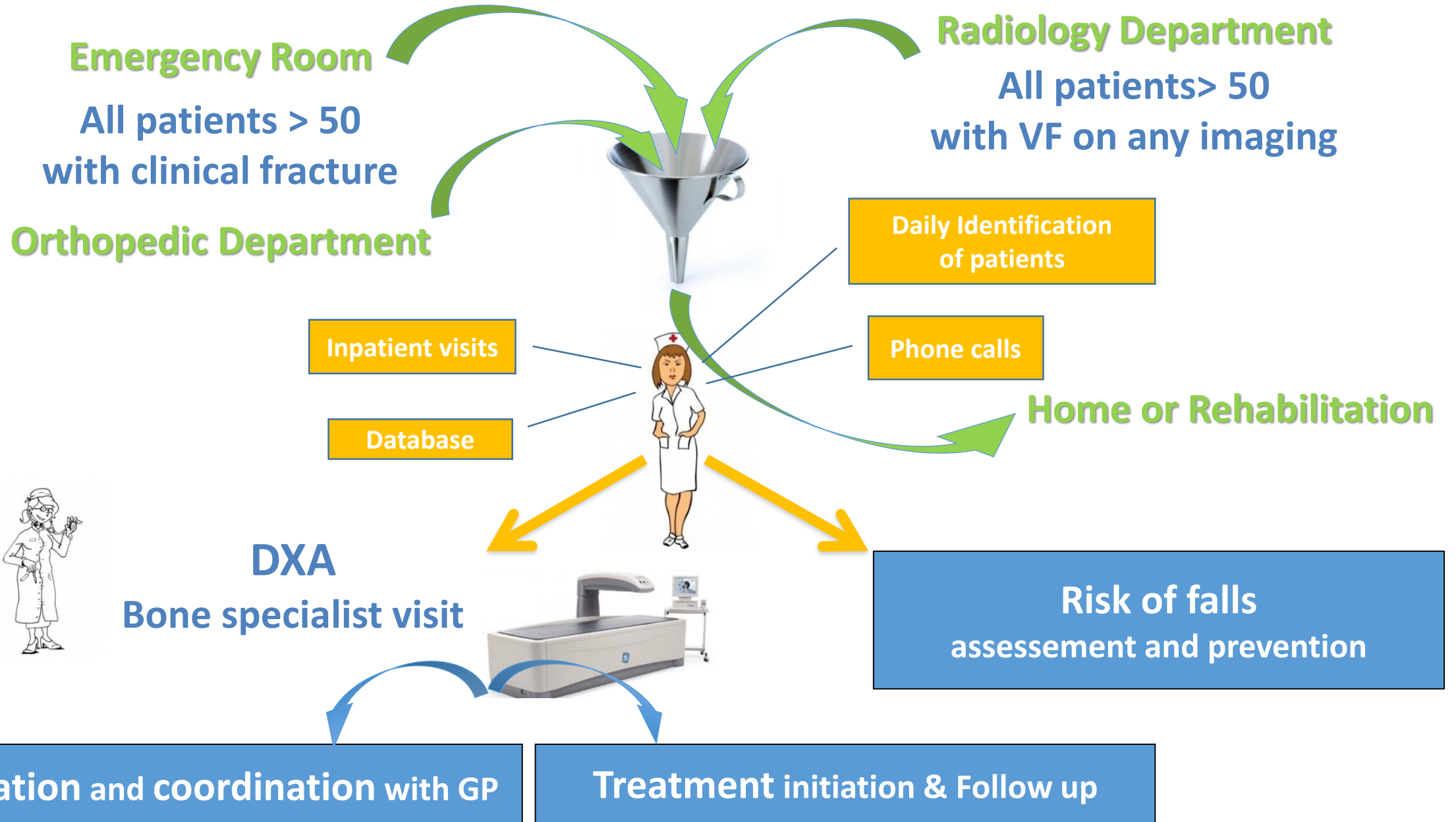
VEHICULE DE SECOURS ET D'ASSISTANCE AUX VICTIMES



LES SAUVETEURS



The optimal fracture liaison service (FLS)



Simplified procedures in FLS

In exceptional circumstances of stretched hospital systems

- Establish pathways in the trauma / orthopaedic centers
 - to **initiate** appropriate osteoporosis therapy
 - **before discharge** from the orthopaedic ward,
 - to **eligible patients** above 65 years with a major fragility fracture of the hip, spine, humerus and **pelvis**
 - **without a DXA scan**
 - **in absence of contra-indications**

Simplified procedures in FLS

When returning to normal

- Keep a **list** of those **patients with fragility fractures** for **further evaluation** and treatment once services start returning to normal, ideally within 6 months after the fracture
- As hospital services restart, **be pro-active** in re-opening the DXA/VFA access **as soon as possible**

