

Romosozumab: when, who and why?

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Drug treatments for osteoporosis

Antiresorptive

- Bisphosphonates
 - Alendronic acid
 - Risedronate
 - Zoledronic acid
 - Ibandronate
- Denosumab
- HRT (seldom used)

Anabolic

- Teriparatide
- **Romsozumab**

Other

- Strontium ranelate

Supplements

- Calcium & Vitamin D

Romosozumab – a novel anabolic agent

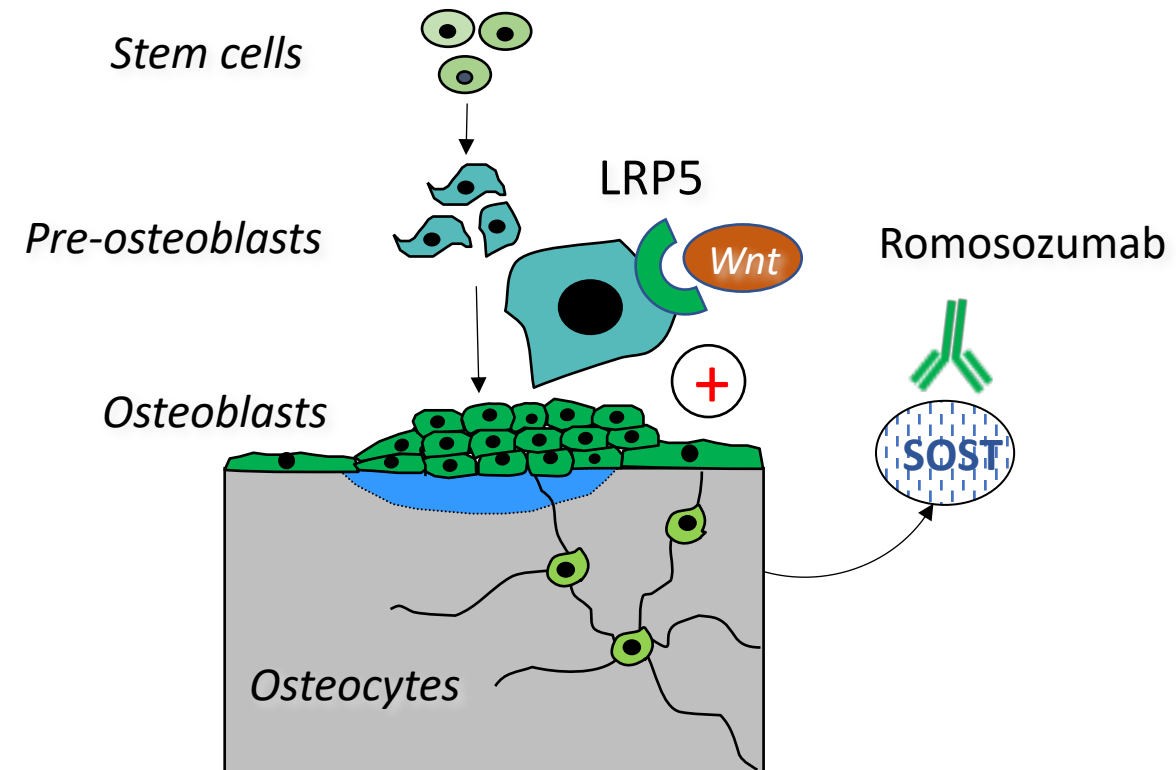
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

