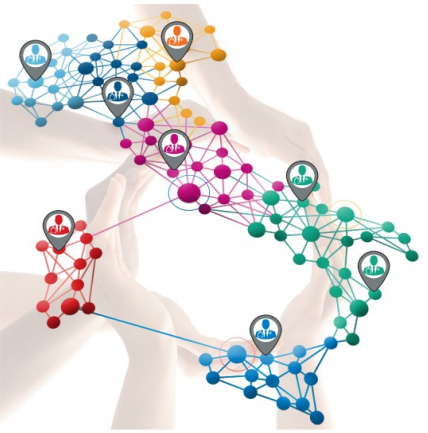
4° CONGRESSO NAZIONALE FRAGILITY FRACTURE NETWORK - ITALIA

Appropriatezza, Qualità e Sostenibilità delle Cure nel Percorso Ortogeriatrico



LA PRVENZIONE SECONDARIA DELLE FRATTURE DA FRAGILITA'

AVVIO
DELLA TERAPIA ANTIFRATTURATIVA
IN FASE ACUTA

Dott.ssa Vanna Bottai

Ortopedia e Traumatologia II Università di Pisa

4° CONGRESSO NAZIONALE FRAGILITY FRACTURE NETWORK - ITALIA

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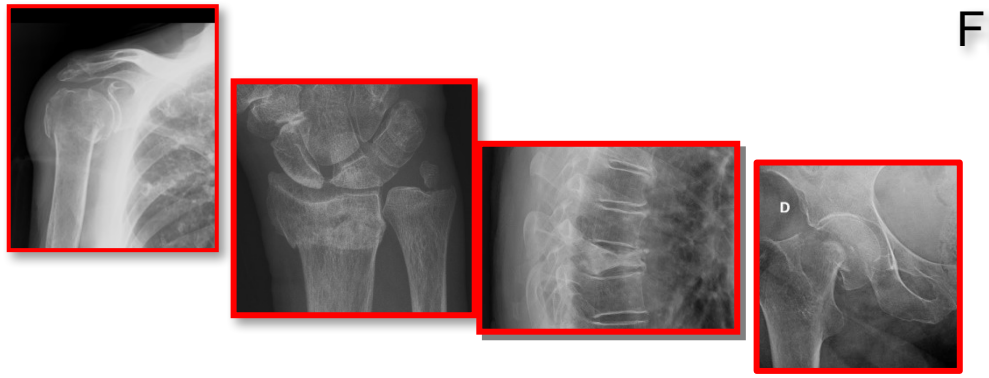
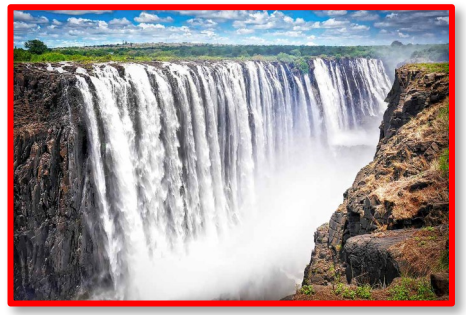


FRATTURA DA FRAGILITA’

RIFRATTURA



“FRACTURE CASCADE”

CRESCITA ESPONENZIALE
DEGLI EFFETTI AVVERSI
DEI PRIMI EPISODI
FRATTURATIVI

MORTALITA’ e MORBIDITA’

OUTCOME FUNZIONALI

RIFRATTURE

GESTIONE CHIRURGICA

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SCOPO TRATTAMENTO ANTIFRATTURATIVO

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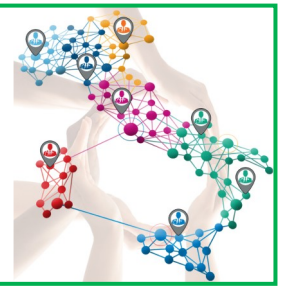
IN FASE ACUTA



Rischio rifratturativo NON COSTANTE nel tempo e insorge SUBITO DOPO la prima frattura

IMMINENT RISK OF FRACTURE
Rischio di rifrattura entro 24 mesi dalla Index Fracture

Osteoporosis International (2022) 33:2453–2466
https://doi.org/10.1007/s00198-022-06473-0

REVIEW

The imminent risk of a fracture—existing worldwide data: a systematic review and meta-analysis

Ronald Man Yeung Wong[1] · Pui Yan Wong[1] · Chaoran Liu[1] · Hiu Wun Wong[1] · Yik Lok Chung[1] · Simon Kwoon Ho Chow[1] · Sheung Wai Law[1] · Wing Hoi Cheung[1]

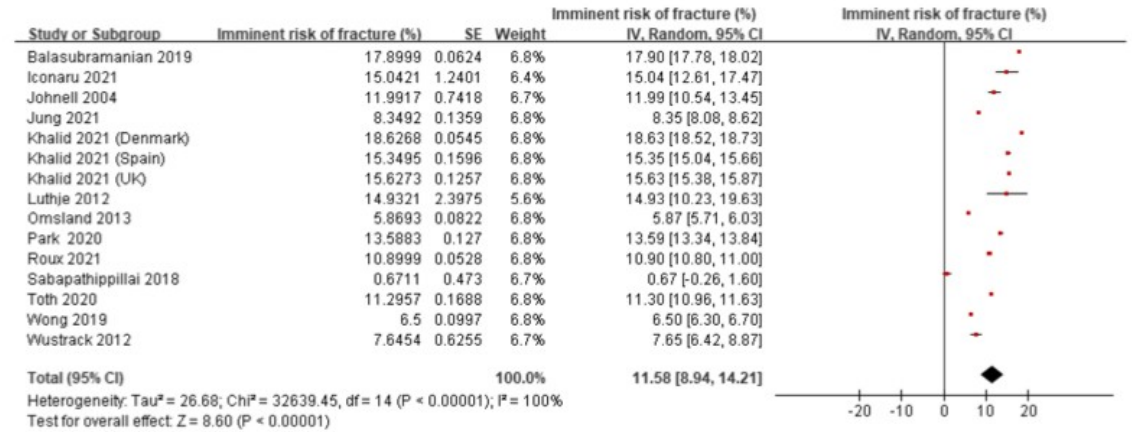


Fig. 2 The forest plot of 2-year cumulative imminent incidence of fracture after index fracture

Incidenza Rifrattura
7,58% a 1 anno
11,58% a 2 anni

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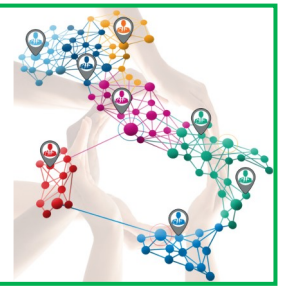
IN FASE ACUTA



Follow-up >= 5 aa, 50% cca di tutte le rifratture avvengono entro 24 mesi dalla prima

Osteoporosis International (2022) 33:2453–2466
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REVIEW

