4° CONGRESSO NAZIONALE FRAGILITY FRACTURE NETWORK - ITALIA

Appropriatezza, Qualità e Sostenibilità delle Cure nel Percorso Ortogeriatrico

La prevenzione secondaria delle fratture da fragilità

Avviare ed ottimizzare il modello ortogeriatrico

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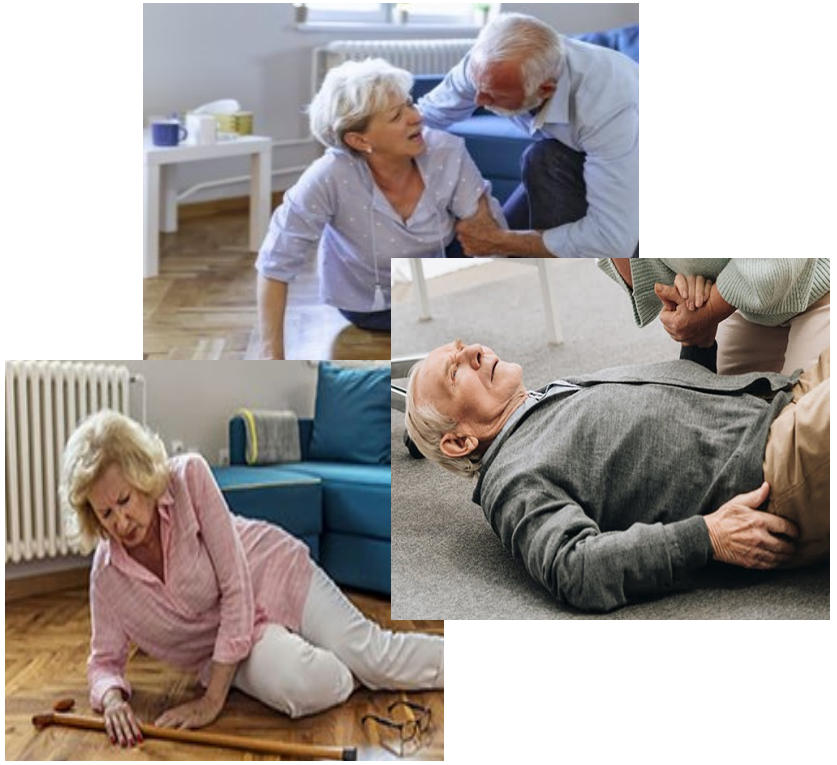
S.C. Geriatria- S.S. Ortogeriatria

FFN Europe Deputy Chair

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)

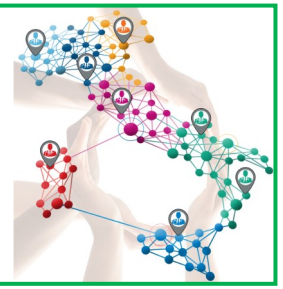
Fracture Liaison Service (FLS)

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

Frailty & Fragility Fracture!

Akesson K, et al, Osteop Int 2022

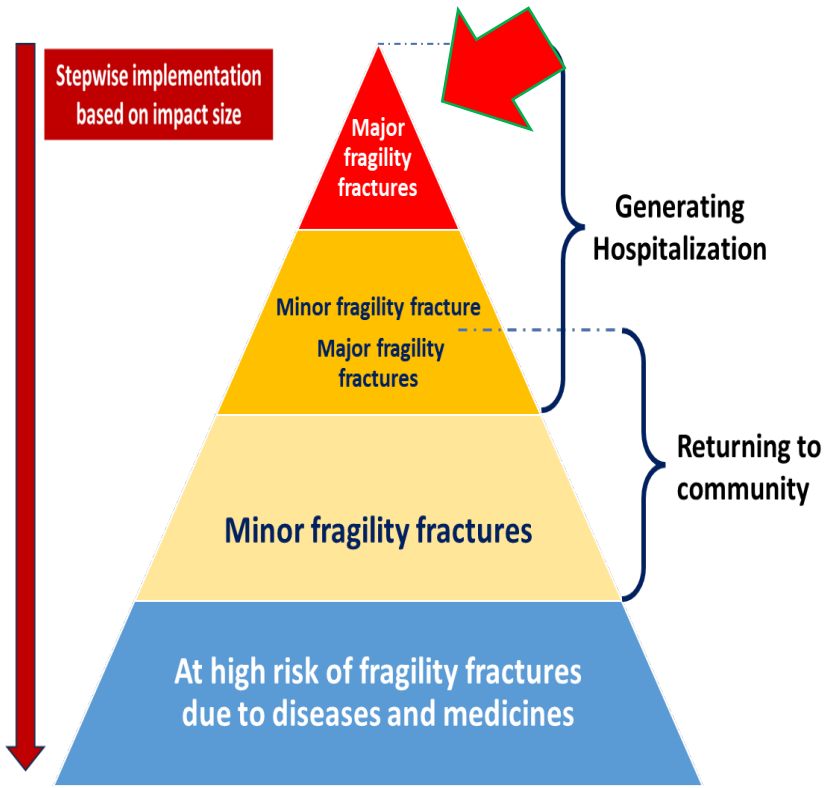
Principali Passaggi

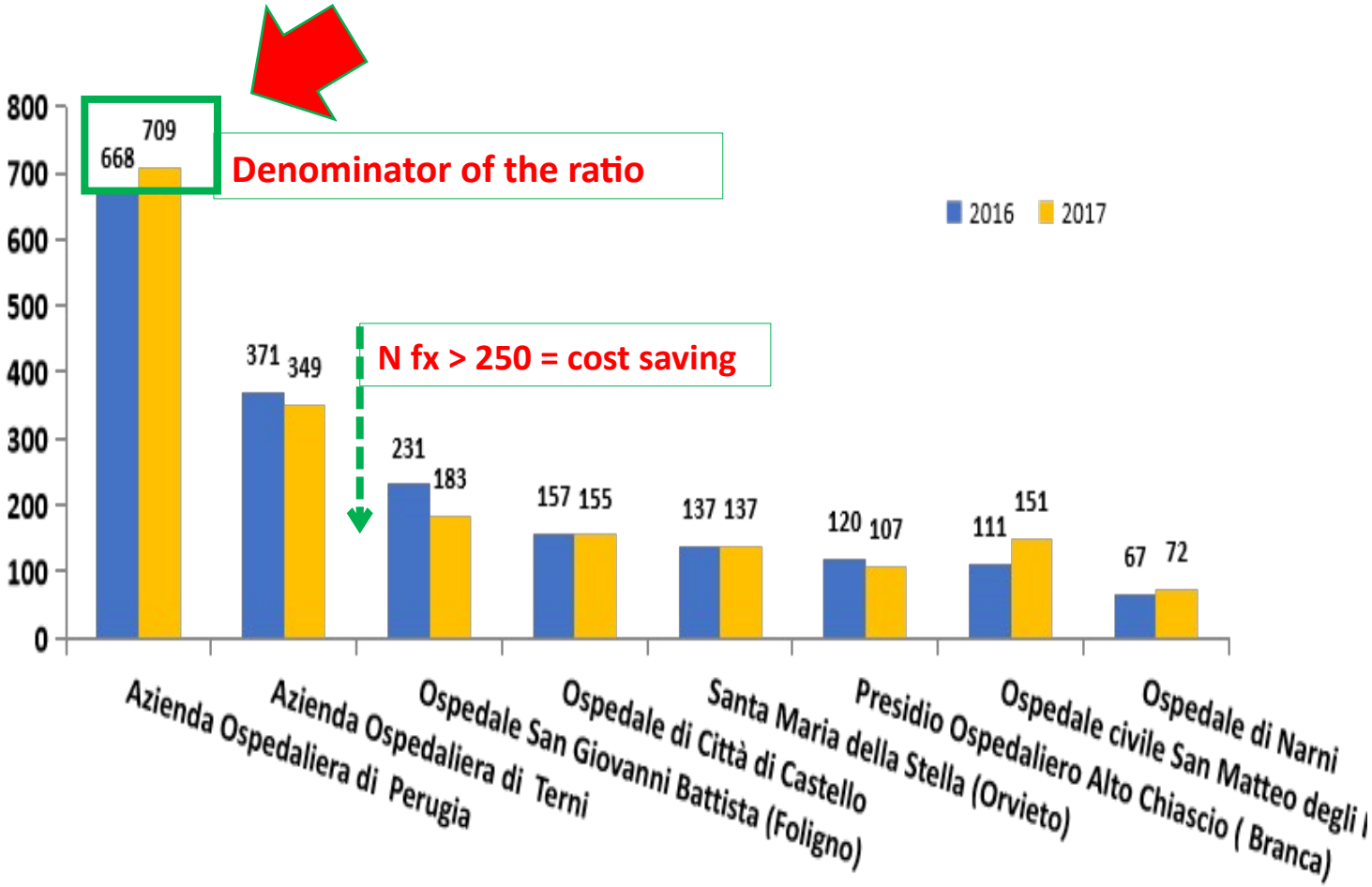


- **Avviare il Modello Ortogeriatrico**
  - **Conoscere il contesto e stabilire la priorità**

Orthogeriatric Care Program

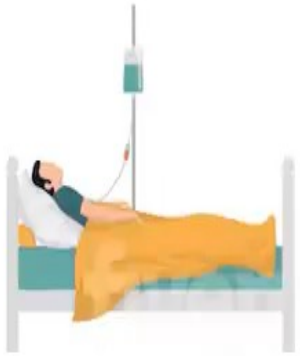
The first step: priority and volume of fragility fractures leading to hospitalization





Orthogeriatric Care Program

The second step: map the care pathway and main pillars of care



Optimal surgery

EMERGENCY PHASE
- Accurate diagnosis
- Adequate pain control
- Treatment decision
- Stabilize medically

PRE-OPERATIVE PHASE
- Rapid optimization for surgery

OPERATIVE PHASE
- Early and appropriate surgical intervention
- Appropriate anaesthesia

Appropriate secondary prevention

Early and effective rehab

RETURN TO FUNCTION
- Care in the community
- Appropriate follow up

REHABILITATION
- Optimize function
- Initiate falls prevention
- Discharge planning

POSTOPERATIVE PHASE
- Everything out, everyone up
- Medical optimization and bone health

Goal: managing fragility fractures and treating frail or vulnerable persons using standardized protocols to maximize the quality of care **based on the available resources**

Orthogeriatric Care Program

The third step: be prepared to treat fragile bone and to manage frail person

woman
75%

Place of living
93% home

age
83.7±7.4

INDEPENDENCE
64% with ADL ≥ 5/6
38% with IADL ≥ 5 (F)
≥4 (M)
60% with CDR ≤0.5

vulnerability & complexity

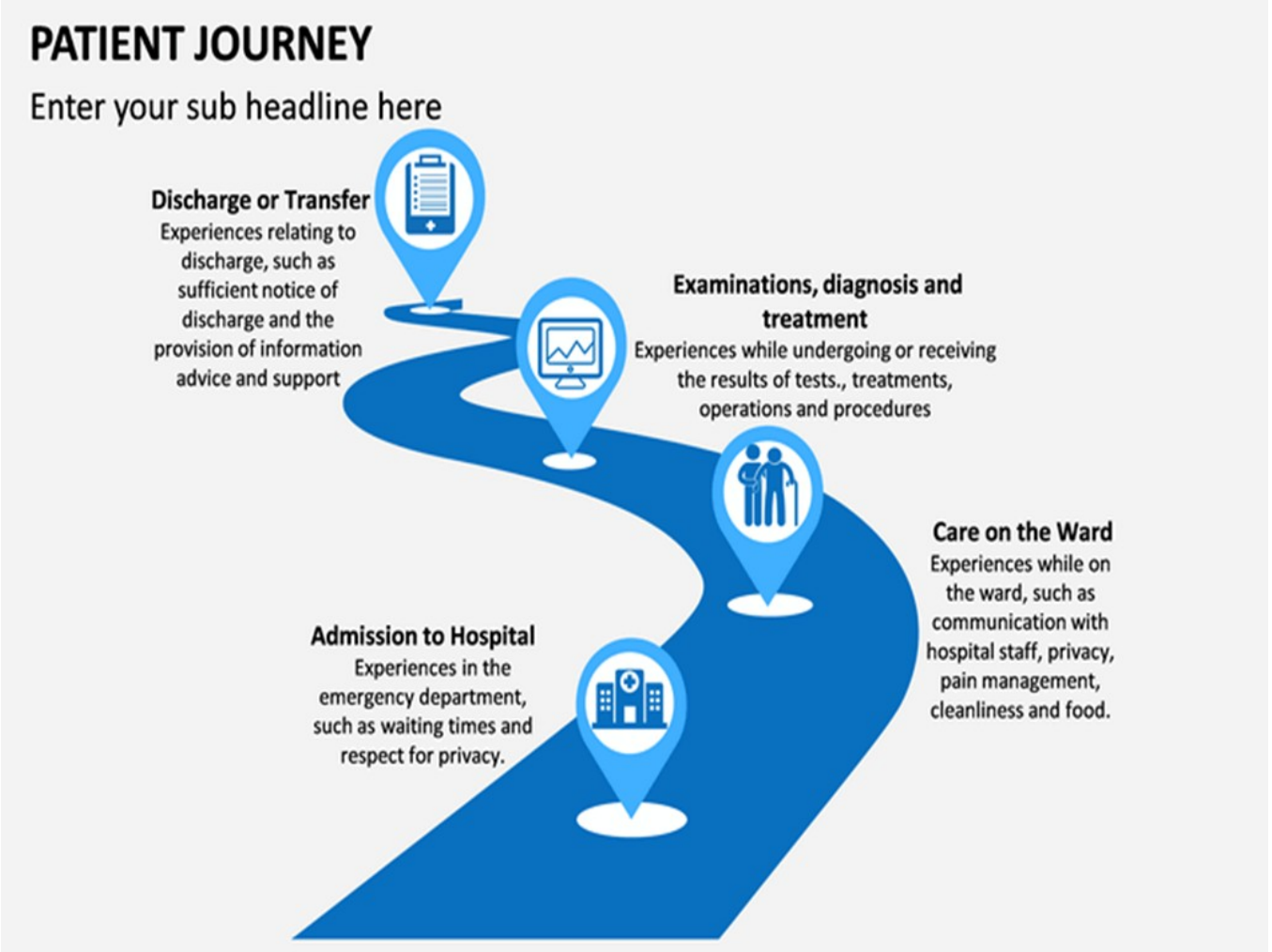
polypharmacy
4.4±2.8
Antihypertensive (99%)
-Benzodiazepine (32%)
-Anticoagulants (15%)
-Antiplatelets (43%)

comorbidity
4.4±2.2
- CV diseases (30%)
-Depression (28%)
-Dementia (22%)
-Diabetes (18%)

Orthogeriatric Care Program

The third step: personalize and integrate interventions using patient-centered approach

