

Sequential dosing of Osteoporosis medications

CHRISTOPHER HOUPPT, PHARM D
PGY2 GERIATRIC RESIDENT
PROVIDENCE ELDERPLACE
APRIL 24, 2022

1

Learning objective

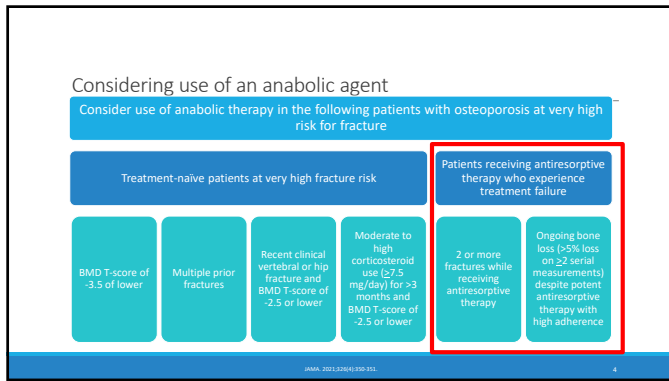
Describe the effect of treatment sequence on bone mineral density (BMD) when anabolic agents are used after antiresorptive agents.

2

Classification of osteoporosis medications

ANTIRESORPTIVE AGENTS Inhibit bone resorption Maintain or improve BMD and reduce fracture risk Examples <ul style="list-style-type: none">Bisphosphonates (alendronate, risedronate, zoledronic acid, etc.)DenosumabEstrogen agonists/antagonists	ANABOLIC AGENTS Stimulate new bone formation Induce large increases in BMD, reducing fractures quickly Examples <ul style="list-style-type: none">Parathyroid hormone analogs (teriparatide and abaloparatide)Romosozumab <p>It is recommended to follow anabolic agents with antiresorptive agents to maintain BMD gains</p>
---	--

3



4

Clinical trials evaluating the transition from an antiresorptive agent to an anabolic agent

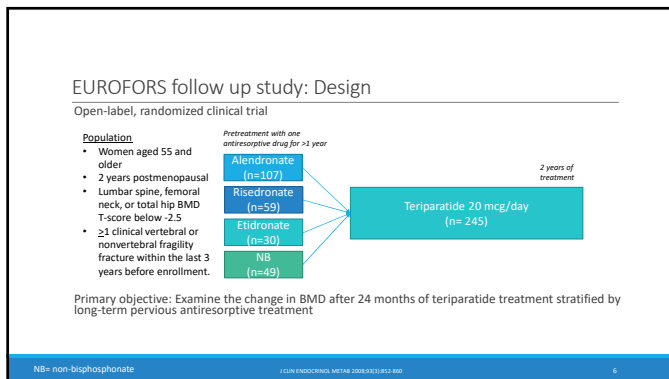
EUROFORS follow up study: Effects of previous antiresorptive therapy on the bone mineral density response to two years of teriparatide treatment in postmenopausal women with osteoporosis

DATA-Switch extension study: Denosumab and teriparatide transitions in postmenopausal osteoporosis

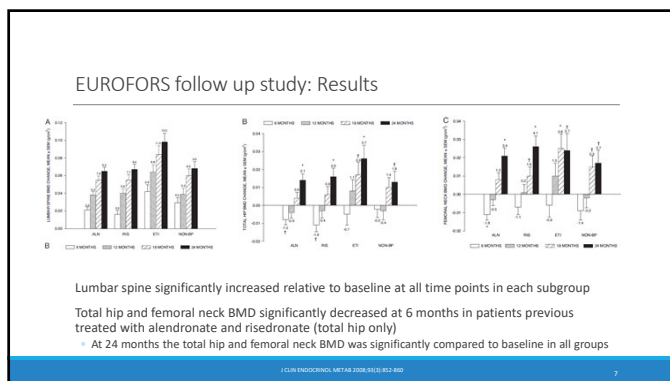
STRUCTURE study: Romosozumab versus teriparatide in postmenopausal women with osteoporosis transitioning from oral bisphosphonate therapy: a randomized, open-label, phase 3 trial