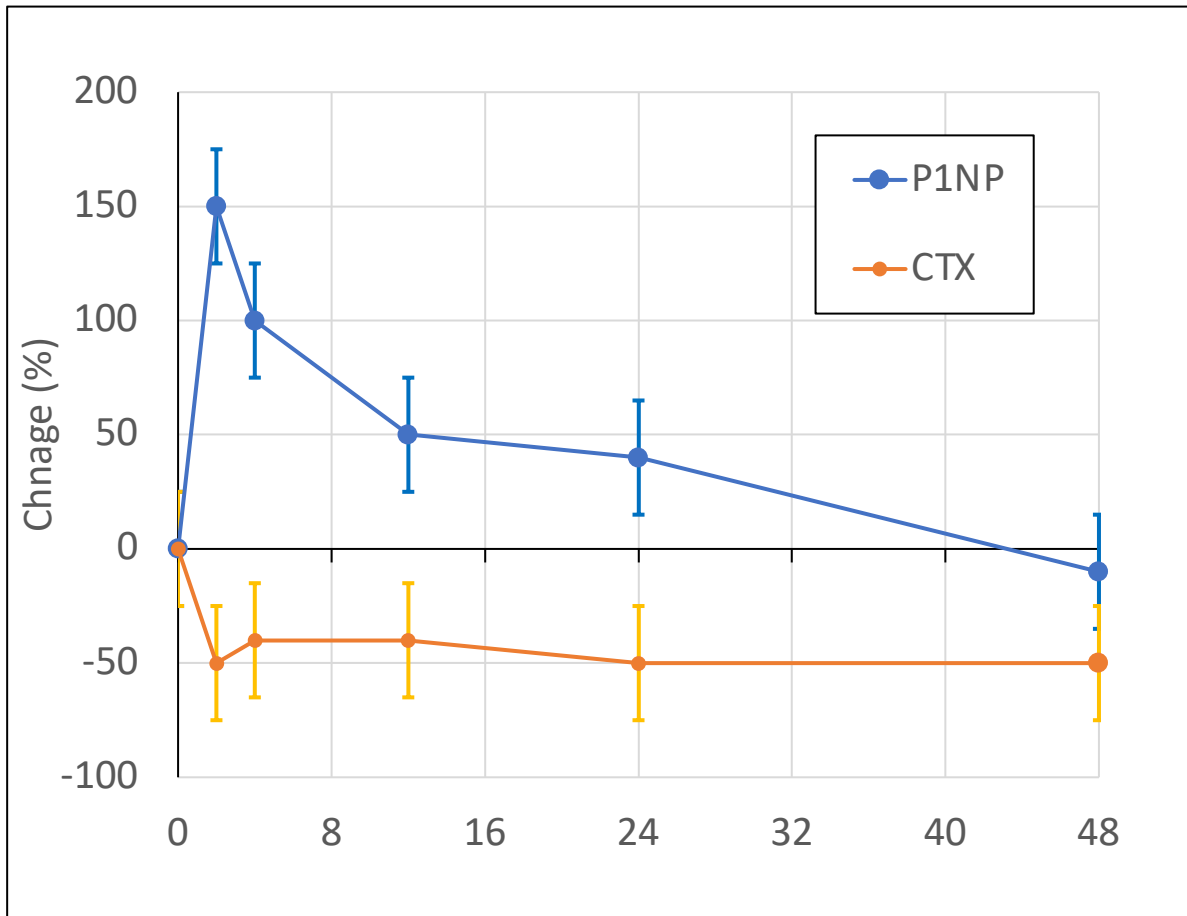
Romosozumab Treatment in Postmenopausal Women with Osteoporosis

F. Cosman, D.B. Crittenden, J.D. Adachi, N. Binkley, E. Czerwinski, S. Ferrari,
L.C. Hofbauer, E. Lau, E.M. Lewiecki, A. Miyauchi, C.A.F. Zerbini, C.E. Milmont,
L. Chen, J. Maddox, P.D. Meisner, C. Libanati, and A. Grauer

ABSTRACT



Romosozumab has a unique mechanism of action



- Stimulates bone formation (P1NP) within 2 weeks but effect wears off after 12 months
- Inhibits bone resorption (CTX) for >12 months
- Powerful anabolic effect at 12 months
 - 13.6% increase in spine BMD
 - 6.8% increased in total hip BMD