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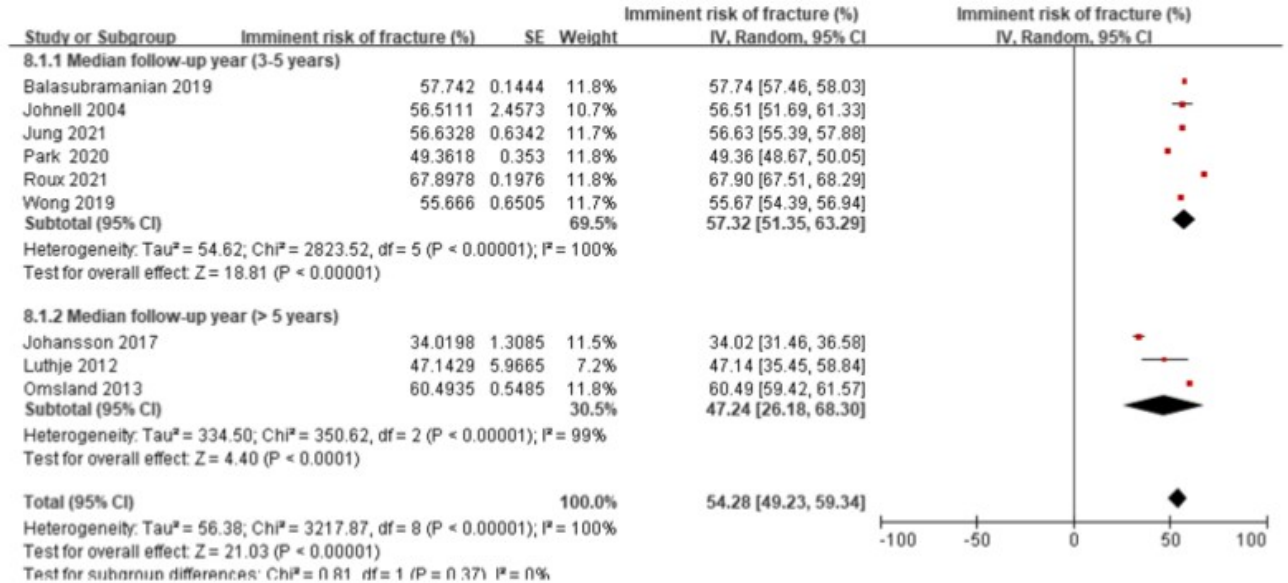

Fig. 3 Subgroup analysis of overall 2-year cumulative imminent incidence of fracture in the total subsequent fractures with median follow-up period of 3 to 5 years and > 5 years

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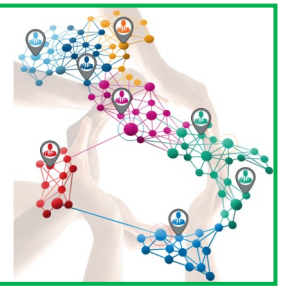
IN FASE ACUTA



Sesso: rischio rifratturativo leggermente maggior in donne

Osteoporosis International (2022) 33:2453–2466
https://doi.org/10.1007/s00198-022-06473-0

REVIEW

The imminent risk of a fracture—existing worldwide data: a systematic review and meta-analysis

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Distribuzione geografica con differenze Asia 7,30 Europa e Nord America 13,15%

Età: il rischio fratturativo incrementa del 4% per ogni anno di età

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Incidenza rifratture a 24 mesi varia a seconda del sito di Index Fracture

Osteoporosis International (2022) 33:2453–2466
https://doi.org/10.1007/s00198-022-06473-0

REVIEW

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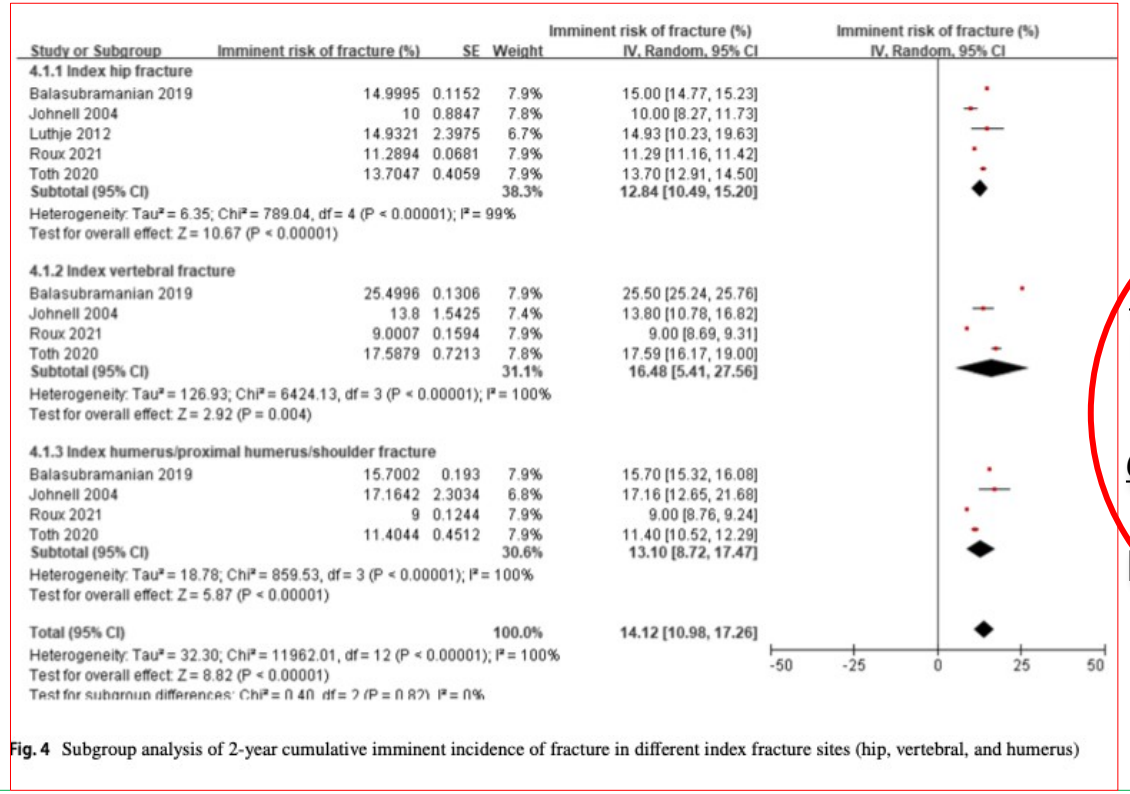

Fig. 4 Subgroup analysis of 2-year cumulative imminent incidence of fracture in different index fracture sites (hip, vertebral, and humerus)