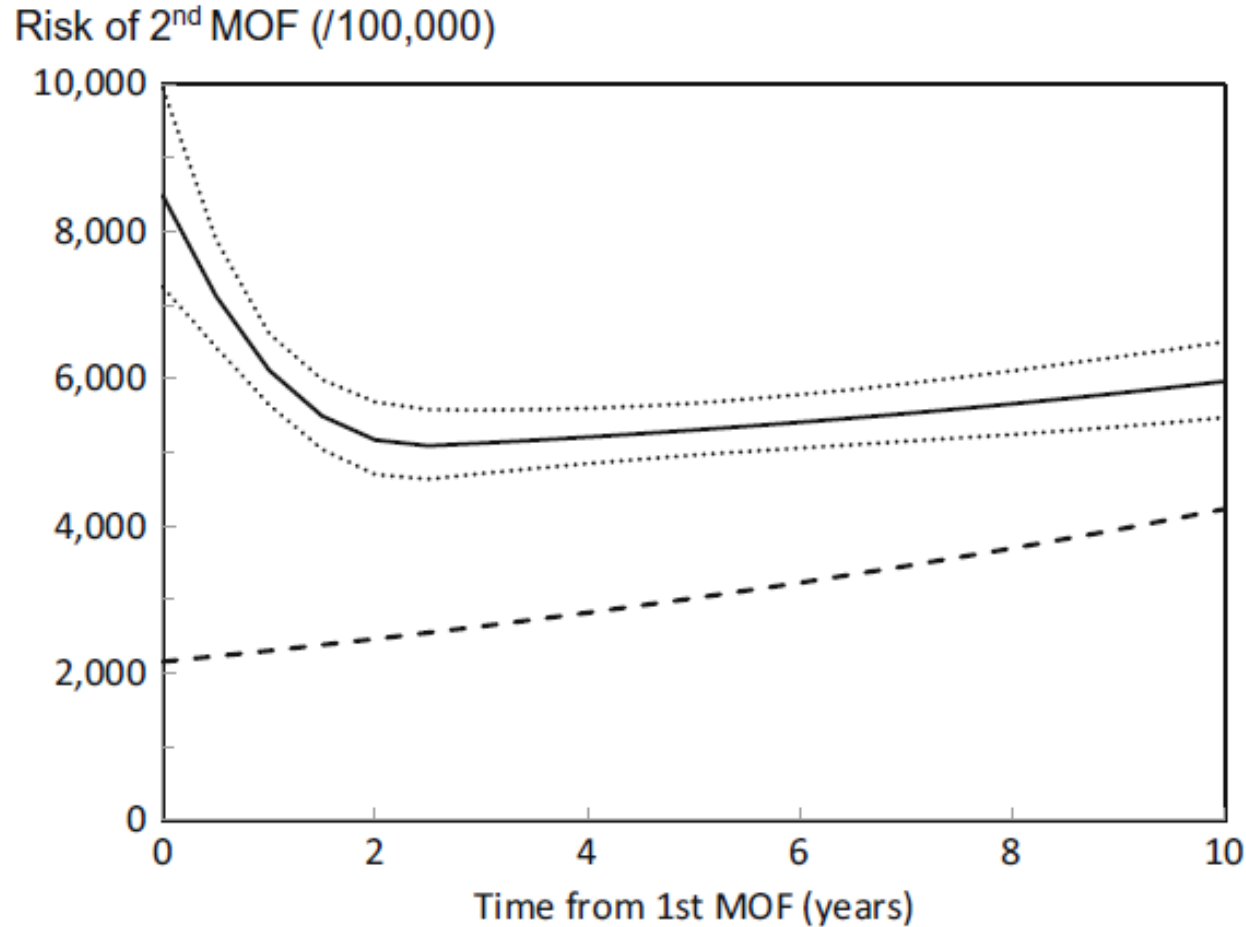
Prerequisite for therapy

A minimal blood test

- normal adjusted serum **calcium**
- serum **25OH vitamin D** of at least **50 nmol/L**
- **Creatinine** clearance of **> 30 to 35 ml/mn** depending on drug use

Imminent risk of fracture

Risk of a 2nd major osteoporotic fracture after the 1st one for a woman aged 75



Population-based cohort of 18,872 men and women born between 1907 and 1935 in Iceland - Fractures were documented over 510,265 person-years
5038 individuals sustained one or more MOFs, of whom 1919 experienced a second MOF