Randomised trial of romosozumab versus alendronic acid in severe osteoporosis

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ORIGINAL ARTICLE

Romosozumab or Alendronate for Fracture Prevention in Women with Osteoporosis

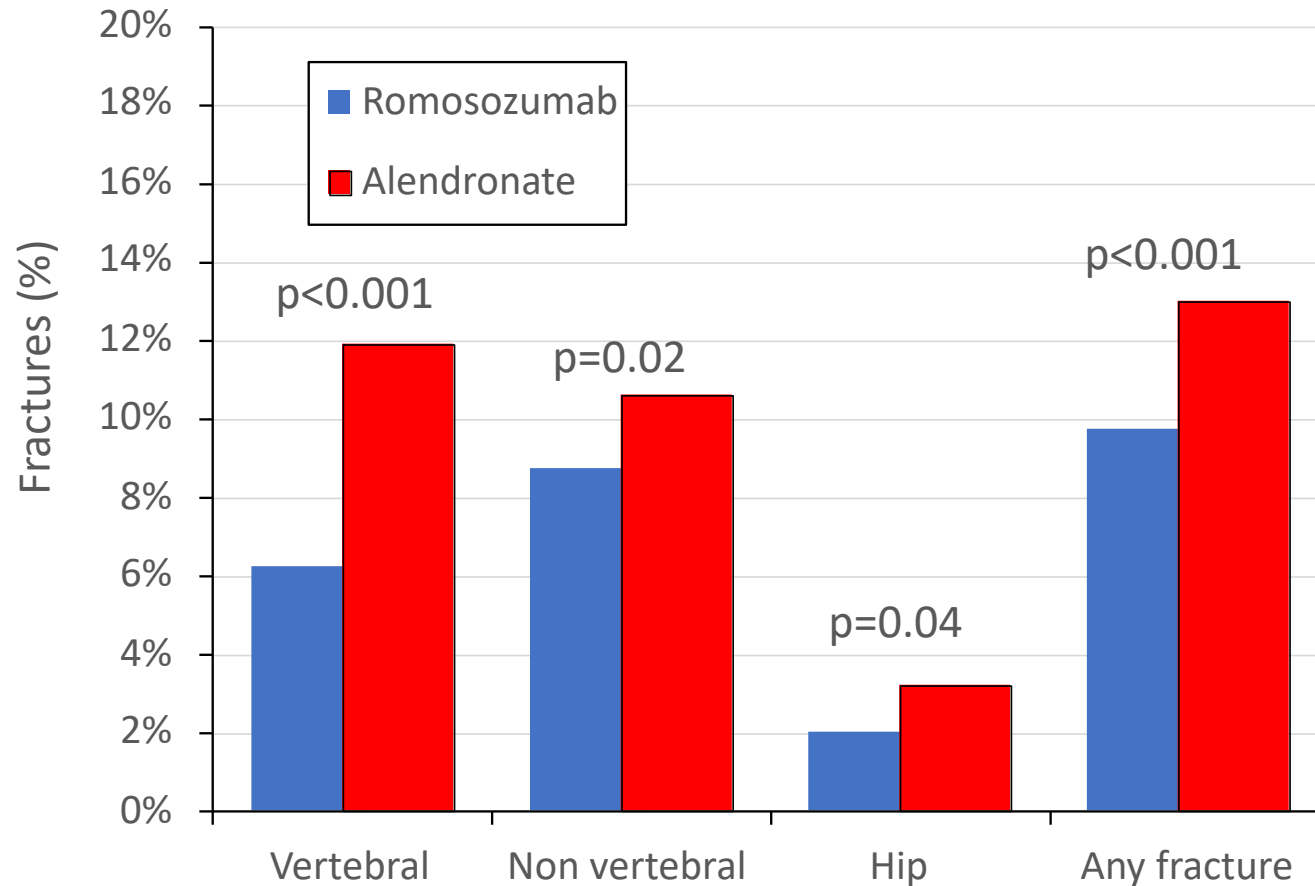
Kenneth G. Saag, M.D., Jeffrey Petersen, M.D., Maria Luisa Brandi, M.D.,
Andrew C. Karaplis, M.D., Ph.D., Mattias Lorentzon, M.D., Ph.D.,
Thierry Thomas, M.D., Ph.D., Judy Maddox, D.O., Michelle Fan, Ph.D.,
Paul D. Meisner, Pharm.D., and Andreas Grauer, M.D.

ABSTRACT

BACKGROUND

Romosozumab is a monoclonal antibody that binds to and inhibits sclerostin, increases bone formation, and decreases bone resorption.

Romosozumab is superior to alendronate at preventing all fractures in osteoporosis



- **Relative risks:**
- Vertebral: 0.52 [0.40-0.66]
- Hip: 0.62 [0.42-0.92]
- Non-vertebral: 0.81 [0.66-0.99]
- Any fracture: 0.73 [0.61-0.88]