Anca: I 7,09% 1 anno;
I 12,84% a 24 mesi

Vertebre: I 11,58% 1 anno
I 16,48% 24 mesi

Omero e omero prossimale
7,52% 1 anno;
I 13,10% a 24 mesi

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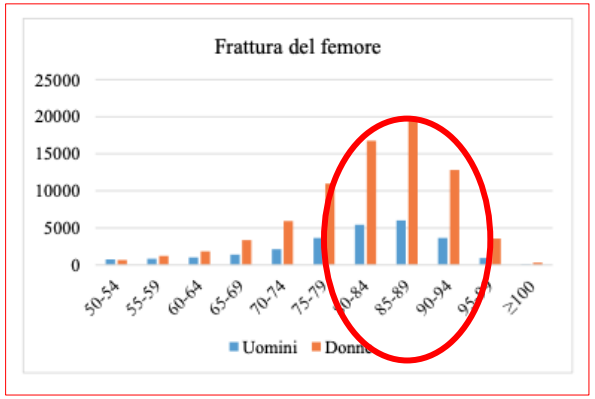
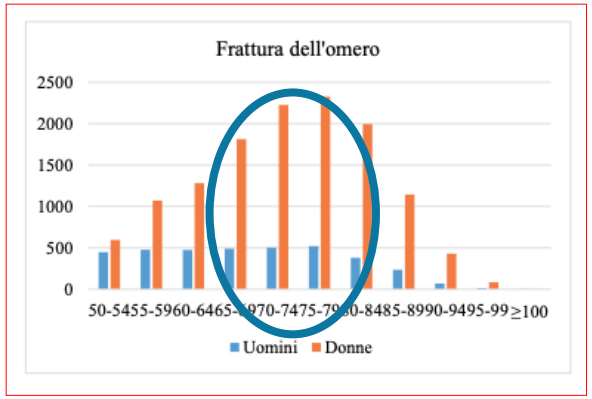
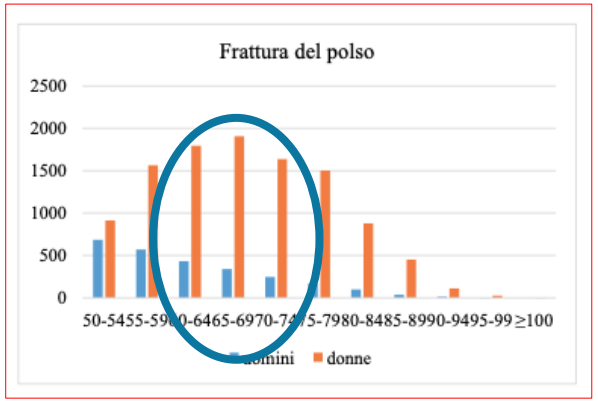
IN FASE ACUTA

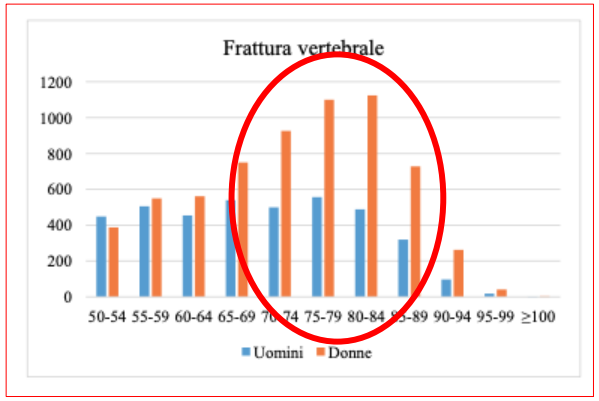
Sistema Nazionale per le Linee Guida

Diagnosi, stratificazione del rischio e continuità assistenziale delle Fratture da Fragilità









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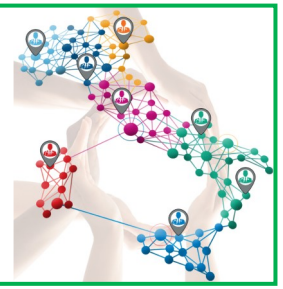

QUALITA' OSSEA

RISCHIO CADUTA

Medicine in Novel Technology and Devices 11 (2021) 100072

Contents lists available at ScienceDirect

Medicine in Novel Technology and Devices

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Full Length Article

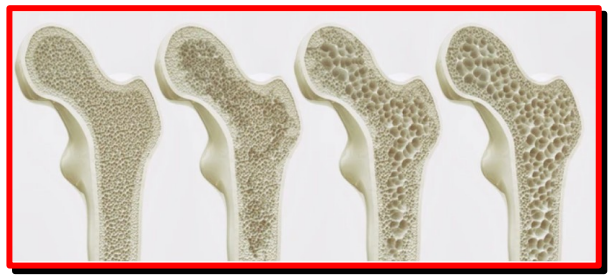
Mechanisms for increased systemic fracture risk after index fracture

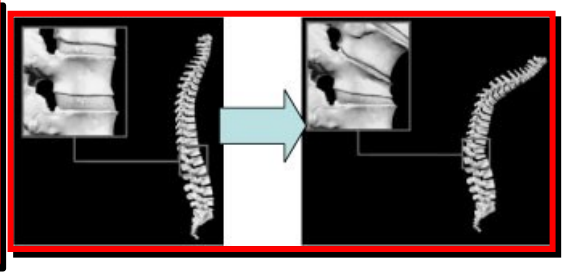
B. Osipov *, B.A. Christiansen

Lawrence J. Ellison Musculoskeletal Research Center, Department of Orthopaedic Surgery, University of California Davis Health, 4635 2nd Avenue, Suite 2000, Sacramento, CA, 95817, USA

ALTERAZIONI BIOMECCANICHE

ALTERAZIONI NEUROMUSCOLARI





4° CONGRESSO NAZIONALE FRAGILITY FRACTURE NETWORK - ITALIA

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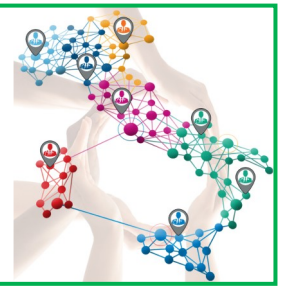
IN FASE ACUTA



DISTRETTUALE

"Local transient osteoporosis"
osteoporosi da disuso
(diminuzione BMD 3-30%)

Medicine in Novel Technology and Devices 11 (2021) 100072

Contents lists available at ScienceDirect

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ELSEVIER

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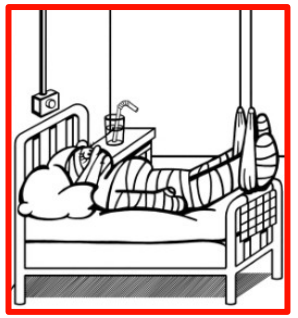
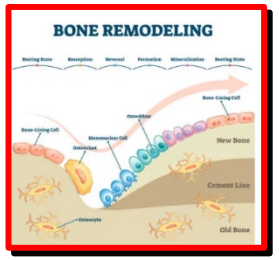
SISTEMICO



ACCELERAZIONE
BONE REMODELING



Bone-loss sistemico
"temporal lag" riassorbimento/formazione ossea (CTX, P1NP)

- **Diminuzione normali attività (diminuzione carico e attività muscolare)**
- **Citochine infiammatorie**
- **Mobilizzazione minerali (Ca) dal tessuto scheletrico "pro-healing"**

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FASE ACUTA

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INDEX FRACTURE

SOTTODIAGNOSI

TRATTAMENTO MIRATO

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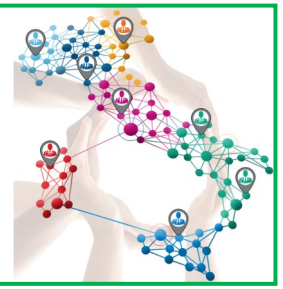


JB&JS OPEN ACCESS

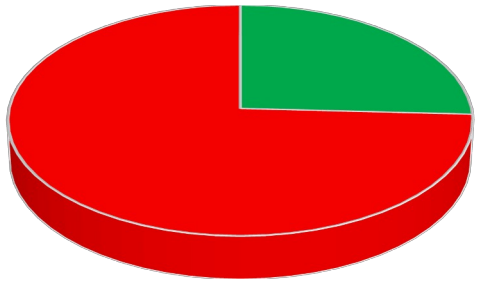
Rates of Osteoporosis Management and Secondary Preventative Treatment After Primary Fragility Fractures