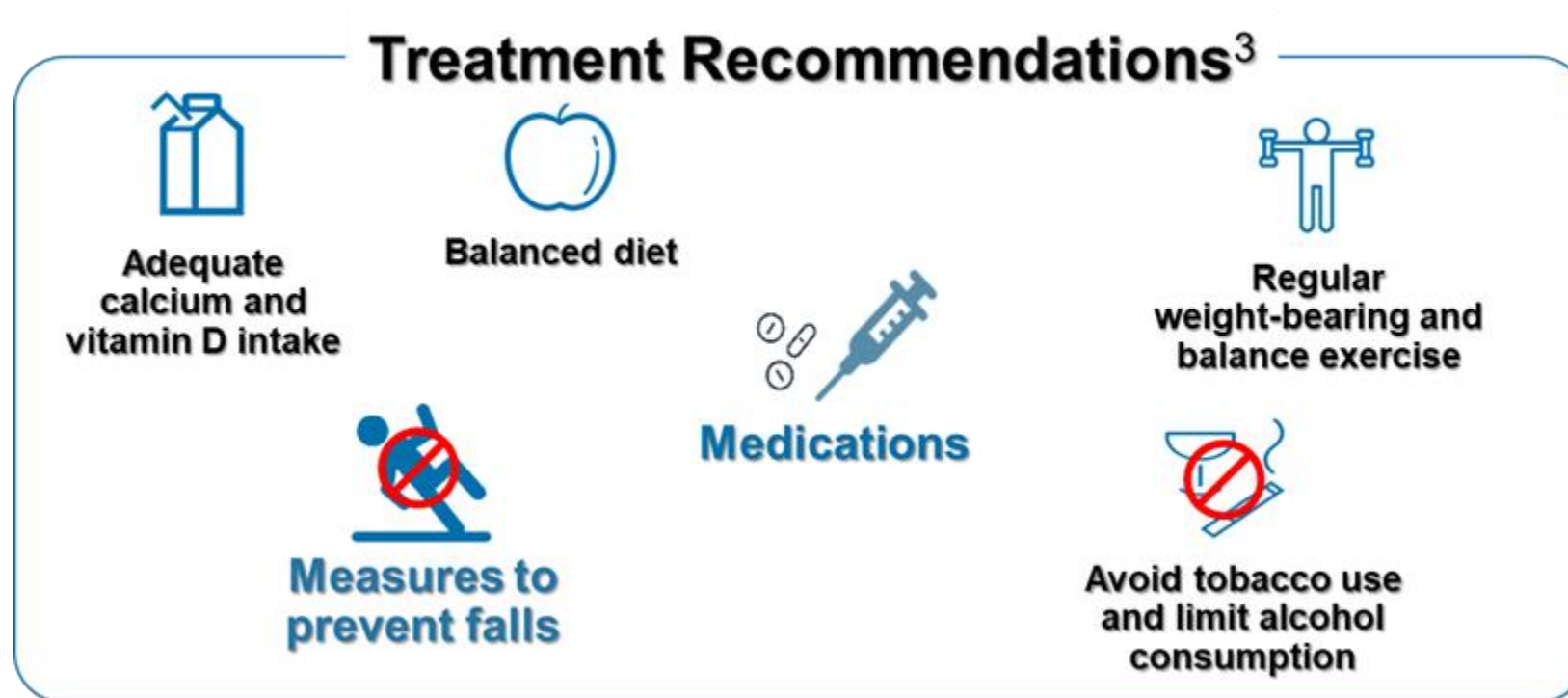
Knots for the spline function are set at 0.5, 2.5 and 15 years of follow-up after the first fracture

The dashed line is the risk of first MOF in whole population (n = 18,872) for a woman 75 years at baseline

Johansson H. Osteoporos Int 2017;28:775-780

Initiating medications is part of a global therapeutic strategy¹

Help patients to be **proactive** in their treatment
rather than reactive^{1,2}



1. Covello VT, et al. Solutions to an Environment in Peril. 2001;164-178. www.psandman.com/articles/covello.htm. Accessed February 13, 2018; 2. Besser SJ, et al. Arch Osteoporos. 2012;7:115-124; 3. Camacho PM, et al. Endocr Pract. 2016;22(Suppl 4):1-42; Image adapted with permission from Servier Medical Art. www.servier.com. Creative Commons CC-BY-3.0.

Images adapted and licensed (royalty-free) from the Noun Project, Inc. www.thenounproject.com.

Treatment choice

- **Zoledronate** can be given **within 2 weeks** of a hip fracture if the patient is eligible
- A **fever** may occur shortly **after the zoledronate** infusion and will be limited with **paracetamol preventive use**
- Special attention to appropriately **schedule the next dose of denosumab**
- Start with an **oral bisphosphonate** (ALN 70 mg per week or RIS 35 mg per week)
- **Teriparatide** may need brief self-injection **training**

Treatment renewal

Patients under IV or SC drugs

- *Teriparatide*
 - No rebound of bone cellular activities
 - A sustained decrease in the risk of fracture following treatment withdrawal
 - Biological **effects not persistent**
 - Necessary to add an antiresorptive agent **within 3 months**

Treatment renewal

Patients under IV or SC drugs

- *Denosumab*
 - Adjustment period narrow beyond 6 months after the previous injection
 - Effect quickly dissipating with a **rebound** in bone remodeling **within a few weeks**
 - Denosumab next injection **should not be postponed**

- *Zoledronic acid*
 - The infusion **can be postponed** from one to several months

Some unknowns

- **Risk of mortality** following major fracture in patients having COVID 19 in the 3 months after the fracture event
- **Risk of major fracture** (hip, pelvis, vertebra, humerus) in osteoporotic patients who had COVID 19
- **Risk of falls** under social distancing and self-isolation circumstances
- **Treatment use** under same conditions
- **Safety** of anti-osteoporotic drugs during pandemic



CHALLENGES OF MANAGING PATIENTS WITH OSTEOPOROSIS DURING AND AFTER THE COVID- 19 PANDEMIC IN EUROPE

Adolfo Diez-Pérez, MD, PhD
Hospital del Mar Institute of Medical
Investigation
CIBER of Frailty and Healthy Aging

