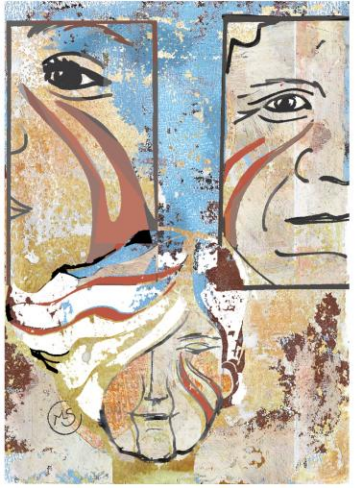


17·20 Dicembre 2025 Napoli

70° CONGRESSO NAZIONALE SIGG

LIBERI E LONGEVI

Università degli Studi di Napoli Federico II Polo Didattico di **SCAMPIA**

SOCIETÀ ITALIANA DI GERONTOLOGIA E GERIATRIA

SIMPOSIO: BONE HEALTH E BONE HEALING

~~Head to head~~: modello ortogeriatrico e fracture liaison service

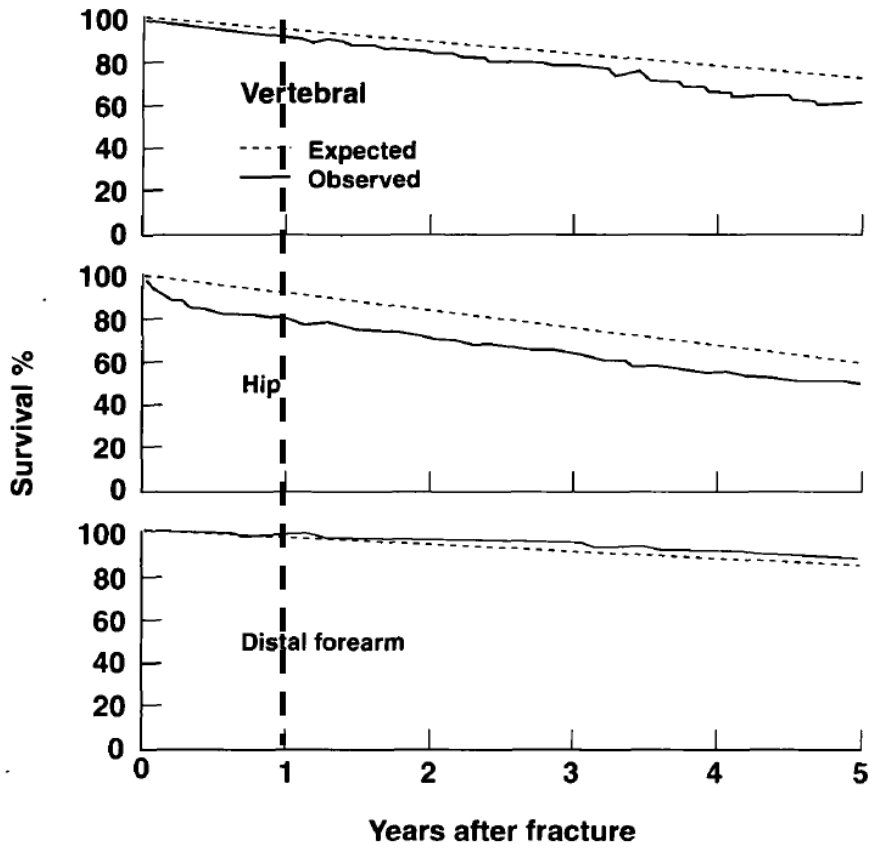
STEFANO VOLPATO

SOCIETÀ ITALIANA DI GERONTOLOGIA E GERIATRIA

Università degli Studi di Ferrara | Dipartimento di Scienze Mediche

SERVIZIO SANITARIO REGIONALE EMILIA-ROMAGNA
Azienda Ospedaliero - Universitaria di Ferrara

Survival rates after vertebral, hip and distal forearm fracture among resident of Rochester



Cooper C et al. Am J Epidemiol 1993;137:1001-1005

Estimated Outcome of Hip Fracture Conditional on Survival

Prefracture status	Postfracture Outcome Probability (%)		
	Independent	Dependent	Nursing home
Independent	74	18	8
Dependent	—	50	50
Nursing home	—	—	100

Cooper C et al. Am J Epidemiol 1993;137:1001-1005

Handgrip Strength Predicts Persistent Walking Recovery After Hip Fracture Surgery

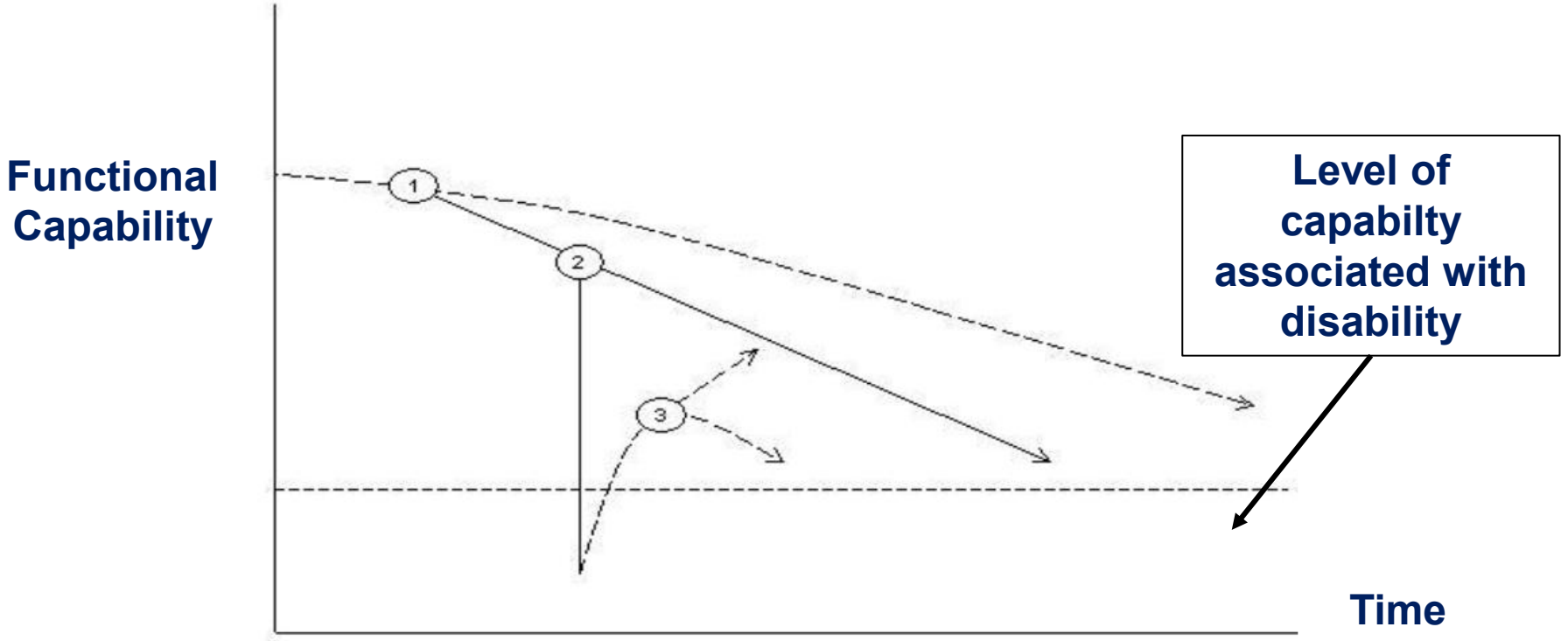
THE AMERICAN JOURNAL of MEDICINE®

Elisabetta Savino, MD,[a] Emilio Martini, MD,[b] Fulvio Lauretani, MD,[c] Giulio Pioli, MD, PhD,[d] Anna Maria Zagatti, MD,[e] Carlo Frondini, MD,[b] Francesca Pellicciotti, MD,[d] Antonio Giordano, MD,[c] Alberto Ferrari, MD,[d] Anna Nardelli, MD,[c] Maria Luisa Davoli, MD,[d] Amedeo Zurlo, MD,[e] Maria Lia Lunardelli, MD,[b] Stefano Volpato, MD, MPH[a]

- Multicenter prospective cohort study;
- 504 patients, aged ≥70 years
- Able to walk independently before the fracture

	Handgrip Strength Tertiles (N = 504)			
	Lowest (n = 172)	Intermediate (n = 173)	Highest (n = 159)	*P* Value
Age (mean ± SD)	86.5 (5.7)	85.6 (5.5)	83.8 (4.8)	<.001
Men, n (%)	45 (26.2)	40 (23.1)	39 (24.5)	.81
Married, n (%)	41 (23.8)	28 (16.2)	53 (33.3)	.02
Home residents, n (%)	154 (89.5)	159 (91.9)	153 (96.2)	.20
Caregiver assistance, n (%)	123 (71.5)	114 (65.9)	74 (46.5)	<.001
Cognitive impairment, n (%)	117 (68.0)	87 (50.3)	48 (30.2)	<.001
Depressive symptoms, n (%)	85 (49.4)	69 (39.9)	54 (34.0)	<.001
Charlson Index, median (IQR)	2 (1-4)	2 (1-3)	1 (0-3)	<.001
No. of medications at admission, median (IQR)	5 (3-7)	4 (2-6)	4 (3-5)	.04
BADL difficulty, n (%)	129 (75.0)	95 (54.9)	36 (22.6)	<.001
IADL difficulty, n (%)	170 (98.8)	172 (99.4)	159 (100)	.39
Vitamin D (25-OH) ng/mL, median (IQR)	7.5 (4.3-13.2)	9.0 (6.1-13.2)	9.0 (5.7-14.1)	.03
C-reactive protein mg/L, median (IQR)	4.2 (2.3-9.8)	5.3 (2.6-8.0)	4.1 (1.8-9.1)	.19
Hemoglobin g/dL, median (IQR)	12.0 (10.9-13.3)	12.4 (10.9-13.5)	12.2 (11.0-13.3)	.55
Type of fracture: n (%)				
Intracapsular	77 (44.8)	83 (48.0)	81 (50.9)	
Trochanteric	87 (50.6)	82 (47.4)	60 (37.7)	.03
Subtrochanteric	8 (4.6)	8 (4.6)	18 (11.3)	
Days before surgery, median (IQR)	2 (2-4)	3 (2-4)	3 (2-5)	<.001
Type of surgery, n (%)				
Endoprosthesis	75 (43.6)	71 (41.0)	76 (47.8)	
Arthroplasty	3 (1.7)	6 (3.5)	3 (1.9)	<.001
Other	94 (54.7)	96 (55.5)	80 (50.3)	
Early rehabilitation, n (%)	157 (91.3)	162 (93.6)	136 (85.5)	.04

Hypothetical natural pathway for hip fracture in in older people



Punto 1: Risk factors for steeper age-related functional decline

Punto 2: Risk factors for cathastrofic disability: IE hip fracture

Punto 3: Risk factors for impaired functional recovery

NICE National Institute for Health and Care Excellence

NICE guideline

Hip fracture: management

Clinical guideline
Published: 22 June 2011
www.nice.org.uk/guidance/cg124

1.8 Multidisciplinary management

1.8.1 From admission, offer patients a formal, acute, orthogeriatric or orthopaedic ward-based Hip Fracture Programme that includes all of the following:

- orthogeriatric assessment
- rapid optimisation of fitness for surgery
- early identification of individual goals for multidisciplinary rehabilitation to recover mobility and independence, and to facilitate return to pre-fracture residence and long-term wellbeing
- continued, coordinated, orthogeriatric and multidisciplinary review
- liaison or integration with related services, particularly mental health, falls prevention, bone health, primary care and social services
- clinical and service governance responsibility for all stages of the pathway of care and rehabilitation, including those delivered in the community. **[2011]**

Aging Clinical and Experimental Research (2021) 33:2405–2443
https://doi.org/10.1007/s40520-021-01898-9

CONSENSUS DOCUMENT

Orthogeriatric co-management for the care of older subjects with hip fracture: recommendations from an Italian intersociety consensus

Antonio De Vincentis[1] · Astrid Ursula Behr[2] · Giuseppe Bellelli[3,4] · Marco Bravi[5] · Anna Castaldo[6] · Lucia Galluzzo[7] · Giovanni Iolascon[8] · Stefania Maggi[9] · Emilio Martini[10] · Alberto Momoli[11] · Graziano Onder[7] · Marco Paoletta[8] · Luca Pietrogrande[12] · Mauro Roselli[13] · Mauro Ruggeri[14] · Carmelinda Ruggiero[15] · Fabio Santacaterina[5] · Luigi Tritapepe[16] · Amedeo Zurlo[17] · Raffaele Antonelli Incalzi[1] · on behalf of Società Italiana Geriatria e Gerontologia (SIGG), · Associazione Italiana di Psicogeriatria (AIP), · Società Italiana di Geriatria Ospedale e Territorio (SIGOT), · Società Italiana di Medicina Generale (SIMG), · Società Italiana di Anestesia Analgesia Rianimazione e Terapia Intensiva (SIAARTI), · Società Italiana di Ortopedia e Traumatologia (SIOT), · Fragility Fracture Network-Italia (FFN-I), · Società Italiana di Medicina Fisica e Riabilitativa (SIMFER), · Società Italiana di Fisioterapia (SIF), · Consiglio Nazionale delle Ricerche (CNR), · Associazione Italiana di Fisioterapia (AIFI), · Istituto Superiore Sanità (ISS)

Pre-operative assessment

Composition of the multidisciplinary care team

Statement	Type	Quality of evidence	Strength of recommendation
We recommend that the MCT includes, at the minimum, an orthopaedic surgeon, an anaesthetist, and a geriatrician	Recommendation	High	A
If a geriatrician is unavailable, the MCT might consider involving a specialist in internal medicine with well-recognised skills in geriatric medicine	Recommendation	Low	B
From the early postoperative phase, the physiatrist and the physiotherapist should actively contribute to the MCT	Recommendation	Low	B

Principles of Comanagement and the Geriatric Fracture Center

Daniel Ari Mendelson, MS, MD*, Susan M. Friedman, MD, MPH

Clin Geriatr Med 30 (2014) 183–189

KEY POINTS

- The 5 principles of the geriatric fracture center
  - Most patients benefit from surgical stabilization of their fracture.
  - The sooner patients have surgery, the less time they have to develop iatrogenic illness.
  - Comanagement with frequent communication avoids common medical and functional complications.
  - Standardized protocols decrease unwarranted variability.
  - Discharge planning begins at admission.
- Interdisciplinary care is multidisciplinary care that is integrated in a patient-centered fashion.
- Interdisciplinary care requires communication and shared decision making.
- Comanagement is true interdisciplinary care that results in a collaborative care environment in which all team members maximize their contributions resulting in improved outcomes.