SMC advice

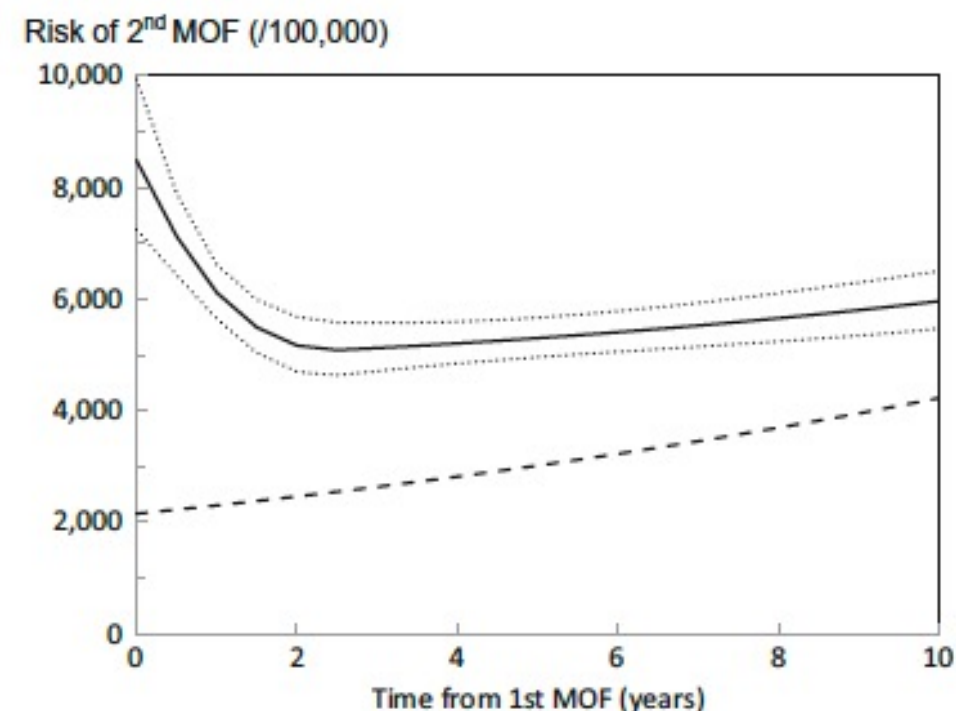
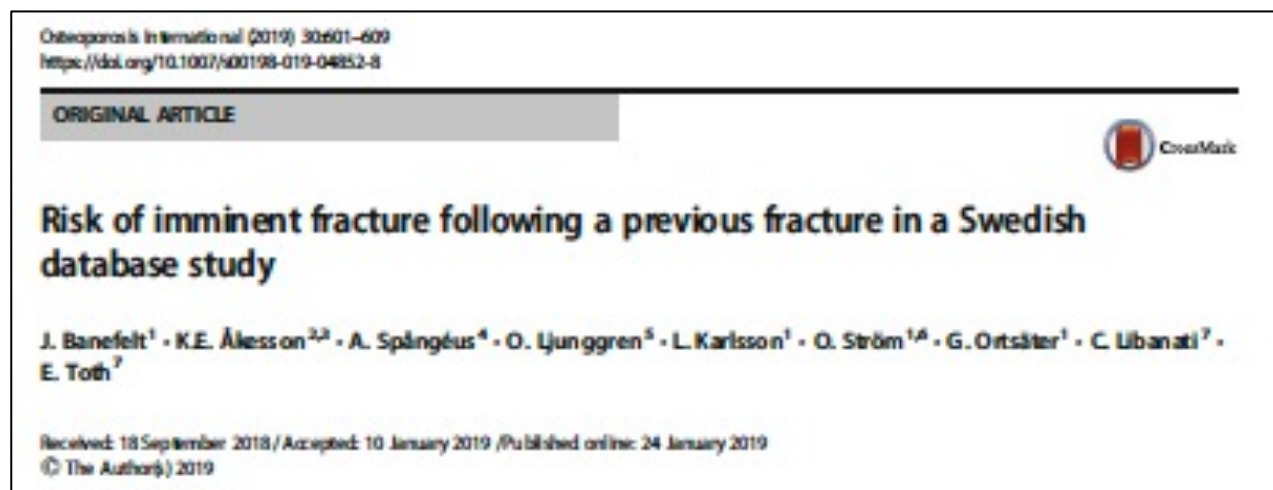
romosozumab (Evenity®) is accepted for restricted use within NHSScotland.

Indication under review: treatment of severe osteoporosis in postmenopausal women at high risk of fracture.

SMC restriction: to use in patients who have experienced a fragility fracture and are at imminent risk of another fragility fracture (within 24 months).

In a phase III study in post-menopausal women with osteoporosis who were at high risk of fracture, romosozumab for 12 months followed by an oral bisphosphonate reduced the risk of fractures compared with an oral bisphosphonate alone.

What is an imminent risk of fracture?