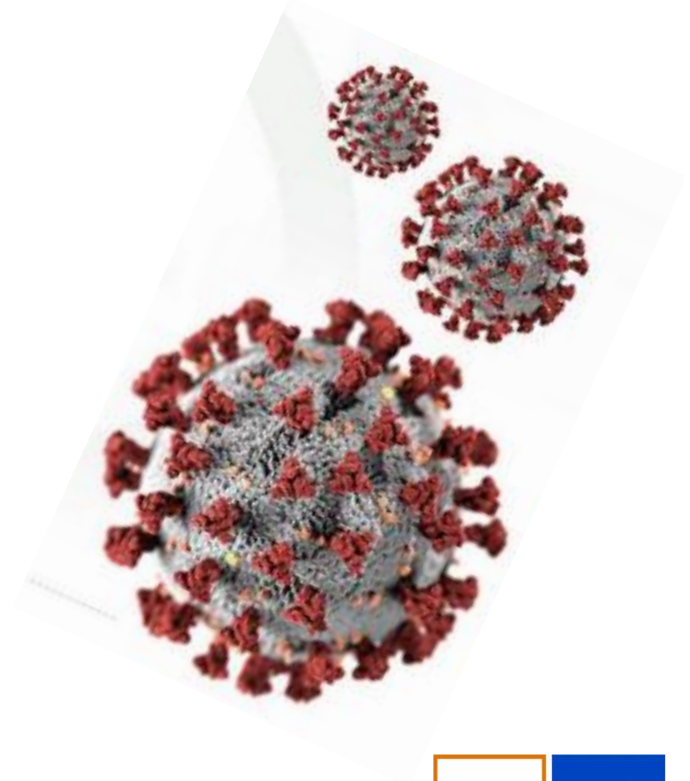


Disclosures

- **Consultant or speaker for AMGEN, UCB, Lilly, Gilead, Theramex**
- **Shareholder of Active Life Sci**

Agenda

- **Clinical assessment**
- **Remote consultations/Telemedicine**
- **Self-injection**
- **Changes in practices for healthcare practitioners**



CLINICAL VIGNETTE

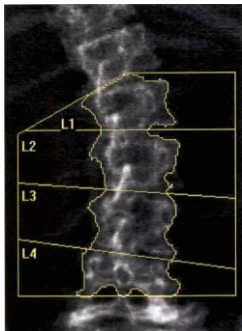
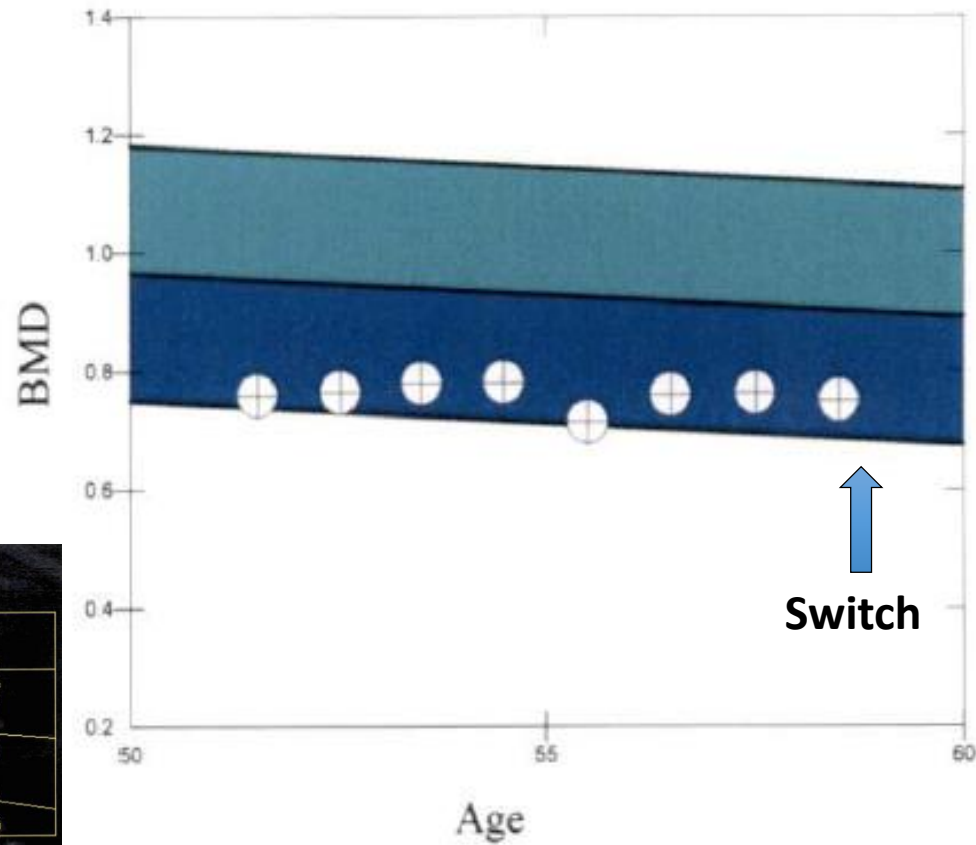
- **60 years old lady**
- **History of multiple fractures**
- **Scoliosis**
- **Weekly alendronate for 4 years**
- **Two new fractures while on treatment**
- **Switch to denosumab sc/6 mo, 23 months ago (3 doses)**