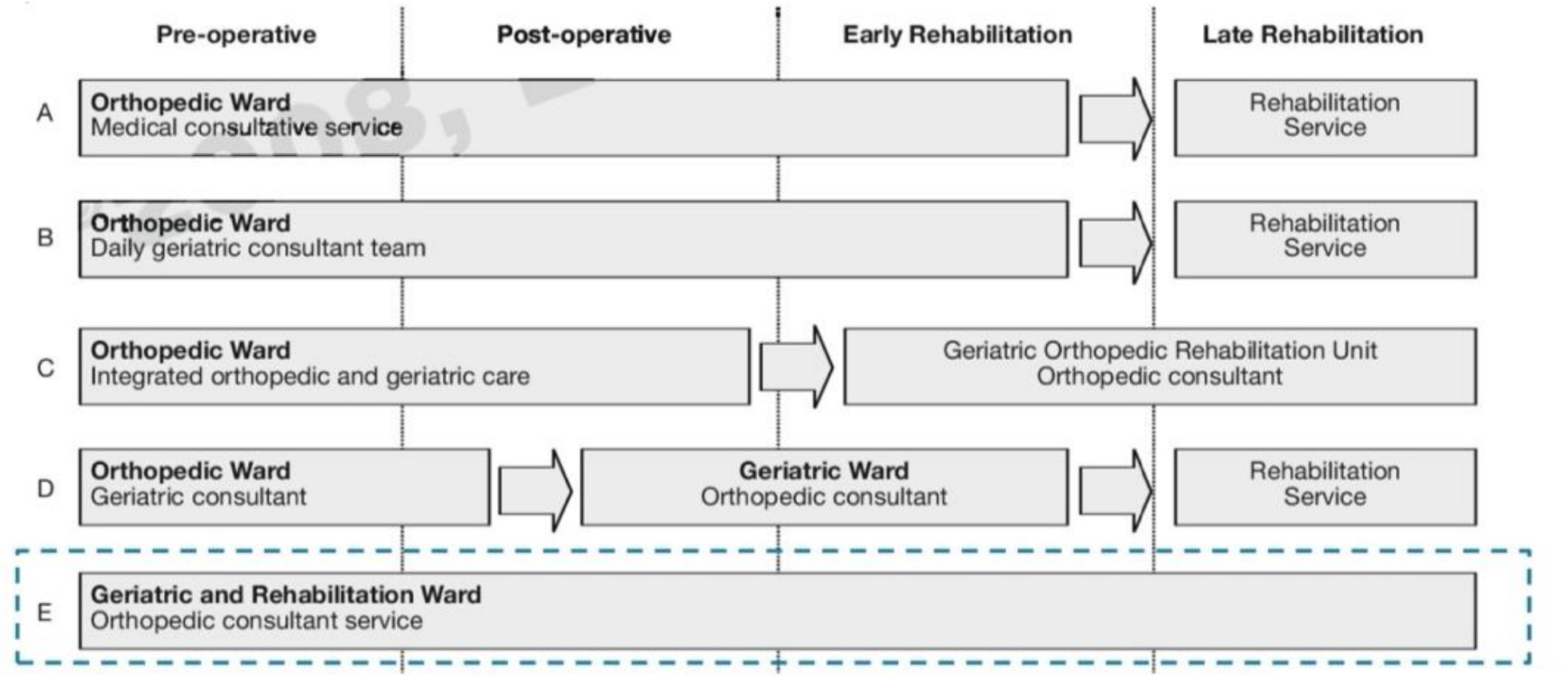
Key Geriatrics roles

The management of hip fracture in the older population.
Joint position statement by Gruppo Italiano Ortogeriatria (GIOG)
Giulio Pioli • A. Barone • C. Mussi •L. Tafaro • G. Bellelli • P. Falaschi • M. Trabucchi • G. Paolisso • On behalf of GIOG *Aging Clin Exp Res* Published online 25/02/2014

Requisito	Standard dell'intervento
1.Responsabilità gestionale	• Cogestione ortopedico-geriatrica • Team multidisciplinare nelle varie fasi del percorso
2. Profilo e compiti dell'ortogeriatra	• Esperienza comprovata nella valutazione multidimensionale e nella gestione del paziente anziano acuto, con particolari competenze sulle sindromi geriatriche • Esperienza comprovata nella gestione dei problemi medici perioperatori e del delirium • Esperienza comprovata nella capacità di formulare una prognosi quoad vitam e quoad valetudinem e nel pianificare la prevenzione delle complicanze in base ai profili di rischio dei pazienti • Esperienza nella diagnosi e nel trattamento della patologia osteoporotica
3. Standardizzazione della comunicazione	• Descrizione delle procedure comunicate dei diversi professionisti • Definizione delle modalità di visita, breefing e meeting
4. Standardizzazione dell'intervento	• Sviluppo di protocolli condivisi basati sulle evidenze disponibili sui principali aspetti del perioperatorio
5. Rapidità di intervento chirurgico	• Riduzione del trattamento conservativo al di sotto del 4% dei pazienti e con scelta condivisa dal team multidisciplinare • Condivisione di protocolli di ottimizzazione preoperatoria con anestesisti ed ortopedici in base ai criteri dell'"urgenza differita" • Predisposizione di interventi organizzativi per evitare ritardi di intervento dovuti a fattori sistemici
6. Precocità nella mobilizzazione	• Intervento chirurgico orientato alla possibilità di carico completo immediato • Condivisione di protocolli di riabilitazione precoce con ortopedici, fisiatri/fisioterapisti • Realizzazione di protocolli per il trattamento del dolore, dell'anemia, prevenzione di ipovolemia postoperatoria e prevenzione e trattamento del delirium
7. Continuità assitenziale	• Discharge planning interdisciplinare precoce • Accesso all'intervento riabilitativo intra ed extraospedaliero secondo un piano di trattamento multidisciplinare, appropriato per tipologia ed intensità, in base alle potenzialità e alle condizioni prefrattura indipendentemente dal livello cognitivo, dalla sede di provenienza e dall'età del paziente.
8. Programma di prevenzione secondaria	• Valutazione in ogni paziente della patologia osteometabolica e del trattamento farmacologico indicato • Valutazione del rischio di caduta e definizione di un piano preventivo

- **Pre-operative**
  - Immediate assessment
  - CGA including screening for geriatric syndromes (i.e. delirium, acute sarcopenia, disability)
  - Medication managment
  - Multimorbidity managment (avoid specialists intervention)
  - Nutritional therapy
  - Type of anesthesia
  - Pain control
- **Post operative**
  - Avoid geriatric complications
  - Treatment of geriatric complications
  - Early mobilization
- **Discharge**
  - Early discharge planning
  - Secondary prevention

Different types of orthogeriatric models



Pioli G et al. ACER 2008;20:113-22

Orthogeriatric comanagement: Key Performance Indicators

National Hip Fracture Database

National Falls and Fragility Fracture Audit Programme (FFFAP)

Home | Charts | KPIs | Benchmarks | Dashboards Login

Key performance indicators (KPIs)

KPIs Overview
KPIs
KPIs Table

KPI 0 - Admission
KPI 1 - Prompt review
KPI 2 - Prompt surgery
KPI 3 - NICE compliance
KPI 4 - Promptly out of bed
KPI 5 - Delirium
KPI 6 - Home return
KPI 7 - Medication

Survival At 30 Days

Search: enter a hospital name, address or postcode...

About | Using charts | FAQs

KPI overview: [ALL]

Annualised values based on 69,445 cases averaged over 12 months to the end of August 2024, except KPI6 and KPI 7 which are delayed to allow for follow up data to be included.

0. Admission to specialist ward	1. Prompt orthogeriatric review	2. Prompt surgery	3. NICE compliant surgery
9%	88%	58%	69%
NHFD overall: 9%	NHFD overall: 88%	NHFD overall: 58%	NHFD overall: 69%

4. Promptly out of bed	5. Not delirious post-op	6. Return to original residence	7. Bone medication
81%	66%	74%	47%
NHFD overall: 81%	NHFD overall: 66%	NHFD overall: 74%	NHFD overall: 47%

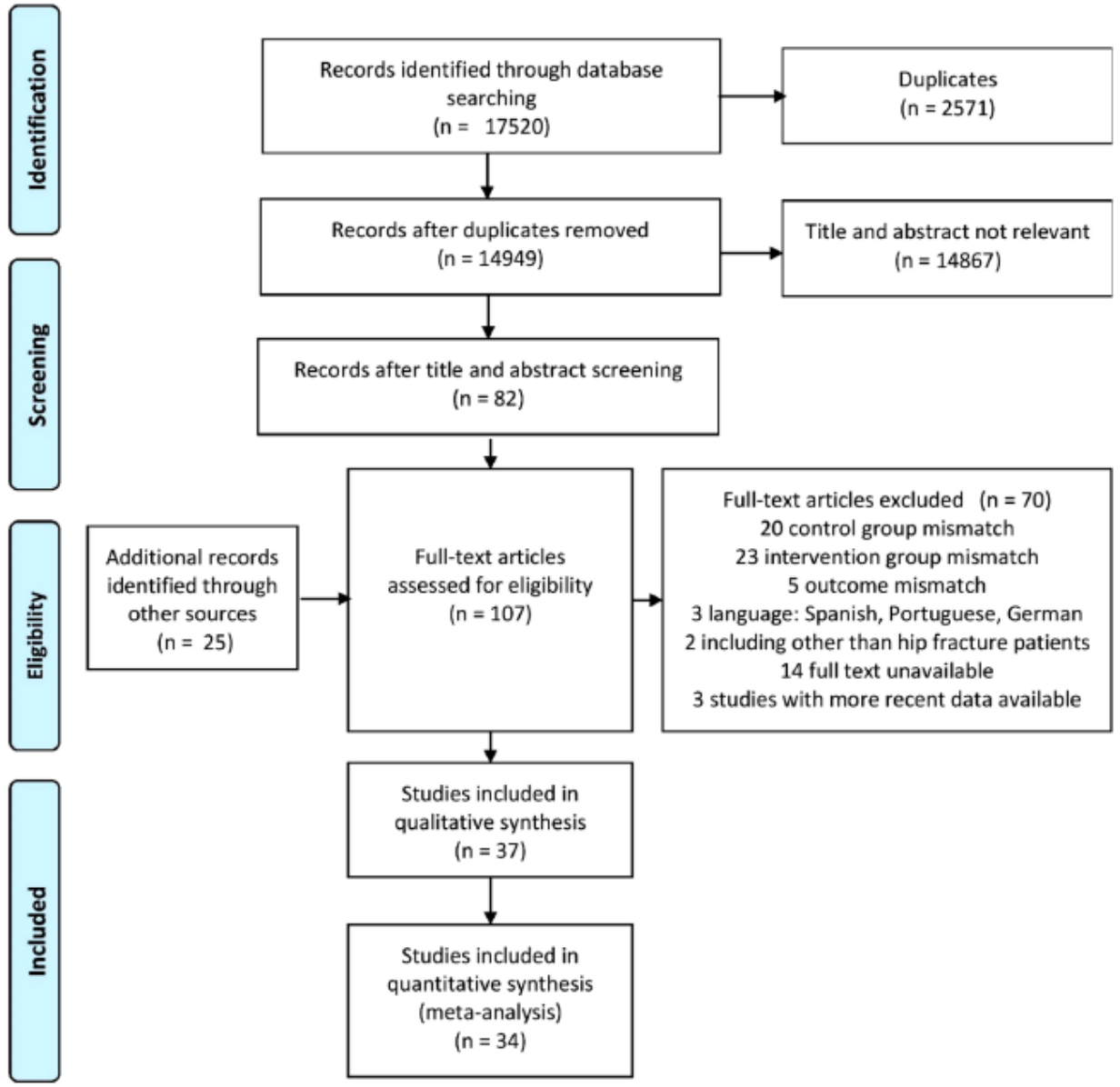
Calcified Tissue International (2022) 110:162–184
https://doi.org/10.1007/s00223-021-00913-5

ORIGINAL RESEARCH

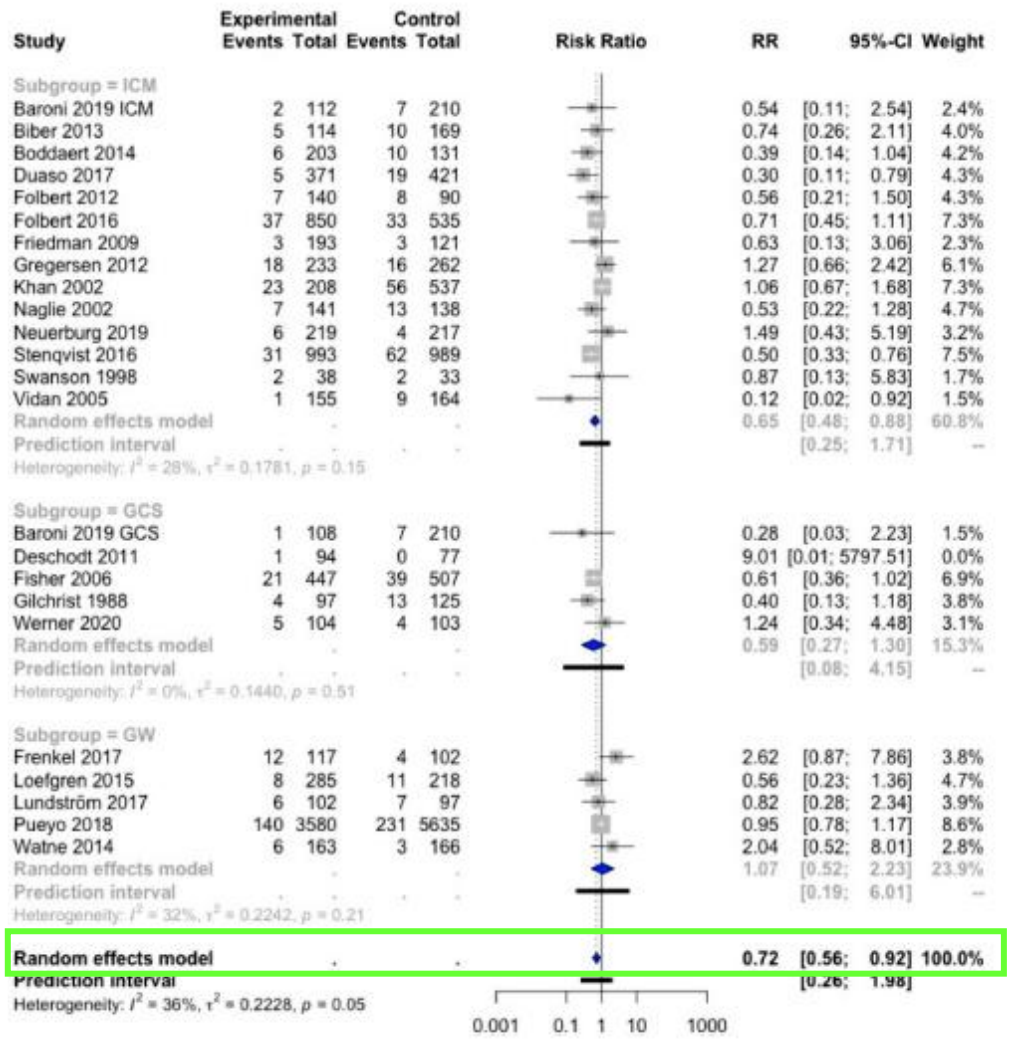
Effects of Orthogeriatric Care Models on Outcomes of Hip Fracture Patients: A Systematic Review and Meta-Analysis

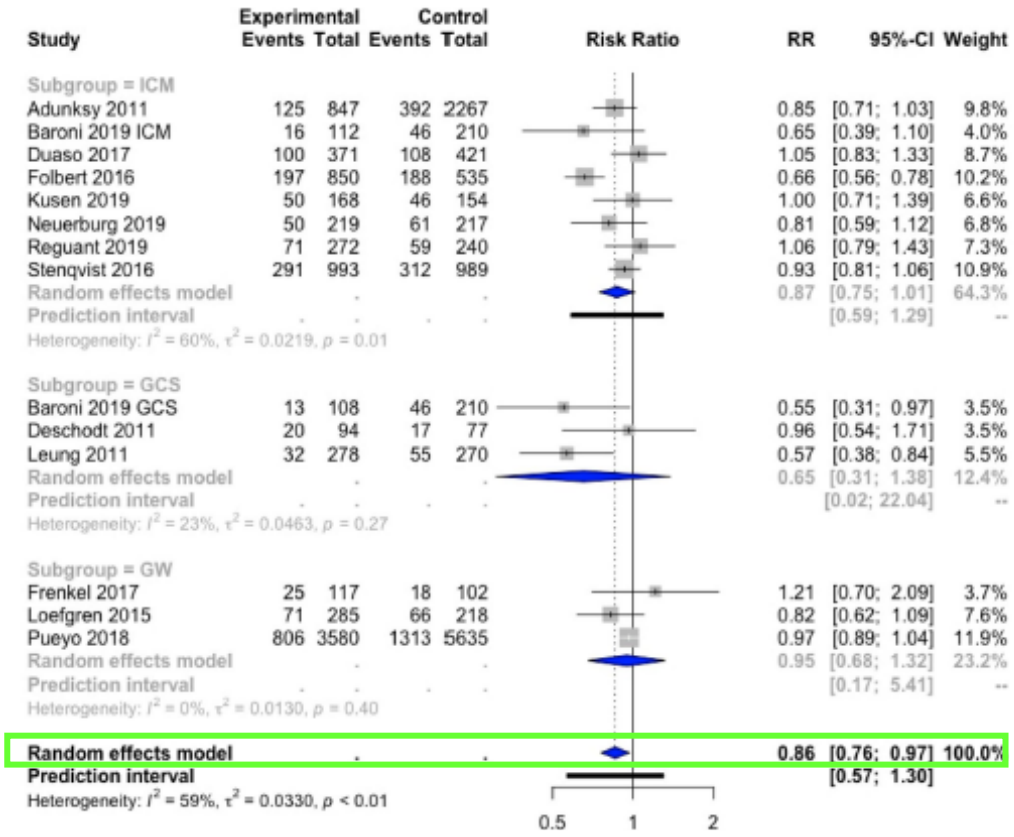
Annelore Van Heghe[1] · Gilles Mordant[2] · Jolan Dupont[3,4,5] · Marian Dejaeger[3,4,5] · Michaël R. Laurent[4,6] · Evelien Gielen[3,4,5]

