

L'ANZIANO FRAGILE OSPEDALIZZATO E LA BPCO



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Malattie Respiratorie un Approccio Multidisciplinare

Milano, 10 Marzo 2018

ANZIANO FRAGILE

"... paziente storicamente ignorato dalla medicina tradizionale, in quanto numericamente irrilevante, non gratificante sul piano professionale, perché inguaribile, "scomodo" da gestire da parte delle strutture sanitarie ed assistenziali, anche perché spesso disturbante ..."

Senin U., 1999

Quasi tutti i medici sono d'accordo nel dire che l'anziano "fragile" si riconosce ad una prima occhiata anche se quasi nessuno è in grado di fornirne una descrizione adeguata.

L. Ferrucci et Al
AIP, 2002; SIGG 2002

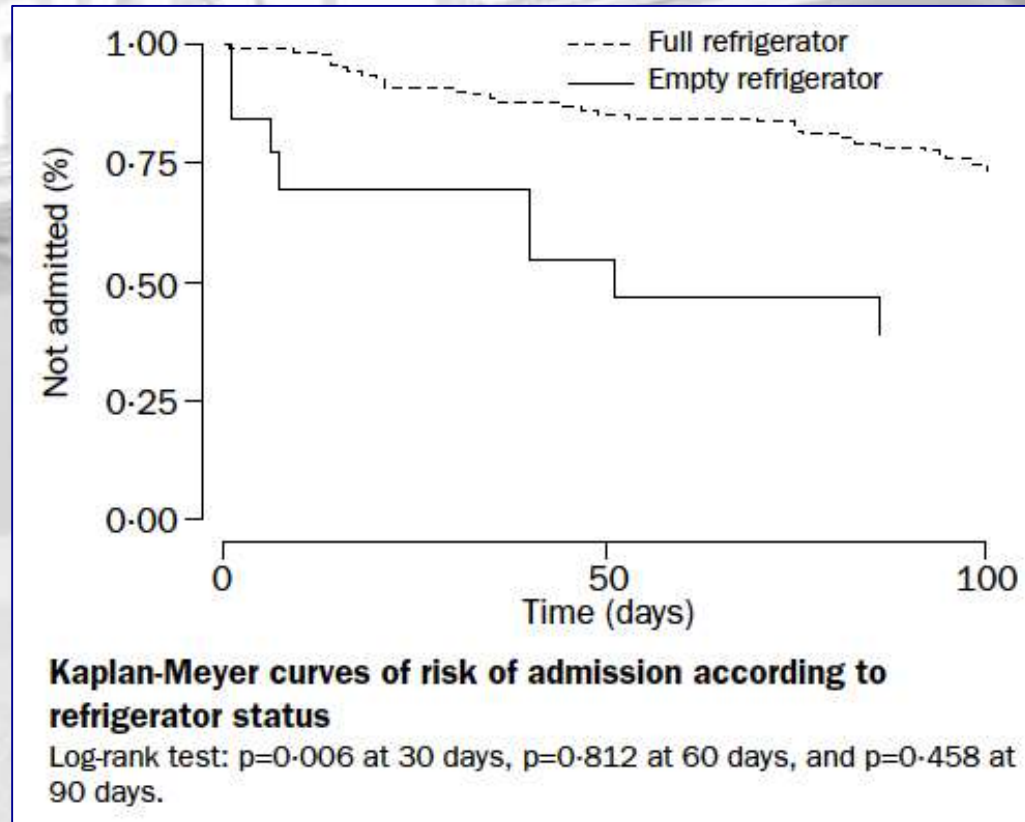
Refrigerator content and hospital admission in old people

Nadir Boumendjel, François Hermann, Véronique Girod, Cornel Sieber, Charles-Henri Rapin

We assessed whether the refrigerator contents of elderly people could be related to subsequent admission to hospital.

132 patients aged over 65 years had a thorough assessment of their refrigerator contents and the numbers and dates of admission were recorded.

Elderly people with empty refrigerators were **more frequently admitted ($p=0.032$) in the month after assessment** and **three times sooner than those who did not have empty refrigerators (34 vs 100 days, $p=0.002$)**.