CLINICAL VIGNETTE

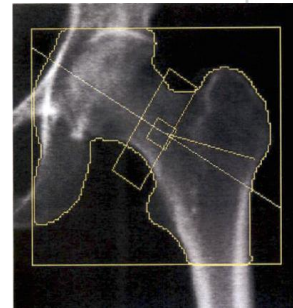
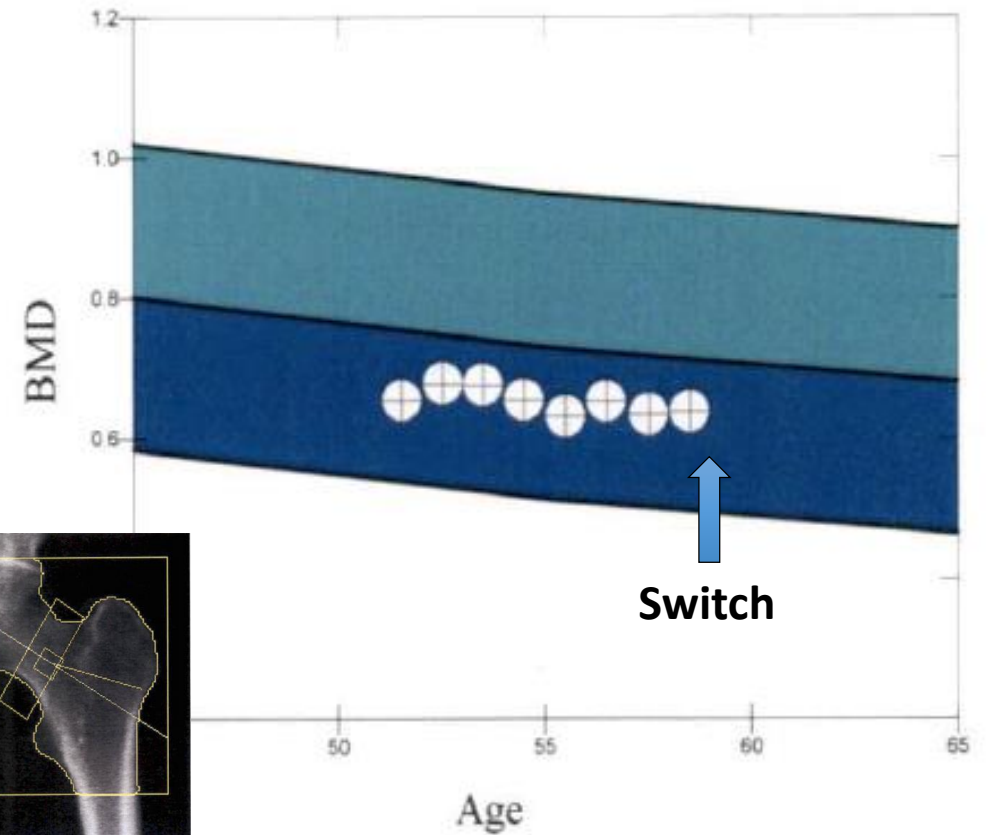


CLINICAL VIGNETTE

L1-L4



Neck



CLINICAL VIGNETTE

- **Five days of fever (up to 38.7°C)**
- **Dry cough**
- **General malaise**
- **Mild diarrhea**
- **SaO₂: 97%**
- **Chest X-Ray: mild basal infiltrate**
- **PCR SARS-CoV-2 (COVID-19): Positive**
- **Next dose of denosumab scheduled in two weeks**