Received: 14 June 2021 / Accepted: 6 September 2021 / Published online: 30 September 2021



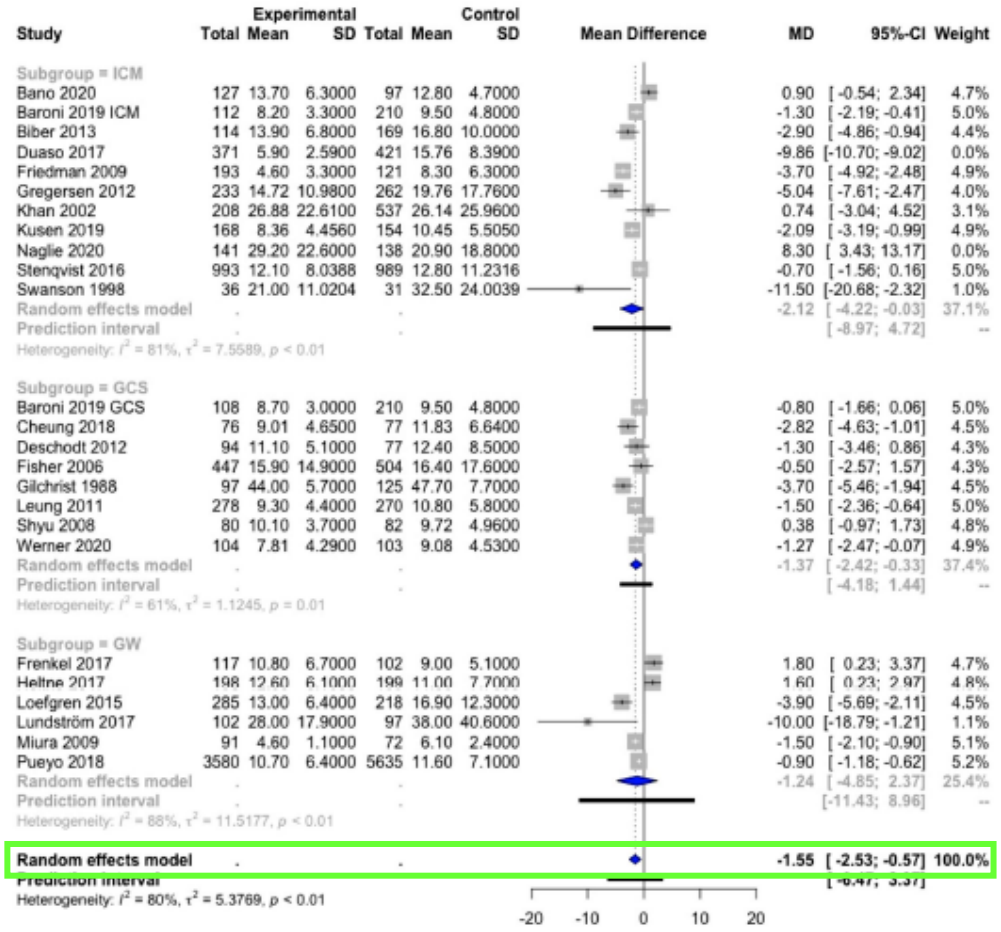
Comparison of in-hospital and 1-year mortality according to orthogeriatric models compared to usual orthopedic care

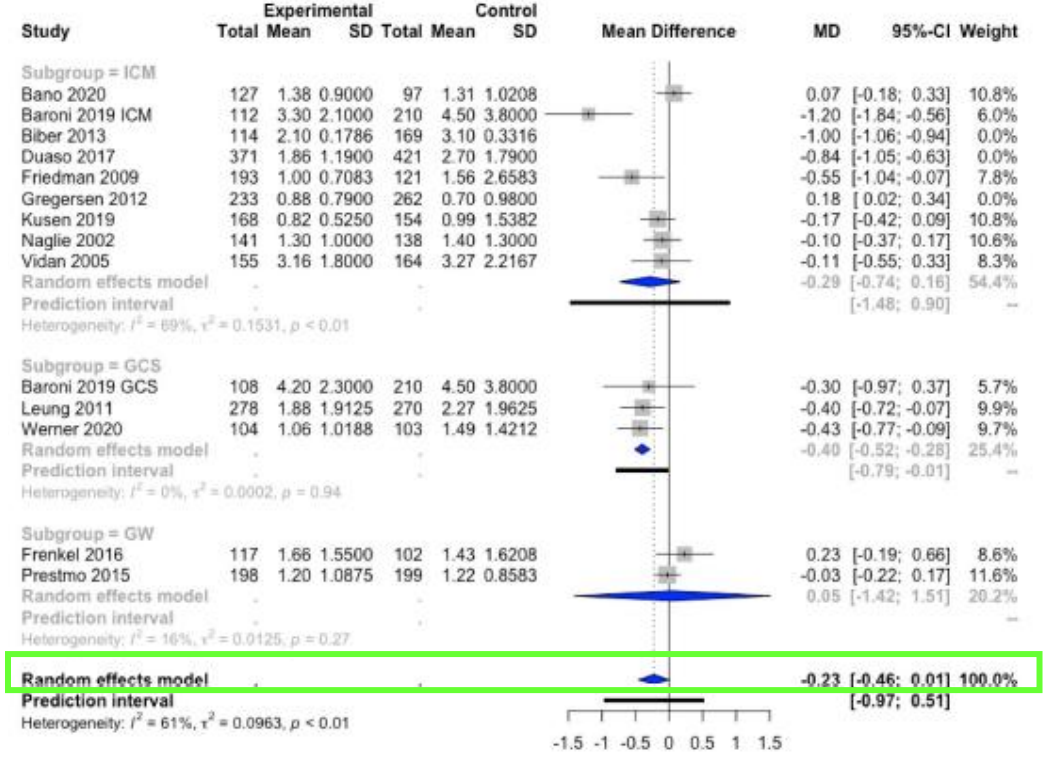




ICM: Integrated care model
GCS: Geriatric consultant service
GW: Geriatric ward

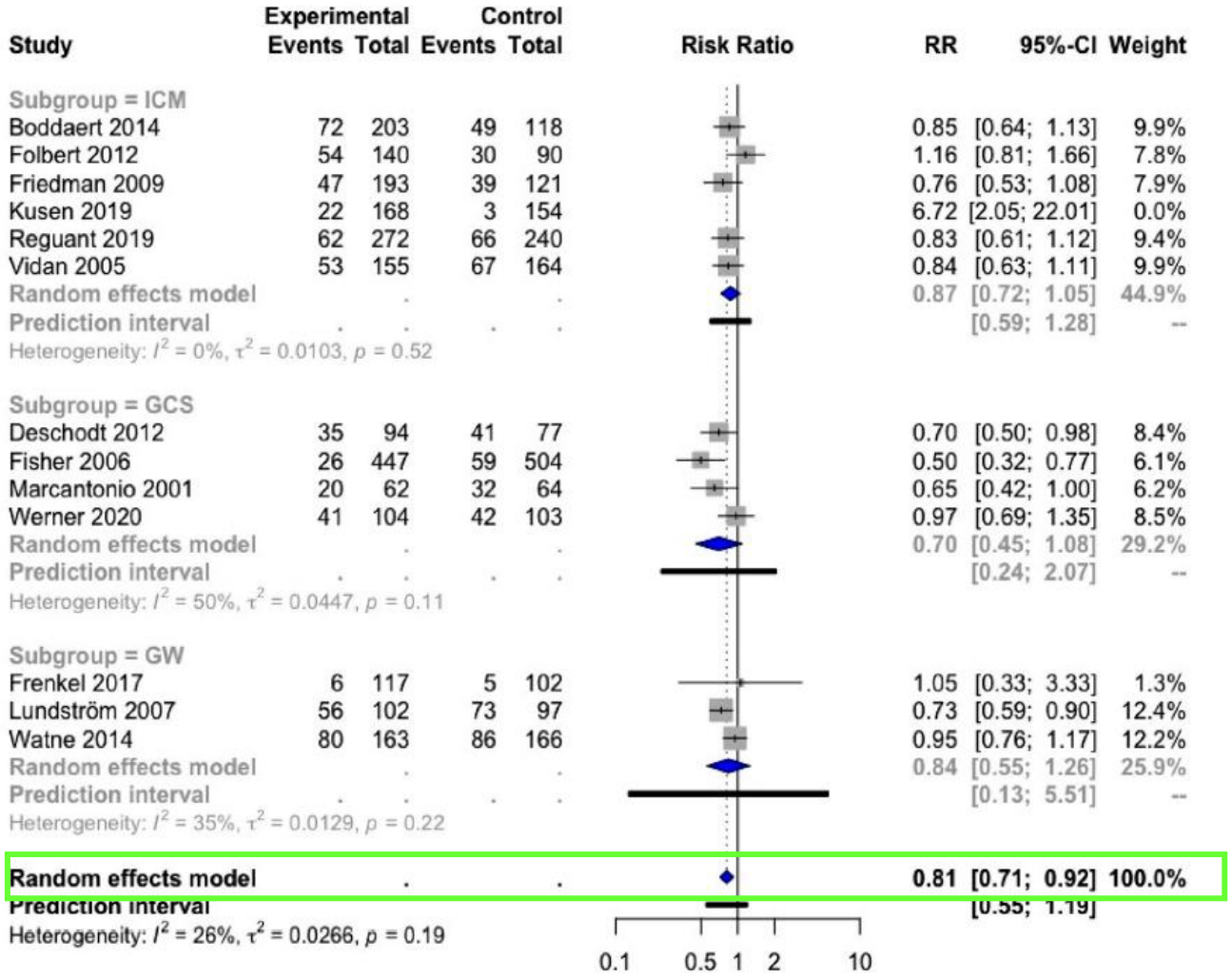
Comparison of LOS and time to surgery according to orthogeriatric models compared to usual orthopedic care





ICM: Integrated care model
GCS: Geriatric consultant service
GW: Geriatric ward

Comparison of Delirium incidence according to orthogeriatric models compared to usual orthopedic care



ICM: Integrated care model
GCS: Geriatric consultant service
GW: Geriatric ward

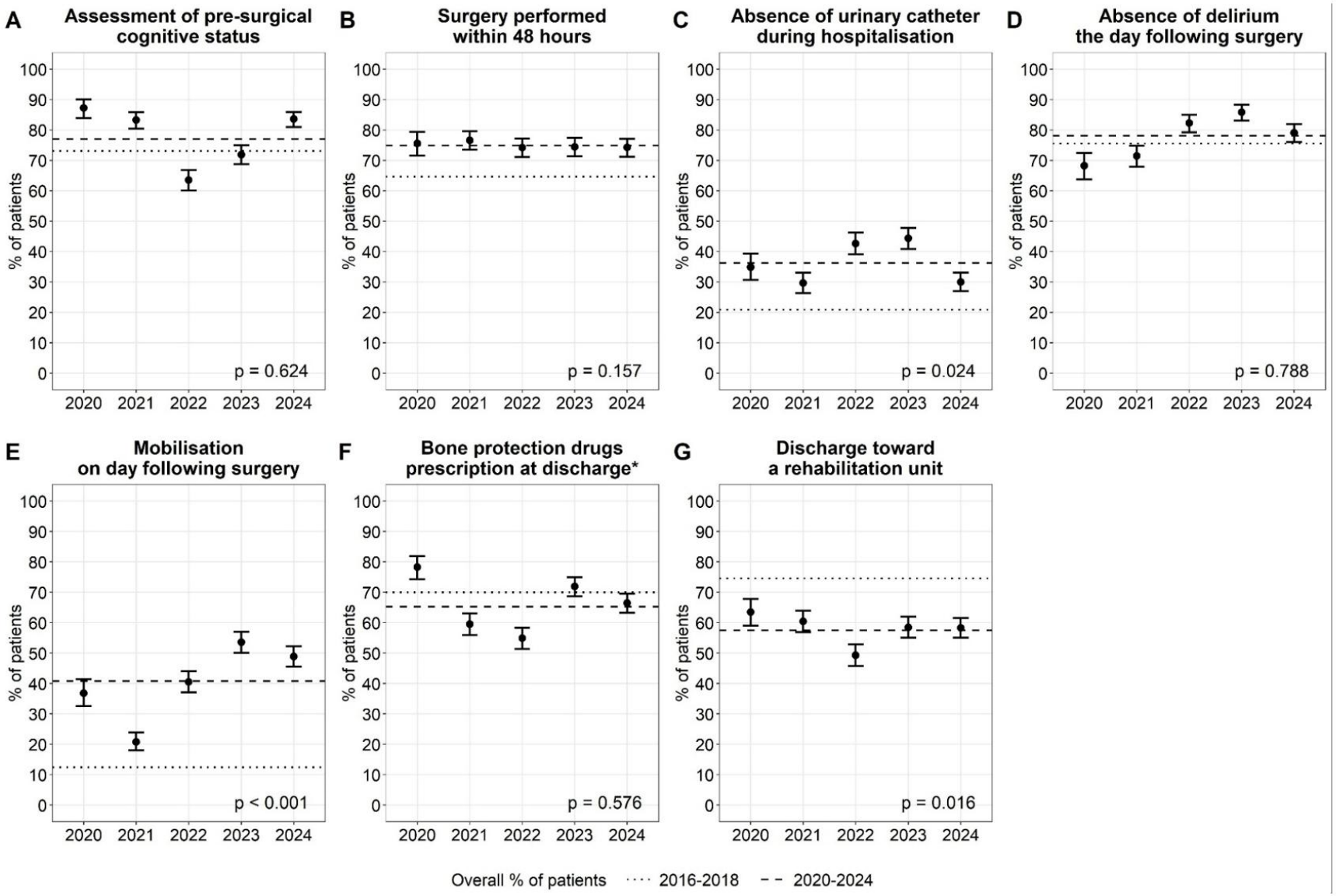
Comparison of Functional Status according to orthogeriatric models compared to usual orthopedic care

Study	ADL scale	Care model	FU (m)	ADL score of intervention group	ADL score of control group	*p* value
Bano et al. [34]	Katz index 0 = fully dependent 6 = fully independent	ICM	6	Mean loss (SD) 1.1 (1.7)	Mean loss (SD) 2.4 (2.2)	**< 0.001**
Deschodt et al. [27]	Katz index 6 = fully independent 18 = fully dependent	GCS	4 12	Mean (SD) 10.0 (3.8) 9.8 (3.8)	Mean (SD) 10.8 (3.9) 10.0 (3.4)	0.19 0.34
Prestmo et al. [21]	Barthel index 0 = fully dependent 20 = fully independent	GW	1 4 12	Mean (SE) 14.53 (0.28) 16.31 (0.29) 16.46 (0.29)	Mean (SE) 14.21 (0.29) 15.30 (0.29) 15.33 (0.30)	0.43 **0.013** **0.007**
Watne et al. [22]	Barthel index 0 = fully dependent 20 = fully independent	GW	4 12	Median (IQR) 17 (10–20) 17 (9.5–19)	Median (IQR) 16 (12–20) 16 (11–19)	0.80 0.44
Naglie et al. [23]	Modified Barthel index 0 = fully dependent 100 = fully independent	ICM	3 6	Mean (SD) 62.0 65.0	Mean (SD) 62.4 65.7	NS NS
Shyu et al. [18]	Chinese Barthel index 0 = fully dependent 100 = fully independent	GCS	1 3 6 12	Mean (SD) 81.24 (15.49) 88.82 (13.37) 91.84 (11.41) 90.53 (18.40)	Mean (SD) 72.92 (19.77) 79.93 (20.00) 84.08 (18.71) 84.36 (24.02)	*p* value for ADL performance trajectory: **0.002**