Bailey J. Ross, BA, Olivia C. Lee, MD, Mitchel B. Harris, MD, Thomas C. Dowd, MD, Felix H. Savoie III, MD, and William F. Sherman, MD, MBA, MFIN

Investigation performed at Tulane University School of Medicine, New Orleans, Louisiana

USA 2010-2018

48668 paz. frattura fragilità



25,2% (12693) pazienti trattati nei 2 anni precedenti

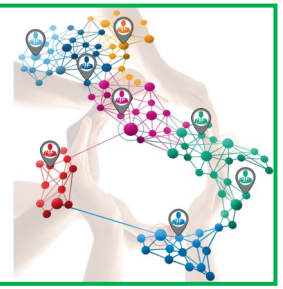
TABLE II Total Primary Fragility Fractures by Anatomic Location

Primary Fracture Location	No. of Fractures* (N = 36,295)
Spine	14,209 (39%)
Hip	9,370 (26%)
Wrist	4,897 (13%)
Humerus	4,277 (12%)
Pelvis	2,943 (8%)
Other pathologic fracture	599 (2%)

TABLE I Demographic Data for Unique Patients Sustaining Primary and Secondary Fragility Fractures

	Primary Fragility Fracture*	Secondary Fragility Fracture*†
Total	36,095 (100%)	3,038 (8.4%)
Sex		
Male	10,385 (29%)	685 (22%)
Female	25,710 (71%)	2,353 (78%)
Age		
60 to 64 years	4,607 (13%)	244 (8%)
65 to 69 years	4,908 (14%)	307 (10%)
70 to 74 years	9,495 (26%)	584 (19%)
75 to 80 years	17,085 (47%)	1,903 (63%)
Region		
Midwest	8,371 (23%)	690 (23%)
Northeast	7,496 (21%)	633 (21%)
South	14,783 (41%)	1,279 (42%)
West	5,380 (15%)	431 (14%)
Not available	65 (0.2%)	5 (0.2%)
Clinical diagnoses		
Osteoporosis	6,799 (19%)	927 (31%)
Vitamin D deficiency	6,611 (18%)	606 (20%)
Tobacco use	6,016 (17%)	555 (18%)
Diabetes mellitus	15,365 (43%)	1,313 (43%)

AVVIO DELLA TERAPIA ANTIFRATTURATIVA IN FASE ACUTA



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Investigation performed at Tulane University School of Medicine, New Orleans, Louisiana

36095 "naive"

Paz. trattati o indirizzati vs percorsi: 18%

- 7,2% solo DEXA
- 7,1% terapia medica
- 4,2% dexa + terapia medica

TABLE IV Rates of Osteoporosis-Related Management Following Primary Fragility Fractures* (N = 36,095)

	Management			
	DXA Scan Only	Pharmacotherapy Only	Both Managements	No Management
No. of patients†	2,588 (7.2%)	2,563 (7.1%)	1,502 (4.2%)	29,442 (81.6%)
Time between fracture and claim† *(days)*	243.6	285.4	225.1	NA

3038 rifratture

Paz. trattati o indirizzati vs percorsi: 1

- 6,3% solo DEXA
- 8,6% terapia medica
- 4,2% dexa + terapia medica

TABLE V Incidence of Secondary Fragility Fractures and the Impact of Treatment Exposure, Demographic Variables, and Clinical Diagnoses*

	No. of Patients†	Time Between Fractures† *(days)*	Cox Regression§
Secondary fractures	3,038 (8.4%#)	221.4	NA
Treatment			
DXA scan only	190 (6.3%)	204.9	0.66 (0.59 to 0.74)
Pharmacotherapy only	261 (8.6%)	225.2	0.88 (0.79 to 0.98)
Both management	128 (4.2%)	177.1	1.20 (0.98 to 1.47)
No management	2,459 (80.9%)	224.5	NA
Demographic variables			
Male sex	685 (22.5%)	215.7	0.76 (0.70 to 0.83)
Age			
60 to 64 years	244 (8.0%)	154.6	0.97 (0.43 to 2.19)
65 to 69 years	307 (10.1%)	167.5	1.10 (0.49 to 2.46)
70 to 74 years	584 (19.2%)	148.1	1.43 (0.64 to 3.19)
75 to 80 years	1,903 (62.6%)	261.1	1.55 (0.69 to 3.44)
Tobacco use	555 (18.3%)	221.0	1.19 (1.08 to 1.31)
Clinical diagnoses			
Vitamin D deficiency	606 (19.9%)	204.7	1.04 (0.95 to 1.14)
Osteoporosis	927 (30.5%)	234.0	1.91 (1.75 to 2.08)
Diabetes	1,313 (43.2%)	223.3	1.02 (0.95 to 1.14)
Charlson Comorbidity Index	NA	NA	1.03 (1.01 to 1.04)

*NA = not applicable. †The values are given as the number of patients, with the percentage in parentheses. †The values are given as the mean. §The values are given as the HR, with the 95% CI in parentheses. #The proportion of patients with a fragility fracture who subsequently had another fragility fracture diagnosis code corresponding to a different anatomic location than the index fracture on a claim within 2 years of the index fracture(s).

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IN FASE ACUTA

FASE ACUTA

Golden Opportunity

INDEX
FRACTURE

SOTTODIAGNOSI

TRATTAMENTO
MIRATO

SCELTA TRATTAMENTO

AVVIO DELLA TERAPIA ANTIFRATTURATIVA IN FASE ACUTA

Archives of Osteoporosis (2023) 18:93
https://doi.org/10.1007/s11657-023-01282-2

SHORT COMMUNICATION

Current approaches to secondary prevention after hip fracture in England and Wales — an analysis of trends between 2016 and 2020 using the National Hip Fracture Database (NHFD)

Zaineb Mohsin[1] · M. Kassim Javaid[2] · Antony Johansen[3,4]

Inghilterra e Galles 2016-2020 63705 paz.

RICOVERO

88,3% non trattati

11,7% trattati

DIMISSIONE

30% terapia x os

13,3% tp iniettiva

88.3% terapia x os

15% tp iniettiva

66 % terapia x os

15 % tp iniettiva

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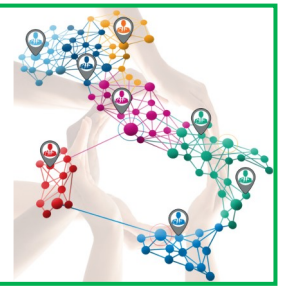

Bone Reports 15 (2021) 101105

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Mini-Review

Which treatment to prevent an imminent fracture?