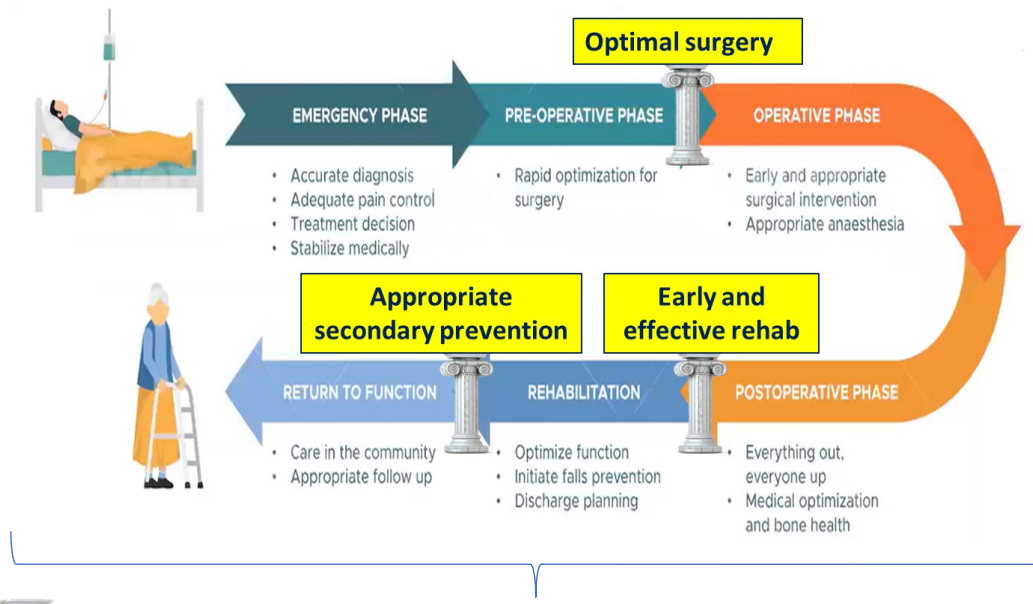
- Multiple Acute/Chronic Conditions
  (i.e. multisystem diseases, including osteoporosis)
- Polypharmacy (i.e.Beers, Start-Stop, FRIDS)
- Functional Abilities (i.e. physical and cognitive performance)
- Nutritional Status (i.e. protein and vitamin deficiency)
- Frailty and geriatric syndromes
  (i.e. Fall, Delirium, ADRs, etc.)
- Social context and resilience
- Patients health outcome goals and care preferences



Orthogeriatric Care Program

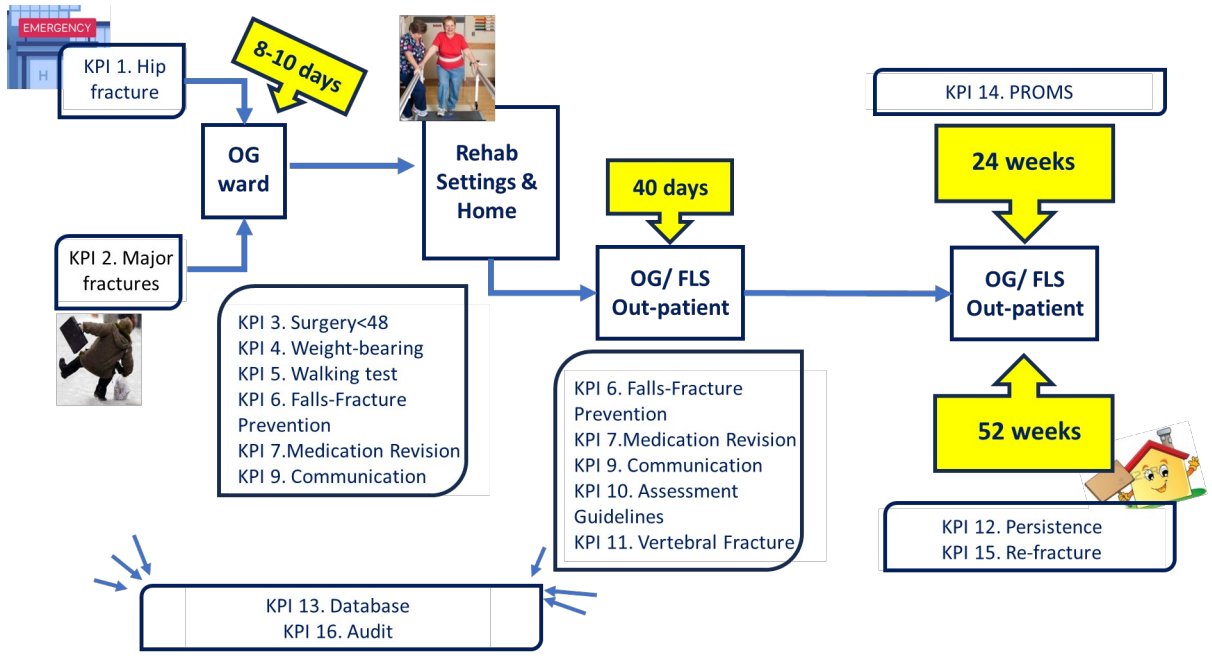
The fourth step: translate the pathway into a flow of processes

Real world patient's journey



Management driven by Comprehensive Assessment

Real world map of KPIs



• Orthogeriatric Care Program

The fourth step: watch your pathway using Key Performance Indicators (KPI)

1. Patient Identification
2. Patient Management drive by CGA
3. Patient Surgery<48h
4. Early weight-bearing
5. Short & long-term Functional Recovery
6. Falls and Fracture Prevention
7. Medication Review and Initiation
8. Post-Surgical Assessment & Management
9. Communication Strategy
10. Assessment Guidelines (X-ray; DXA)
11. Vertebral Fracture Identification
12. Long-term Management & Persistence
13. Re-fractures
14. PROMS
15. Database
16. Audit

Outcome measure: the measure ultimately you want to affect

i.e. number of patients >50 yrs on treatment after 12 months from index event

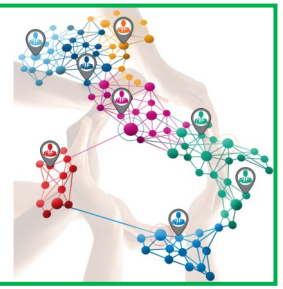
Process measures: reflects the way your system and your processes work to deliver what you want

i.e. number of patients able to be monitored at 12 months from index event

Balancing measures: they track if you are introducing problems in another part of the system

i.e. waiting list for assessment

Principali Passaggi

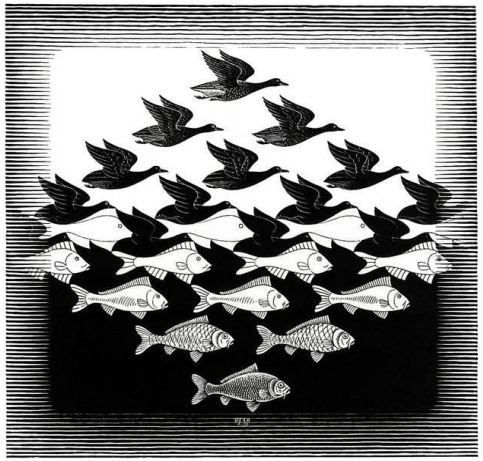


- **Avviare il Modello ortogeriatrico**
  - Conoscere il contesto e stabilire la priorità
  - **Coinvolgere tutti gli attori definendone obiettivi e modalità**

Orthogeriatric Care Program

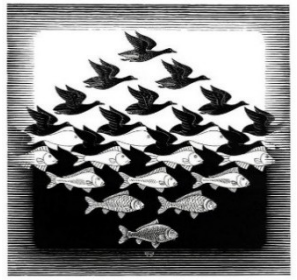
The fifth step: set the roundtable of stakeholders <u>at different levels</u>

1. Directional & Organizational
2. Core & All Professionals
3. Transmural Actors



Being aware of the status quo, defining the pathway of care useful to achieve desidered goals, planning interventions in a synergic way among professionals

Orthogeriatric Care Program



The fifth step: set the co-management model of care

COD. PRATICA: 2015-001-1153 MODULO DG1

Regione Umbria

DELIBERAZIONE

N. 1

OGGETTO: Linee di indirizzo assistenziale riabilitat femore

AZIENDA OSPEDALIERA DI PERUGIA

PRO_AzOsp_43

Rev. 00

Data Marzo 2018

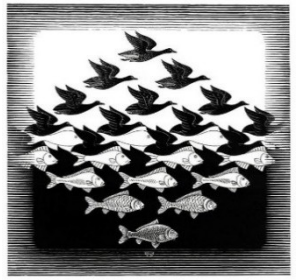
Management PDTA Ortogeriatrico per il paziente con fratture maggiori da fragilità – Modello organizzativo e Responsabilità

PROCEDURA OPERATIVA

Management PDTA Ortogeriatrico per il paziente con fratture maggiori da fragilità – Modello organizzativo e Responsabilità

... considering the skills and responsibility of each professional, the ***specific areas of management and responsibility of the Orthopedic surgeon and the Geriatrician are stated***; they are entrusted with the management of the ortho-geriatric pathway (**co-management model**), which provides for the ***permanent presence of geriatricians in the orthopaedic ward from 8 to 20, from Monday to Saturday***.

Orthogeriatric Care Program



The fifth step: set the comanagement model of care

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N. 1

OGGETTO: Linee di indirizzo assistenziale riabilitat femore

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PRO_A

Rev. 00

Data Marzo 201

Management PDTA Ortogeriatrico per il paziente con fratture maggiori da fragilità – Modello organizzativo e Responsabilità

PROCEDURA OPERATIVA

Management PDTA Ortogeriatrico per il paziente con fratture

fragilità – Modello organizzativo e Responsabilit

5.2 Gli ambiti di competenza della responsabilità gestionale

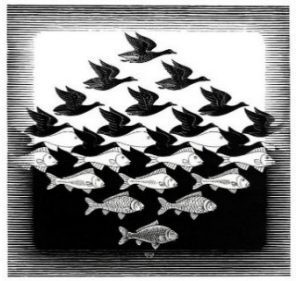
L'ortopedico è responsabile:

- degli aspetti chirurgici e di tutti i problemi ad essi connessi in fase pre-operatoria,operatoria e post-operatoria;
- della comunicazione al paziente e al familiare di detti aspetti;
- della tenuta della documentazione clinica; nello specifico, al momento del ricovero compila la cartella clinica, imposta la protocolli di terapia antalgica
- della organizzazione e inse
- della scelta, comunicazion chirurgica, della profilassi a chirurgica della ferita e delle
- della valutazione dei radiog riguardo alla concessione d
- dell'aggiornamento quotidia effettuati, analogamente al g
- della gestione complessiva quali può avvalersi delle co caso;
- della compilazione della lett in post-ricovero fino alla gu documento condiviso con il

Il geriatra è responsabile della valutazione e gestione medica multidimensionale, in particolare comorbilità, poli-farmacoterapia e prevenzione delle complicanze, dall'ingresso alla dimissione, e quindi:

- degli aspetti internistici nella fase pre- e post-operatoria;
- della ottimizzazione clinica in vista dell'intervento chirurgico secondo i criteri condivisi con l'anestesista;
- della stabilizzazione e della prevenzione delle complicanze mediche nel post-operatorio (incluso terapia medica, diagnostica laboratoristica e strumentale);
- dell'attivazione del percorso di continuità di cura;
- della valutazione mediante gli strumenti e le scale definite in cartella ortogeriatrica relativamente: allo stato di salute e al grado di autonomia precedente, alle funzioni cognitive, allo stato nutrizionale, al tipo di supporto sociale disponibile per definire tempestivamente il piano diagnostico-terapeutico e assistenziale più appropriato;
- della prescrizione della terapia nella scheda informatizzata per quanto riguarda gli aspetti di competenza e delle richieste di consulenza specialistiche o riabilitative necessarie;
- dell'aggiornamento quotidiano del diario clinico nella cartella di reparto con gli interventi effettuati, analogamente all'ortopedico e per ciò che gli compete;
- della raccolta del consenso informato del paziente per gli esami per cui è previsto e per la terapia trasfusionale, quando non già effettuata dall'ortopedico all'ingresso;
- della comunicazione al paziente e ai familiari delle informazioni relative all'iter clinico e al *discharge planning*;
- della compilazione alla dimissione della lettera sugli aspetti clinici, terapeutici e socio-assistenziali del percorso ortogeriatrico, in un unico documento condiviso con l'ortopedico.

Orthogeriatric Care Program



The fifth step: set the comanagement model of care

UNIVERSITÀ DEGLI STUDI DI PERUGIA
AZIENDA OSPEDALIERA DI PERUGIA

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Direttore: Prof Auro Caraffa

S.C. GERIATRIA
Direttore: Prof.ssa Patrizia Mecocci

S.S. ORTOGERIATRIA
Responsabile: Prof.ssa Carmelinda Ruggiero

Check-list preoperatoria
Paziente con frattura di femore da sottoporre ad intervento chirurgico

Cognome Nome	
Data nascita	Data ingresso
Tipo frattura	Allergie

	ALTERAZIONI DA ESCLUDERE ASSENTE = 0 ····· PRESENTE = -1	T 0	T 24	T 48	T 72	T 96
PA SISTOLICA	- PAs ≥ 180 mmHg - PAs ≤ 90 mmHg					
RITMO/FC	- Tachi / Bradi aritmia non nota - FC ≥ 120 o ≤ 50 bpm					
DOL TORACICO	- Dolore + ECG normale/alterato o Δ acute ECG					
INSUFFICIENZA CARDIACA	- Segni clinici e/o radiologici di scompenso cardiaco acuto - SSEA non nota - SA nota ETT ≥ 24 mesi o ETT più recente ma ↑ sintomi - SSEA + METs < 4 + Δ ECG					
INFEZIONI	- T° ≤ 35 opp ≥ 38°					
INS RESPIRAT POLMONITE	- SO_2 < 90 mmHg o pO_2 < 60 mmHg in O2 tp o O2 tp > 6 l/m - pCO_2 ≥ 55 mmHg o pCO_2 46-55 mmHg acuta e/o pH < 7.35					
DISIONIE	- Na < 128 opp > 150 mEq/L - K < 3.0 opp > 5.6-6.0 mEq/L					
GLICEMIA	> 250 mg/dl					
FUNZIONE RENALE	- Oliguria (< 500 cc/die) - Incremento Cr > 1.5-2 volte valore basale					
ANEMIA	- Hb ≤ 9 - Hb ≤ 10 g/dl + pz cardiopatico / elevato rischio emorragico					

Hb preop	data	GRC richiesti n°	
PLT preop	data	PLT richieste n°	

METs (1-8.5)		METs 4 = salire e scendere le scale senza fermarsi
ADL (0-6)		autonomia nel lavarsi, vestirsi, andare in bagno, spostarsi dentro casa, continenza, mangiare
IADL (0-8)		autonomia nel telefonare, spesa, cucinare, faccende, bucato, uscire di casa, farmaci, denaro
CDR (0-5)		0 = integro; 0.5 = lievi deficit cognitivi; 1 = demenza lieve; 2 = moderata; 3 = severa
NRS (0-10)		0 = assenza di dolore ····· 10 = massimo dolore immaginabile
PAINAD (0-10)		respiro, vocalizzazione, espressione facciale, espressione corporea, consolabilità

Ospedale Santa Maria della Misericordia – Loc. Sant'Andrea delle Fratte – 06132 Perugia – Segreteria e Direzione 075 5783839
Fax 075 5783878 – Degenza 075 5783533 – Day Service 075 5783390 – e-mail ortogeriatria@ospedale.perugia.it

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GESTIONE DELLE TERAPIA PERIOPERATORIA DEL PAZIENTE ANZIANO CON FRATTURA DI FEMORE PROSSIMALE

FARMACI DA SOSPENDERE SEMPRE
GG INGRESSO >>>> GG INTERVENTO (COMPRESO)

ANTIPERTENSIVI
Ace inibitori (es. Ramipril, Enalapril, Captopril, Lisinopril, etc)
Sartani (es. Valsartan, Olmesartan, Telmisartan, Candesartan, Losartan)
>>> possibile graduale riduzione della posologia se dosaggi elevati e/o associazioni precostituite

ANTICOAGULANTI ORALI
Warfarin o Acenocumarolo
>>>sospendere e somministrare vitamina K sec schema: 10 MG: ½ fiala EV in 100 cc di SF 0.9% da infondere in 40 minuti, non somministrare enoxaparina se INR > 1.8
Dabigatrani, Rivaroxaban, Apixabani, Edoxaban
>>>NON somministrare Enoxaparina per almeno 48 ore dall'ultima assunzione del farmaco anticoagulante