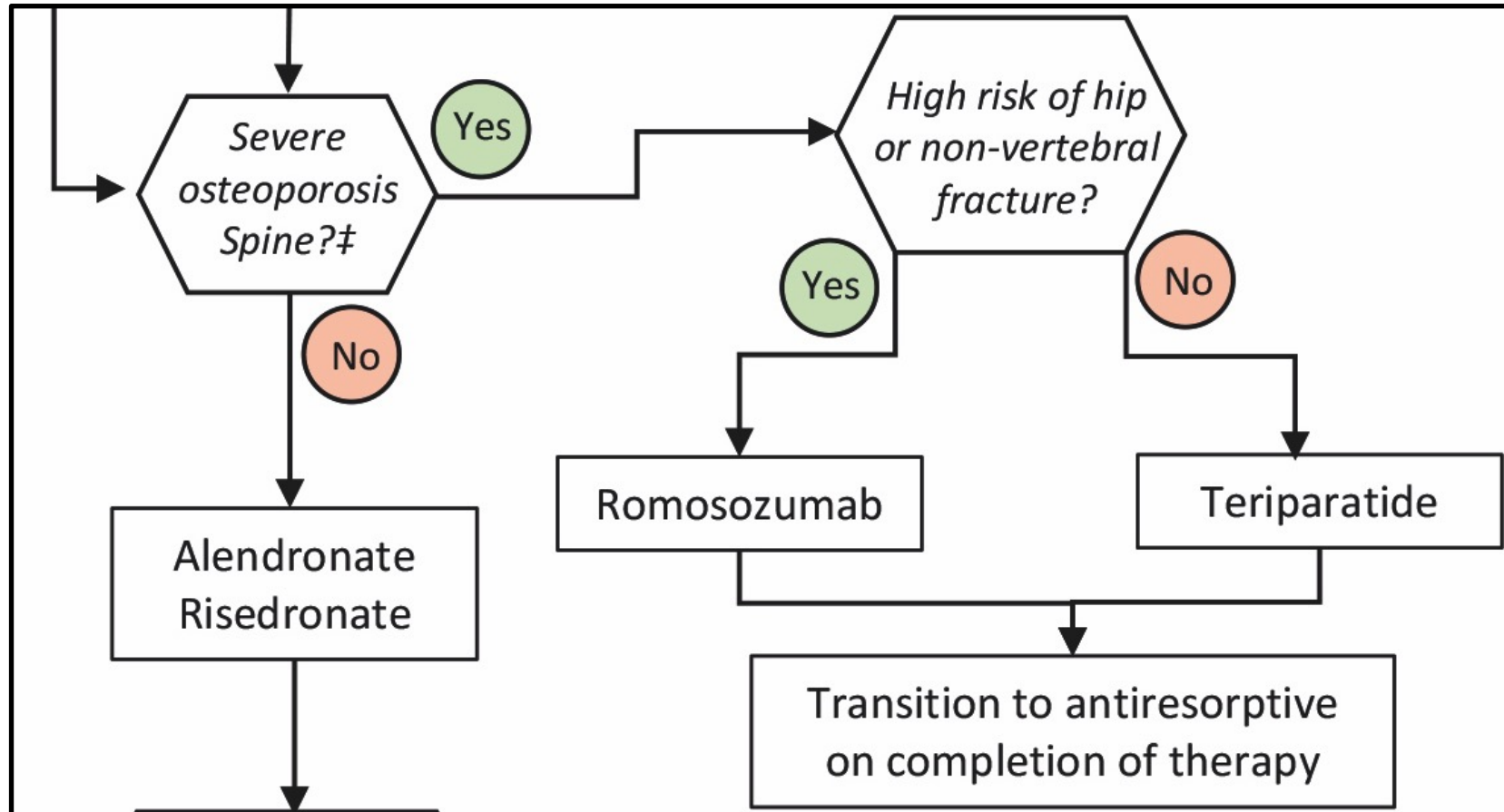
⁷ UCB Biopharma Sprl, Allée de la Recherche 60,
1070 Brussels, Belgium

SIGN 142 advice on romosozumab

Section 6.4.9

- *Romosozumab is recommended for the treatment of postmenopausal women with severe osteoporosis who have previously experienced a fragility fracture, to reduce the risk of further vertebral, non-vertebral and hip fractures*
- *In postmenopausal women with at least one severe or two moderate low trauma vertebral fractures, romosozumab is recommended over oral bisphosphonates to prevent further vertebral, non-vertebral and hip fractures.*
- *Treatment with an antiresorptive agent is recommended to maintain the increase in bone density once a course of romosozumab has been completed.*