Iconaru Laura [a,*], Baleanu Felicia [a], Charles Alexia [b], Mugisha Aude [c], Benoit Florence [c], Surquin Murielle [c], Karmali Rafik [a], Body Jean-Jacques [a,b,c], Bergmann Pierre [b,d]

a) For vertebral fractures

	Before 12 months	After 12 months
Oral bisphosphonates (Black et al., 2000; Chesnut et al., 2004; Harris et al., 1999; Liberman et al., 1995):	NS	***
Alendronate		**
Risedronate		**
Ibandronate		
Zoledronate (Dennis et al., 2007)	***	***
Denosumab (Steven et al., 2007; Boonen et al., 2011)	***	***
Teriparatide (Body et al., 2020; Lindsay et al., 2009)	**	**
Abaloparatide (Cosman et al., 2017; Miller et al., 2016a)	NA	***
Romosozumab (Cosman et al., 2016; Saag et al., 2017)	**	**

b) For non-vertebral fractures

	Before 12 months	After 12 months
Oral bisphosphonates (Black et al., 2000; Harris et al., 1999; Liberman et al., 1995):	NS	*
Alendronate		*
Risedronate		
Zoledronate (Dennis et al., 2007)	***	***
Denosumab (Steven et al., 2007)	*	*
Teriparatide (Body et al., 2020)	**	**
Abaloparatide (Cosman et al., 2017; Miller et al., 2016a)	*	*
Romosozumab (Cosman et al., 2016; Saag et al., 2017)	*NS*	*

c) For hip fractures

	Before 12 months	After 12 months
Oral bisphosphonates (Black et al., 2000; Liberman et al., 1995):	NS	*
Alendronate		
Zoledronate (Dennis et al., 2007)	***	***
Denosumab (Steven et al., 2007; Boonen et al., 2011)	*	*
Teriparatide (Eriksen et al., 2014; Lindsay et al., 2009)	*	*
Romosozumab (Saag et al., 2017)	*NS*	*

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DELLA TERAPIA ANTIFRATTURATIVA
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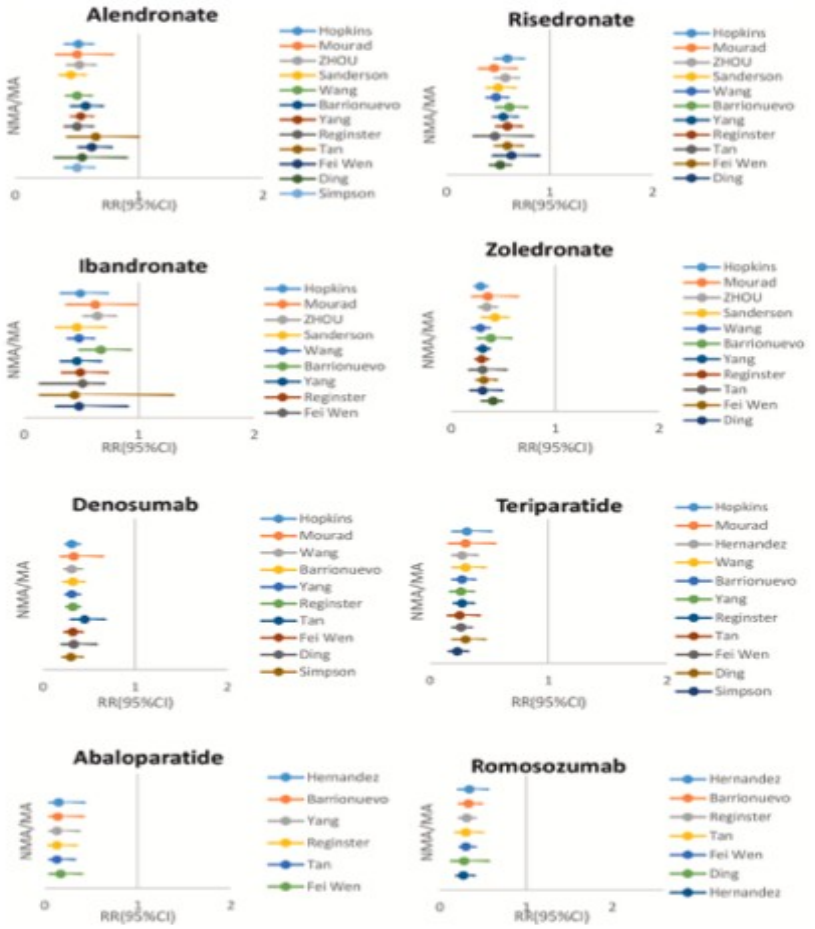

Fig. 1. Data reported in NMA/MA (efficacy vs placebo) for vertebral fractures.

4° CONGRESSO NAZIONALE FRAGILITY FRACTURE NETWORK - ITALIA

AVVIO
DELLA TERAPIA ANTIFRATTURATIVA
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Mini-Review

Which treatment to prevent an imminent fracture?

Iconaru Laura [a,*], Baleanu Felicia [a], Charles Alexia [b], Mugisha Aude [c], Benoit Florence [c], Surquin Murielle [c], Karmali Rafik [a], Body Jean-Jacques [a,b,c], Bergmann Pierre [b,d]

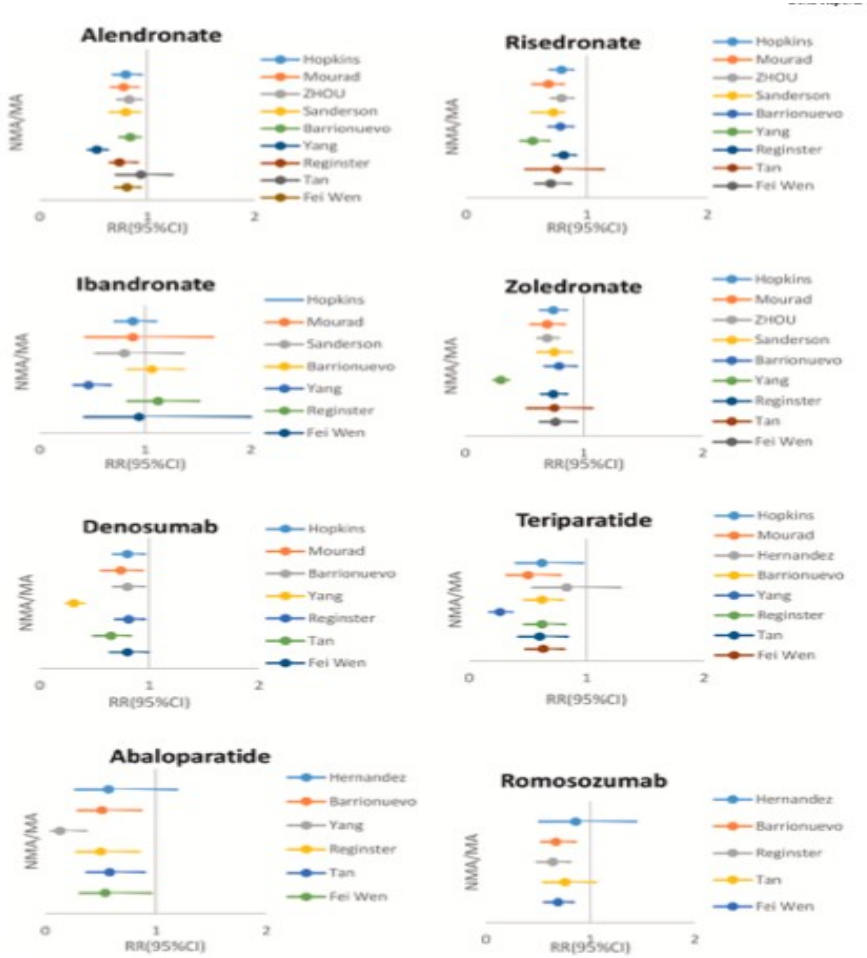

Fig. 2. Data reported in NMA/MA (efficacy vs placebo) for non-vertebral fractures.