IPOGLICEMIZZANTI ORALI
(es. Metformine, Sulfaniluree, Incretine, Glifozine, altri)
>>> utilizzare SOLO INSULINA basal-bolus previo stick glicemico secondo le unità prescritte; in caso di paziente in insulino terapia domiciliare ridurne la posologia rispetto alle unità assunte al domicilio

FARMACI DA MANTENERE SEMPRE
GG INGRESSO >>> GG INTERVENTO (COMPRESO)

ANTIAGGREGANTI SINGOLI
(ASA, Clopidogrel)
>>> in caso di DOPPIA ANTIAGGREGAZIONE (ASA + Clopidogrel, ASA + Ticagrelor) valutare se consulenza cardiologica in ingresso per probabile gestione con solo ASA + Enoxaparina in base alla clinica e alla distanza temporale dal posizionamento degli stent cardiaci

BETA BLOCCANTI
(atenololo, bisoprololo, nebivololo, metoprololo)
>>> in caso di bassi valori pressori riduzione della posologia ma NON sospendere

CALCIO ANTAGONISTI NON DIIDROPIRIDINICI
(verapamil, diltiazem)
>>> in caso di bassi valori pressori riduzione della posologia ma NON sospendere

CLONIDINA
>>>probabile riduzione della posologia, ma NON sospendere

TERAPIA PSICOFARMACOLOGICA
(antidepressivi, ansiolitici, antiepilettici, antiparkinsoniani, antipsicotici, anticolinesterasici, etc)
>>> avvertire il medico in caso di scarso controllo dei disturbi del comportamento o di stato soporoso ma NON sospendere

FARMACI TIROIDE e GASTROPROTETTORI
>>> da non somministrare simultaneamente (in caso di levotiroxina + PPI posticipare il PPI alle ore 12.00)

Ospedale Santa Maria della Misericordia – Loc. Sant'Andrea delle Fratte – 06132 Perugia – Segreteria e Direzione 075 5783839
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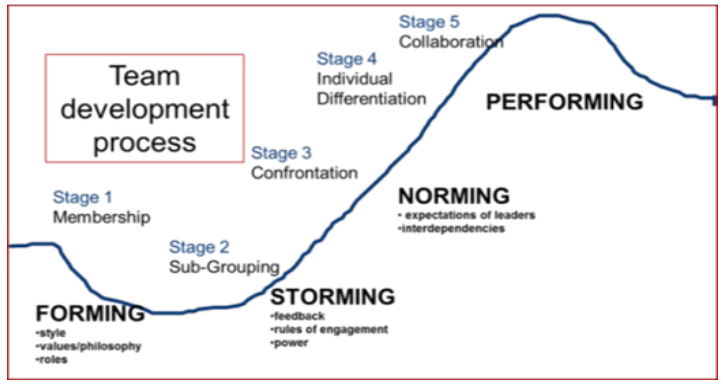
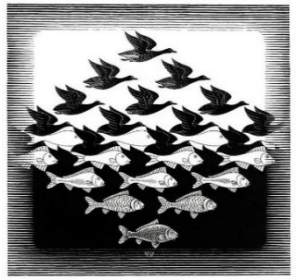
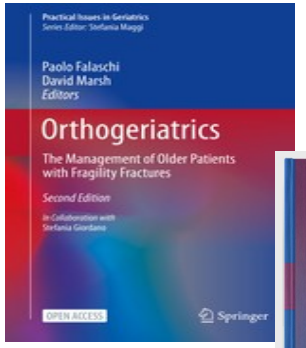


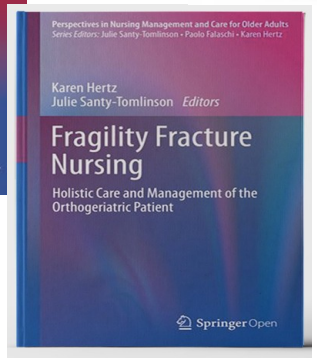
Orthogeriatric Care Program



The fifth step: set the comanagement model of care based on evidence

FFN
Clinical Toolkit





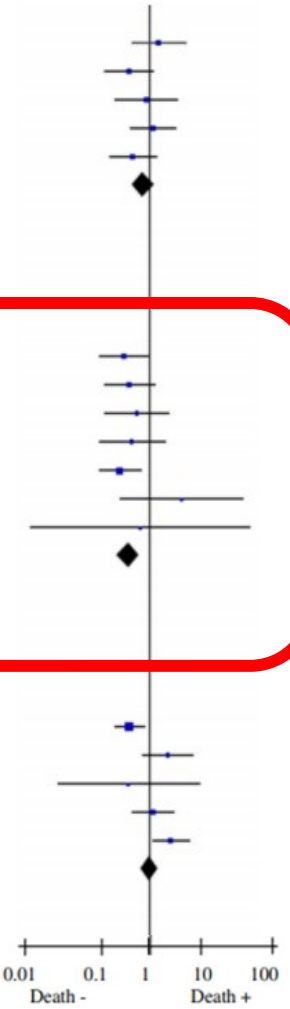
Historia Magistra vitae est!

Which is the optimal orthogeriatric care model to prevent mortality of elderly subjects post hip fractures? A systematic review and meta-analysis based on current clinical practice

..elderly patients with hip fractures admitted early into a dedicated orthogeriatric ward had reduced long-term mortality.

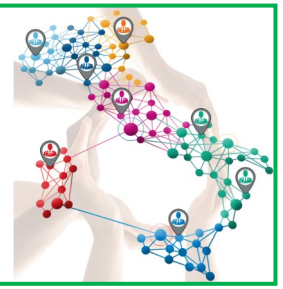
The ***orthogeriatric ward*** proves daily efficiency and ability to *incorporate many advantages for the older patients with hip fractures and the hospital organisations*, being a practical alternative well adapted to the local needs.

Study or Subgroup	Orthogeriatric model Events	Total	Standard model Events	Total	Weight	Odds Ratio M-H, Fixed, 95%CI
Geriatric advice in an orthopaedic ward						
Deschodt 2011[16]	40	94	29	77	3.9%	1.23 [0.66, 2.27]
Fisher 2006[17]	21	447	37	504	7.0%	0.62 [0.36 1.08]
Hempsall 1991[21]	28	82	22	73	3.3%	1.20 [0.61, 2.37]
Huusko 2000[23]	17	119	18	119	3.3%	0.94 [0.46, 1.92]
Khan 2002[24]	23	205	56	537	5.8%	1.09 [0.65, 1.82]
Vidan 2005[26]	29	155	41	164	6.9%	0.69 [0.40, 1.18]
Subtotal (95% CI)		**1102**		**1474**	**30.2%**	**0.90 [0.71, 1.15]**
Total events	158		203			
Heterogeneity: Chi² = 4.58; I² = 0%						
Test for overall effect: Z = 0.85 (P = 0.40)						
Orthogeriatric ward						
Boddaert 2014[3]	31	203	32	131	7.0%	0.56 [0.32, 0.97]
Cogan 2010[15]	33	98	46	103	6.3%	0.62 [0.36, 1.11]
Gilchrist 1988[5]	14	97	23	125	3.7%	0.63 [0.36, 1.54]
Grund 2015[20]	14	216	16	169	3.6%	0.66 [0.31, 1.40]
Ho 2009[22]	32	281	55	273	10.5%	0.51 [0.32, 0.82]
Watne 2014[27]	6	163	3	166	0.6%	2.08 [0.51, 8.45]
Zeltzer 2014[28]	1	14	2	23	0.3%	0.81 [0.07, 9.82]
Subtotal (95% CI)		**1072**		**990**	**31.9%**	**0.62 [0.48, 0.80]**
Total events	131		177			
Heterogeneity: Chi² = 3.99; I² = 0%						
Test for overall effect: Z = 3.66 (P = 0.0002)						
Shared care by orthopaedists and geriatricians						
Barone 2006[13]	63	252	196	570	19.1%	0.64 [0.46, 0.89]
Bhattarayya 2010[14]	34	274	21	249	4.1%	1.54 [0.87, 2.73]
Friedman 2009[18]	3	193	3	121	0.8%	0.62 [0.12, 3.13]
Gregersen 2012[19]	37	233	39	262	6.6%	1.08 [0.66, 1.76]
Suhm 2014[25]	64	224	53	269	7.3%	1.63 [0.81, 1.23]
Subtotal (95% CI)		**1176**		**1471**	**37.9%**	**1.00 [0.81, 1.23]**
Total events	201		312			
Heterogeneity: Chi² = 14.93; I² = 73%						
Test for overall effect: Z = 0.02 (P = 0.99)						



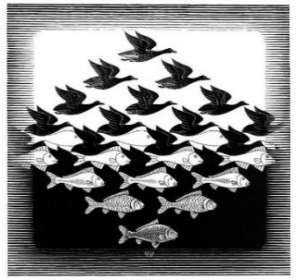
Moyet J, International Orthopaedics 2019

Principali Passaggi

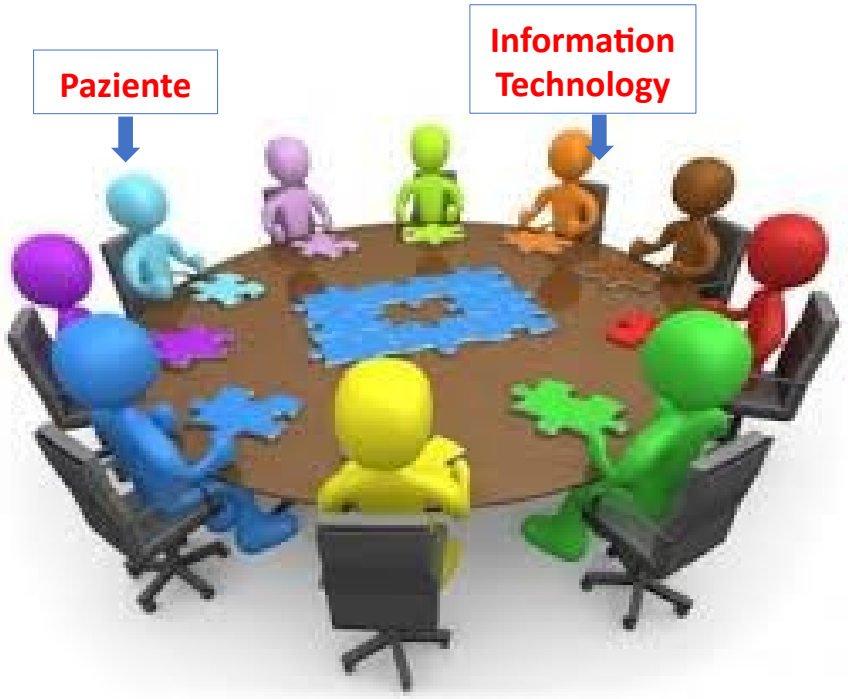


- **Avviare il Modello ortogeriatrico**
  - Conoscere il contesto e stabilire la priorità
  - Coinvolgere tutti gli attori definendone obiettivi e modalità
  - **Monitorare gli esiti nel breve -medio termine**

Orthogeriatric Care Program



The sixth step: identify the main phases and how they perform _



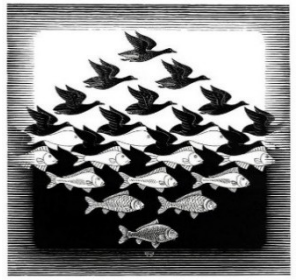
Hospital Admission

- Focus on hip fractures (may include other fracture types)

Key Performance Indicators	Jan -2024	Rate
1. Patient Identification	Y/N	%
2. Patient Management drive by CGA	Y/N	%
3. Patient Surgery<48h	Y/N	%
4. Early weight-bearing	Y/N	%
5. Short & long-term Functional Recovery	Y/N	%
6. Falls and Fracture Prevention	Y/N	%
7. Medication Review and Initiation	Y/N	%
8. Post-Surgical Assessment & Management	Y/N	%
9. Communication Strategy	Y/N	%
10. Assessment Guidelines (X-ray; DXA)	Y/N	%
11. Vertebral Fracture Identification	Y/N	%
12. Long-term Management & Persistence	Y/N	%
13. Re-fractures	Y/N	%
14. PROMS	Y/N	%
15. Database	Y/N	%
16. Audit	Y/N	%

- What are we doing?
- Where are we in the development?
- What is easily achievable?

Orthogeriatric Care Program



The sixfth step: interdisciplinary and integrated clinical chart (FSE?)

Code: 2699

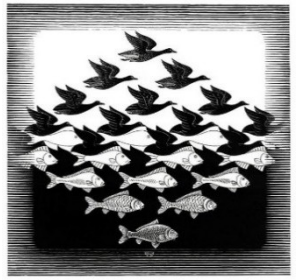
Database

Multidimensional: appropriate for patient's clinical needs, including CGA & M tools

Multidisciplinary: highlighting timing and processes associated with patients' care and supporting physicians' problem-solving

Audit-based: ready to support revision/implementation strategies and tracking the KPIs
Facilitating Audit Methodology

Orthogeriatric Care Program



The seventh step: shaping the organizational features and clinical-surgical processes

Hospital Admission

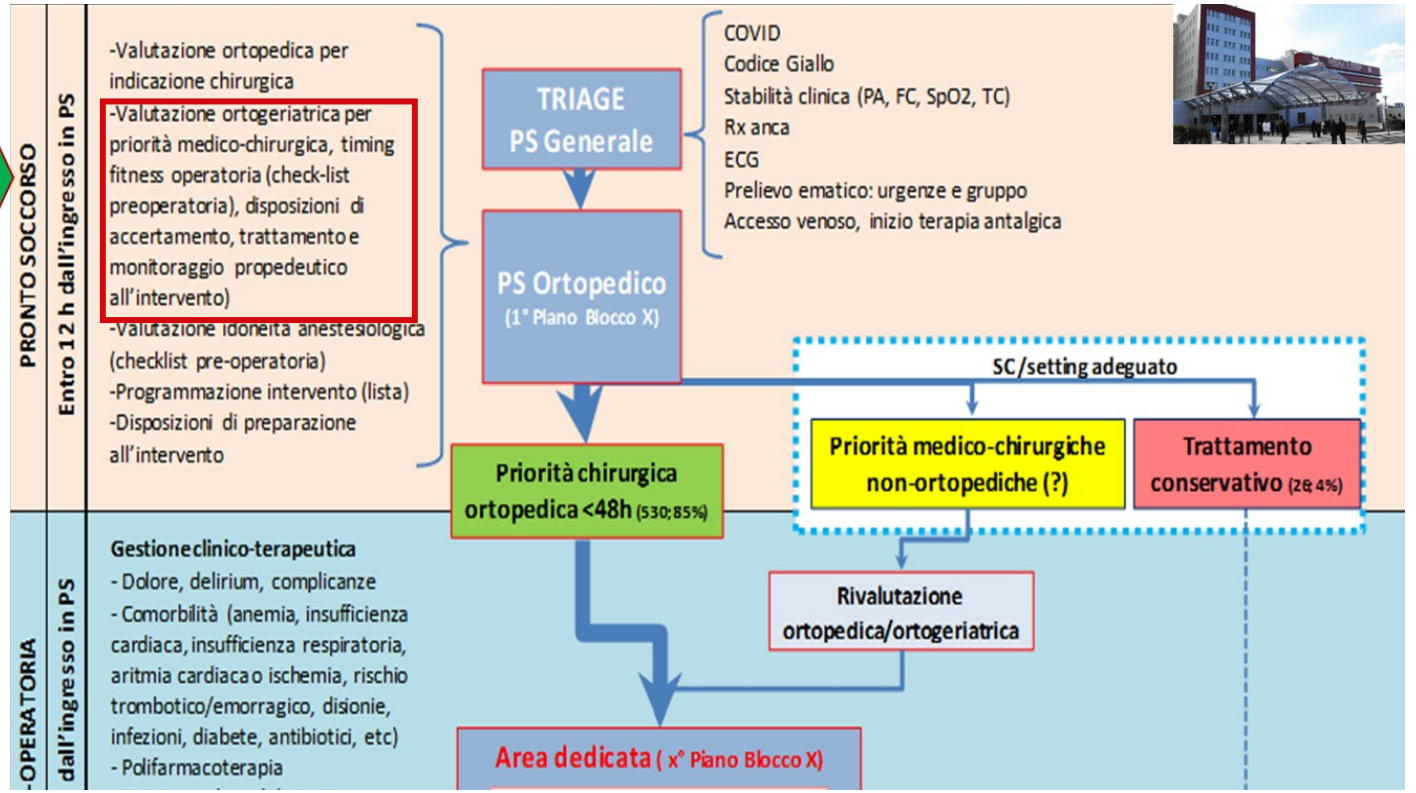
- Focus on hip fractures (may include other fracture types)