Frailty in Older Adults: Evidence for a Phenotype

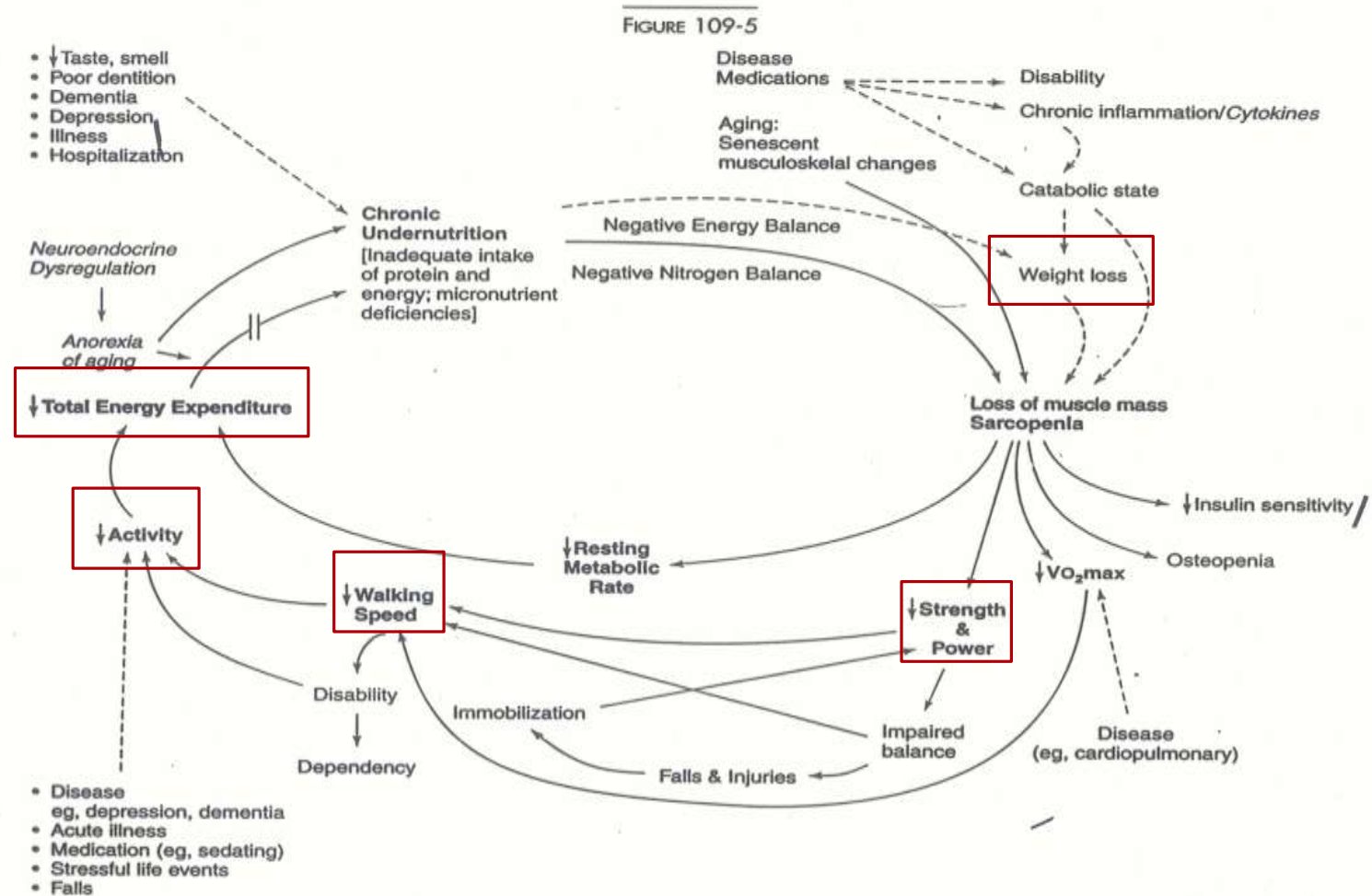
Linda P. Fried,¹ Catherine M. Tangen,² Jeremy Walston,¹ Anne B. Newman,³ Calvin Hirsch,⁴
John Gottdiener,⁵ Teresa Seeman,⁶ Russell Tracy,⁷ Willem J. Kop,⁸ Gregory Burke,⁹
and Mary Ann McBurnie² for the Cardiovascular Health Study
Collaborative Research Group

FRAILTY

“la fragilità è una sindrome fisiologica caratterizzata dalla riduzione delle riserve funzionali e dalla diminuita resistenza agli stressor, risultante dal declino cumulativo di sistemi fisiologici multipli che causano vulnerabilità e conseguenze avverse ”