4° CONGRESSO NAZIONALE FRAGILITY FRACTURE NETWORK - ITALIA

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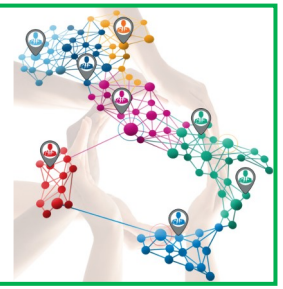
DELLA TERAPIA ANTIFRATTURATIVA
IN FASE ACUTA



Bone Reports 15 (2021) 101105

Contents lists available at ScienceDirect

Bone Reports

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

Mini-Review

Which treatment to prevent an imminent fracture?

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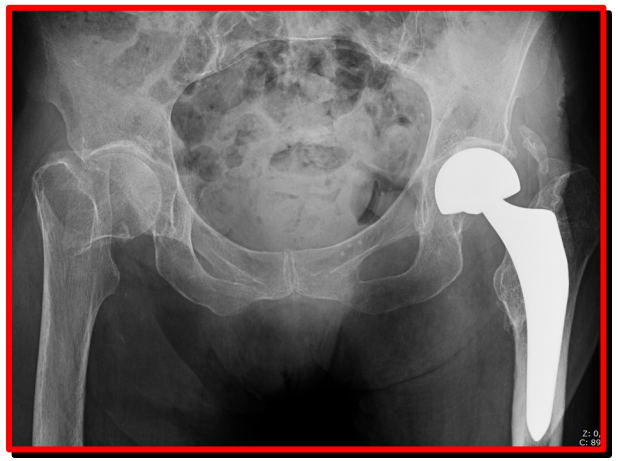

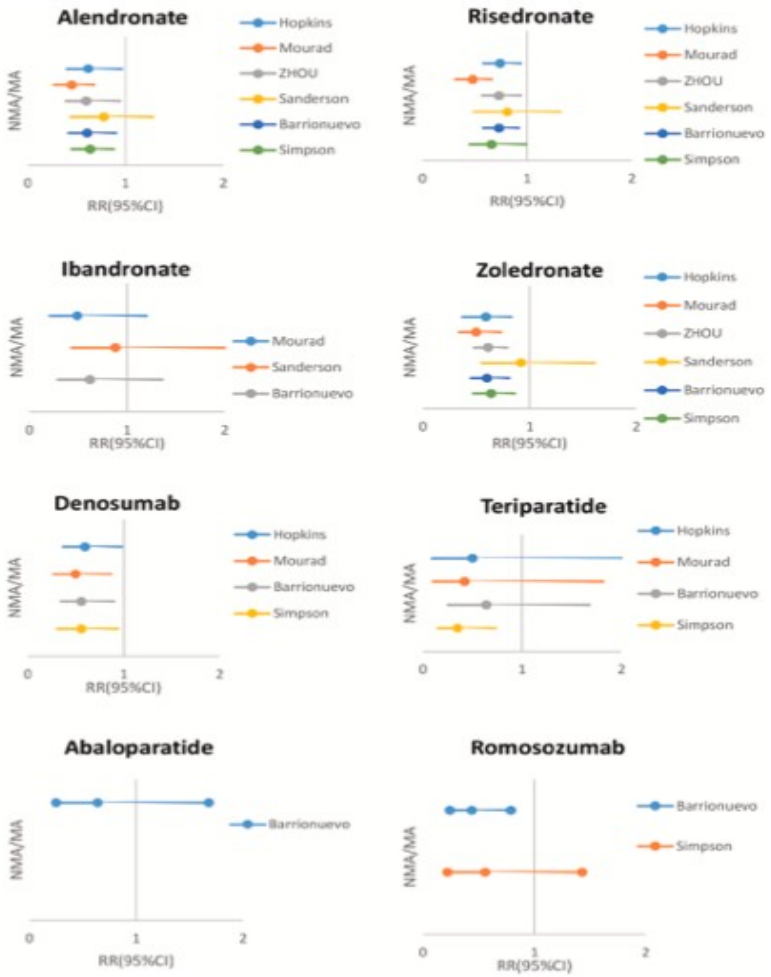

Fig. 3. Data reported in NMA/MA (efficacy vs placebo) for hip fractures.

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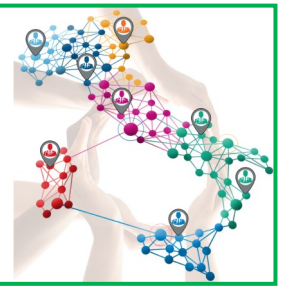
IN FASE ACUTA



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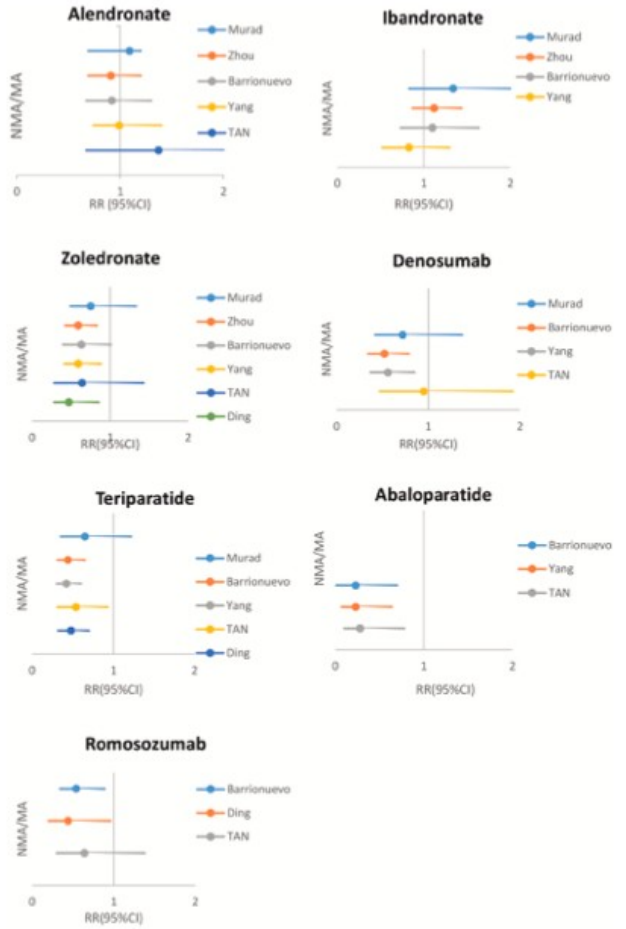

Fig. 4. Data reported in NMA/MA (efficacy vs Risedronate) for vertebral fractures.