ICM: Integrated care model
GCS: Geriatric consultant service
GW: Geriatric ward

Lo Studio GIOG (Gruppo Italiano di OrtoGeriatria)

	Overall (N = 3881)
Genere, N (%)	
Femmina	2931 (75.5)
Maschio	950 (24.5)
Età (anni), mediana (Q1-Q3)	84.0 (79.0-89.0)
Domicilio pre-frattura, N (%) (N=3876)	
Vive solo	764 (19.7)
Vive in famiglia/Badante	2911 (75.1)
RSA/Casa di riposo/Istituto per anziani	201 (5.2)
Demenza, N (%) (N=3759)	1176 (31.3)
CCI, mediana (Q1-Q3) (N=3640)	5.0 (4.0-7.0)
Activities of Daily Living, mediana (Q1-Q3) (N=3698)	5.0 (3.0-6.0)
Scottish audit hip fracture, N (%) (N=3778)	
Deambula autonomamente senza ausili	1532 (40.6)
Deambula fuori casa con un solo ausilio	576 (15.2)
Deambula fuori casa con due ausili o deambulatore	292 (7.7)

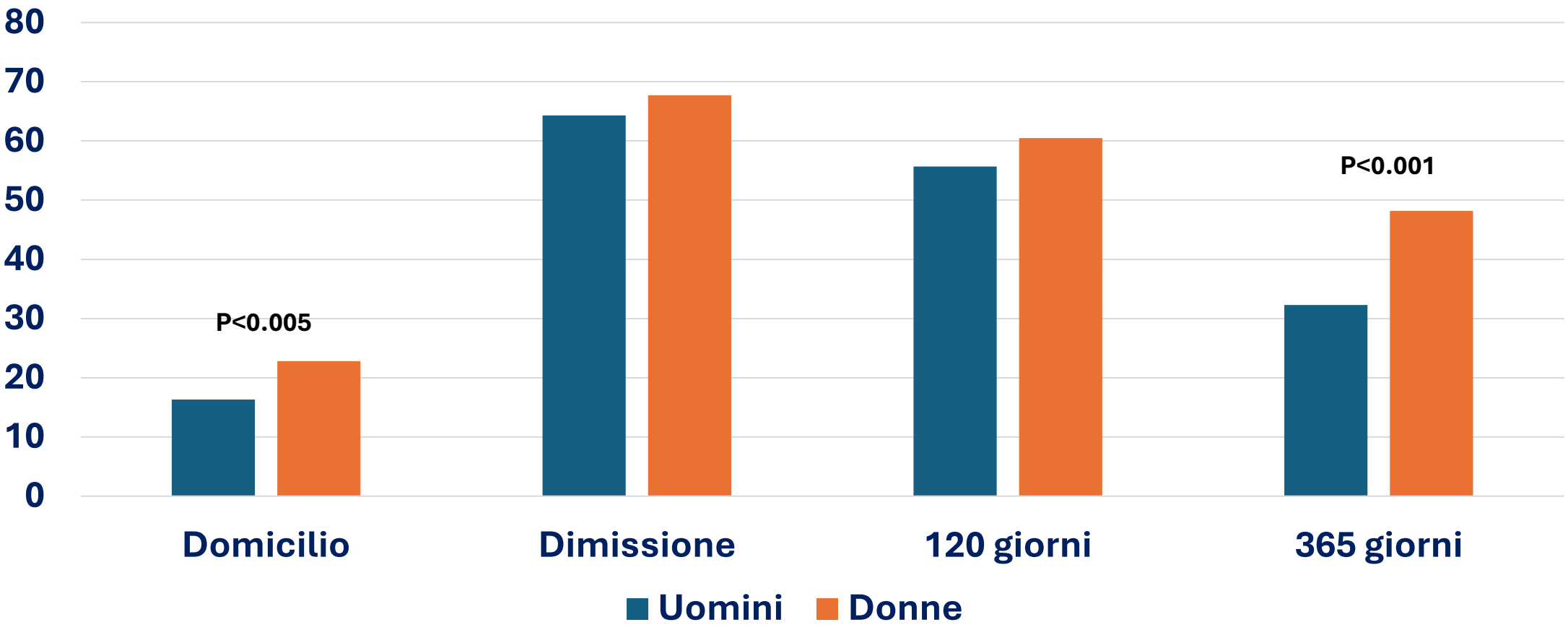


*included colecalciferol, calcium, antiresorptive or anabolic drugs in panel F.

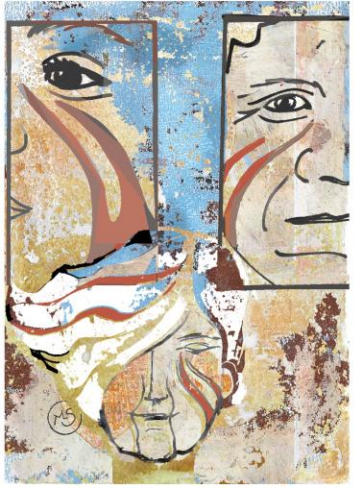
*Il p-value si riferisce al confronto della proporzione media di soggetti soddisfacenti ciascun KPI negli anni 2020-2024 con quella del 2016-2018 [precedente pubblicazione audit triennale GIOG] (confronto delle due righe orizzontali).

Unpublished data

Terapia osteometabolica in pazienti anziani ricoverati per frattura di femore: follow-up



dati non pubblicati



17·20 Dicembre 2025 Napoli

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Università degli Studi di Napoli Federico II Polo Didattico di **SCAMPIA**

SOCIETÀ ITALIANA DI GERONTOLOGIA E GERIATRIA

SIMPOSIO: BONE HEALTH E BONE HEALING

~~Head to head~~: modello ortogeriatrico e fracture liaison service

CARMELINDA RUGGIERO

STUDIUM GENERALE CIVITATIS PERUSII A.D. MCCCVIII

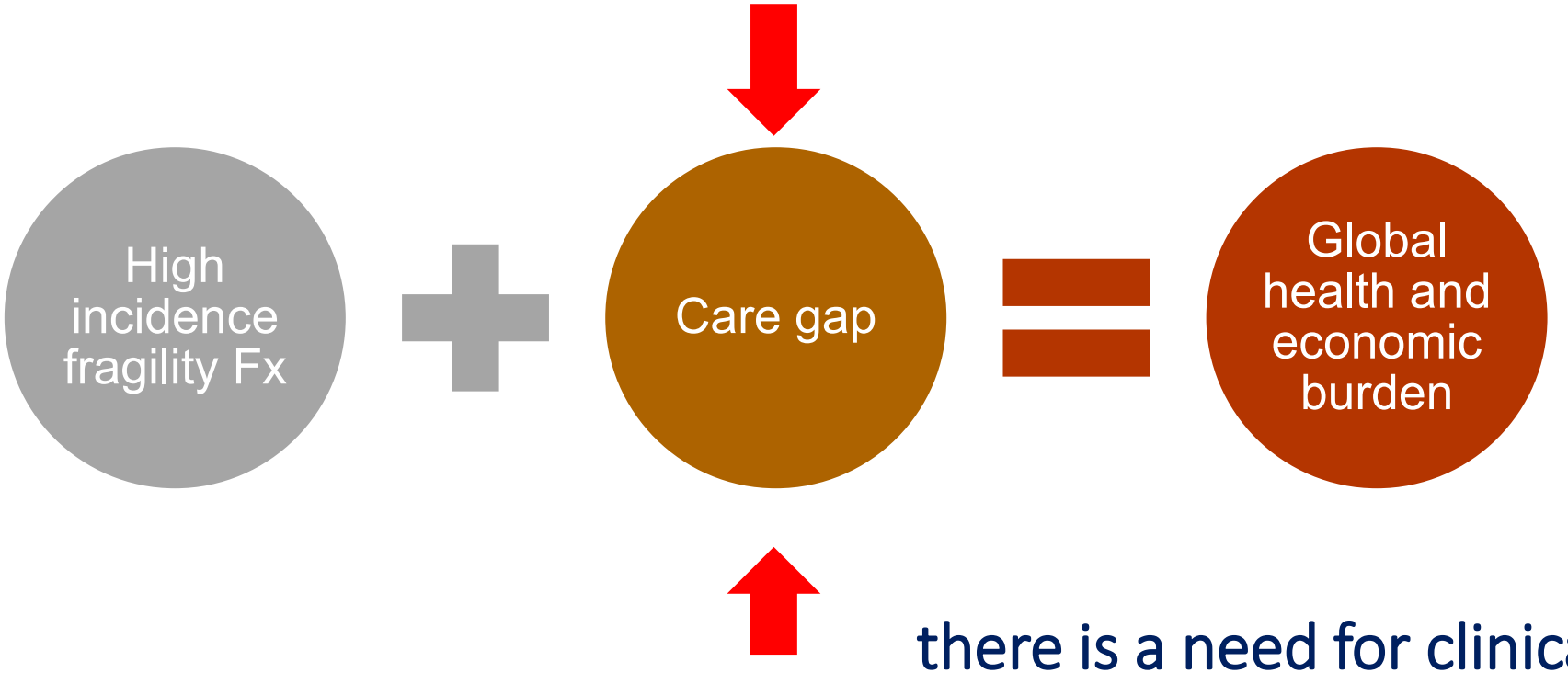
A.D. 1308 unipg Circolo Universitario San Martino

FFN ITALIA Fragility Fracture Network

Regione Umbria

USL1 AOPG USL2 AOTR

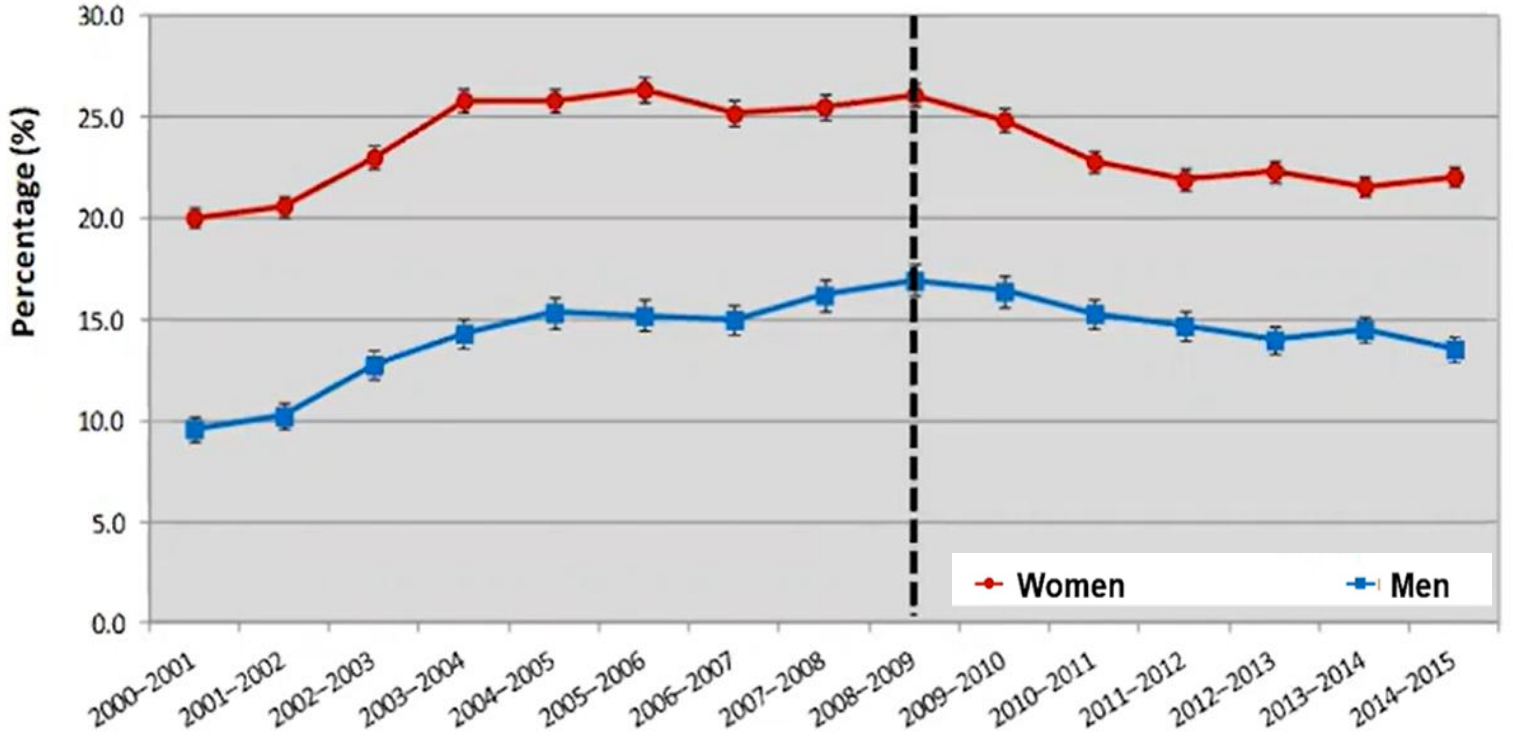
What is the problem?



there is a need for clinically and cost-effective model of care for secondary prevention

SCOPE '21
ScoreCard for OsteoPorosis in Europe

Percentage of individuals who received OP medication 1 year following major fracture in Canada, 2000- 2015



Up to 26.1% in Women and 16.9% in Men
Increase up to 2008-2009 (p for trend <0001)
Followed by decline to 2014- 2015 (p for trend <.0001)

Care Gap

73.9% in women
83.1% in men

Failure of the
non-target interventions
(change patients' outcomes without conneting with the patients, including education, protocols, guidelines, etc).

Post Fracture Care Programs

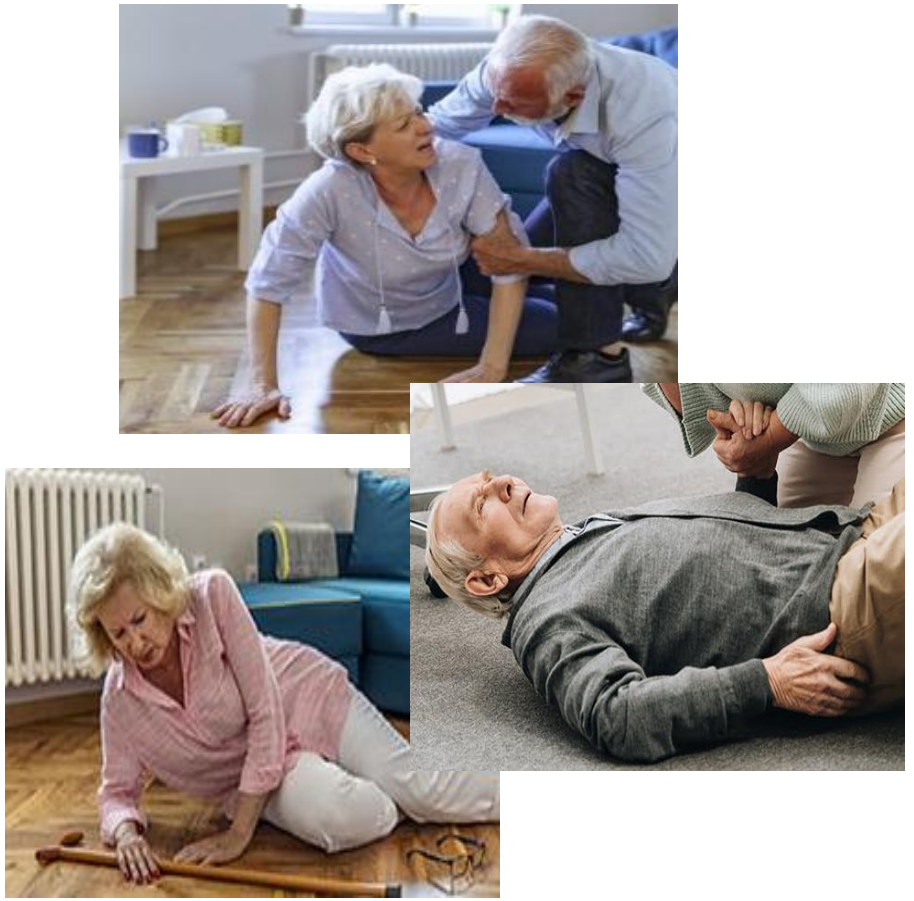
Improve outcomes and prevent subsequent fragility fractures

Orthogeriatric Service (OG)

Primary goal: improve overall patients outcomes (morbidity/ mortality/ functioning/quality of life)

Fracture Liaison Service (FLS)

Primary goal: «capture the first fragility fracture» and prevent subsequent fragility fractures



Akesson K, et al, Osteop Int 2022

How does Fracture Liaison Service work?