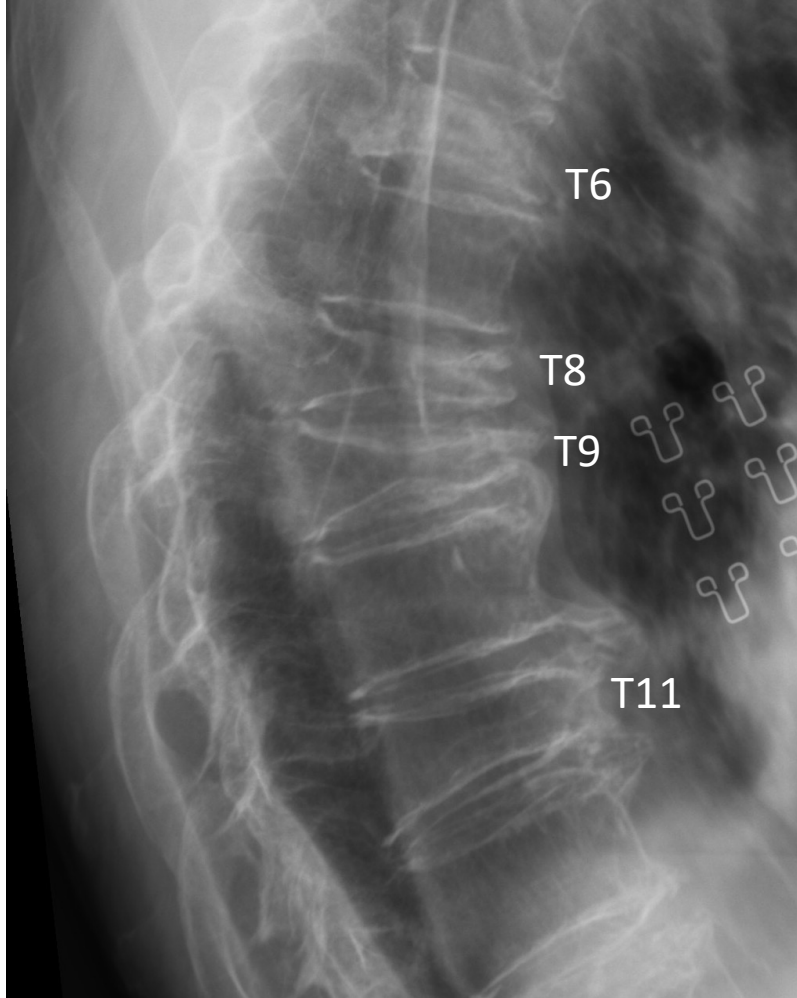
Positioning of romosozumab in clinical practice based on SIGN 142



Case History 1

- **Woman aged 73**
- **Slipped while walking down the stairs and fell backwards**
- **Attended A&E because of severe back pain**
- **Past history of sternal fracture 2017 after falling from her bike; medical history otherwise unremarkable**
- **Vital signs normal. Normal power and sensation in all limbs**
- **Tenderness on percussion in mid-thoracic spine**
- **Routine bloods checked and spine x-ray performed**

Relevant investigations and treatment

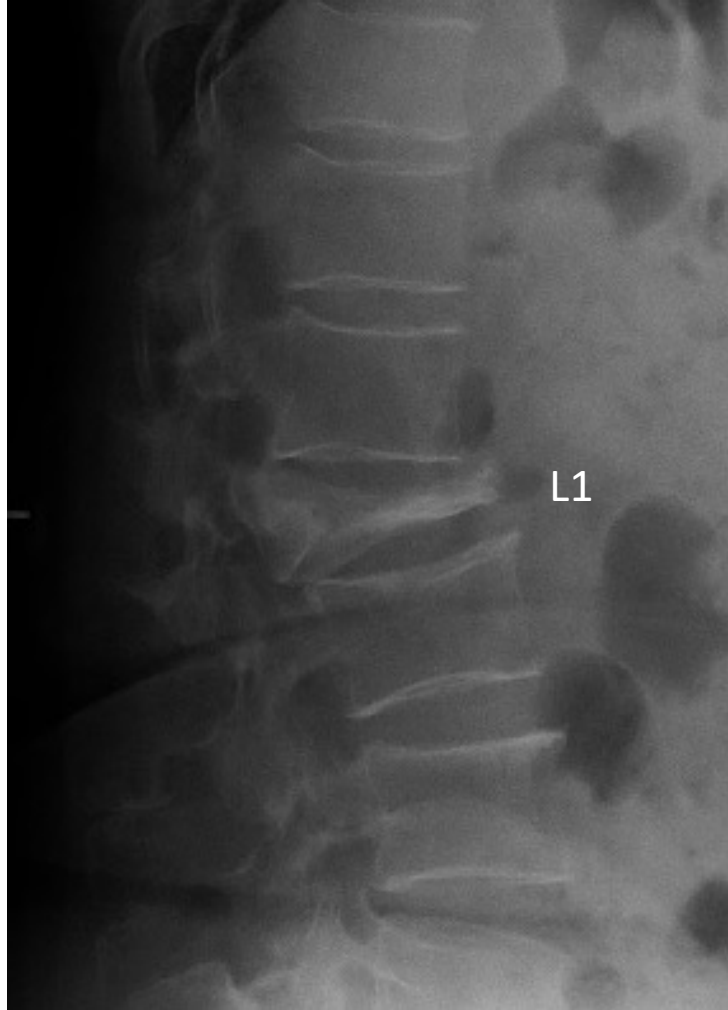


- Multiple vertebral fractures
- Routine bloods unremarkable
- 25(OH)D 55nM
- Spine T-Score: -3.7
- Total hip T-score: -3.0
- Fracture risk:
 - Major osteoporotic fracture: 23%
 - Hip fracture: 7.3%
- Started on romosozumab Feb 2021