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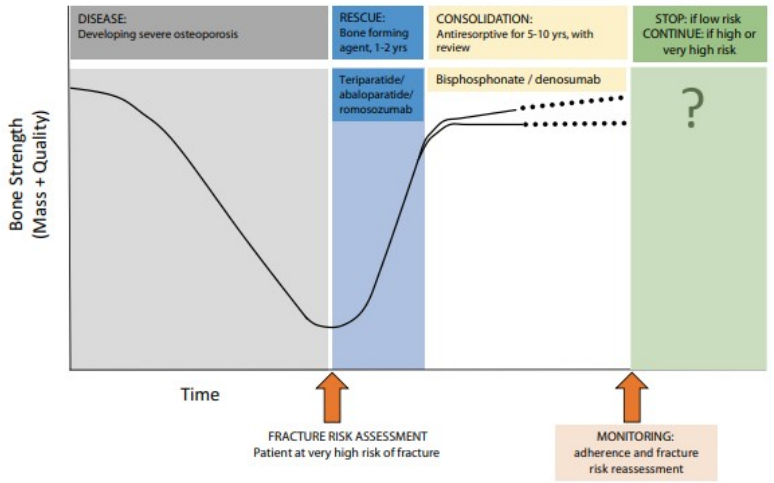
AVVIO DELLA TERAPIA ANTIFRATTURATIVA IN FASE ACUTA

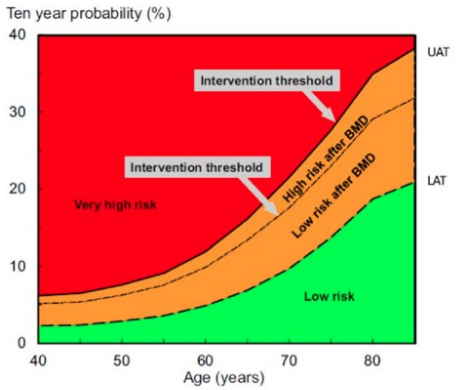
Aging Clinical and Experimental Research (2022) 34:695–714
https://doi.org/10.1007/s40520-022-02100-4

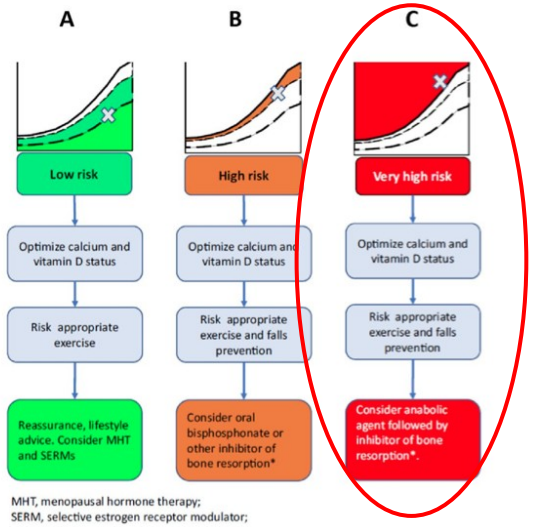
REVIEW

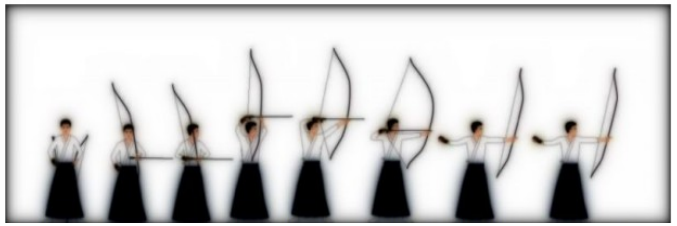
Management of patients at very high risk of osteoporotic fractures through sequential treatments

Elizabeth M. Curtis[1] · Jean-Yves Reginster[2,3] · Nasser Al-Daghri[4] · Emmanuel Biver[5] · Maria Luisa Brandi[6] · Etienne Cavalier[7] · Peyman Hadji[8,9] · Philippe Halbout[10] · Nicholas C. Harvey[1,11] · Mickaël Hiligsmann[12] · M. Kassim Javaid[13] · John A. Kanis[14,15] · Jean-Marc Kaufman[16] · Olivier Lamy[17] · Radmila Matijevic[18,19] · Adolfo Diez Perez[20] · Régis Pierre Radermecker[21] · Mário Miguel Rosa[22] · Thierry Thomas[23,24] · Friederike Thomasius[8] · Mila Vlaskovska[25] · René Rizzoli[5] · Cyrus Cooper[1,11,26]









the consequent recommendations. The key conclusion is that the current evidence base supports an "anabolic first" approach in patients found to be at very high risk of fracture, followed by maintenance therapy using an antiresorptive agent, and with the subsequent need for antiosteoporosis therapy addressed over a lifetime horizon.

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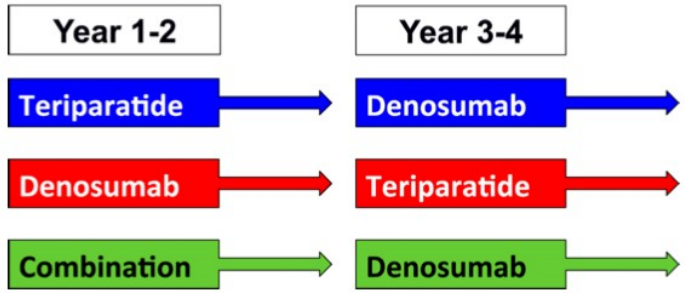
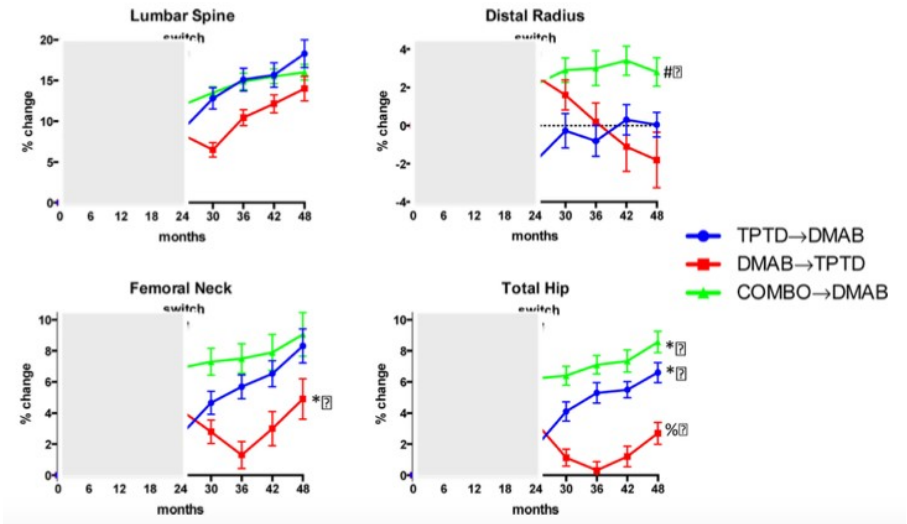
Lancet. 2015 September 19; 386(9999): 1147–1155. doi:10.1016/S0140-6736(15)61120-5.