Presurgical Management

- Patient assessment
- Comorbidity management
- Appointment coordination to reduce time to surgery

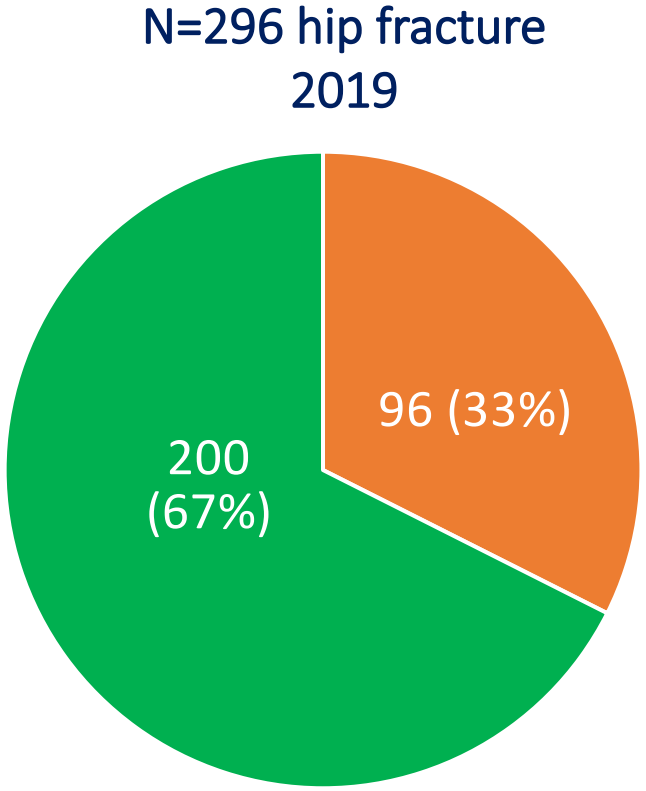
1. Early surgery (24-36h)

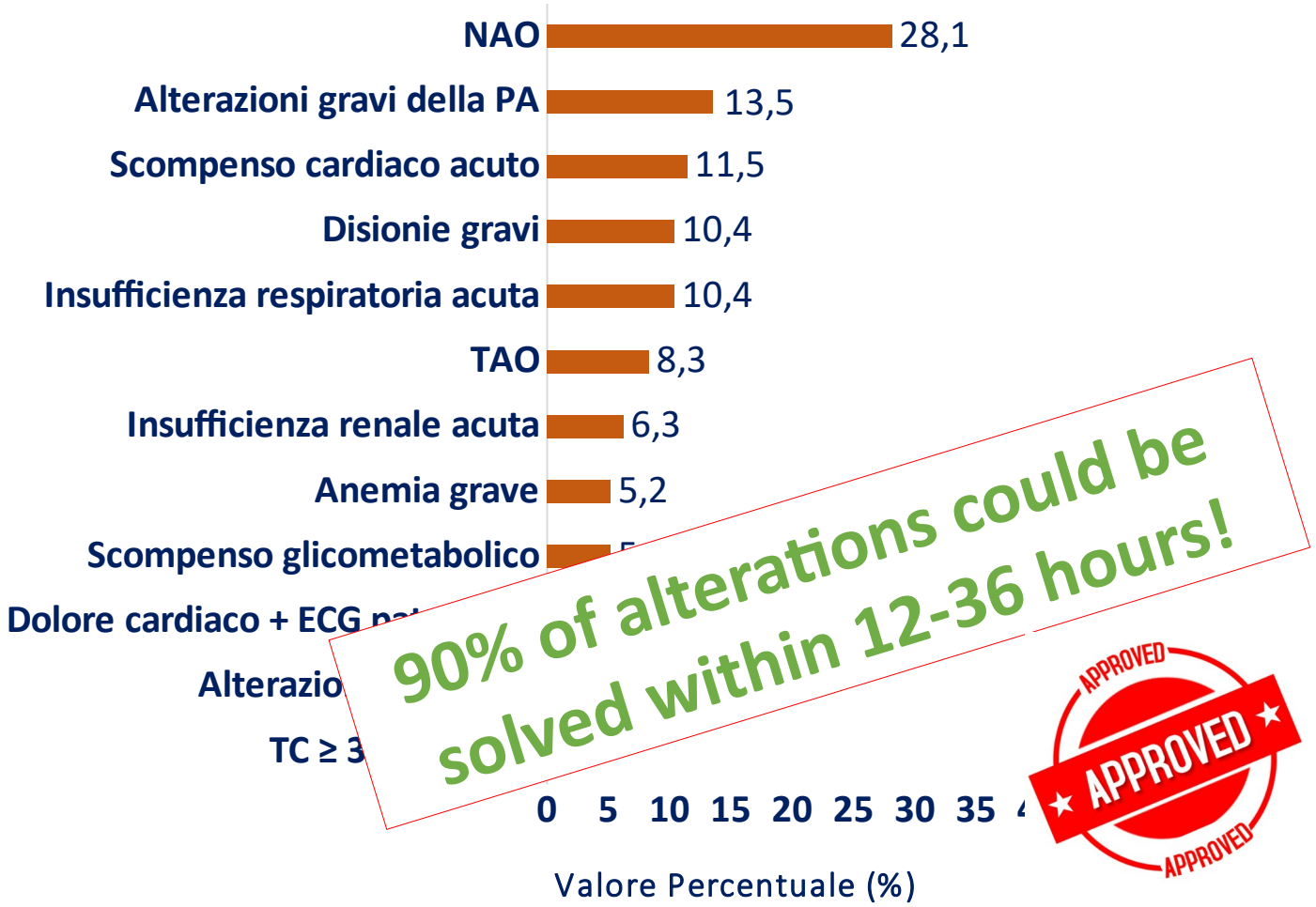
2. Joint admission (≈2-4 hours)



Orthogeriatric care model: major alterations

potentially delaying access to surgical theatre

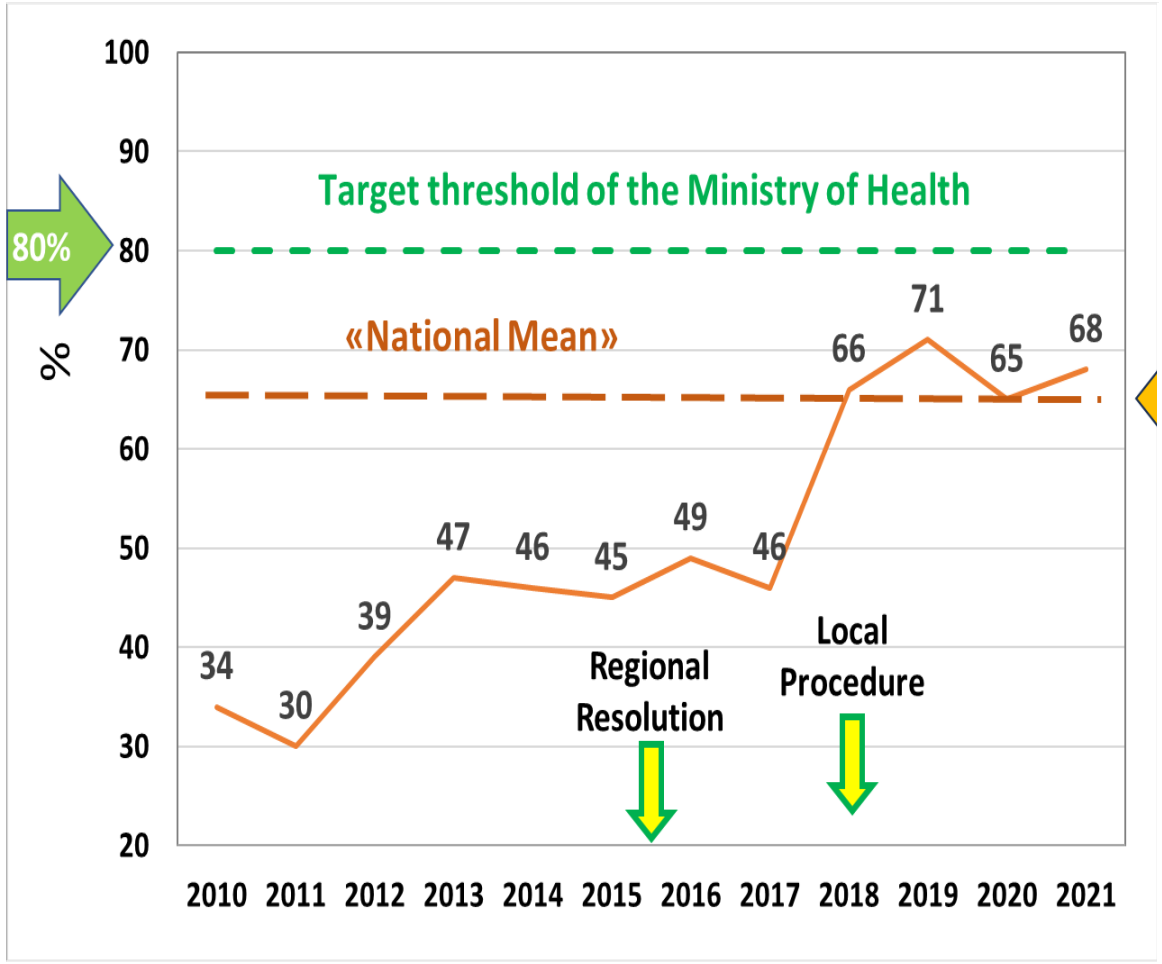


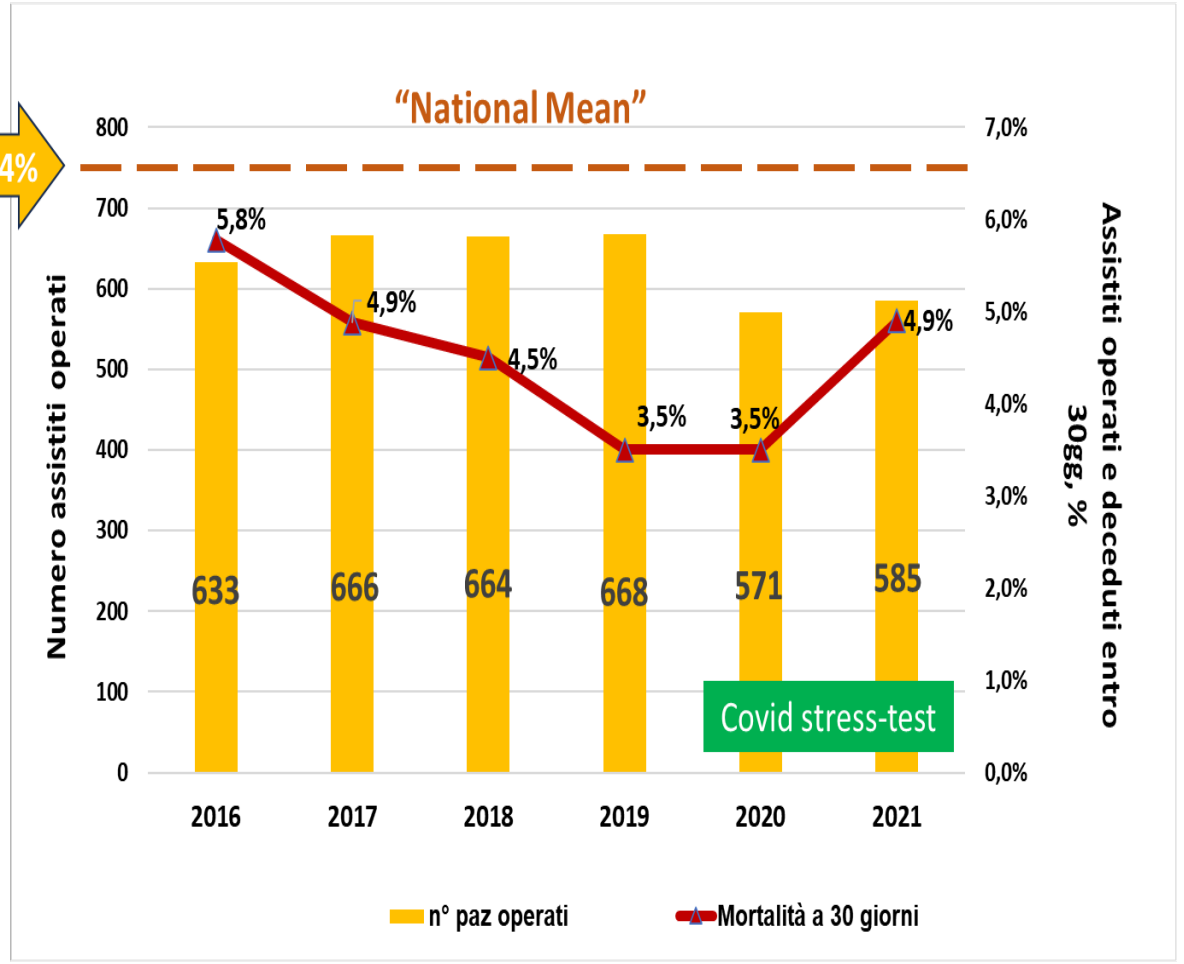


90% of alterations could be solved within 12-36 hours!