Fried LP, et al. J Gerontol A Biol Sci Med Sci 2001;56A:M146–M156

CICLO DI INDUZIONE DELLA FRAGILITA'



The cycle of frailty. Key components of frailty that appear to underlie its phenotypic manifestations in a negative cycle are chronic undernutrition; sarcopenia; declines in strength, power, and exercise tolerance; and declines in activity and total energy expenditure. Factors that could precipitate or exacerbate this core cycle are indicated with dashed lines. Factors in which a relationship is hypothesized are indicated in italics.

MINORE CAPACITA' DI RECUPERO

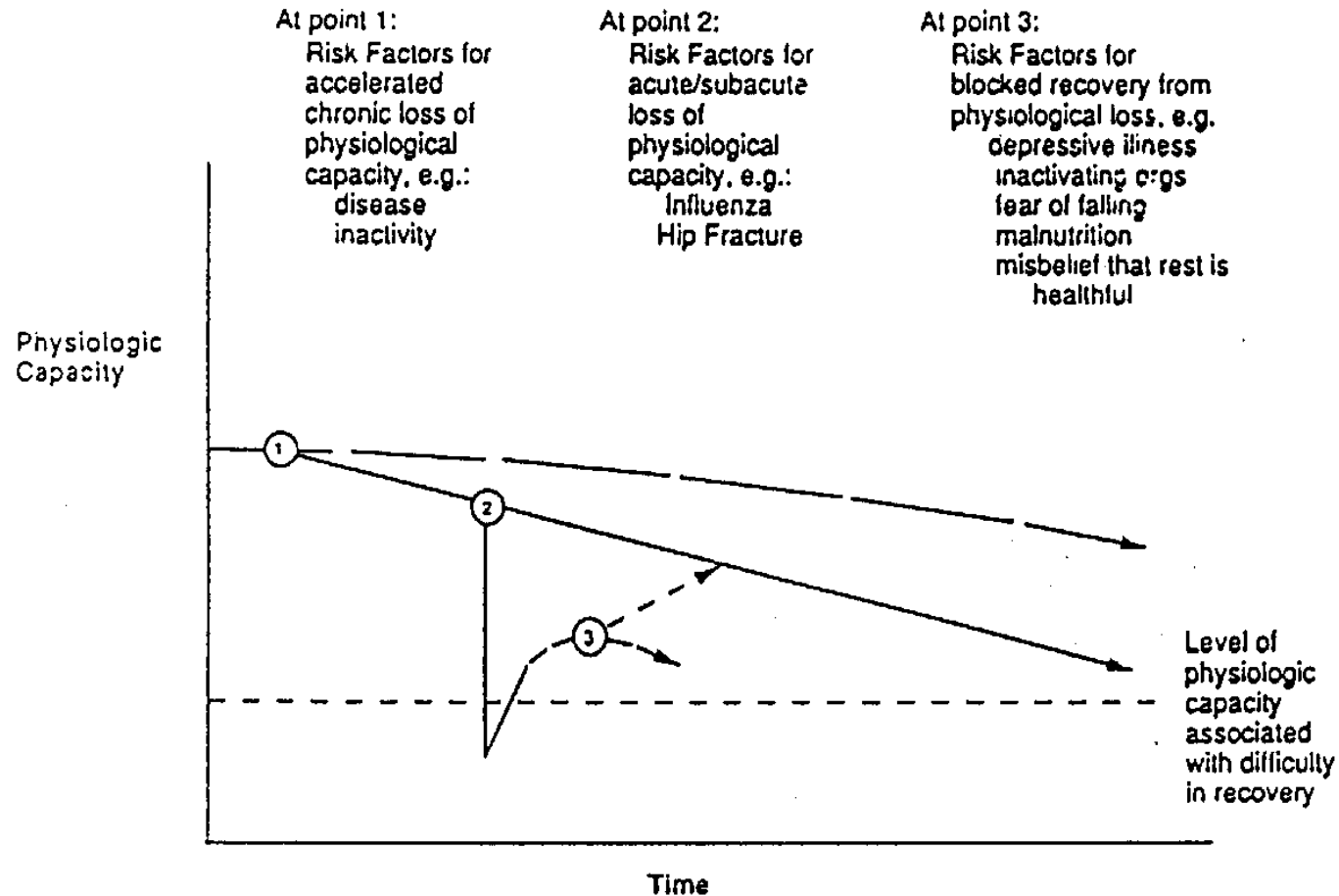


Figure 2. Conceptual model of how risk factors cause frailty.