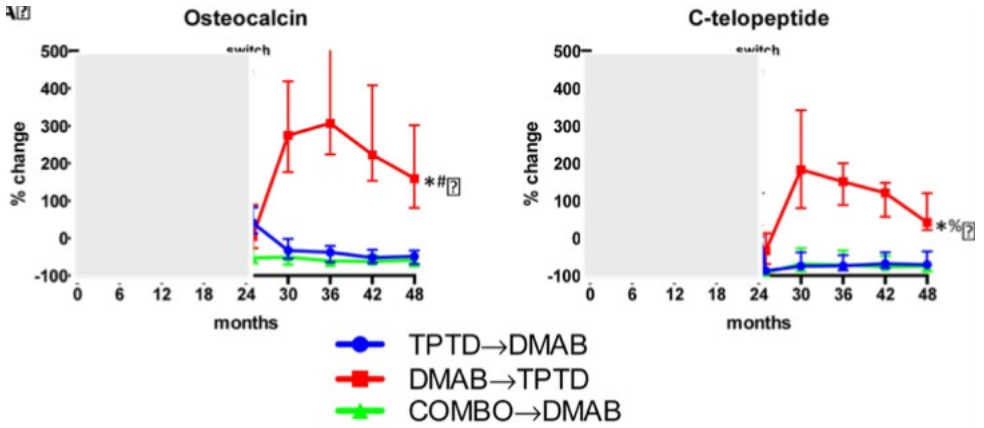
Denosumab and Teriparatide Transitions in Postmenopausal Osteoporosis (The DATA-Switch Study): a Randomised Controlled Trial

Benjamin Z. Leder, MD, Joy N. Tsai, MD, Alexander V. Uihlein, MD, Paul Wallace, BA, Hang Lee, PhD, Robert M. Neer, MD, and **Sherri-Ann M. Burnett-Bowie, MD**

DATA-Switch Study Design







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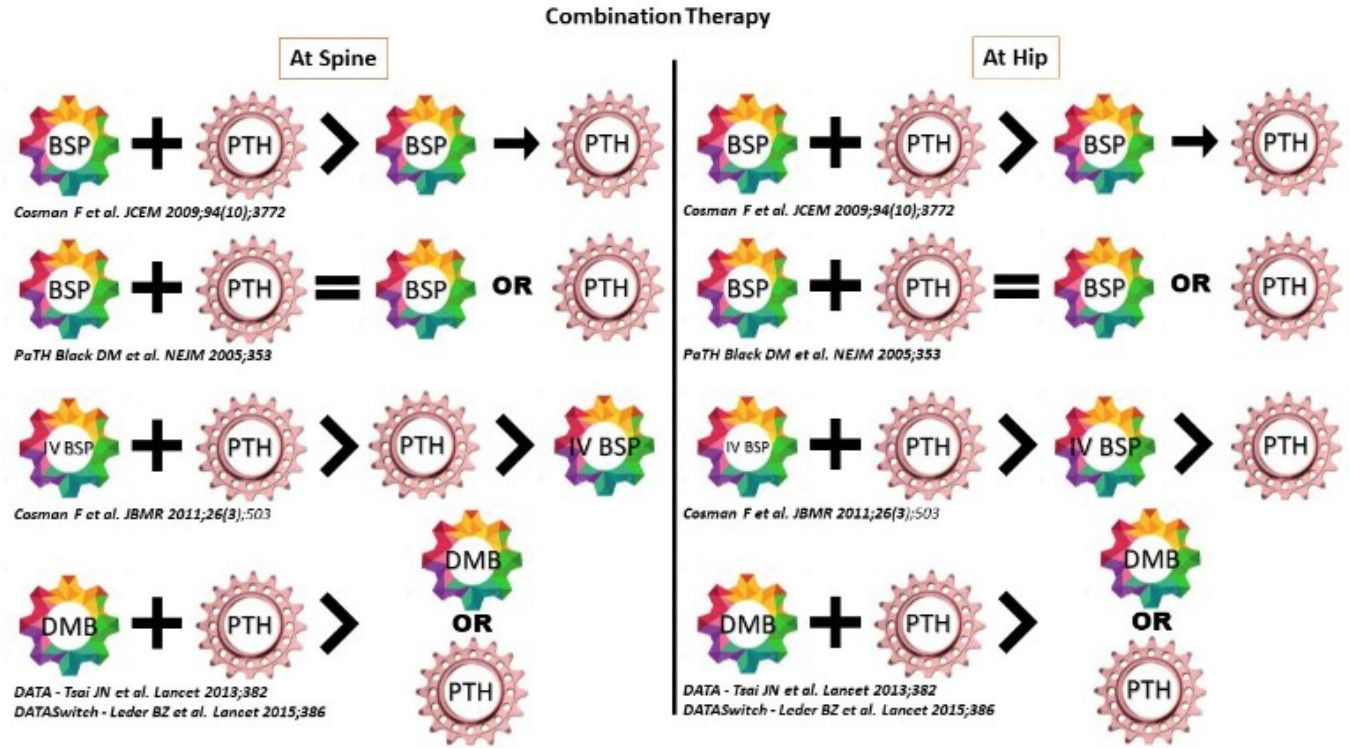
Review > Arch Endocrinol Metab. 2022 Nov 11;66(5):724-738.
doi: 10.20945/2359-3997000000564.

The why and how of sequential and combination therapy in osteoporosis. A review of the current evidence

Manju Chandran [1]



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J Med Assoc Thai. 2016 Nov;99(11):1233-8.

The Prevalence of Hypovitaminosis D in Patient with Fragility Hip Fracture at a Single Institution in Thailand

Suchat Phusunti, Worasit Suthutvoravut, Aasis Unnanuntana, Pojchong Chotiyarnwong

PMCID: PMC7818778
PMID: 33478397

High-dose versus low-dose ergocalciferol for correcting hypovitaminosis D after fragility hip fracture: a randomized c

Atthakorn Jarusriwanna,[1] Suchat Ph

Journal of Clinical Orthopaedics and Trauma 10 (2019) 768–773

Contents lists available at ScienceDirect

Journal of Clinical Orthopaedics and Trauma

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

Hypovitaminosis D in patients with osteoporotic hip fractures

Maheshwar Lakkireddy[a], Shashi vardhan Mudavath[a,*], Madhu Latha Karra[b], Abhishek J. Arora[c]

4° CONGRESSO NAZIONALE FRAGILITY FRACTURE NETWORK - ITALIA

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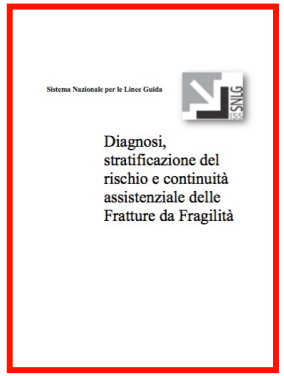
IN FASE ACUTA

TAKE HOME MESSAGE

Fase acuta – Imminent risk of fracture "GOLDEN OPPORTUNITY"

Criticità sottodiagnosi e trattamento inadeguato INDEX FRACTURE

Terapia fase acuta deve avere 2 caratteristiche: POTENZA E RAPIDITA' di effetto



Al fine di ottimizzare le vie di assistenza per i pazienti ad alto rischio di rifrattura, sono fortemente consigliati e risultano necessari a tutti i livelli di assistenza, gli approcci integrati e multidisciplinari per la prevenzione secondaria della frattura (Tarantino, 2017). Ad oggi, i sistemi più efficaci risultano essere i modelli integrati e multidisciplinari, quali le Cogestioni Ortogeriatriche, le Fracture Unit e le Fracture Liaison Service (FLS) (Borgström, 2020; Commissione Intersocietaria per l'Osteoporosi,

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