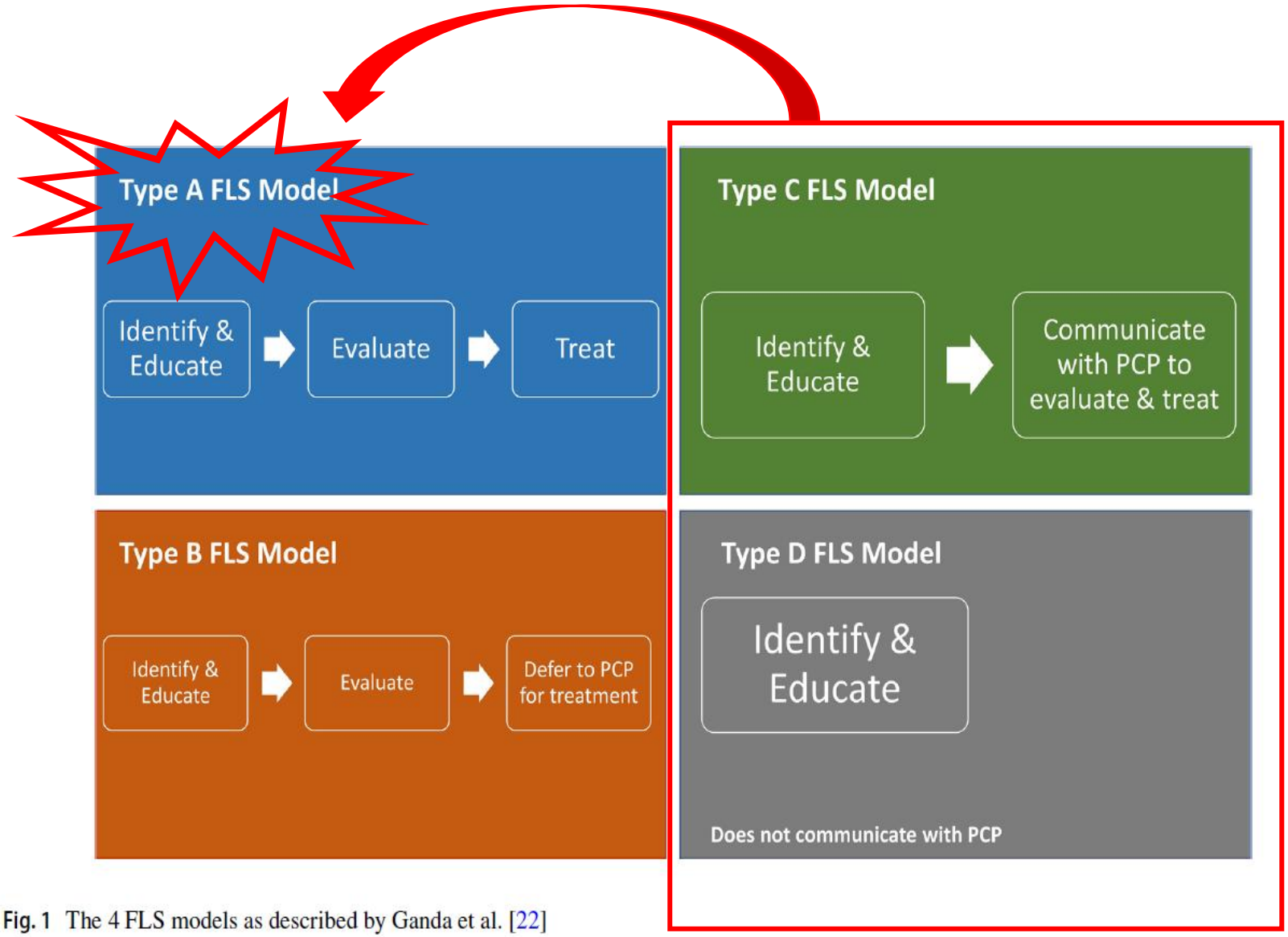
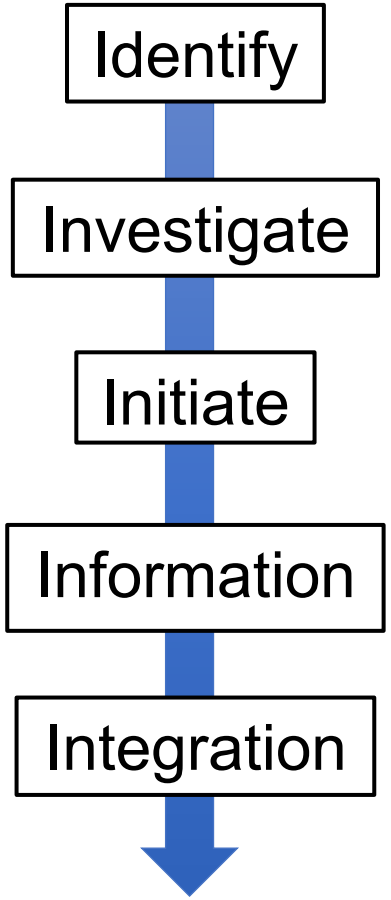


Fig. 1 The 4 FLS models as described by Ganda et al. [22]

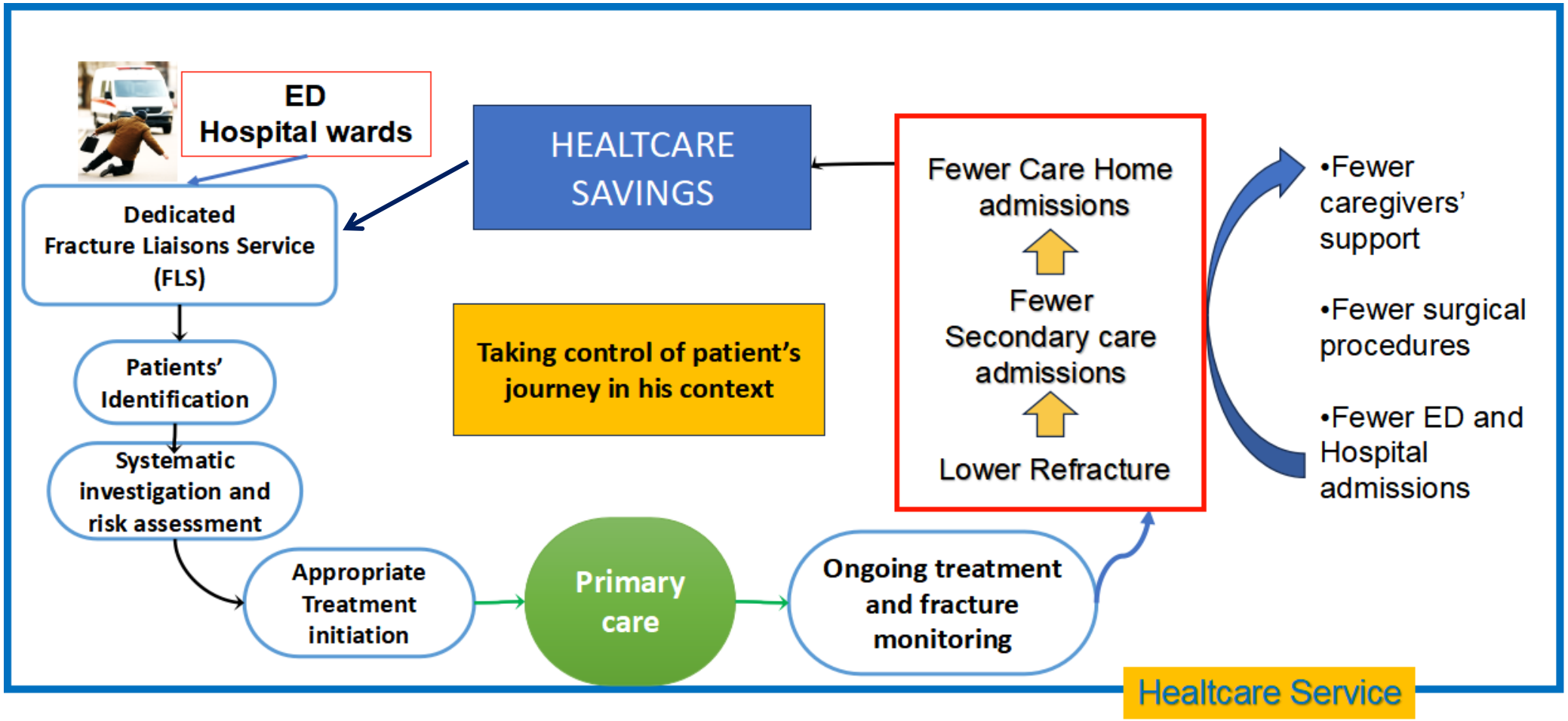
5i Targeted Interventions



Ganda K, Osteop Int 2021; Hal V.Le et al, Arch Osteop 2024; Tahmasbi F et al, Ostop INt 2024

Fracture Liaison Service

1. Patient-Centered - Transmural- Multiprofessional and Coordinated care model usually hospital-based



Modified from Javaid MK, et al, Osteoporosi Int 2020; Akesson K, et al, Osteop Int 2022

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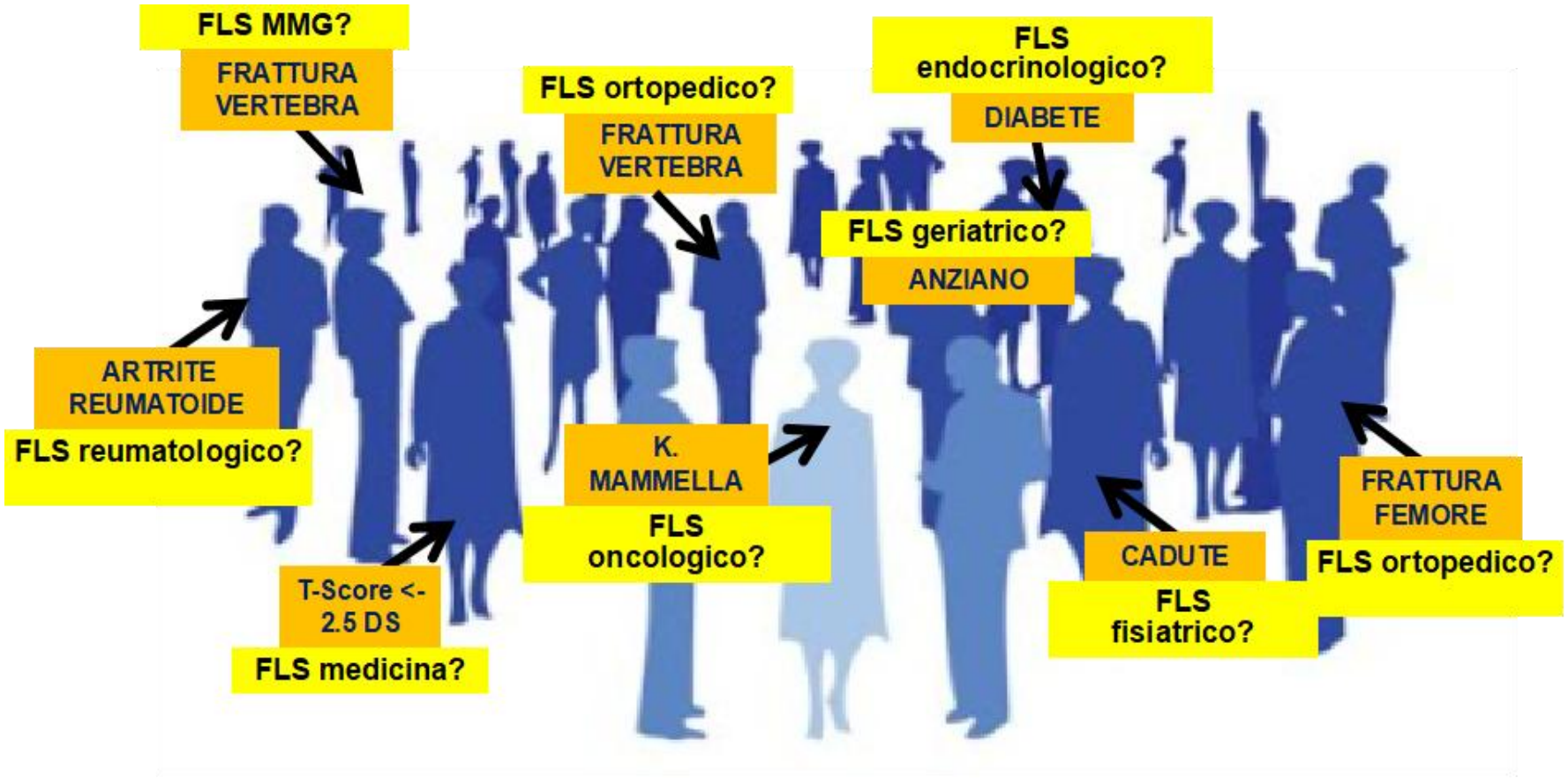

Author's personal view

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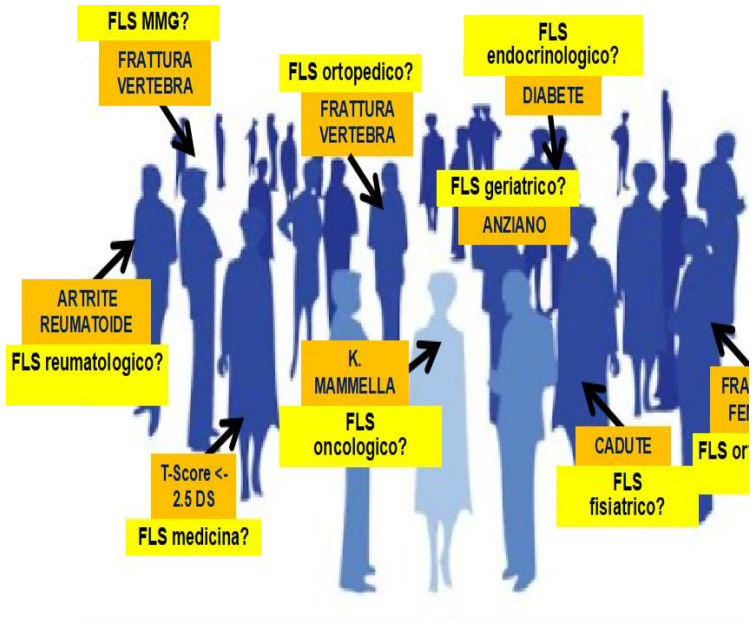


Depending on patients' setting, post-fracture programs should be adapted while retaining consistent KPIs

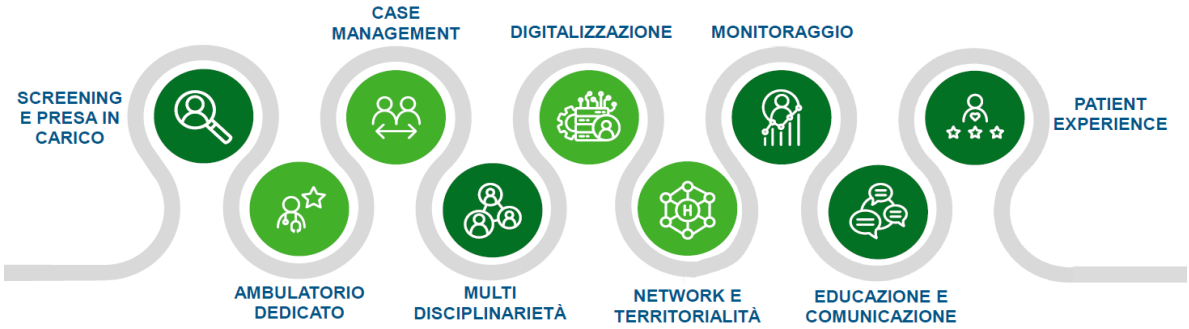
Pazienti con frattura chirurgica maggiore

Tipologia di pazienti:
pazienti che accedono in PS con frattura da fragilità maggiore che necessitano di intervento chirurgico