I PARADIGMI DELLA FRAGILITÀ'

Due sono essenzialmente i paradigmi che definiscono la fragilità:

- il **PARADIGMA BIOMEDICO**, secondo il quale la fragilità è una sindrome fisiologica caratterizzata dalla riduzione delle riserve funzionali e dalla diminuita resistenza agli stressor, risultante dal declino cumulativo di sistemi fisiologici multipli che causano vulnerabilità e conseguenze avverse (Fried 2004);
- il **PARADIGMA BIO-PSICO-SOCIALE**, secondo il quale la fragilità è uno stato dinamico che colpisce un individuo che sperimenta perdite in uno o più domini funzionali (fisico, psichico, sociale), causate dall'influenza di più variabili che aumentano il rischio di risultati avversi per la salute (Gobbens 2010).

FATTORI DI RISCHIO

- Età avanzata
- Stato sociale: dipendenza o necessità di caregivers
- Stato cognitivo: deterioramento, demenza o depressione
- Declino funzionale, disabilità fisica e necessità di aiuto nelle ADL/IADL
- Malnutrizione
- Frequenti cadute e traumi (frattura di femore)
- Stato infiammatorio e disendocrino
- Malattie croniche
- Polifarmacoterapia
- Istituzionalizzazione o ospedalizzazione

FRAILITY AND ADVERSE OUTCOMES



Frailty in elderly people

Andrew Clegg, John Young, Steve Iliffe, Marcel Olde Rikkert, Kenneth Rockwood

	Year	Country	Participants (n)	Length of follow-up (years)	Falls (HR*/OR† [95% CI])		Worsening disability (HR*/OR† [95% CI])		Hospitalisation (HR*/OR† [95% CI])		Care home admission (HR*/OR† [95% CI])		Mortality (HR*/OR† [95% CI])	
					Inter-mediate frailty	Severe frailty	Inter-mediate frailty	Severe frailty	Inter-mediate frailty	Severe frailty	Inter-mediate frailty	Severe frailty	Inter-mediate frailty	Severe frailty
Cardiovascular Health Study (CHS) ³	2001	USA	5317	7	1.12* (1.00–1.26)	1.23* (0.99–1.54)	1.55* (1.38–1.75)	1.79* (1.47–2.17)	1.11* (1.03–1.19)	1.27* (1.11–1.46)	NA	NA	1.32* (1.13–1.55)	1.63* (1.27–2.08)
Canadian Study of Health and Aging (CSHA) ⁹²	2004	Canada	9008	5	NA	NA	NA	NA	NA	NA	2.54† (1.67–3.86)	2.60† (1.36–4.96)	2.54† (1.92–3.37)	3.69† (2.26–6.02)
Women's Health and Aging Study (WHAS) ⁹³	2006	USA	1438	3	0.92* (0.63–1.64)	1.18* (0.63–2.19)	NA	NA	0.99* (0.67–1.47)	0.67* (0.33–1.35)	5.16* (0.81–32.79)	23.98* (4.45–129.2)	3.50* (1.91–6.39)	6.03* (3.00–12.08)
Study of Osteoporotic Fractures (SOF) ⁹⁴	2008	USA	6701	4.5	1.23† (1.02–1.48)	2.44† (1.95–3.04)	1.89† (1.66–2.14)	2.79† (2.31–3.37)	NA	NA	NA	NA	1.54† (1.40–1.69)	2.75* (2.46–3.07)

HR=hazard ratio. NA=not available. OR=odds ratio. *Hazard ratio. †Odds ratio. The comparator for hazard ratios and odds ratios is people who are not frail.

Table: Covariate-adjusted associations between frailty and adverse outcomes (falls, disability, hospitalisation, care home admission, and mortality) from four large prospective cohort studies

Review

Frailty assessment instruments: Systematic characterization of the uses and contexts of highly-cited instruments

Brian J. Buta^{a,b}, Jeremy D. Walston^{a,b}, Job G. Godino^{c,d}, Minsun Park^d, Rita R. Kalyani^{a,b}, Qian-Li Xue^{a,b}, Karen Bandeen-Roche^{a,d}, Ravi Varadhan^{a,b,e,*}

- A total of **67 frailty instruments** available in the literature
- **Nine instruments** are "highly-cited" (≥ 200 citations)
- The most common assessment context was **observational studies of older community-dwelling adults**.