Remote consultation: Telehealth

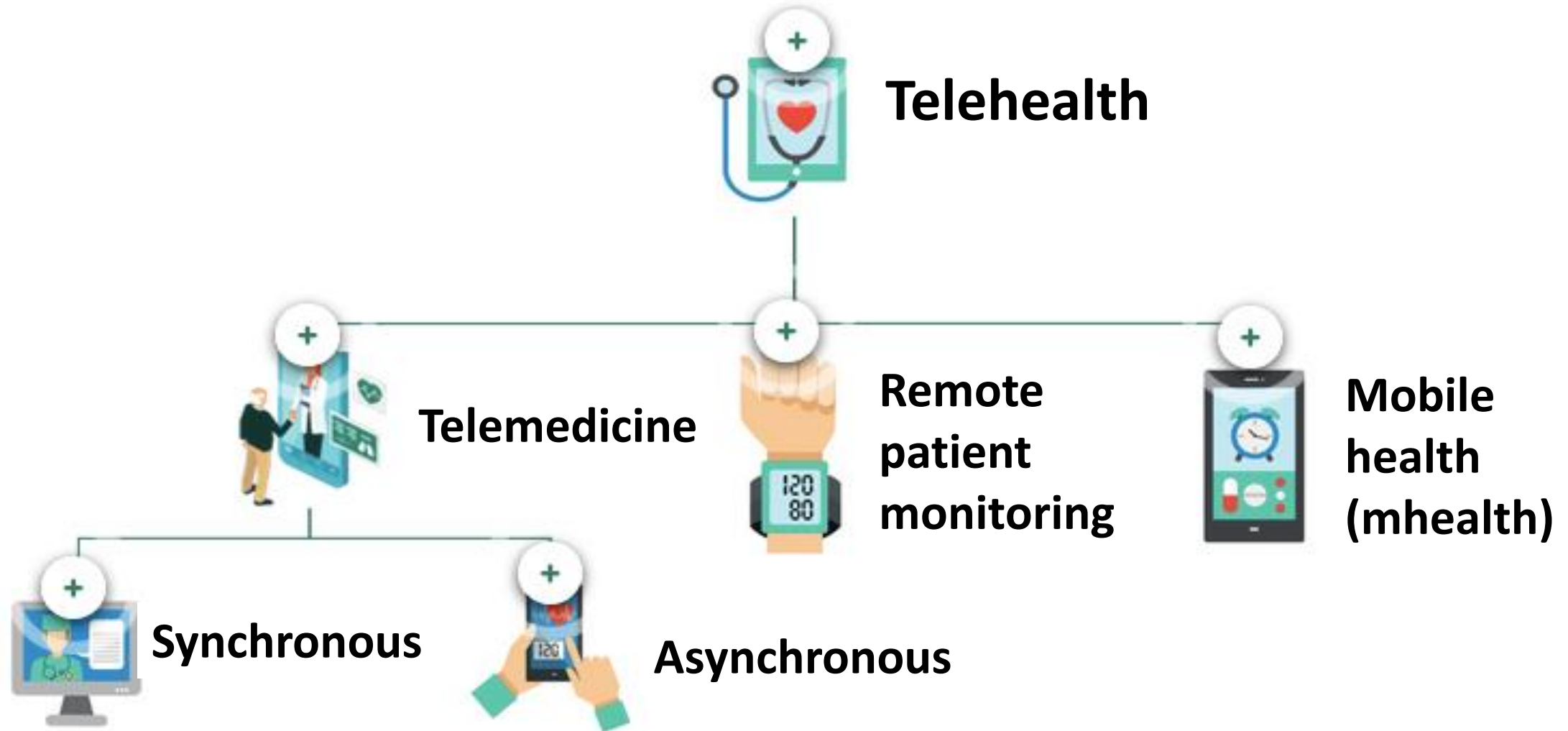


Butler JAMA 2020; 323: 2450-51

COVID-19 transforms telehealth into an essential service

- COVID-19 has changed the paradigm of face-to-face visits, leading to an increased adoption of telehealth
- What is meant by “telehealth”?
 - Interactive, electronic exchange of information for diagnosis, intervention, or ongoing care management remotely
- Rapid expansion during COVID-19 pandemics

Telehealth interactions



<https://assets.acponline.org/telemedicine>

Telehealth During Pandemics: advantages

- Remote triage
- Remote surveillance
- Continuity of chronic disease management
- Face-to-face visits only for the sickest patients
- Decreases the risk of person-to-person transmission
- Keeps the health care workforce safe
- Allow physicians symptom-free, but in quarantine, to provide patient care remotely.
- Relieve strain on the local health care workforce

COVID-19 transforms telehealth into an essential service

- What is meant by “telehealth”?
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Telehealth modalities

 Real-time virtual interaction

 Remote patient monitoring

 Asynchronous store-and-forward

COVID-19 transforms telehealth into an essential service

- What is meant by “telehealth”?
 - Interactive, electronic exchange of information for diagnosis, intervention, or ongoing care management remotely

Patient-provider

Virtual visits

Wearables and home exams

Secure messaging

Patient-provider service potentials

- **Video visits, telephone, text, e-mail**
- **Mobile phone applications**
- **Voice-interface applications (Amazon Alexa, Google Voice, Apple Siri)**
- **Mobile sensors (smartwatches)**
- **Wearable devices**
- **Chatbots**
- **Hospital-at-Home**

Chatbot on COVID-19

Answers to Your COVID-19 Questions

Great! To ask a question, type it into the box below.

What is coronavirus?

The World Health Organization states that Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to a more severe lung infection. COVID-19 is the disease caused by a novel coronavirus.

Will it go away in the summer?

At this time, it is not known whether the spread of COVID-19 will decrease when weather becomes warmer. There is much more to learn about the transmissibility, severity, and other features associated with COVID-19 and investigations are ongoing.

Ask something... [Feedback](#)

Answers to Your COVID-19 Questions

How many days ago did your fever start?

3 or fewer days

Are you 60 years of age or older?

Yes

Based on your answers we need to speak with you. Please call Penn Medicine OnDemand at 215-615-2222 to schedule an appointment. When you talk to a clinician, tell them you used the COVID Chatbot and your code is C2. Write down this code so you don't forget it! C2

Restart symptom checker

Ask a question

Ask something... [Feedback](#)

COVID-19 transforms telehealth into an essential service

- What is meant by “telehealth”?
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Provider-provider

E-consults

Implantables

Second opinion consults

Telehealth and osteoporosis



<http://impulsesport.ca/telehealth-services/>

Home - News & Multimedia - News Stories -

COVID-19 and osteoporosis

MARCH 25, 2020

Stay safe and well informed. Here we provide some helpful information for older adults and people with osteoporosis.



This article can be read in [French](#), [Japanese](#), [Spanish](#), [Russian](#), [Mandarin](#), [Malay*](#) and [Farsi](#). As well, an [Arabic-language video on COVID-19 & Osteoporosis](#) is available (courtesy of the Saudi Osteoporosis Society)*

Clinical assessment: Initial

- Anamnesis
 - Family history
 - Previous fractures
 - Risk factors (modifiable/non-modifiable): age, gender, physical activity, falls,...
 - Social support, isolation, pain, depression, etc.
- Comorbidities, etc.