Orthogeriatric care: timing and 30-day mortality

potentially delaying access to surgical theatre



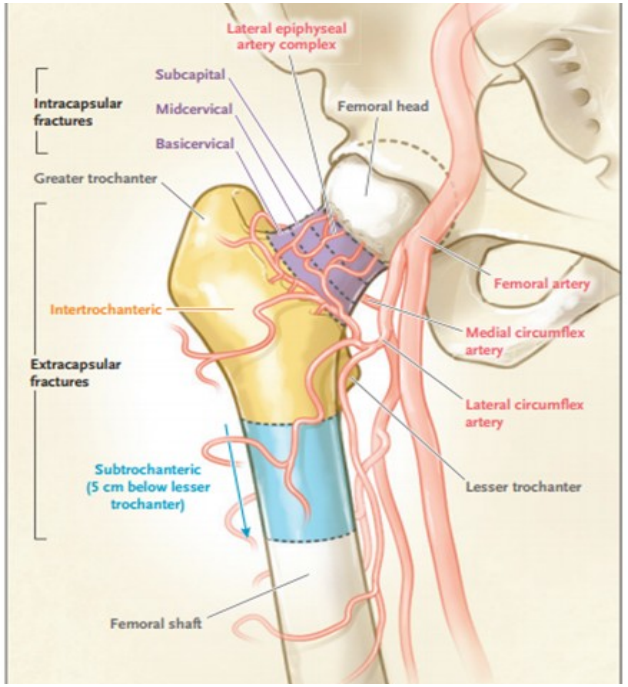


Orthogeriatric care model: quality of surgery

surgical treatment for **fast-up** recovery

Surgery in the planned list
Surgical technique for immediate walking

Moving from Quantity to Quality



Hip fracture type, n(%)

- Medial 38.0%
- Lateral 62.0%

Surgery, n (%)

- Prosthesis 43.3%
- Osteosynthesis 56.7%

Weight-bearing, n (%)

- Early 90.10 %
- Delayed 9.90%

Surgical technique

- Intracapsular fx→ arthroplasty

Total arthroplasty is the choice

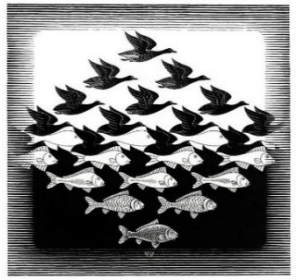
- Pts walking outdoor pre-fx
- Cognitive preserved
- Eligibility to procedure

Time to weight-bearing

- Immediate post-surgery
- Days after surgery

Integration of medical and surgical needs

Orthogeriatric Care Program



The sixth step: shaping the organizational features and clinical- surgical processes

4. Falls and fracture secondary prevention assessment, management and follow-up

Hospital Admission

- Focus on hip fractures (may include other fracture types)

Presurgical Management

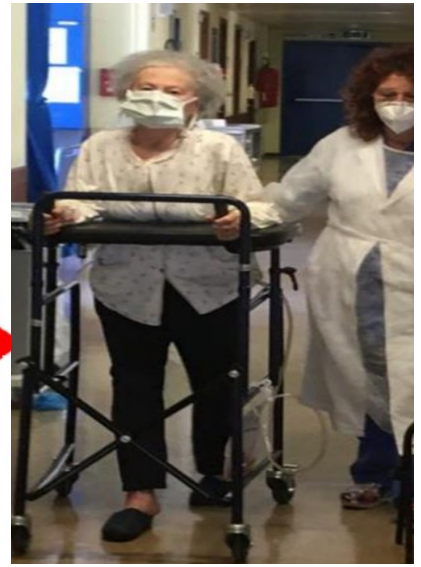
- Patient assessment
- Comorbidity management
- Appointment coordination to reduce time to surgery

Postsurgical Management

- Comorbidity management Polypharmacy revision
- Prevention of complications
- Interventions supporting rehab

Rehabilitation

- Inpatient or outpatient PT
- Fall prevention education



1. Early surgery (24-36h)

2. Joint admission (≈2 hours)

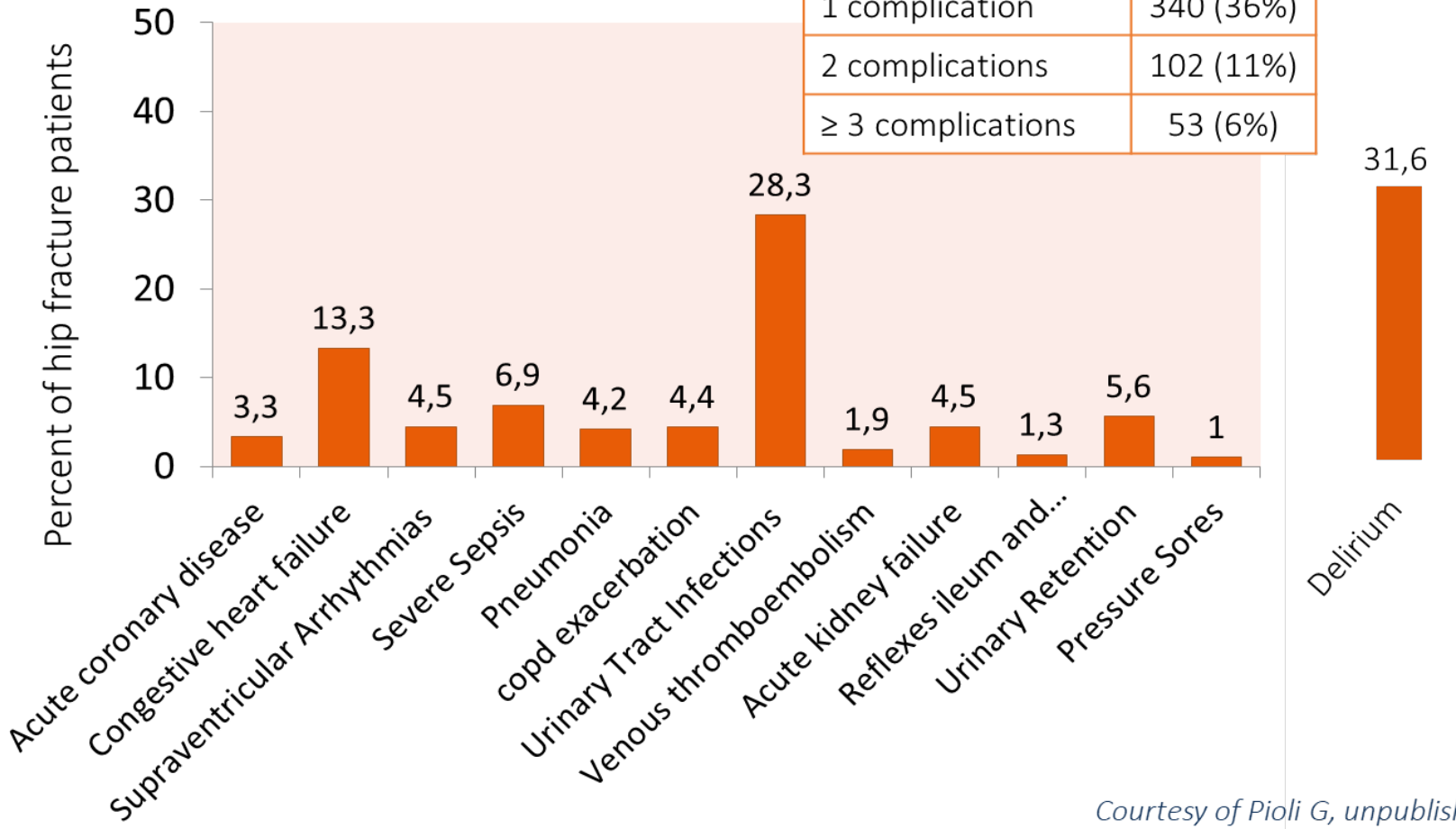
3. Pre-op and post-op interdisciplinary protocols

Comprehensive Geriatric Management

reducing complications and initiating secondary prevention

933 patients underwent surgical repair

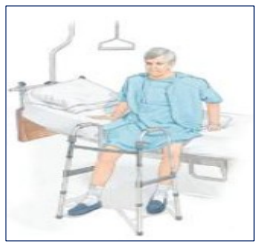
No complications	438 (47%)
1 complication	340 (36%)
2 complications	102 (11%)
≥ 3 complications	53 (6%)

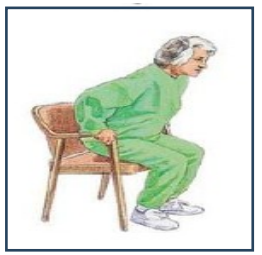


Courtesy of Pioli G, unpublished data

Orthogeriatric care: Early Recovery of Function

treatment for fast-up recovery

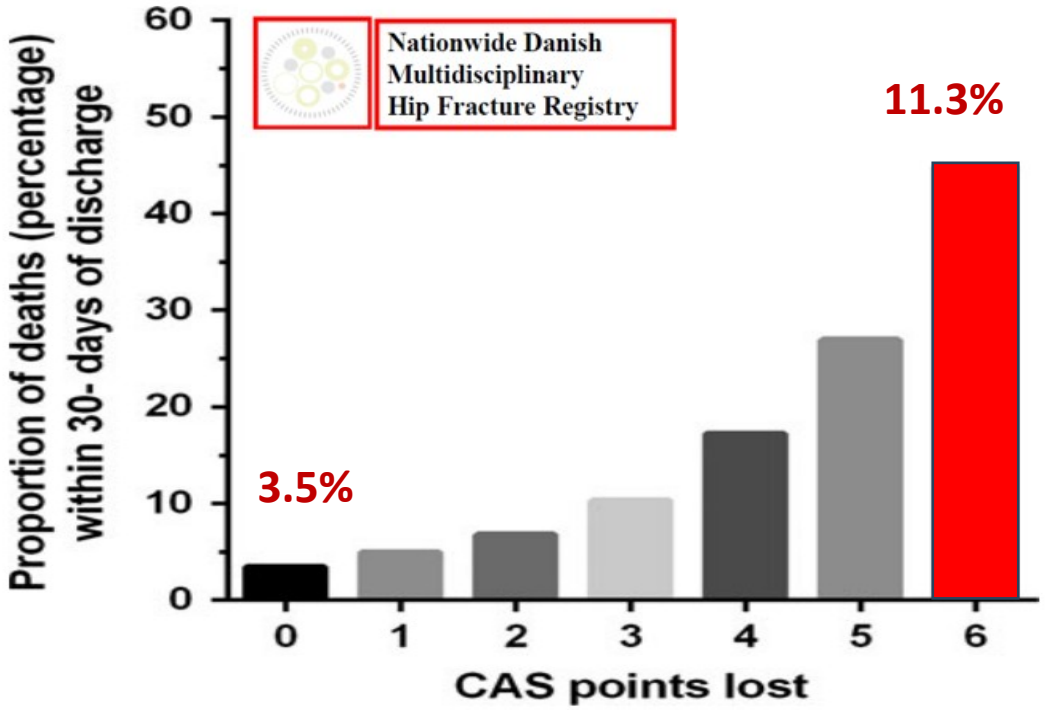




	1°PO	2° PO	3° PO	4° PO	5° PO	6°PO	note
1) **Alzarsi e rimettersi a letto** (dalla posizione supina a letto mettersi seduti sul bordo del letto, alzarsi o trasferirsi su una sedia posta accanto al letto e ritornare alla posizione supina nel letto)	1	1	1	1	2	2	
2) **Alzarsi da una sedia dotata di braccioli** (passare dalla posizione seduta a quella eretta e ritornare alla posizione seduta)	0	1	2	2	2	2	
3) **Deambulazione indoor**	0	0	1	1	2	2	
Totale	**1**	**2**	**4**	**4**	**6**	**6**	
Legenda: (0) Non in grado, nonostante l'assistenza o l'esortazione di una o piu' persone. (1) In grado, con l'assistenza o l'esortazione di una o piu' persone. (2) Capace autonomamente in sicurezza, senza l'assistenza o l'esortazione di nessuno.							

Orthogeriatric care: Early Recovery of Function

treatment for fast-up recovery



Nationwide study of 5,147 elderly patients with HF: the risk of 30-day mortality was substantially increased for those who had not regained their pre-fracture basic mobility CAS level at the time of acute hospital discharge, compared with those who did.

4-year national cohort >20.000 patients

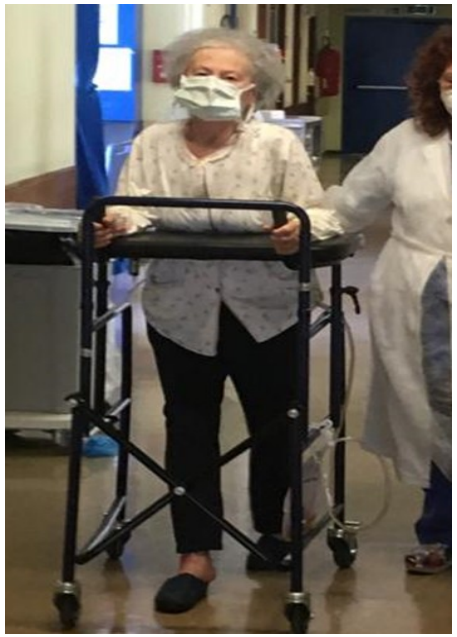
Adjusted Hazard Ratio for infection <30 days
<u>if CAS not regained</u>:

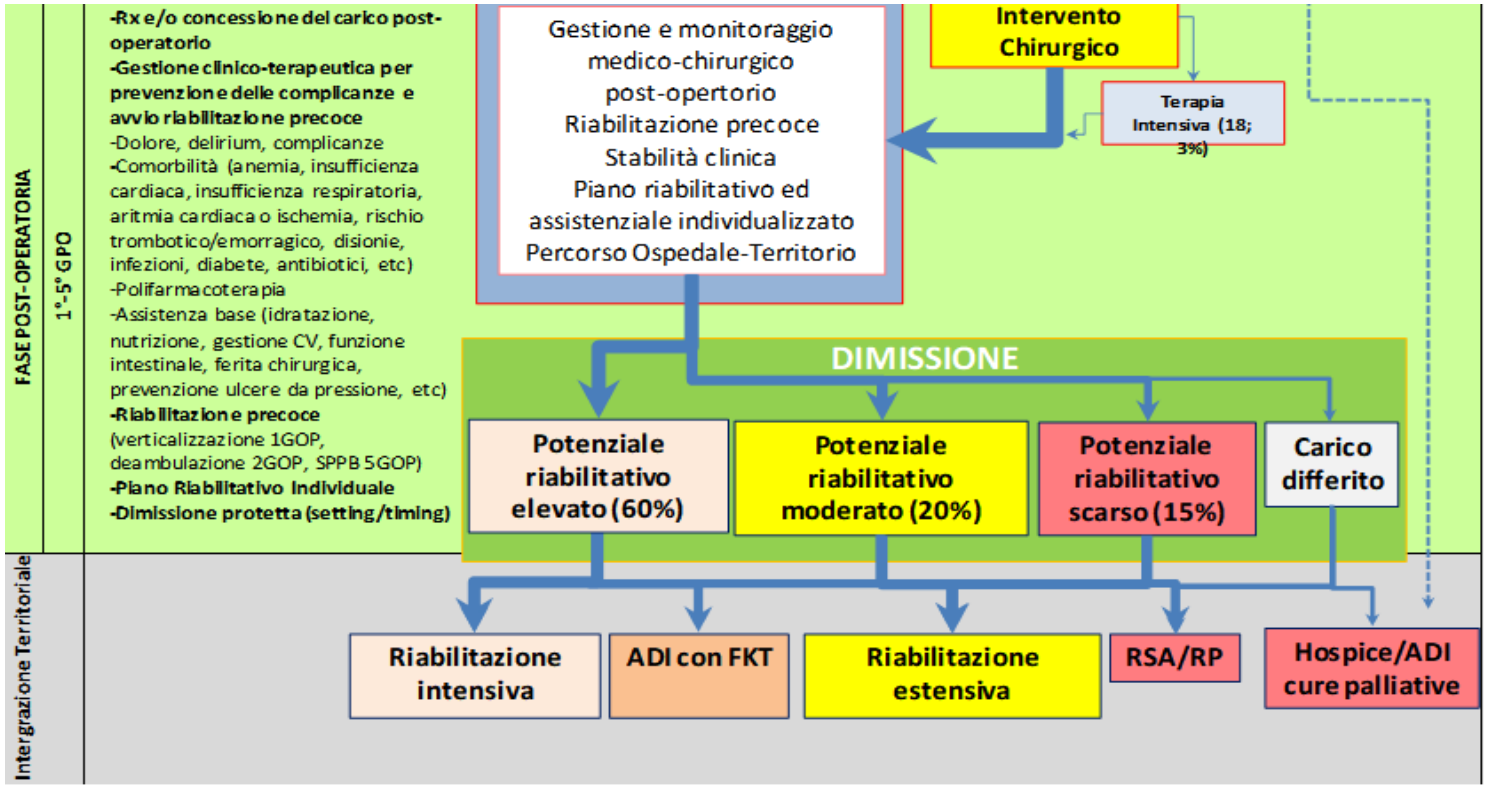
- 1.34 (CI: 1.16-1.54) **hospital-treated infection**
- 1.35 (CI: 1.09 –1.67) **for pneumonia**
- 1.36 (CI: 1.21-1.52) for **community-treated infection**