THE FRAILTY PHENOTYPE

Table 1. Operationalizing a Phenotype of Frailty

A. Characteristics of Frailty	B. Cardiovascular Health Study Measure*
Shrinking: Weight loss (unintentional) Sarcopenia (loss of muscle mass)	Baseline: >10 lbs lost unintentionally in prior year
Weakness	Grip strength: lowest 20% (by gender, body mass index)
Poor endurance; Exhaustion	"Exhaustion" (self-report)
Slowness	Walking time/15 feet: slowest 20% (by gender, height)
Low activity	Kcals/week: lowest 20% males: <383 Kcals/week females: <270 Kcals/week
C. Presence of Frailty	
Positive for frailty phenotype: ≥ 3 criteria present	
Intermediate or prefrail: 1 or 2 criteria present	

*See Appendix.

CRITERI DI FRAGILITA'

(Fried et al, 2001)

- Perdita di peso involontaria
- Bassa velocità del passo
- Scarsi livelli di attività fisica
- Facile affaticabilità
- Debolezza muscolare (low grip strenght)
 - 3-5: Fragile
 - 1-2: Intermedio ("pre-fragile "
 - 0: Non fragile

Accumulation of Deficits as a Proxy Measure of Aging

Arnold B. Mitnitski^{1,2}, Alexander J. Mogilner, and Kenneth Rockwood^{2,*}

¹*Department of Mechanical Engineering, Ecole Polytechnique, Montreal P.O. Box 6079, Station Centre-ville Montreal, Quebec H3C 3A7;* ²*Queen Elizabeth II, Health Sciences Centre, Geriatric Medicine Research Unit, Room 1421, 5955 Veterans' Memorial Lane, Halifax, Nova Scotia B3H 2E1*

“...a method for appraising health status in elderly people.

A frailty index was defined as **the proportion of accumulated deficits** (symptoms, signs, functional impairments, and laboratory abnormalities). It serves as an individual state variable, **reflecting severity of illness and proximity to death...**”

Appendix 1: List of variables used by the Canadian Study of Health and Aging to construct the 70-item CSHA Frailty Index

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> • Changes in everyday activities • Head and neck problems • Poor muscle tone in neck • Bradykinesia, facial • Problems getting dressed • Problems with bathing • Problems carrying out personal grooming • Urinary incontinence • Toileting problems • Bulk difficulties • Rectal problems • Gastrointestinal problems • Problems cooking • Sucking problems • Problems going to a toilet • Impaired mobility • Musculoskeletal problems • Bradykinesia of the limbs • Poor muscle tone in limbs • Poor limb coordination • Poor coordination, trunk • Poor standing posture • Irregular gait pattern • Falls | <ul style="list-style-type: none"> • Mood problems • Feeling sad, blue, depressed • History of depressed mood • Tiredness all the time • Depression (clinical impression) • Sleep changes • Restlessness • Memory changes • Short-term memory impairment • Long-term memory impairment • Changes in general mental functioning • Onset of cognitive symptoms • Clouding or delirium • Paranoid features • History relevant to cognitive impairment or loss • Family history relevant to cognitive impairment or loss • Impaired vibration • Tremor at rest • Postural tremor • Intention tremor • History of Parkinson's disease • Family history of degenerative disease | <ul style="list-style-type: none"> • Seizures, partial complex • Seizures, generalized • Syncope or blackouts • Headache • Cerebrovascular problems • History of stroke • History of diabetes mellitus • Arterial hypertension • Peripheral pulses • Cardiac problems • Myocardial infarction • Arrhythmia • Congestive heart failure • Lung problems • Respiratory problems • History of thyroid disease • Thyroid problems • Skin problems • Malignant disease • Breast problems • Abdominal problems • Presence of snout reflex • Presence of the palmomental reflex • Other medical history |
|--|---|---|