Calculation Tool

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

Country: **UK** 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/cm²)
 Select BMD

BMI: 22.2

The ten year probability of fracture (%)

without BMD	
Major osteoporotic	23
Hip Fracture	3.8

[View NOGG Guidance](#)



Weight Conversion

Pounds → kg

Height Conversion

Inches → cm

07424638

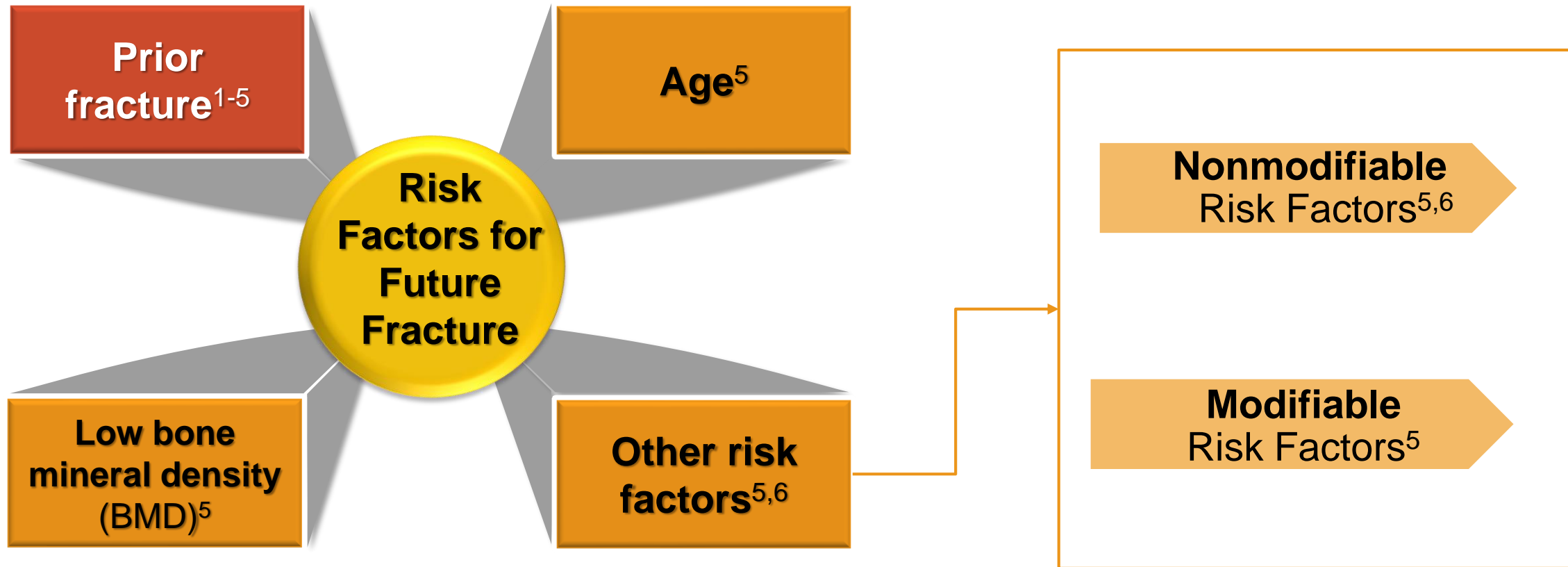
Individuals with fracture risk assessed since 1st June 2011

[Print tool and information](#)

Risk factors

theros.org.uk

Prior Fragility Fracture Is an Important Predictor of Future Fracture Risk, Along With Other Risk Factors



BMI=body mass index

1. Kanis JA, et al. *Bone*. 2004;35:375-382.
2. Kanis JA, et al. *Lancet*. 2002;359:1929-1936.
3. Black DM, et al. *J Bone Miner Res*. 1999;14:821-828.
4. Eisman JA, et al. *J Bone Miner Res*. 2012;27:2039-2046.
5. Cosman F, et al. *Osteoporos Int*. 2014;25:2359-2381.
6. US Department of Health and Human Services. Bone health and osteoporosis: a report of the surgeon general. 2004. Rockville, MD.

Recent Guideline Updates Provide Consistent Understanding of Fracture Risk

VERY HIGH RISK*

If one or more of the below is true[†]:

- Fx within past 12 months^{1,4}
- Multiple Fxs^{1-3§}
- Fx while on OP Tx¹
- Fx while on medication harmful to bone¹
- Very low T-score < -3.0 ^{1-3§}
- FRAX probability $>30\%$ MOF, $>4.5\%$ hip^{1,4}

HIGH RISK*

If any of the below is true[†]:

- Age: postmenopausal¹⁻⁴ +
- Prior Fx (>12 mos) **or**¹⁻³
- T-score ≤ -2.5 **or**¹⁻³
- T-score -1.0 to -2.5 **and** FRAX probability $\geq 20\%$ MOF **or** $\geq 3\%$ hip¹⁻³

LOW RISK*

If all of the below are true^{†‡}:

- Age: postmenopausal^{2,3}
- No prior Fx^{2,3}
- T-score > -1.0 **and** FRAX probability $< 20\%$ MOF **and** $< 3\%$ hip^{2,3}