Orthogeriatric care: patient-centred through **settings** qualifying professionals and settings

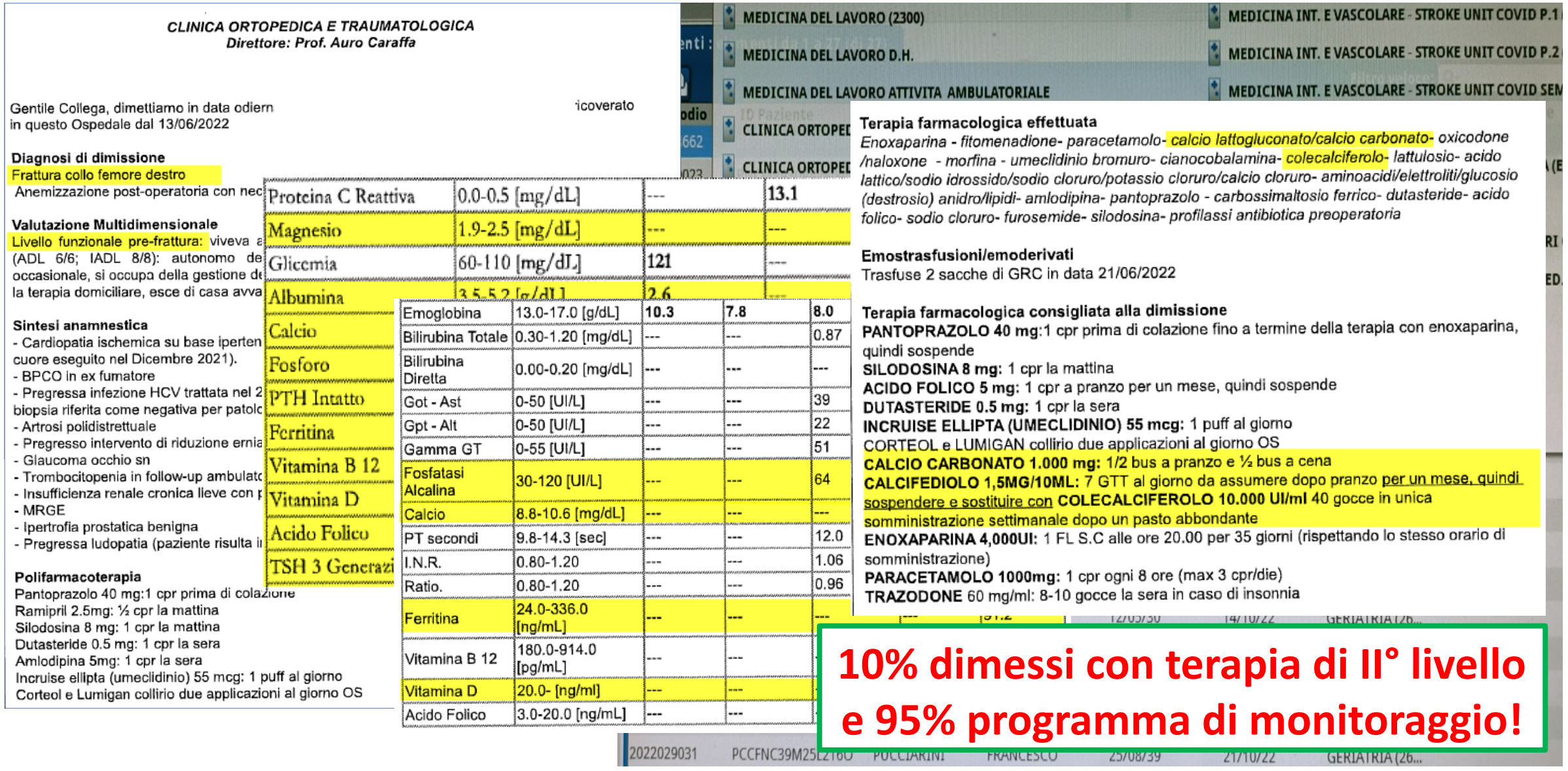
«qualified» hospital for the management of the acute phase...

to the most suitable setting in the medium and long-term period





Perugia Orthogeriatric Care Program



CLINICA ORTOPEDICA E TRAUMATOLOGICA
Direttore: Prof. Auro Caraffa

Gentile Collega, dimettiamo in data odierna ricoverato
in questo Ospedale dal 13/06/2022

Diagnosi di dimissione
Frattura collo femore destro
Anemizzazione post-operatoria con nec

Valutazione Multidimensionale
Livello funzionale pre-frattura: viveva a
(ADL 6/6; IADL 8/8): autonomo de
occasionale, si occupa della gestione de
la terapia domiciliare, esce di casa avva

Sintesi anamnestica
- Cardiopatia ischemica su base iperten
cuore eseguito nel Dicembre 2021).
- BPCO in ex fumatore
- Pregressa infezione HCV trattata nel 2
biopsia riferita come negativa per patolc
- Artrosi polidistrettuale
- Pregresso intervento di riduzione ernia
- Glaucoma occhio sn
- Trombocitopenia in follow-up ambulato
- Insufficienza renale cronica lieve con p
- MRGE
- Ipertrofia prostatica benigna
- Pregressa ludopatia (paziente risulta i

Polifarmacoterapia
Pantoprazolo 40 mg:1 cpr prima di colazione
Ramipril 2.5mg: ½ cpr la mattina
Silodosina 8 mg: 1 cpr la mattina
Dutasteride 0.5 mg: 1 cpr la sera
Amlodipina 5mg: 1 cpr la sera
Incruise ellipta (umeclidinio) 55 mcg: 1 puff al giorno
Corteol e Lumigan collirio due applicazioni al giorno OS

MEDICINA DEL LAVORO (2300)
MEDICINA DEL LAVORO D.H.
MEDICINA DEL LAVORO ATTIVITA AMBULATORIALE
CLINICA ORTOPED
CLINICA ORTOPED
MEDICINA INT. E VASCOLARE - STROKE UNIT COVID P.1
MEDICINA INT. E VASCOLARE - STROKE UNIT COVID P.2
MEDICINA INT. E VASCOLARE - STROKE UNIT COVID SEM

Proteina C Reattiva	0.0-0.5 [mg/dL]	---		13.1
Magnesio	1.9-2.5 [mg/dL]	---		---
Glicemia	60-110 [mg/dL]	121		---
Albumina	3.5-5.2 [g/dL]	2.6		---
Calcio				
Fosforo				
PTH Intatto				
Ferritina				
Vitamina B 12				
Vitamina D				
Acido Folico				
TSH 3 Generazi				

Emoglobina	13.0-17.0 [g/dL]	**10.3**	**7.8**	**8.0**
Bilirubina Totale	0.30-1.20 [mg/dL]	---	---	0.87
Bilirubina Diretta	0.00-0.20 [mg/dL]	---	---	---
Got - Ast	0-50 [UI/L]	---	---	39
Gpt - Alt	0-50 [UI/L]	---	---	22
Gamma GT	0-55 [UI/L]	---	---	51
Fosfatasi Alcalina	30-120 [UI/L]	---	---	64
Calcio	8.8-10.6 [mg/dL]	---	---	---
PT secondi	9.8-14.3 [sec]	---	---	12.0
I.N.R.	0.80-1.20	---	---	1.06
Ratio.	0.80-1.20	---	---	0.96
Ferritina	24.0-336.0 [ng/mL]	---	---	---
Vitamina B 12	180.0-914.0 [pg/mL]	---	---	
Vitamina D	20.0- [ng/ml]	---	---	
Acido Folico	3.0-20.0 [ng/mL]	---	---	

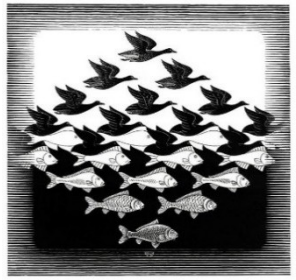
Terapia farmacologica effettuata
Enoxaparina - fitomenadione- paracetamolo- calcio lattogluconato/calcio carbonato- oxicodone /naloxone - morfina - umeclidinio bromuro- cianocobalamina- colecalciferolo- lattulosio- acido lattico/sodio idrossido/sodio cloruro/potassio cloruro/calcio cloruro- aminoacidi/elettroliti/glucosio (destrosio) anidro/lipidi- amlodipina- pantoprazolo - carbossimaltosio ferrico- dutasteride- acido folico- sodio cloruro- furosemide- silodosina- profilassi antibiotica preoperatoria

Emostrasfusioni/emoderivati
Trasfuse 2 sacche di GRC in data 21/06/2022

Terapia farmacologica consigliata alla dimissione
PANTOPRAZOLO 40 mg:1 cpr prima di colazione fino a termine della terapia con enoxaparina, quindi sospende
SILODOSINA 8 mg: 1 cpr la mattina
ACIDO FOLICO 5 mg: 1 cpr a pranzo per un mese, quindi sospende
DUTASTERIDE 0.5 mg: 1 cpr la sera
INCRUISE ELLIPTA (UMECLIDINIO) 55 mcg: 1 puff al giorno
CORTEOL e LUMIGAN collirio due applicazioni al giorno OS
CALCIO CARBONATO 1.000 mg: 1/2 bus a pranzo e ½ bus a cena
CALCIFEDIOLO 1,5MG/10ML: 7 GTT al giorno da assumere dopo pranzo per un mese, quindi sospendere e sostituire con **COLECALCIFEROLO 10.000 UI/ml** 40 gocce in unica somministrazione settimanale dopo un pasto abbondante
ENOXAPARINA 4,000UI: 1 FL S.C alle ore 20.00 per 35 giorni (rispettando lo stesso orario di somministrazione)
PARACETAMOLO 1000mg: 1 cpr ogni 8 ore (max 3 cpr/die)
TRAZODONE 60 mg/ml: 8-10 gocce la sera in caso di insonnia

10% dimessi con terapia di II° livello
e 95% programma di monitoraggio!

Orthogeriatric Care Program



The sixth step: shaping the organizational features and clinical- surgical processes

4. Falls and fracture secondary prevention assessment, management and follow-up

Hospital Admission

- Focus on hip fractures (may include other fracture types)

Presurgical Management

- Patient assessment
- Comorbidity management
- Appointment coordination to reduce time to surgery

Postsurgical Management

- Comorbidity management Polypharmacy revision
- Prevention of complications
- Interventions supporting rehab

Rehabilitation

- Inpatient or outpatient PT
- Fall prevention education

Patient Follow-up

- Clinic visits
- Virtual medical care[a]
- PCP contact

1. Early surgery (24-36h)

2. Joint admission (≈2 hours)

3. Pre-op and post-op interdisciplinary protocols

Orthogeriatric Care Program

How translate actual patient's journey into a process flow

Hip Fracture

Ortho-Geriatric Unit (≈7.5 gg degenza)

Identification (100% HF inpatients)

Investigation (lab exams, **CGA**)

Initiation (Vitamin D and Calcium [100%], AOT [10%] at discharge

Pivotal time!

Orthogeriatric out-patient Service (≈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

Pharmacological & Non-pharmacological Interventions

Falls & Fracture Prevention Intervention

Care-giver Education

General Practitioners

OrthoGeriatric Care Program

Reduces post-acute individual adverse events and healthcare burden

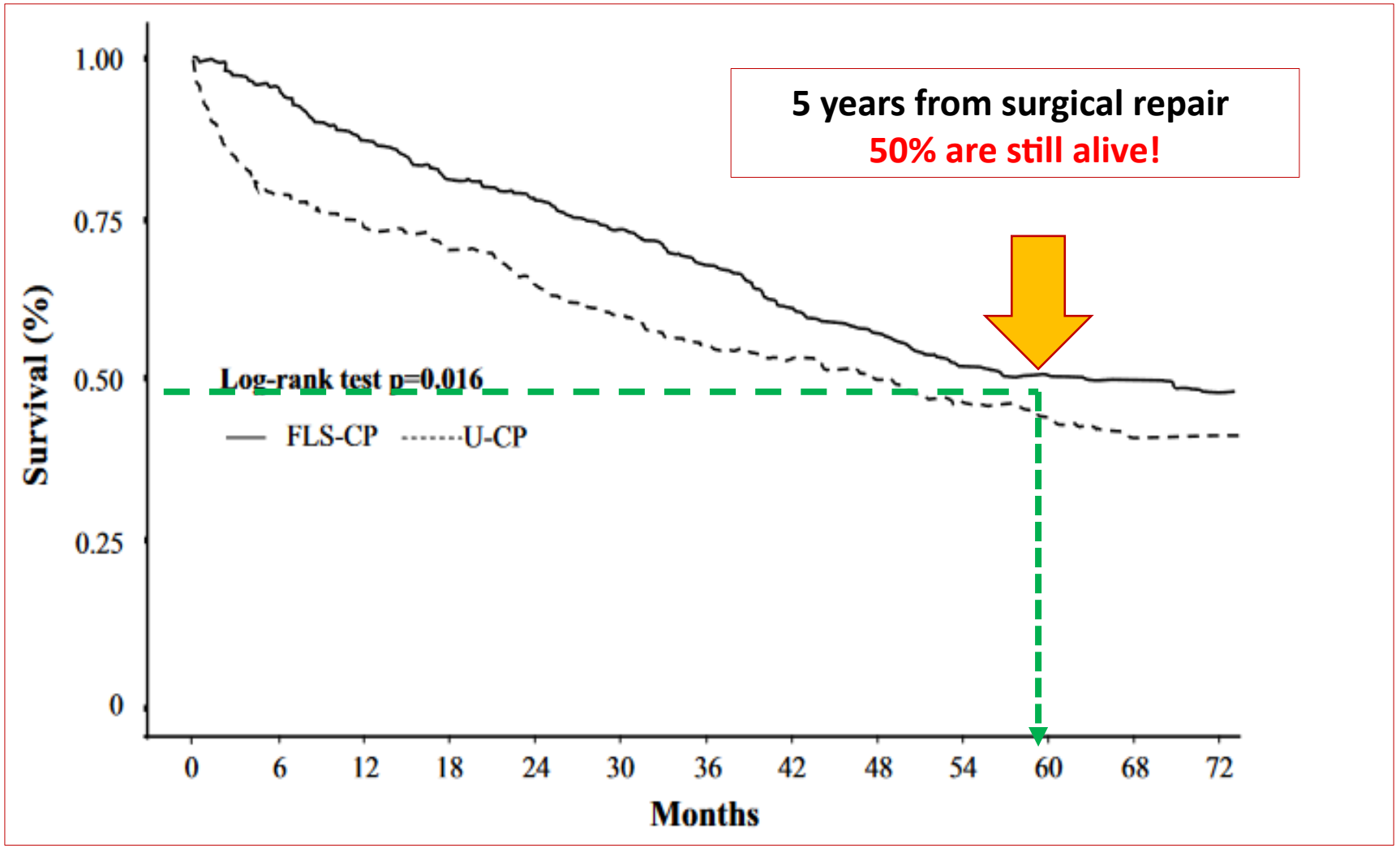
80% alive after 1 year
80% adherence 1 year
Reduced rates of adverse events

	OG-CP	Usual-CP	p value
1-year adherence to antifracture drugs	80%	9%	<.0001
Multiple fallers	19%	35%	0.0399
Health facility admissions*	41%	58%	0.0125
Time free hospitalization (days)	176	89	0.0152

Ruggiero C et al, Arch Osteop 2022

The interdisciplinary fracture liaison service improves health-related outcomes and survival of older adults after hip fracture surgical repair