Case History 2

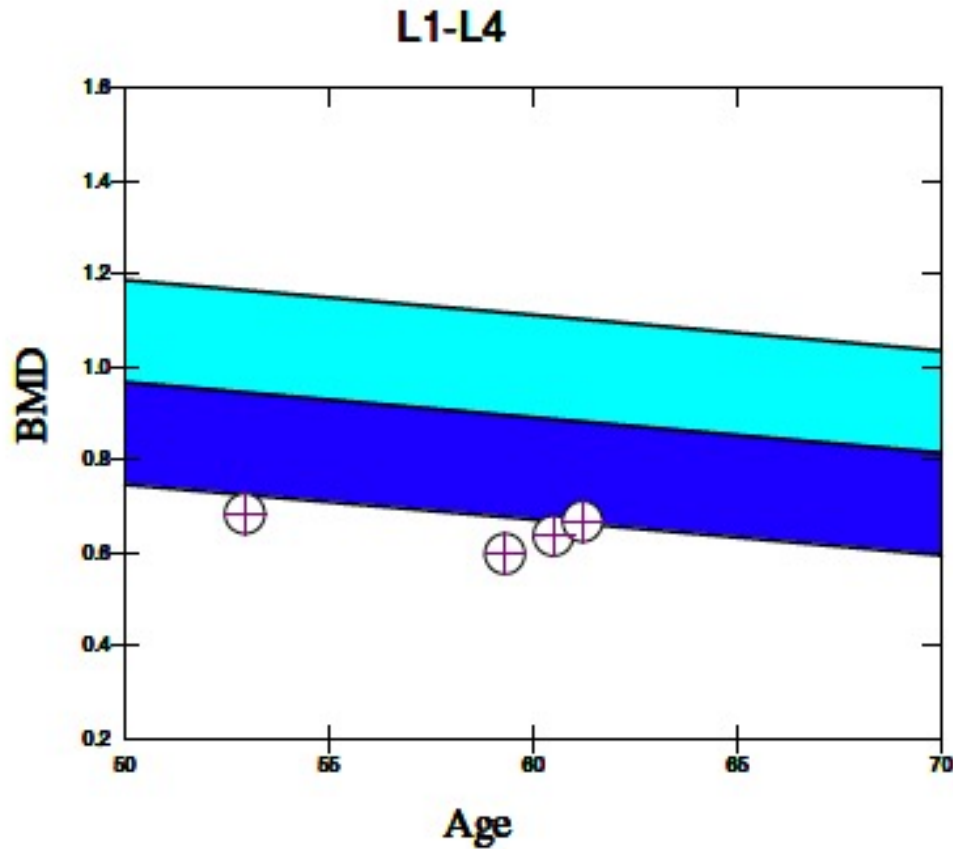
- **Woman aged 59**
- **Presented with sudden onset back pain 2008**
- **Referred by GP for spine x-ray which showed L1 fracture**
- **Past medical history of mild asthma, well controlled on inhalers**
- **Had never required oral glucocorticoids**
- **Tenderness on percussion in mid-thoracic spine**
- **Routine bloods checked and spine x-ray performed**

Relevant investigations and treatment



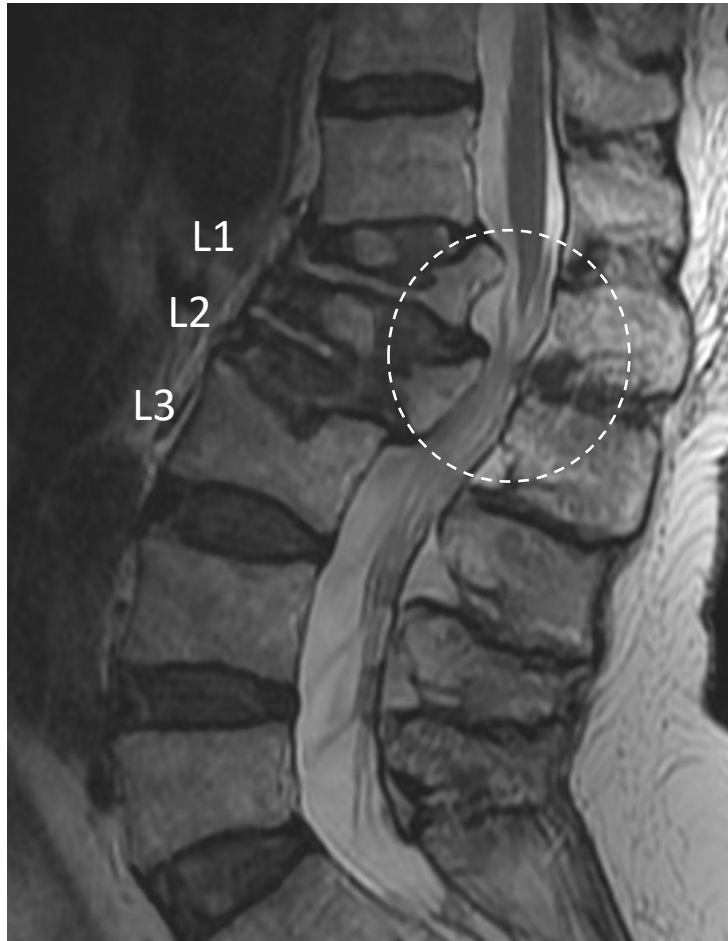
- Severe fracture L1
- Routine bloods unremarkable
- 25(OH)D 73nM
- Spine T-Score: -4.1
- Total hip T-score: -2.4
- Fracture risk:
 - Major osteoporotic fracture: 13%
 - Hip fracture: 2.6%
- Started on Teriparatide Jan 2009,