Elementi chiave del percorso:
- Triage ed accertamenti ematochimici e radiologici in PS; invio fratturati al PS ortopedico e fratturati di vertebra in neurochirurgia
- ricovero ed intervento chirurgico presso il reparto di Ortogeriatria
- contestuale inserimento del paziente nel percorso FLS integrato tra Ortopedia e Geriatria

Punti di attenzione:
Percorso strutturato di presa in carico Ortogeriatrico dedicato alle fratture di femore e maggiori, ma non alle fratture vertebrali e minori

Main KPIs of an FLS	
Rate of survival	Rate of falls
Rate of new (secondary) fractures	Rate of outpatient follow-up (30–60 days)
Readmission	Rate of follow-up
Reoperation within this follow-up period	Comprehensive assessment of adherence (anti-osteoporosis medication taken according to an agreed treatment plan)
Medication and calcium/vitamin D adherence	Mortality at the end of the follow-up period
Residence at end of follow-up period (Home / Institution / Acute Care / Rehabilitation / Unknown / Dead)	Specialists performing follow-up (orthopedic surgeon / geriatrician / rehabilitation)



Tahmasbi F et al , Osteop Int 2024

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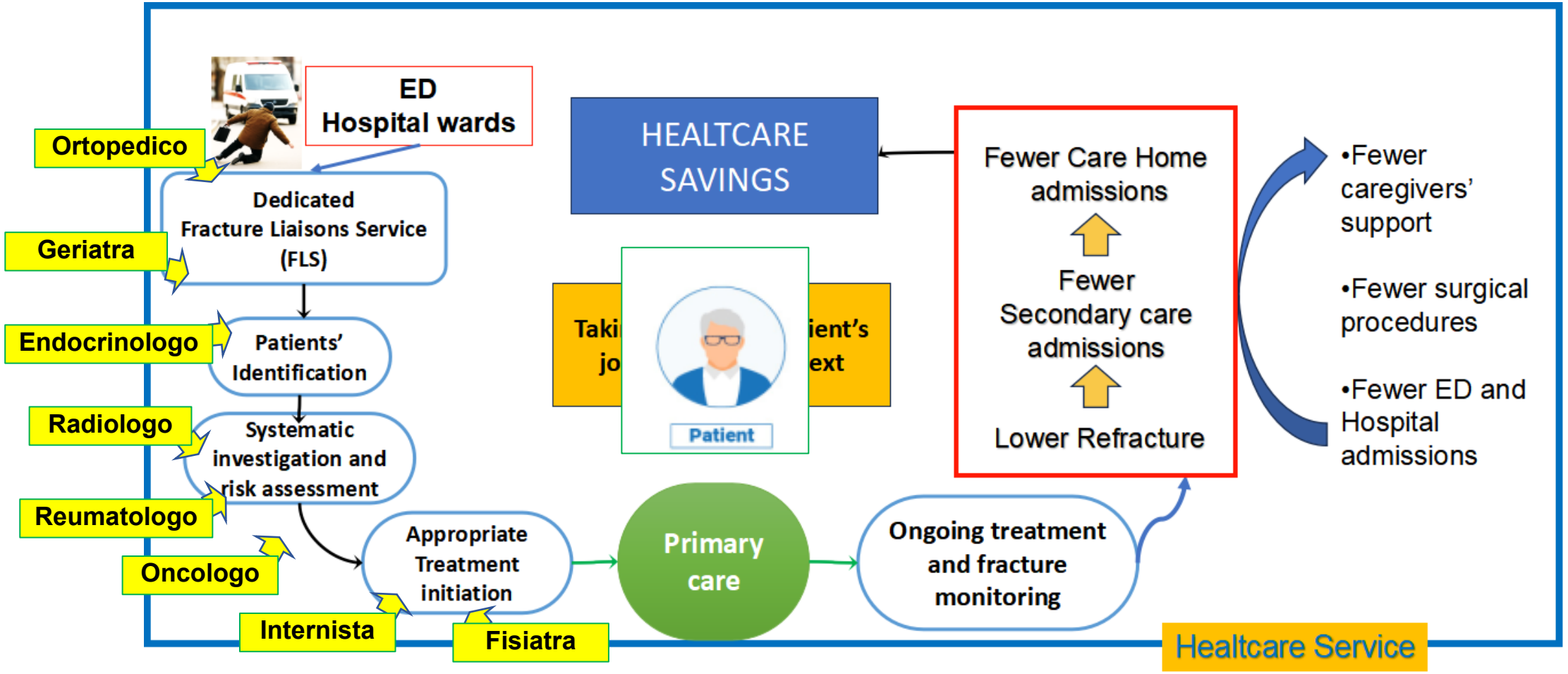
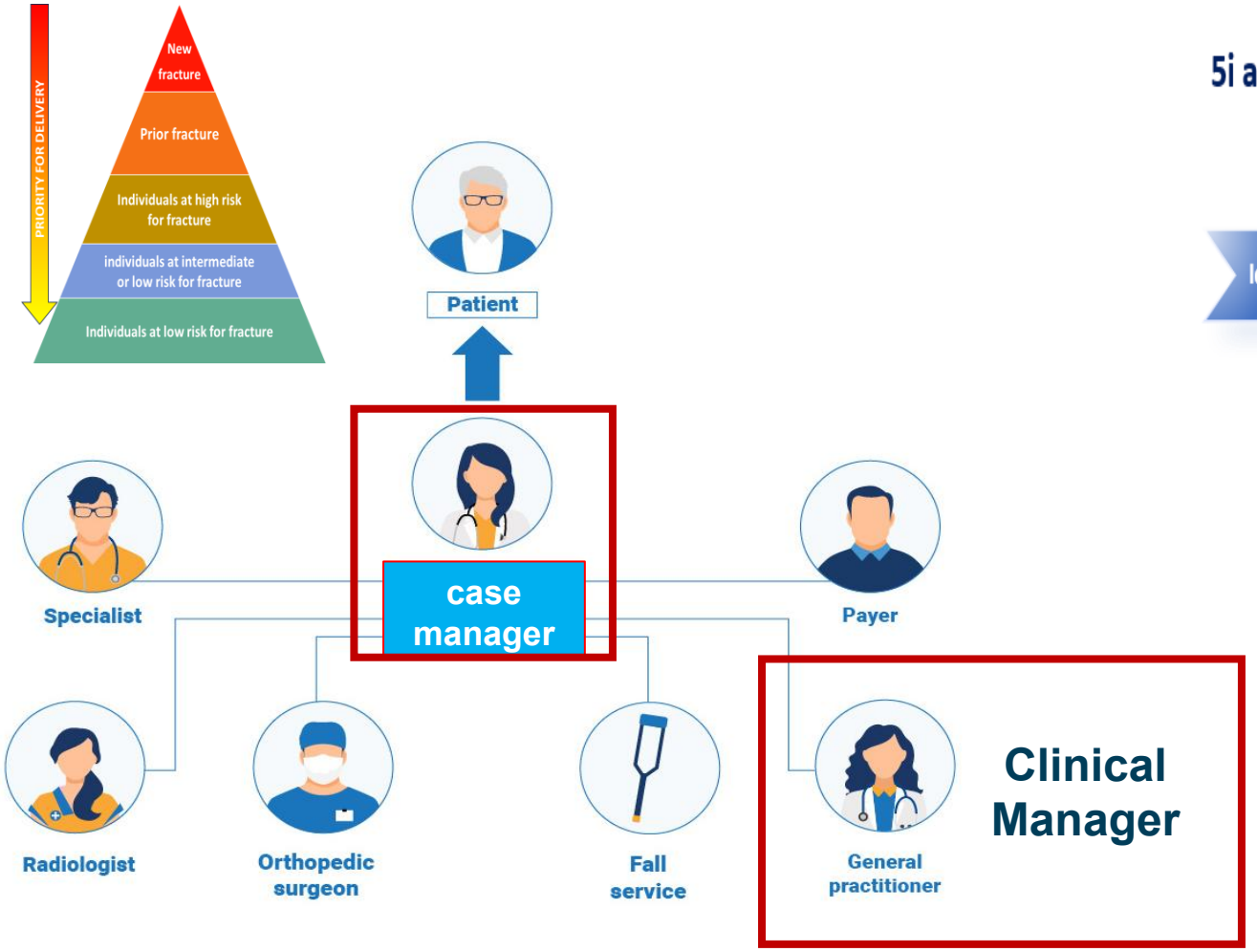


Modified from Javaid MK, et al, Osteoporosi Int 2020; Akesson K, et al, Osteop Int 2022

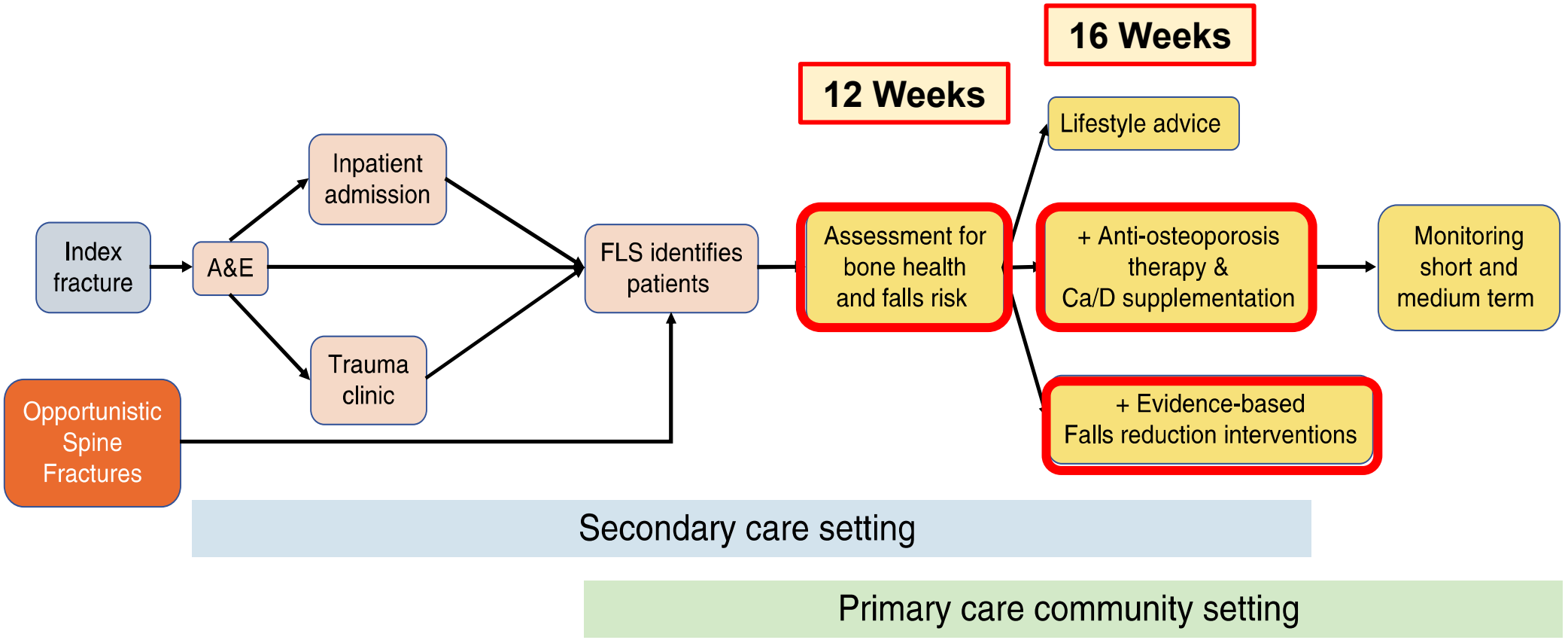
Fracture Liaison Service e Casa della Comunità

Patient-Centered - **Transmural**- **Multiprofessional** and **Coordinated** care model usually hospital-based and **transitioning to home**



Author's personal view

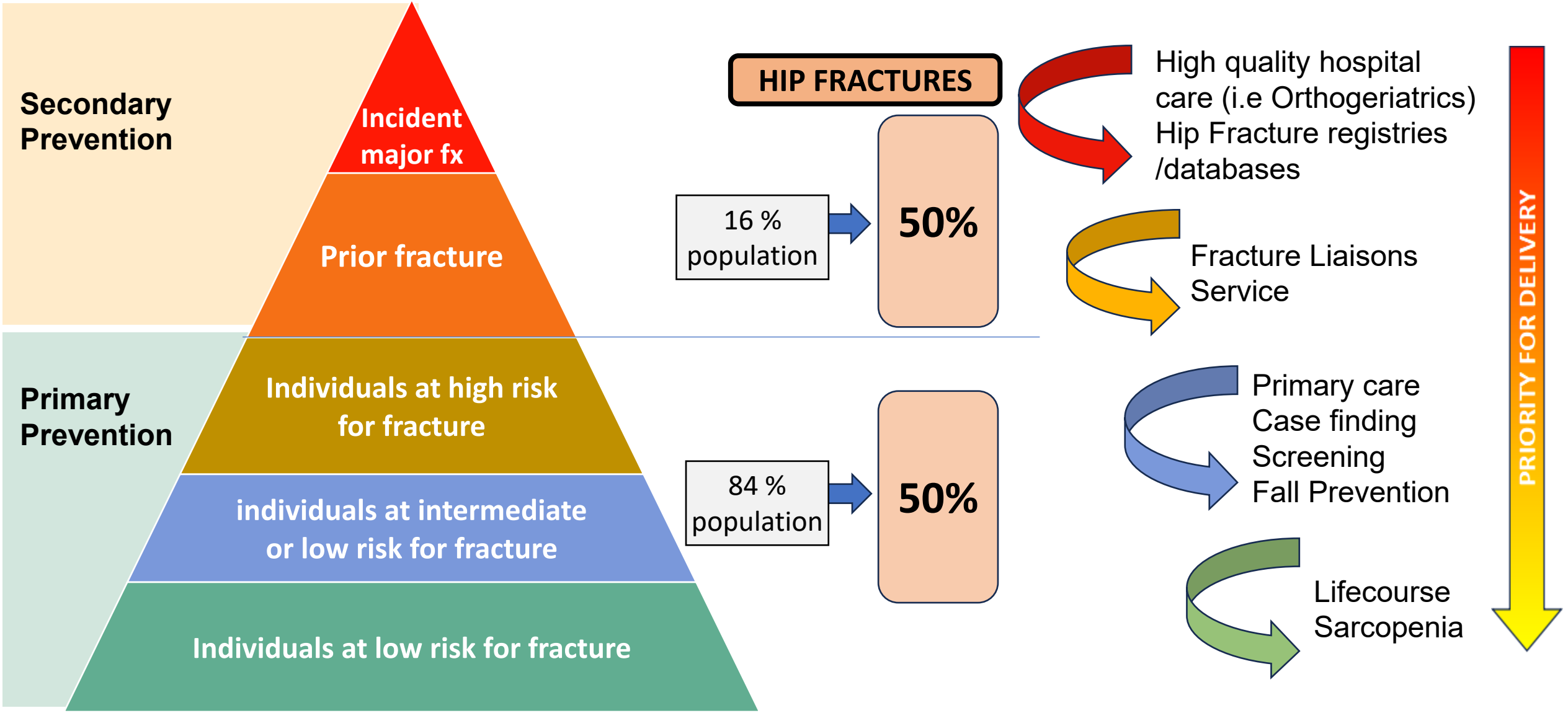
Operational Structure of UK-based Fracture Liaison Service



Fuggle NR et al, Orthogeriatrics 2021 (Book Chapter)

AOM: Anti-Osteoporosis Medication

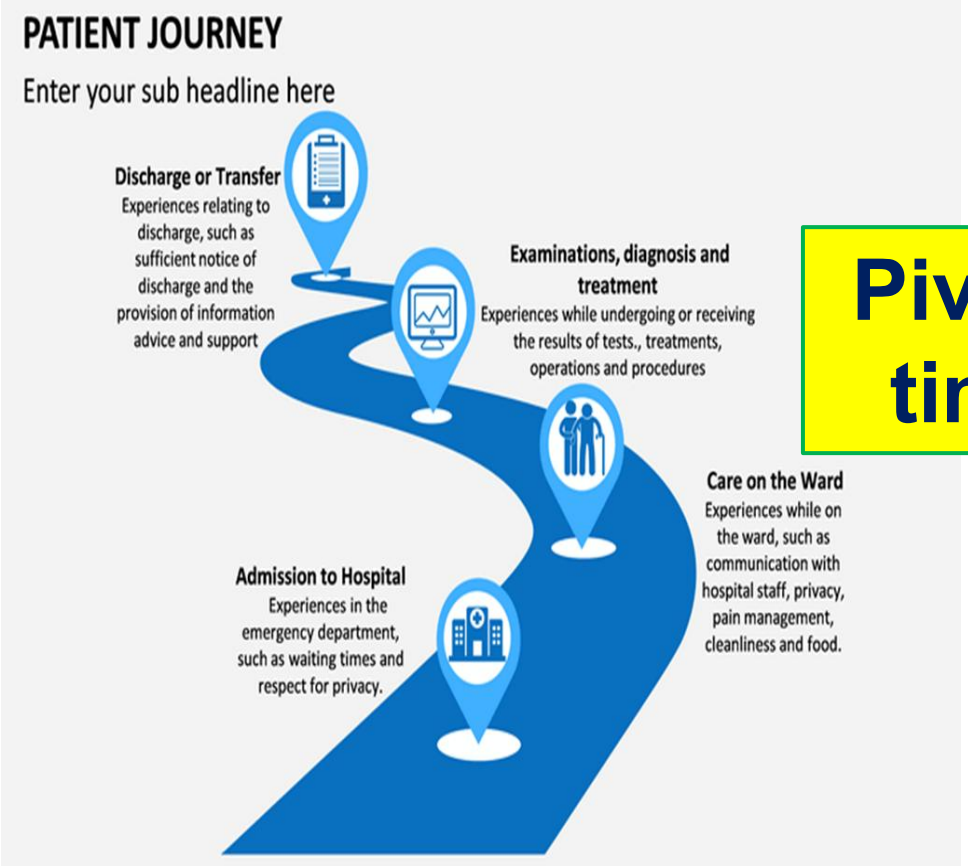
Where is the problem?