5

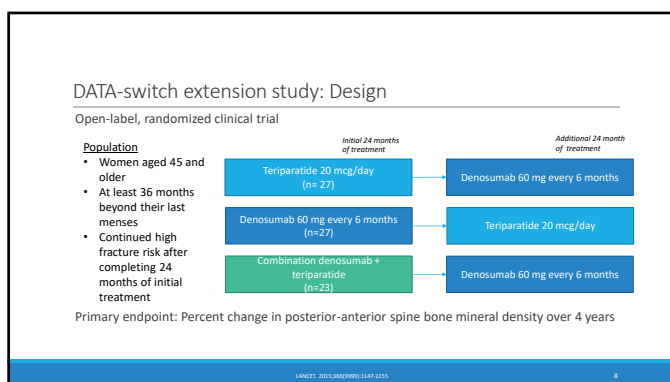
5



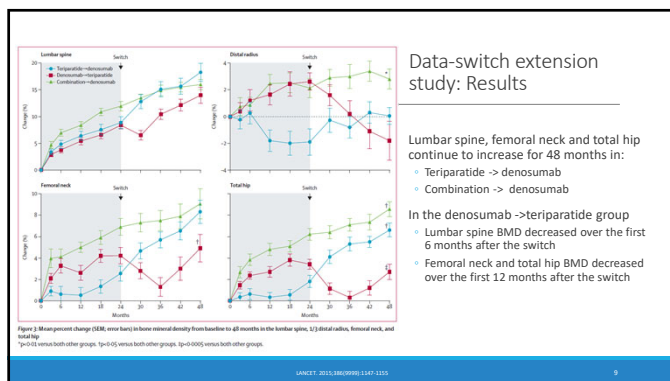
6



7



8



9

Structure study: Design

Randomized, phase 3, open-label, active-controlled study

12 months of treatment

Population

- Women aged 55-90 years
- Diagnosed postmenopausal osteoporosis
- Oral bisphosphonate for at least 3 years before screening
- Total hip, femoral neck, or lumbar spine BMD T score ≤ -2.5
- History of fracture

Oral bisphosphonate pretreatment (n=436)

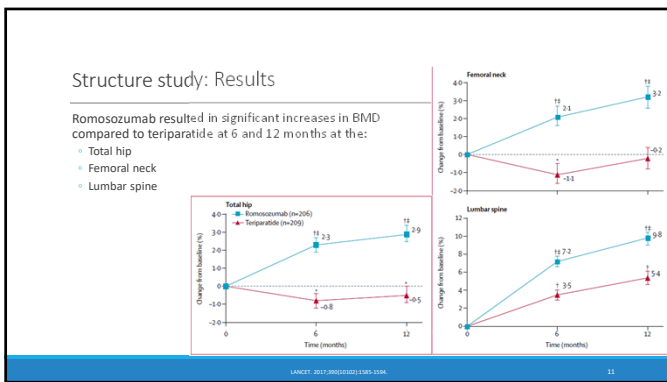
Teriparatide 20 mcg/day (n= 218)

Romosozumab 210 mg/month (n= 218)

Primary objective: Percentage change from baseline in BMD by DXA at the total hip through 12 months

LANCET 2017;390(10100):1189-1194 10

10



11

Summary

- Anabolic osteoporosis medications work to stimulate bone formation
- Clinical studies have found that the use of teriparatide following antiresorptive agents results in transient reductions in BMD depending on the antiresorptive agent used
- Romozozumab has not been shown to cause reductions in BMD following antiresorptive agents
- The clinical implications on fracture risk is currently unknown

LANCET 2017;390(10100):1189-1194 12

12

Self assessment question

Which is true regarding a patient's bone mineral density (BMD) when switching osteoporosis treatment?

- A. Transitioning from a bisphosphonate to a parathyroid hormone analog results in a transient reduction in spine BMD
- B. Transitioning from denosumab to a parathyroid hormone analog results in a transient reduction in spine BMD
- C. Transitioning from a parathyroid hormone analog to a bisphosphonate results in a transient reduction in spine BMD
- D. Transitioning from a parathyroid hormone analog to denosumab results in a transient reduction in spine BMD

13

13

References

Management of osteoporosis in postmenopausal women: the 2021 position statement of The North American Menopause Society. *Menopause*. 2021;28(9):973-997.

Ensrud KE, Schousboe JT. Anabolic Therapy for Osteoporosis. *JAMA*. 2021;326(4):350-351.

Boonen S, Marin F, Obermayer-Pietsch B, et al. Effects of previous antiresorptive therapy on the bone mineral density response to two years of teriparatide treatment in postmenopausal women with osteoporosis. *J Clin Endocrinol Metab*. 2008;93(3):852-860.

Leder BZ, Tsai JN, Uihlein AV, et al. Denosumab and teriparatide transitions in postmenopausal osteoporosis (the DATA-Switch study): extension of a randomised controlled trial. *Lancet*. 2015;386(9999):1147-1155.

Langdahl BL, Libanati C, Crittenden DB, et al. Romosozumab (sclerostin monoclonal antibody) versus teriparatide in postmenopausal women with osteoporosis transitioning from oral bisphosphonate therapy: a randomised, open-label, phase 3 trial. *Lancet*. 2017;390(10102):1585-1594.

14

14