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
The optimal fracture liaison service (FLS)

Orthopedic Department
- All patients > 50 with clinical fracture

Emergency Room
- All patients > 50 with VF on any imaging

Radiology Department
- Risk of falls assessment and prevention

Home or Rehabilitation
- Daily Identification of patients
- Phone calls

Database
- Inpatient visits

DXA
- Bone specialist visit

Information and coordination with GP

Treatment initiation & Follow up
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.
Initiating medications is part of a global therapeutic strategy\(^1\)

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

**Treatment Recommendations**\(^3\)

- **Adequate calcium and vitamin D intake**
- **Balanced diet**
- **Regular weight-bearing and balance exercise**
- **Medications**
- **Measures to prevent falls**
- **Avoid tobacco use and limit alcohol consumption**


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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**

Richez C et al. Joint Bone Spine 19 May 2020, E-pub ahead
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

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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
CLINICAL VIGNETTE

• Five days of fever (up to 38.7°C)
• Dry cough
• General malaise
• Mild diarrhea
• $\text{SaO}_2$: 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

https://www.healtheuropa.eu
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

https://assets.acponline.org/telemedicine
COVID-19 transforms telehealth into an essential service

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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

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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

Herriman M et al. NEJM Catalyst 2020, June 18
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**Provider-provider**

- E-consults
- Implantables
- Second opinion consults
Telehealth and osteoporosis

http://impulsesport.ca/telehealth-services/
Stay safe and well informed. Here we provide some helpful information for older adults and people with osteoporosis.
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: NNN

Questionnaire:
1. Age (between 40 and 90 years) or Date of Birth
   - Age: 60
   - Year: Y
   - Month: M
   - Day: D
2. Sex
   - Male
   - Female
3. Weight (kg)
   - 59
4. Height (cm)
   - 163
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

Risk factors

Print tool and information
Prior Fragility Fracture Is an Important Predictor of Future Fracture Risk, Along With Other Risk Factors

Risk Factors for Future Fracture

- Prior fracture
- Low bone mineral density (BMD)
- Age
- Other risk factors

Nonmodifiable Risk Factors

- Modifiable Risk Factors

BMI=body mass index

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
- Multiple Fxs
- Fx while on OP Tx
- Fx while on medication harmful to bone
- Very low T-score ≤ -3.0
- FRAX probability >30%

**HIGH RISK***

If any of the below is true†:

- Age: postmenopausal
- Prior Fx (>12 mos) or
- T-score ≤-2.5 or
- T-score -1.0 to −2.5 and FRAX probability ≥20% MOF or ≥3% hip

**LOW RISK***

If all of the below are true‡:

- Age: postmenopausal
- No prior Fx
- T-score > -1.0 and FRAX probability <20% MOF and <3% hip

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

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

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• 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.

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

  Avoids risk of transmission
Future development of telehealth
Expansion of telehealth in Europe

Telehealth services experiencing an explosion of demand due to the coronavirus

20th March 2020

https://www.healtheuropa.eu
Artificial Intelligence in Medicine and Healthcare


jrc120214_ai_in_medicine_and_healthcare_report-aiwatch_v50.pdf
• 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