Modified from Department of Health Prevention Package for Older People: Falls and Fractures – Effective interventions in health and social care, 2009

Orthogeriatrics integrated with FLS

Comprehensive Geriatric Assessment informing Management



Pivotal time!

Ortho-Geriatric Unit (≈7.5 days LOS)

- **Identification** (100% HF inpatients)
- **Investigation** (lab exams, **CGA**)
- **Initiation** (Vitamin D and Calcium [100%], AOT [10%] at discharge

Orthogeriatric out-patient or FLS (≈30-40 days from surgery)

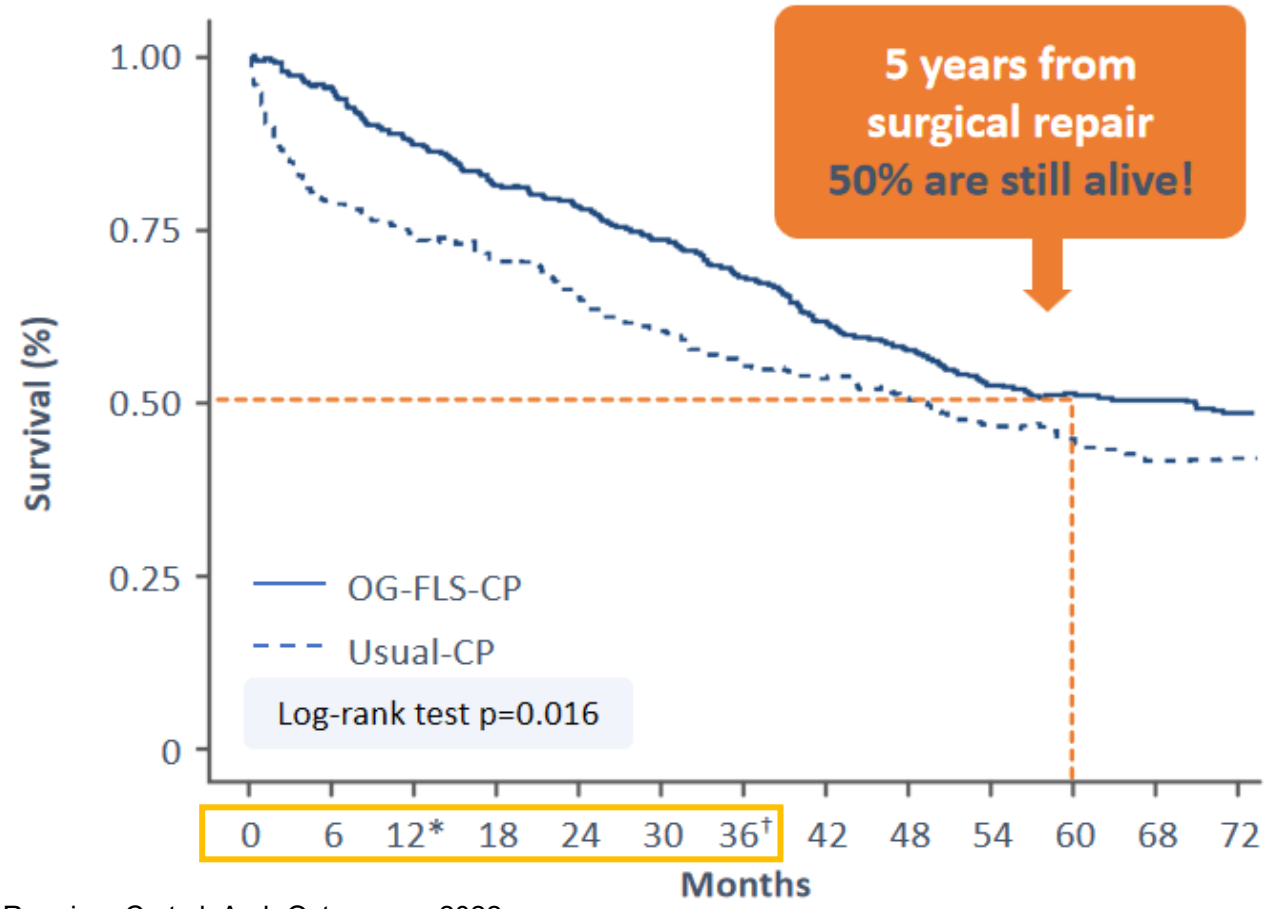
Post-discharge hip Xray, surgical and clinical assessment and drug review **based on CGA**
Laboratory evaluation if needed
DXA
Radiologic evaluation (where indicated)
Fall risk assessment and functional recovery
Follow-up scheduled at 6 or 12 months

Revision Pharmacological & Non-pharmacological Interventions	Falls & Fracture Prevention Interventions	Care-giver Education and Enpowerement	General Practitioners engagement and monitoring

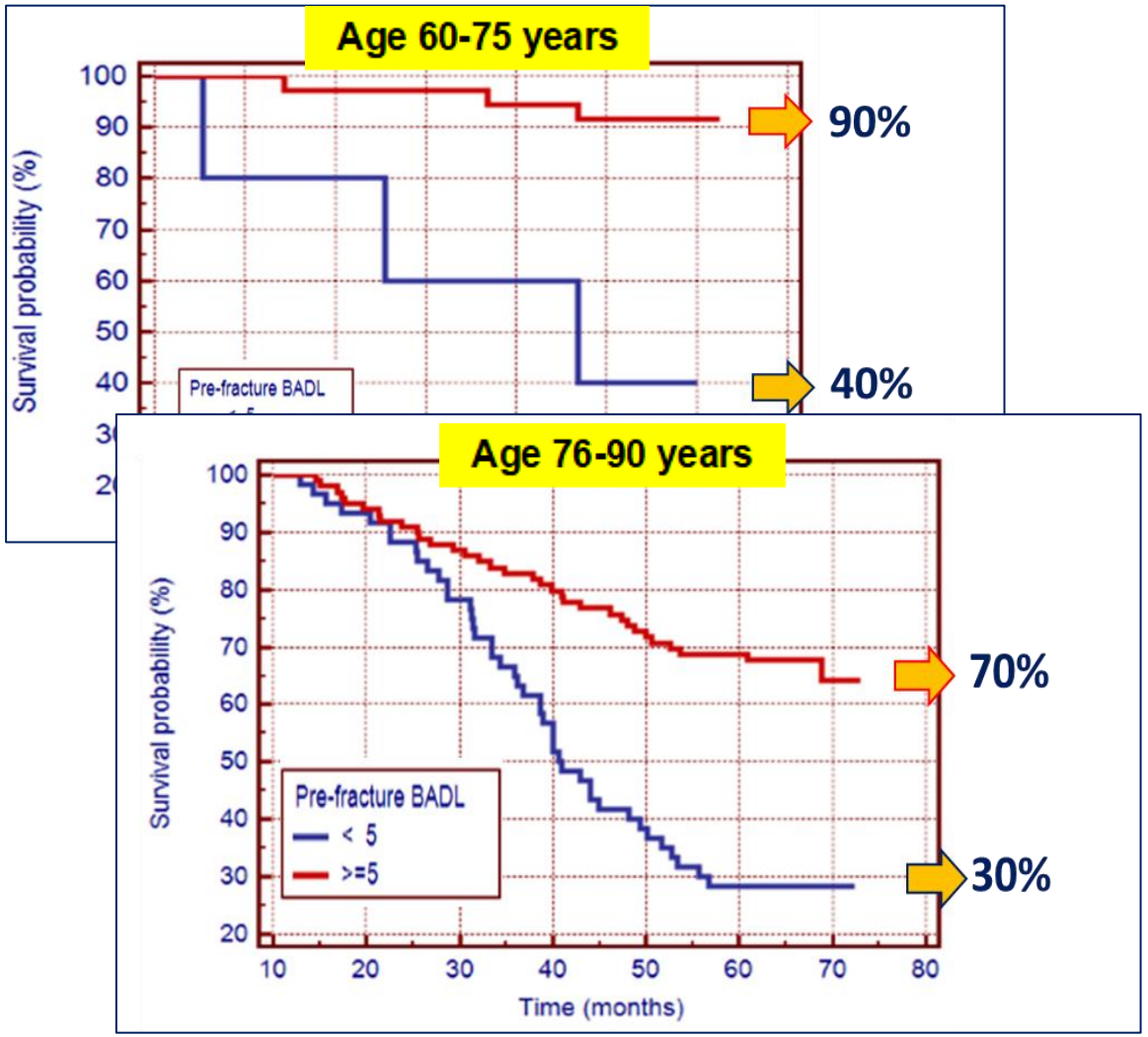
Orthogeriatrics - FLS care pathway

manages fractures, treats persons and impacts services

1. Survival advantage depending on pre-event independence



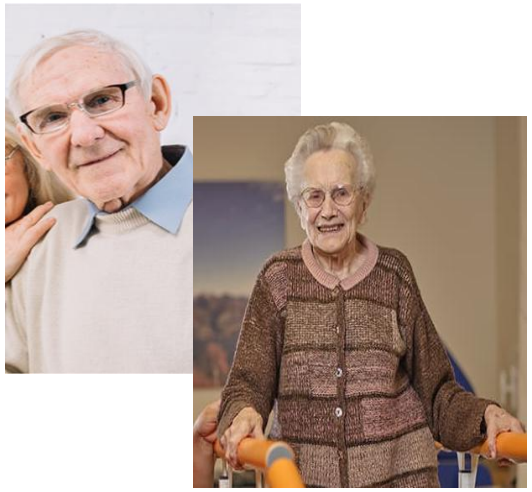
Ruggiero C et al, Arch Osteoporos 2022



BADL, Basic Activity of Daily Living;
FLS-CP fracture liaison service model of care; U-CP, usual care practice.

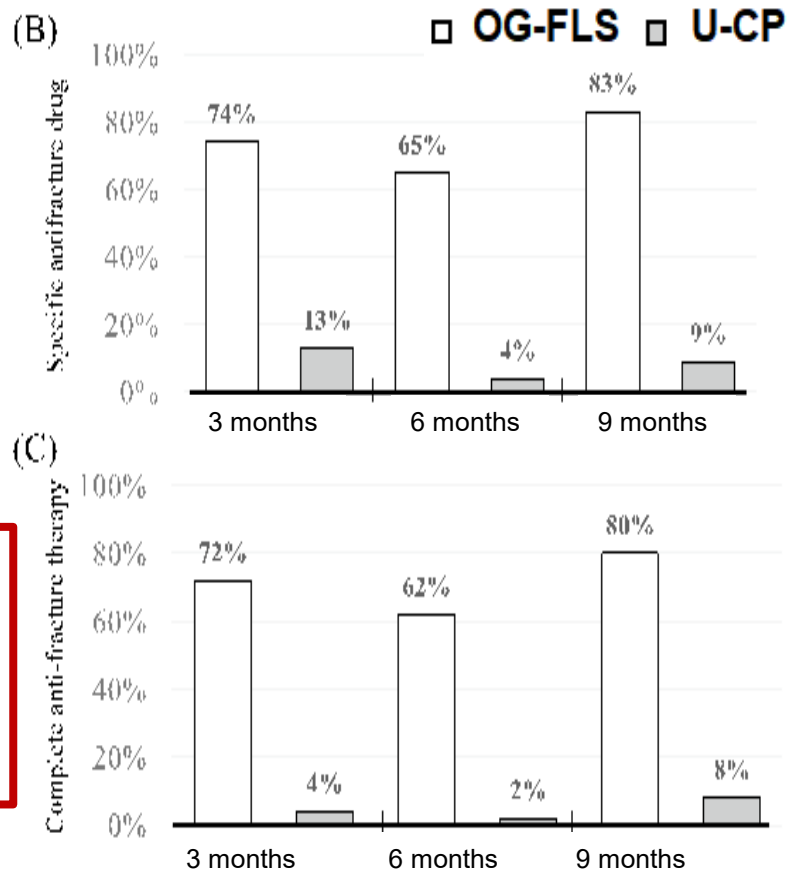
Orthogeriatrics - FLS care pathway

manages fractures, treats persons and impacts services



80% alive after 1 year
80% adherence 1 year
Reduced rates of adverse events

2. Timing & adherence to secondary prevention



3. Prevention of adverse events

	OG-FLS CP	Usual-CP	p value
Multiple fallers	**19%**	**35%**	0.0399
Health facility admissions*	**41%**	**58%**	0.0125
Time free hospitalization (days)	**176**	**89**	0.0152

*** ED and hospital admission**

Ruggiero C et al, Arch Osteoporos 2022

Fracture liaison services improve outcomes of patients with osteoporosis-related fractures: A systematic literature review and meta-analysis

Chih-Hsing Wu [a,b,*], Shih-Te Tu [c], Yin-Fan Chang [a], Ding-Cheng Chan [d,e,f], Jui-Teng Chien [g], Chih-Hsueh Lin [h], Sonal Singh [i], Manikanta Dasari [j], Jung-Fu Chen [k], Keh-Sung Tsai [l,**]

Outcome	Study design	Number of studies	Study/follow-up duration (months)
BMD testing	RCTs	13	3–13
	Controlled observational	24	1–26
	Total	**37**	**3–26**
Treatment initiation	RCTs	14	3–12
	Controlled observational	32	3–72
	Total	**46**	**3–72**
Adherence	RCTs	2	6–24
	Controlled observational	7	3–48
	Total	**9**	**6–48**
Re-fracture	RCTs	2	6
	Controlled observational	9	6–72
	Total	**11**	**6–72**
Mortality	RCTs	4	6–12
	Controlled observational	11	12–72
	Total	**15**	**6–72**

BMD, bone mineral density; CI, confidence interval; n/a, not applicable; NNT, number needed to treat; RCT, randomised controlled trial.