Carmelinda Ruggiero[1] · Marta Baroni[1] · Giuseppe Rocco Talesa[2] · Alessandro Cirimbilli[2] · Valentina Prenni[1] · Valentina Bubba[1] · Luca Parretti[1] · Riccardo Bogini[3] · Giuliana Duranti[3] · Auro Caraffa[2] · Virginia Boccardi[1] · Patrizia Mecocci[1] · Giuseppe Rinonapoli[2]



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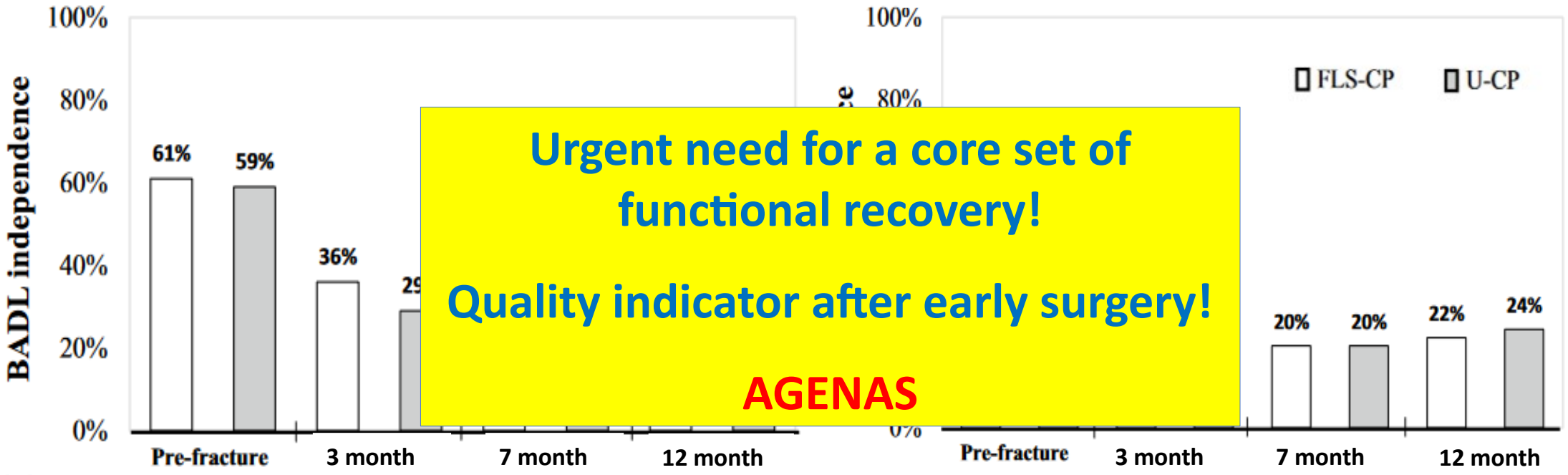


Urgent need for a core set of functional recovery!

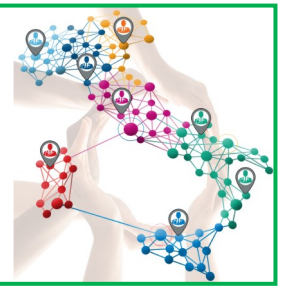
Quality indicator after early surgery!

AGENAS

50% patients do not recover their pre-fracture after 1 year, with a trend to experience an increasing rate of peri-prosthetic re-fractures

Ruggiero C et al, Osteoporos Int 2022

Principali Passaggi

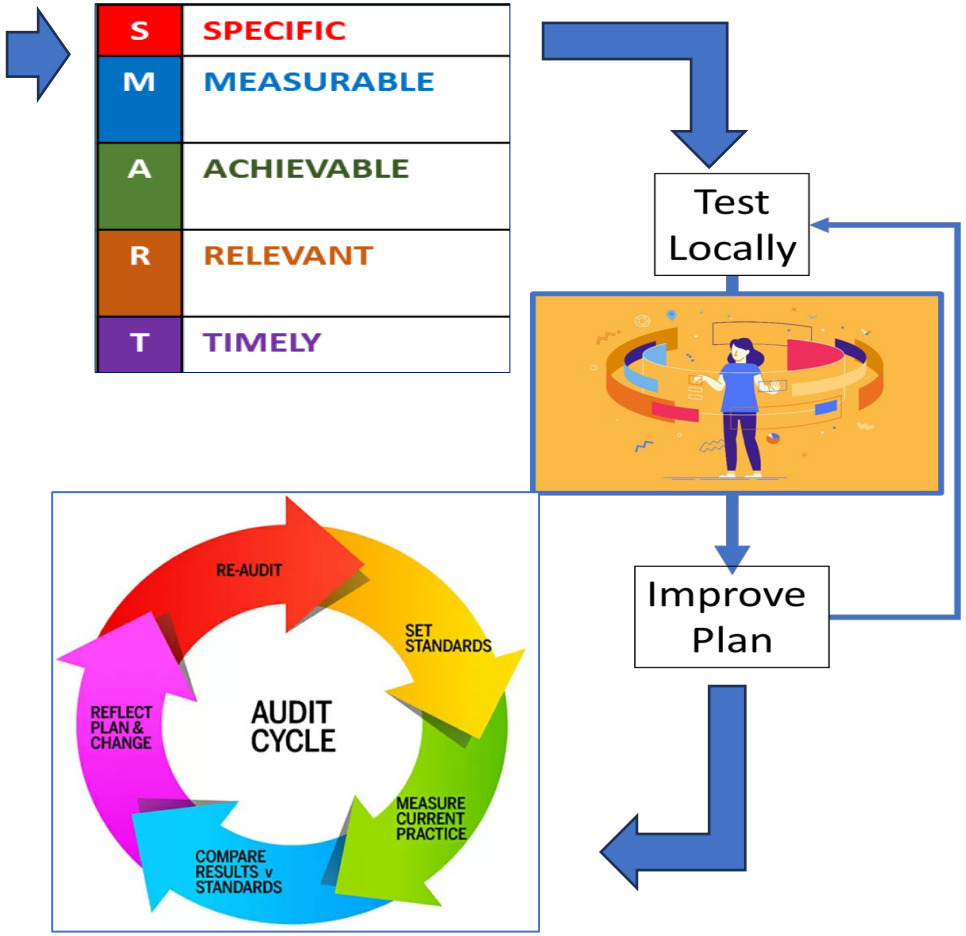


- **Avviare il Modello Ortogeriatrico**
  - Conoscere il contesto e stabilire la priorità
  - Coinvolgere tutti gli attori definendone obiettivi e modalità
  - Monitorare gli esiti nel breve -medio termine
- **Ottimizzare il Modello Ortogeriatrico**
  - **Principi di miglioramento continuo**

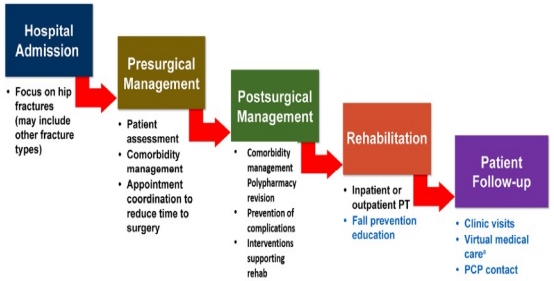
Orthogeriatric Care Program

The seventh step: checking on outcomes for advancing goals and processes

Key Performance Indicators	Jan -2024	Rate
1. Patient Identification	Y	70%
2. Patient Management drive by CGA	N	%
3. Patient Surgery<48h	Y	60%
4. Early weight-bearing	N	%
5. Short & long-term Functional Recovery	N	%
6. Falls and Fracture Prevention	Y	30%
7. Medication Review and Initiation	N	%
8. Post-Surgical Assessment & Management	Y	50%
9. Communication Strategy	N	%
10. Assessment Guidelines (X-ray; DXA)	Y	25%
11. Vertebral Fracture Identification	Y	25%
12. Long-term Management & Persistence	N	%
13. Re-fractures	N	%
14. PROMS	N	%
15. Database	N	%
16. Audit	N	%



Orthogeriatric Care Program



The eigth step: **makes the service valuable and sustainable _**

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

Sustain: continue to provide healthcare in the future

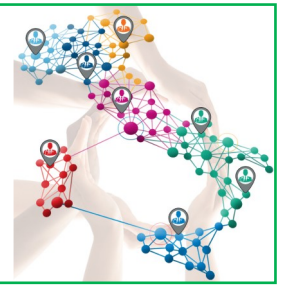
The goal is to make the service **normalised** in the healthcare system

What are the future costs?

Make your service

- More Effective
- Less costly
- **Lean approach - Sigma**

Principali Passaggi



- **Avviare il Modello Ortogeriatrico**
  - Conoscere il contesto e stabilire la priorità
  - Coinvolgere tutti gli attori definendone obiettivi e modalità
  - Monitorare gli esiti nel breve -medio termine
- **Ottimizzare il Modello Ortogeriatrico**
  - Principi di miglioramento continuo
  - **Fare cultura e crescere in network**

Orthogeriatric Care Program

The ningth step: being activists and promoting transmural orthogeriatric culture

CONSENSUS DOCUMENT

Check for updates

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

... Secondary prevention of fragility fractures...

.... Risk of fall evaluation and management....

SOCIETÀ ITALIANA DI GERONTOLOGIA E GERIATRIA

SIOT

SIAARTI

SIMFER SOCIETÀ ITALIANA DI MEDICINA FISICA E RIABILITATIVA The Italian Society of Physical and Rehabilitative Medicine

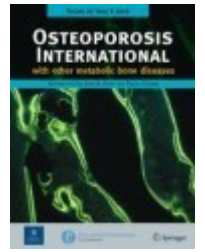
SIMG SOCIETÀ ITALIANA DI MEDICINA GENERALE E DELLE CURE PRIMARIE

SIGOT

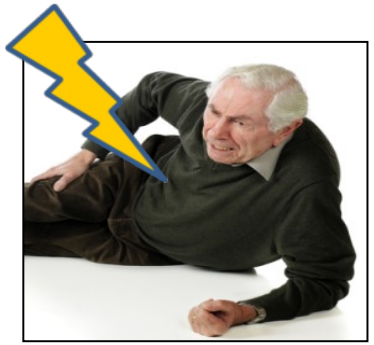
FFN ITALIA Fragility Fracture Network

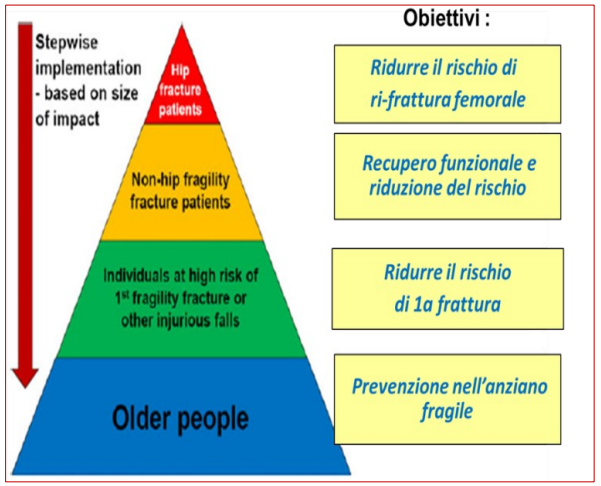
Post-fracture care programs for prevention of subsequent fragility fractures: a literature assessment of current trends

K.E. Åkesson[1,2] · K. Ganda[3,4] · C. Deignan[5] · M.K. Oates[5] · A. Volpert[6] · K. Brooks[7] · D. Lee[8,9] · D.R. Dirschl[10] · A.J. Singer[11]



2022





Orthogeriatric Service

Primary goal: improve overall patient's outcomes (morbidity/mortality/ physical function)

Combination

Fracture Liaison Service

Primary goal: prevent subsequent fragility fractures

Improvement in osteoporosis detection in a fracture liaison service with integration of a geriatric

Amrut Borade, MBBS MS, Harish Kemp
Michael Suk, MD JD MPH, Daniel S. Ho

Implementation of a fracture liaison service for patients with hip fracture cared for on a hospital medicine service

John R. Stephens , Donald Caraccio , Dana R Mabry , Kelly V. Stepanek , Morgan S. Jones , David F. Hemsey & Carlton R. Moore

Orthogeriatric Care Program

Improve outcomes and prevent subsequent fragility fractures

Ospedale

Dedicated Fracture Liaison Service (FLS)

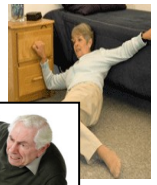
Healthcare savings

Fewer Care Home admissions

Fewer Secondary care admissions

Lower re-fracture

Identify at risk patients



Systematic **investigation** and risk a

OG-PFC = riappropriarsi del percorso di cura della persona nel suo contesto

Appropriate Treatment **initiation**

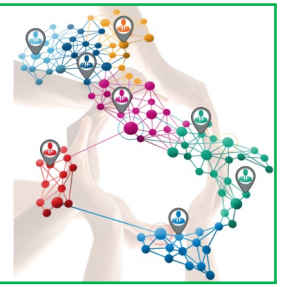
and fracture **monitoring**

Primary care

E' un modello di cura clinicamente ed economicamente vantaggioso se attuato correttamente

Territorio

Take home messages



- **Orthogeriatric patient is not an osteoporotic patient, but frail and highly deserving of pro-active strategies to preserve pre-fracture QoL**

- **Orthogeriatric care programs is required and based on multidisciplinary interventions integrated across the pathway of care**

- **It's time to embrace the challenge of improving the QoL of older people facing fragility fractures by using/developing audit methodology proactive**

OrthoGeriatric Care Program

Reduces post-acute individual adverse events and healthcare burden

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

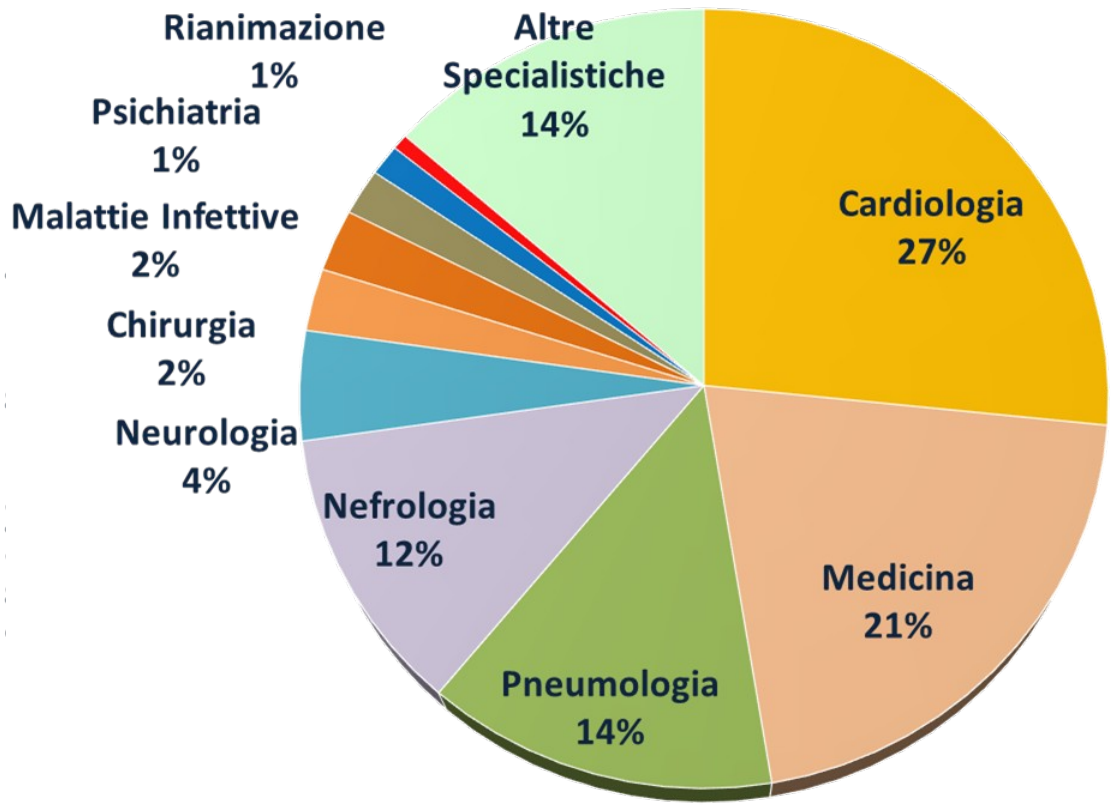
	FLS-CP	U-CP	p value
Multiple fallers	19%	35%	0.0399
Health facility admissions*	41%	58%	0.0125
Time free hospitalization (days)	176	89	0.0152