Progress



- Good response to Teriparatide with 11% increased in spine BMD over 18 months and 5% increase in hip BMD
- Transitioned to oral alendronic acid September 2010
- Clinically stable with no further fractures on review in 2017

Deterioration!



- Presented in 2021 with sudden onset of severe lower back pain
- Fractures of L1-L3 with some compression cauda equina (treated conservatively)
- Repeat Hip DEXA requested:

Date of scan	Hip T-score	Change from:	
		Baseline (%)	Last scan (%)
2020	−2.6	−12	−12.5
2017	−1.8	+0.6	+0.6
2010	−1.9		

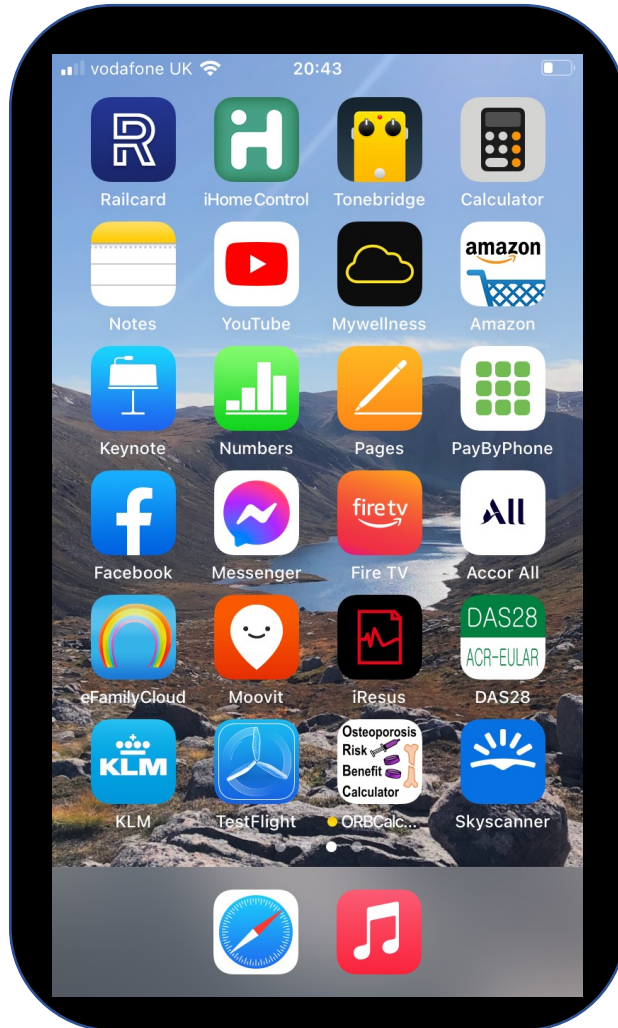
Further treatment

- Confirmed that she had been taking alendronic acid according to instructions
- Discussed possible option of zoledronic acid in view of bone loss
- Theoretically could have had another 6 months TPTD (since only 18-month course in 2009)
- Discussed romosozumab
- Opted for romosozumab having heard pros and cons
- Remains on treatment at present

Summary

- **Romosozumab a good option for severe spinal osteoporosis with vertebral fractures**
- **Teriparatide also a good option for severe spinal osteoporosis with vertebral fractures**
- **How do you choose?**
 - **Romosozumab if low spine and hip BMD at high risk of non-vertebral fracture (often older women)**
 - **Teriparatide for younger women with low spine BMD and reasonable hip BMD or very low spine BMD (<-4.0) with no fractures**

The ORB App to calculate risks and benefits of treatment



Enter 5-year risk
Select treatment
Calculates risk of fractures
with and without treatment

- Spine fracture
- Hip fracture
- Non-vertebral

Visualisation available
(smiley faces)

Questions?