FRAILTY INDEX

NUMBER OF DEFICITS PRESENT

NUMBER OF DEFICITS CONSIDERED

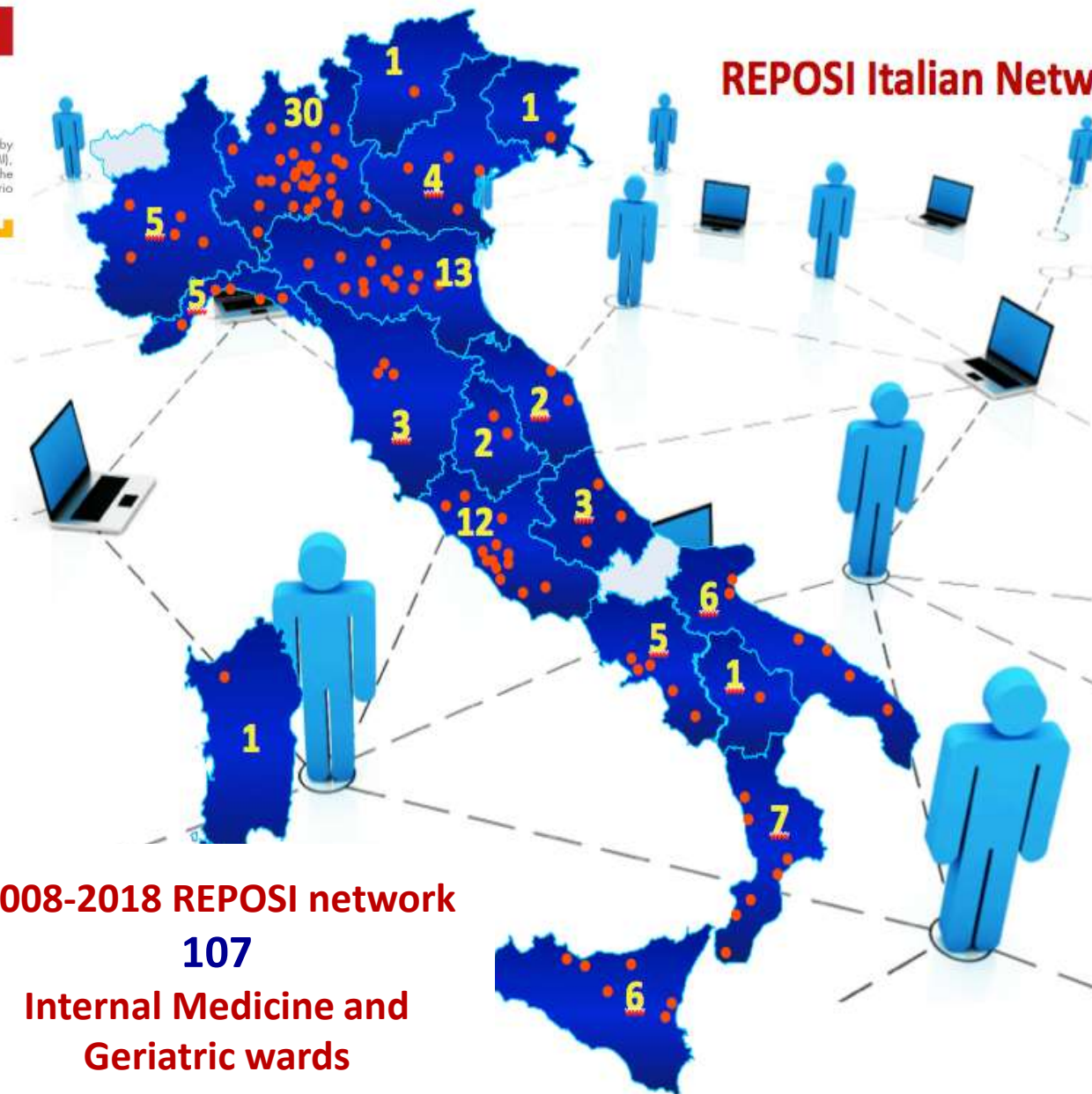


REPOSI

REGISTER OF
MULTIMORBIDITY
AND POLYPHARMACY

REPOSI is a collaborative study promoted by the Italian Society of Internal Medicine (SIMI), IRCCS Co' Granda Foundation Hospital and the Institute of Pharmacological Research Mario Negri of Milan, Italy.