Ruggiero C et al, Arch Osteop 2022

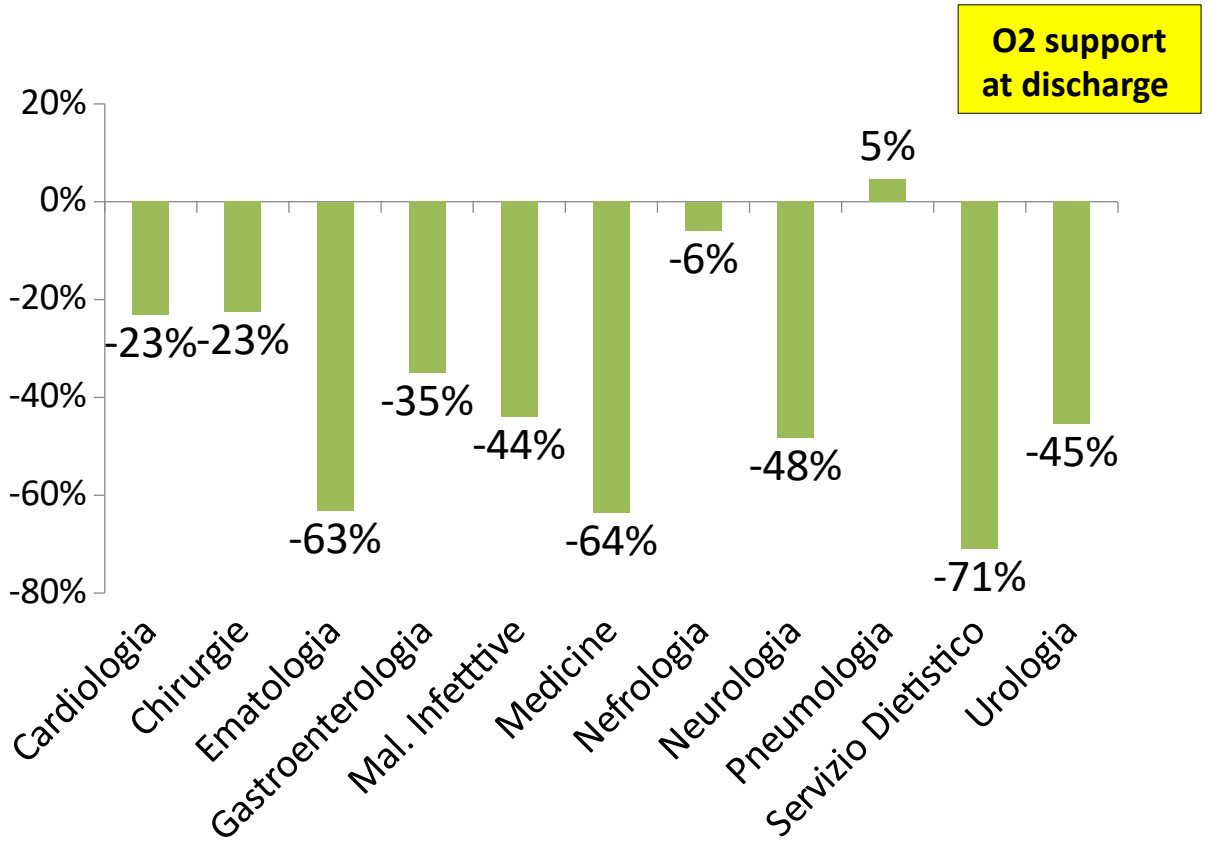
Orthogeriatrics: starting with proof of functioning

highlight the impact on other hospital services

Traditional model
Jan-March 2016: 93 pz (154 consultations)



Comanagement vs Traditional model
Jan-March 2018: 97 pz (57 consultations)



Take-home message

No	
Yes	50%
No	
Yes	50%
No	
No	
No	
No	
No	
No	
Yes	
No	

t Identification (%)
t CG Assessment & Management (%)
t Surgery<48 (%)
weight-bearing (%)
& long-term Functional recovery (%)
nd Fracture Prevention (%)
ation Review and Initiation (%)
8. Post-Fracture Assessment & Management (%)
9. Communication Strategy (%)
10. Assessment Guidelines (%)

	Jan -2024	Rate	Apr -2024	Rate	
	Y	70%	Y	?%	
A	N	%	N	%	
	Y	60%	Y	60%	
	N	%	N	%	
overy	N	%	N	%	
	Y	30%	Y	30%	

1. Patient Identification		
2. Patient Management drive by CGA		
3. Patient Surgery<48h		
4. Early weight-bearing		
5. Short & long-term Functional Recovery		
6. Falls and Fracture Prevention		
7. Medication Review and Initiation		
8. Post-Surgical Assessment &		
9. Communication Strategy		
10. Assessment Guidelines (X		
11. Vertebral Fracture Identifi		
12. Long-term Management &		
13. Re-fractures		
14. PROMS		
15. Database		
16. Audit		

Key Performance Indicators
1. Patient Identification
2. Patient Management drive by CGA
3. Patient Surgery<48h
4. Early weight-bearing
5. Short & long-term Functional Recove
6. Falls and Fracture Prevention
7. Medication Review and Initiation
8. Post-Surgical Assessment & Manager
9. Communication Strategy
10. Assessment Guidelines (X-ray; DXA)
11. Vertebral Fracture Identification

Orthogeriatrics: starting with professionals

3. build the core orthogeriatric team

Geriatrician

Comprehensive assessment

Anesthetist

Type of anesthesia

Orthopedic

Indication to surgery

Mon
Inter

Interdisciplinary approach facilitates the identification and the management of priorities by using the most appropriate way to achieve them.
***The pacemaker* of this process is the Orthogeriatrician!**

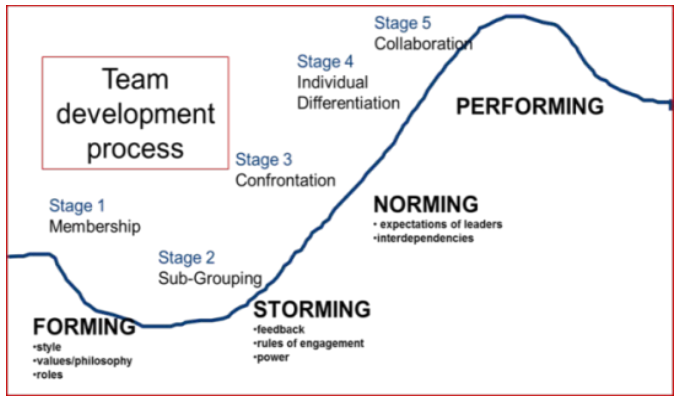
Pre/post-surgical preparation and monitoring
Attending primary functions and assistence, including mobilization

Early mobilization and ambulations
Functional recovery

Discharge
Community care services

Orthogeriatrics: continuing with HC managers

4. approve essential documents for the OG team



UNIVERSITÀ DEGLI STUDI DI PERUGIA
AZIENDA OSPEDALIERA DI PERUGIA

S.C. ORTOPEDIA e TRAUMATOLOGIA
Direttore: Prof Auro Caraffa

S.C. GERIATRIA
Direttore: Prof.ssa Patrizia Mecocci

S.S. ORTOGERIATRIA
Responsabile: Prof.ssa Carmelinda Ruggiero

Check-list preoperatoria
Paziente con frattura di femore da sottoporre ad intervento chirurgico

Cognome Nome	
Data nascita	Data ingresso
Tipo frattura	Allergie

	ALTERAZIONI DA ESCLUDERE ASSENTE = 0 ..... PRESENTE = 1	T 0	T 24	T 48	T 72	T 96
PA SISTOLICA	- PAs ≥ 180 mmHg - PAs ≤ 90 mmHg					
RITMO/FC	- Tachi / Bradi aritmia non nota - FC ≥ 120 o ≤ 50 bpm					
DOL TORACICO	- Dolore + ECG normale/alterato o Δ acute ECG					
INSUFFICIENZA CARDIACA	- Segni clinici e/o radiologici di scompenso cardiaco acuto - SSEA non nota - SA nota ETT ≥ 24 mesi o ETT più recente ma ↑ sintomi - SSEA + METs < 4 + Δ ECG					
INFEZIONI	- T° ≤ 35 opp ≥ 38°					
INS RESPIRAT POLMONITE	- SO_2 < 90 mmHg o pO_2 < 60 mmHg in O2 tp o O2 tp > 6 l/m - pCO_2 ≥ 55 mmHg o pCO_2 46-55 mmHg acuta e/o pH < 7.35					
DISIONIE	- Na < 128 opp > 150 mEq/L - K < 3.0 opp > 5.6-6.0 mEq/L					
GLICEMIA	> 250 mg/dl					
FUNZIONE RENALE	- Oliguria (< 500 cc/die) - Incremento Cr > 1.5-2 volte valore basale					
ANEMIA	- Hb ≤ 9 - Hb ≤ 10 g/dl + pz cardiopatico / elevato rischio emorragico					

Hb preop: data	GRC richiesti n°
PLT preop: data	PLT richieste n°

METs (1-8.5)		METs 4 = salire e scendere le scale senza fermarsi
ADL (0-6)		autonomia nel lavarsi, vestirsi, andare in bagno, spostarsi dentro casa, continenza, mangiare
IADL (0-8)		autonomia nel telefonare, spesa, cucinare, faccende, bucato, uscire di casa, farmaci, denaro
CDR (0-5)		0 = integro; 0.5 = lievi deficit cognitivi; 1 = demenza lieve; 2 = moderata; 3 = severa
NRS (0-10)		0 = assenza di dolore ..... 10 = massimo dolore immaginabile
PAINAD (0-10)		respiro, vocalizzazione, espressione facciale, espressione corporea, consolabilità

Ospedale Santa Maria della Misericordia – Loc. Sant'Andrea delle Fratte – 06132 Perugia – Segreteria e Direzione 075 5783839
Fax 075 5783878 – Degenza 075 5783333 – Day Service 075 5783390 – e-mail ortogeriatria@ospedale.perugia.it

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GESTIONE DELLE TERAPIA PERIOPERATORIA DEL PAZIENTE ANZIANO CON FRATTURA DI FEMORE PROSSIMALE

FARMACI DA SOSPENDERE SEMPRE
GG INGRESSO >>>> GG INTERVENTO (COMPRESO)

ANTIPERTENSIVI
Ace inibitori (es. Ramipril, Enalapril, Captopril, Lisinopril, etc)
Sartani (es. Valsartan, Olmesartan, Telmasartan, Candesartan, Losartan)
>>> possibile graduale riduzione della posologia se dosaggi elevati e/o associazioni precostituite

ANTICOAGULANTI ORALI
Warfarin e Acenocumerolo
>>>sospendere e somministrare vitamina K secondo schema: 10 MG: ½ fiala EV in 100 cc di SF 0.9% da infondere in 40 minuti; non somministrare enoxaparina se INR > 1.5
Dabigatran, Rivaroxaban, Apixaban, Edoxaban
>>>NON somministrare Enoxaparina per almeno 48 ore dall'ultima assunzione del farmaco anticoagulante

IPOGLICEMIZZANTI ORALI
(es. Metformina, Sulfaniluree, Incretine, Glifozine, altri)
>>> utilizzare SOLO INSULINA basal-bolus previo stick glicemico secondo le unità prescritte; in caso di paziente in insulino terapia domiciliare ridurne la posologia rispetto alle unità assunte al domicilio

FARMACI DA MANTENERE SEMPRE
GG INGRESSO >>> GG INTERVENTO (COMPRESO)

ANTIAGGREGANTI SINGOLI
(ASA, Clopidogrel)
>>> in caso di DOPPIA ANTIAGGREGAZIONE (ASA + Clopidogrel, ASA + Ticagrelor) valutare se consulenza cardiologica in ingresso per probabile gestione con solo ASA + Enoxaparina in base alla clinica e alla distanza temporale dal posizionamento degli stent cardiaci

BETA BLOCCANTI
(atenololo, bisoprololo, nebivololo, metoprololo)
>>> in caso di bassi valori pressori riduzione della posologia ma NON sospendere

CALCIO ANTAGONISTI NON DIIDROPIRIDINICI
(verapamil, diltiazem)
>>> in caso di bassi valori pressori riduzione della posologia ma NON sospendere

CLONIDINA
>>>probabile riduzione della posologia, ma NON sospendere

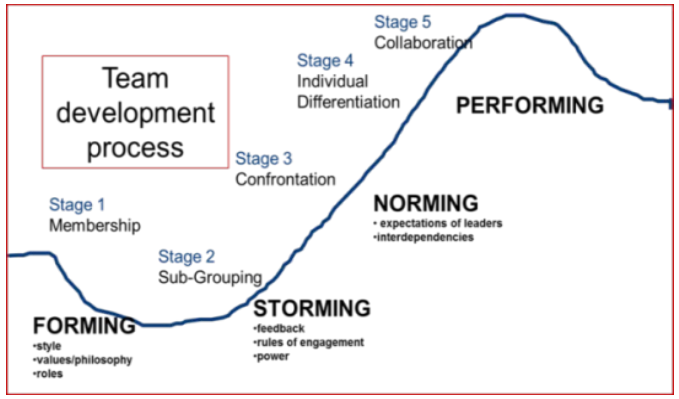
TERAPIA PSICOFARMACOLOGICA
(antidepressivi, ansiolitici, antiepilettici, antiparkinsoniani, antipsicotici, anticolinesterasici, etc)
>>> avvertire il medico in caso di scarso controllo dei disturbi del comportamento o di stato soporoso ma NON sospendere

FARMACI TIROIDE e GASTROPROTETTORI
>>> da non somministrare simultaneamente (in caso di levotiroxina + PPI posticipare il PPI alle ore 12.00)

Ospedale Santa Maria della Misericordia – Loc. Sant'Andrea delle Fratte – 06132 Perugia – Segreteria e Direzione 075 5783839
Fax 075 5783878 – Degenza 075 5783333 – Day Service 075 5783390 – e-mail ortogeriatria@ospedale.perugia.it

Orthogeriatrics: starting with HC managers

5. continuous educational programs “on the job”



- ✓ **ORTOGERIATRIA - ATTIVITA’ DIDATTICA ELETTIVA – CLSI**
- ✓ **MODULO ORTOGERIATRIA – CLM –SI**
- ✓ ***…in progress*** **MASTER II° ORTOGERIATRIA**

Orthogeriatric Care Program

Improve overall patients' outcomes (morbidity, mortality, functioning, quality of life)

The first step: personalize and integrate the interventions using a patient-centered approach

- Multiple Acute/Chronic Conditions
  (i.e. multisystem diseases, including osteoporosis)
- Polypharmacy (i.e.Beers, Start-Stop, FRIDS)
- Functional Abilities (i.e. physical and cognitive performance)
- Nutritional Status (i.e. protein and vitamin deficiency)
- Frailty and geriatric syndromes
  (i.e. Fall, Delirium, ADRs, etc.)
- Social context and resilience
- Patients health outcome goals and care preferences