BMD = bone mineral density; FRAX = Fracture Risk Assessment Tool; Fx = fracture; MOF = major osteoporotic fracture; OP = osteoporosis; Tx = treatment. *Regional and local guidelines may override certain of these criteria based on differences in FRAX data and cost-effectiveness thresholds. † If FRAX not available, major determinants of risk should include age, BMD, fractures, and medication harmful to bone. ‡ IOF-ESCEO defers to local guidelines for definitions of low risk.§ENDO requires both risk factors to be met for very high risk categorization
1. Camacho PM, et al. Endocr Pract. 2020;26:564-570. 2. Shoback D, et al. J Clin Endocrinol Metab. 2020;105(3):1-8. 3. Eastell R, et al. J Clin Endocrinol Metab. 2019;104:1595-1622. 4. Kanis JA, et al. Osteoporos Int. 2020;31:1-12.

Clinical assessment: Follow up

- Anamnesis
 - New or worsening symptoms
 - Physical activity, falls, diet
 - Social support, isolation, depression, etc.
- Medication compliance
- Renew/change prescriptions
- Criteria for referral

Considerations during Telehealth visits for patients with osteoporosis

- Importance of continuing therapy in patients with established bone health plans

Considerations during Telehealth visits for patients with osteoporosis

- Importance of continuing therapy in patients with established bone health plans
- In patients with new fracture who require DXA and lab tests to initiate therapy – consider alternate options for delivery of care

Considerations during Telehealth visits for patients with osteoporosis

- Importance of continuing therapy in patients with established bone health plans
- In patients with new fracture who require DXA and lab tests to initiate therapy – consider alternate options for delivery of care
 - DXA may not be needed depending on type of fracture (i.e. Hip)
 - Use of online risk calculators to aid in decision making (i.e. FRAX, Garvan, American Bone Health)

ASBMR, Endocrine Society, ACE, ECTS: Recommendations

Apr 14, 2020 | Webinar

ASBMR Webinar Panel on Treating Patients with Osteoporosis During the COVID-19 Pandemic

Matthew Drake, M.D., Ph.D., Mayo Clinic, Rochester, Minnesota, USA, Doug Bauer, M.D., University of California, San Francisco, California, USA, Bart Clarke, M.D., Mayo Clinic, Rochester, Minnesota, USA, Elena Tsourdi, M.D., Technische Universität Dresden, Germany, Elaine Yu, M.D., MMSc, Massachusetts General Hospital, Harvard Medical School, Boston, USA

https://www.asbmr.org/education-detail?cid=b92753f3-0a28-4f37-9a58-6ded595a7b40#.Xs_Nlj9S8UR

Yu EW et al. J Bone Miner Res 2020. DOI: 10.1002/jbmr.4049



ASBMR, Endocrine Society, ACE, ECTS: Recommendations

- Denosumab:
 - Consider a delay in treatment.
 - If the delay exceeds one month, consider a temporary transition to an oral bisphosphonate.
- Teriparatide, abaloparatide, or romosozumab:
 - Consider a delay in treatment.
 - If the delay exceeds three months, consider a temporary transition to oral bisphosphonate.
- IV bisphosphonate:
 - Delays (even months) unlikely to be harmful.

What about our patient?

The patient

- She recovered from the infection in 6-7 days
- Fever and respiratory symptoms disappeared
- Denosumab dose was delayed for an extra week
- The drug was self-injected by the patient: easy and approved in all countries (except USA)

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 - ↳ No need to contact with providers, health facilities, other patients, etc..

The patient

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- The drug was self-injected by the patient: easy and approved in all countries (except USA)

↳ No need to contact with providers, health facilities, other patients, etc...

↳ Avoids risk of transmission

Future development of telehealth

Expansion of telehealth in Europe



Home > News > Research & Innovation News > Telehealth services experiencing an explosion of demand due to the coronavirus

News

Research & Innovation News

Telehealth services experiencing an explosion of demand due to the coronavirus

20th March 2020

<https://www.healtheuropa.eu>



Artificial Intelligence in Medicine and



Gómez-González, E. and Gómez, E., Artificial Intelligence in Medicine and Healthcare: applications, availability and societal impact, EUR 30197 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-18454-6, <https://ec.europa.eu/jrc/en/publication>

[jrc120214 ai in medicine and healthcare report-aiwatch v50.pdf](#)

EU JRC Science for Policy Report

- Artificial Intelligence (AI): a subfield of computer science where machines can imitate human intelligence
- In the USA, AI applications in Medicine can save \$150 billion in annual health costs by 2026

Future applications

Fields to explore

Issues

Potential risks

Conclusions

- COVID-19 has changed the paradigm of face-to-face visits with patients
- Decreased access to physicians during COVID-19 highlight the importance of telemedicine to ensure care continuity and fracture risk prevention
- We are at the beginning of telemedicine and AI applications in medical care

Be warm, compassionate and close to your patient!

Thank you very much for your attention



Q & A



Prof Nicholas Harvey



Prof Thierry Thomas



Prof Adolfo Diez-Perez

THANK YOU

On behalf of IOF, we thank you for your participation in this webinar

with support from Amgen Europe

AMGEN