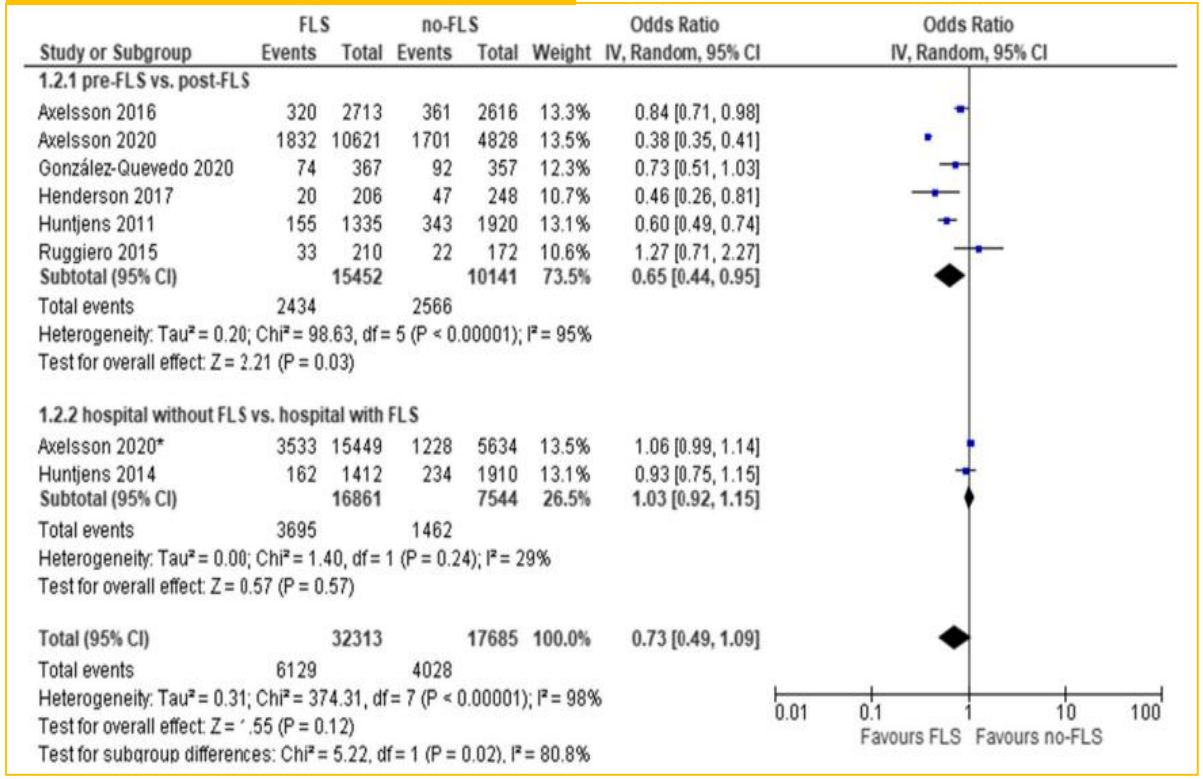
Patient Outcome	Without FLS	With FLS	p
Subsequent Fractures	13.4%	6.4%	<.05
Mortality	15.8%	10.4%	<.05
Initiation	17.2%	38.0%	<.05
Adherence	34.1%	57.0%	<.05

Wu CH, et al, Bone 2018

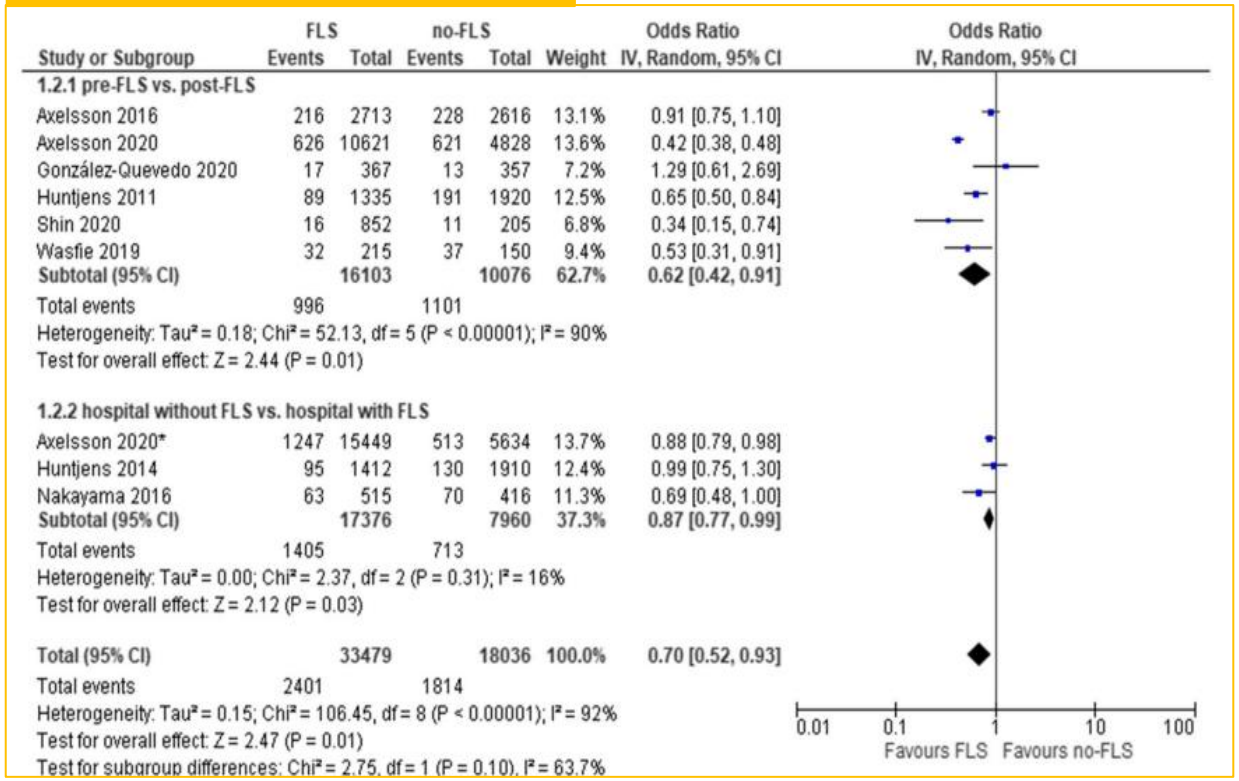
The impact of fracture liaison services on subsequent fractures and mortality: a systematic literature review and meta-analysis

N. Li[1] · M. Hiligsmann[1] · A. Boonen[2] · M. M. van Oostwaard[3,4] · R. T. A. L. de Bot[1,5] · C. E. Wyers[3,4] · S. P. G. Bours[2] · J. P. van den Bergh[3,4,6]

Mortality

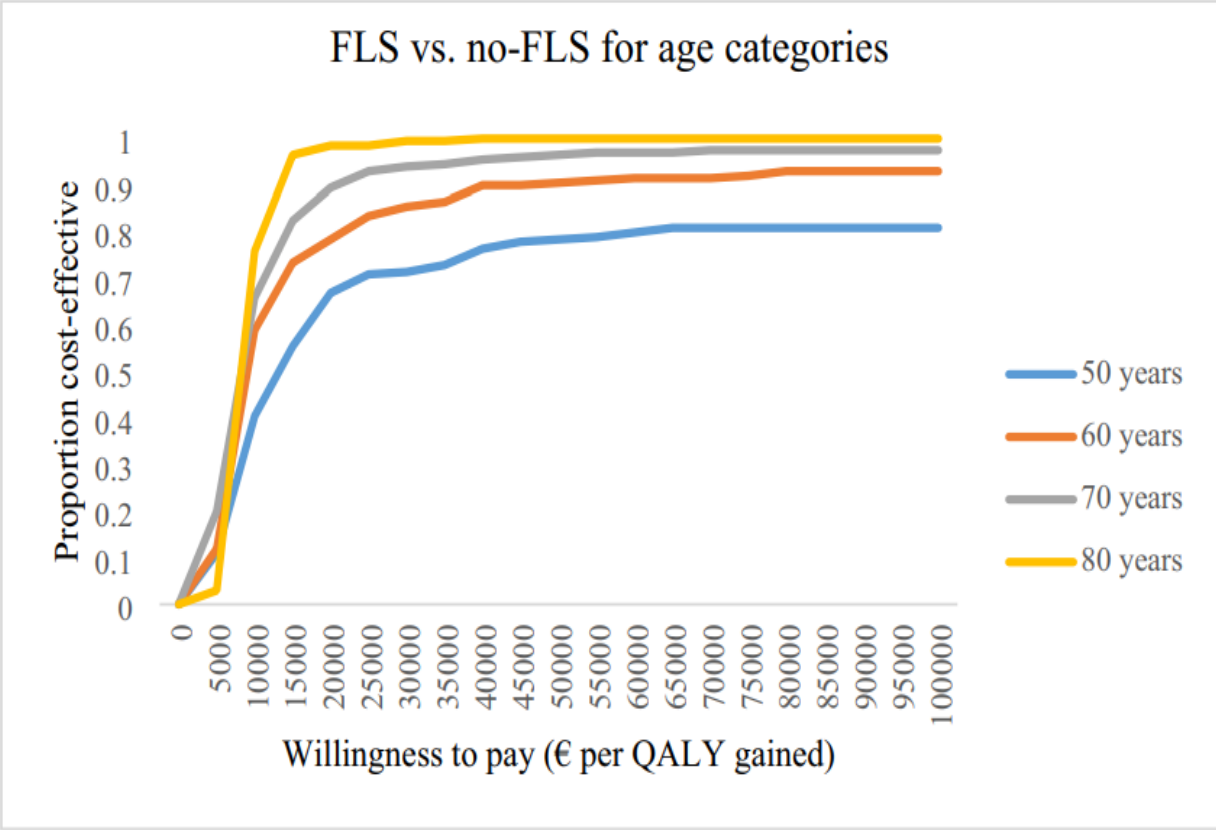


Subsequent Fractures



Cost-effectiveness analysis of fracture liaison services: a Markov model using Dutch real-world data

N. Li[1,2] · J. P. van den Bergh[3,4,5] · A. Boonen[2,5] · C. E. Wyers[3,4] · S. P. G. Bours[2,5] · M. Hiligsmann[1,2]



Cost-effectiveness acceptability curves of FLS versus no-FLS in patients at different age categories with a recent fracture (QALY, quality-adjusted life years; FLS, fracture liaison service)

The FLS is cost-effective in Denmark remained favorable in all age categories.

Compared to younger groups, patients aged 80 years resulted in slightly higher QALY gained.

- FLS was **estimated to lead a reduction of 41 subsequent fractures in per 1,000 simulated individuals** with the time horizon of 5 years

- FLS was associated with a **reduction of 30 subsequent fractures in per 1000 individuals** in UK study

Pinedo-Villanueva R, et al, J Bone Miner Res 2023

Incidence of Secondary Fractures After Implementation of Different Models of FLS Secondary Prevention Programs: Scoping Review

Patricia Clark,[a,b] Lucía Méndez-Sánchez,[a,b] Eliseo Ramírez-García,[c] Sergio Sánchez-García,[c] Adriana Medina,[d] and Juan Humberto Medina Chávez[e]

Table 2. Range of frequencies reported after the different FF secondary prevention programs

FLS interventions				
Program	**Incidence of secondary fracture range (%)**	**Age population range**	**Included population range**	**Monitoring range**
FLS program (41–87)	0–37%	>45 years	75–625,000	2–72 months
Orthogeriatric units (88–92)	1.3–23.4	>65 years	495–898	6–26 months
Educational strategies (93–103)	0–10.9	>45 years	78–45,321	6–120 months
Exercise programs (104–115)	0–28.8	>50 years	78–162	12–192 months
Screening strategies (116–123)	0.62–15.3	>50 years	65–650,000	12–72 months
Interventions by clinical specialists (orthopedic or nurses) (124–130)	0–7	>65 years	62–4910	6–36 months

significant heterogeneity in the incidence of secondary fractures in the different types of FLS. The incidence of secondary fractures found in these reviews ranged from 0–37%.

Fragility Fracture Prevention - Efficacy and Sustainability

High Added Value for the System = **Big Population benefit (Denominator)** / Lower Cost = Financial & Social

Competencies:

- **bone specialists**
- **case managers**

Methodology:

- **tools**
- **oriented to priorities**

Background

What about MI recurrence?

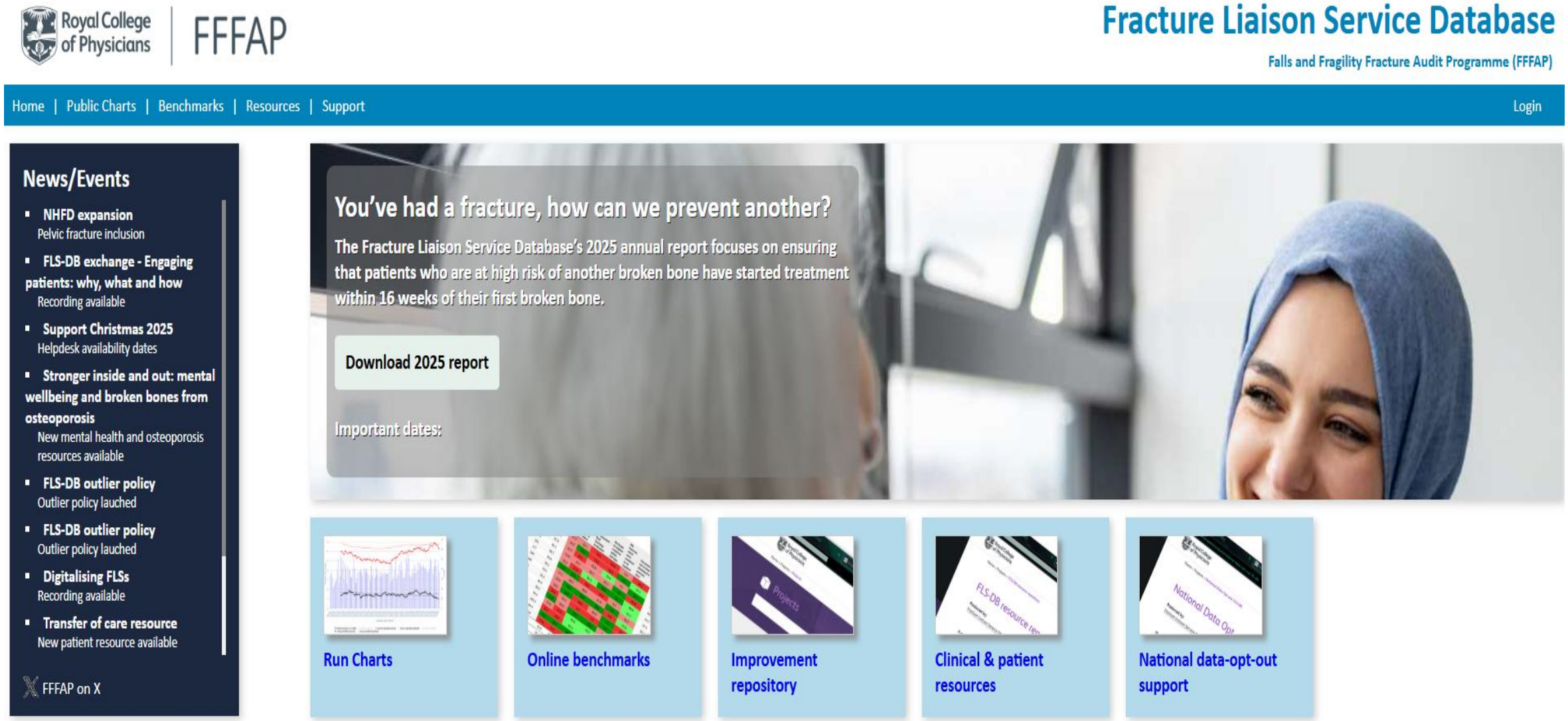
MI recurrence is estimated at 5-7% over a median follow-up of 10 years, with higher risk in the first year and lower rates in subsequent years.

(Smolina K et al, Circulation, 2012; Bruno F et al, Int J Card 2022)

Index fra							hin
Overall							
Distal ra							
Ankle							
Hip	630	19	3.02	42	6.67	84	13.33
Proximal humerus	997	26	2.61	52	5.22	117	11.74
Multiple fractures	214	13	6.07	20	9.35	42	19.63
All other fractures*	1138	30	2.64	57	5.01	120	10.54

*Includes femur, spine, pelvis, clavicle, elbow, tibia/fibula, and other fragility fractures

Barriers and opportunities



Take home messages: what is the solution?

Ortogeriatria e FLS sono modelli assistenziali altamente appropriati per la gestione dell'anziano in prevenzione secondaria

Ortogeriatria e FLS devono essere modelli integrati nel percorso di cura centrato sulla persona

E' necessario sviluppare cultura, protocolli e procedure multidisciplinari integrati (PDTA) ed incentivare un processo di "miglioramento continuo" tramite audit permanenti.

…Grazie per l’attenzione …