REPOSI Italian Network



2008-2018 REPOSI network

107

**Internal Medicine and
Geriatric wards**

From 2008

**7,014 patients aged 65
years or older by 107
Italian and 15 Spanish
(only in 2014-2015)
internal medicine and
geriatric wards and
more than 300 clinical
investigators**



REPOSI

REGISTER OF
MULTIMORBIDITY
AND POLYPHARMACY

REPOSI is a collaborative study promoted by the Italian Society of Internal Medicine (SIMI), IRCCS Ca' Granda Foundation Hospital and the Institute of Pharmacological Research Mario Negri of Milan, Italy.

Starting 2008:

- Pre-hospital
- In-hospital

From 2010

- **2010:** 3-months follow-up
- **2012:** 12-months follow-up

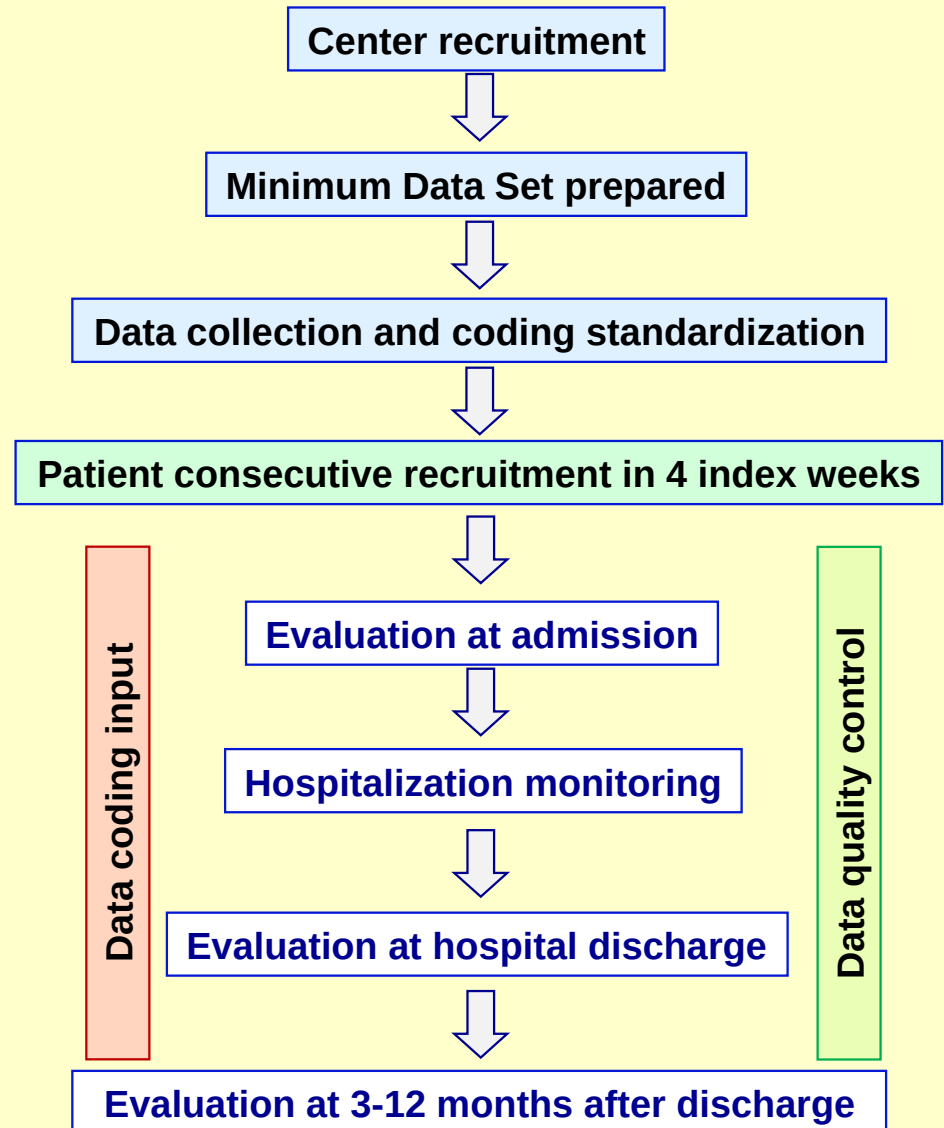
From 2014

- REPOSI Spanish Network

Main outcomes

- mortality (in-hospital, 3-12 months);
- re-hospitalization;
- changes in multimorbidity and polypharmacy (at admission, at discharge and at 3-12 months).

REPOSI FLOW CHART

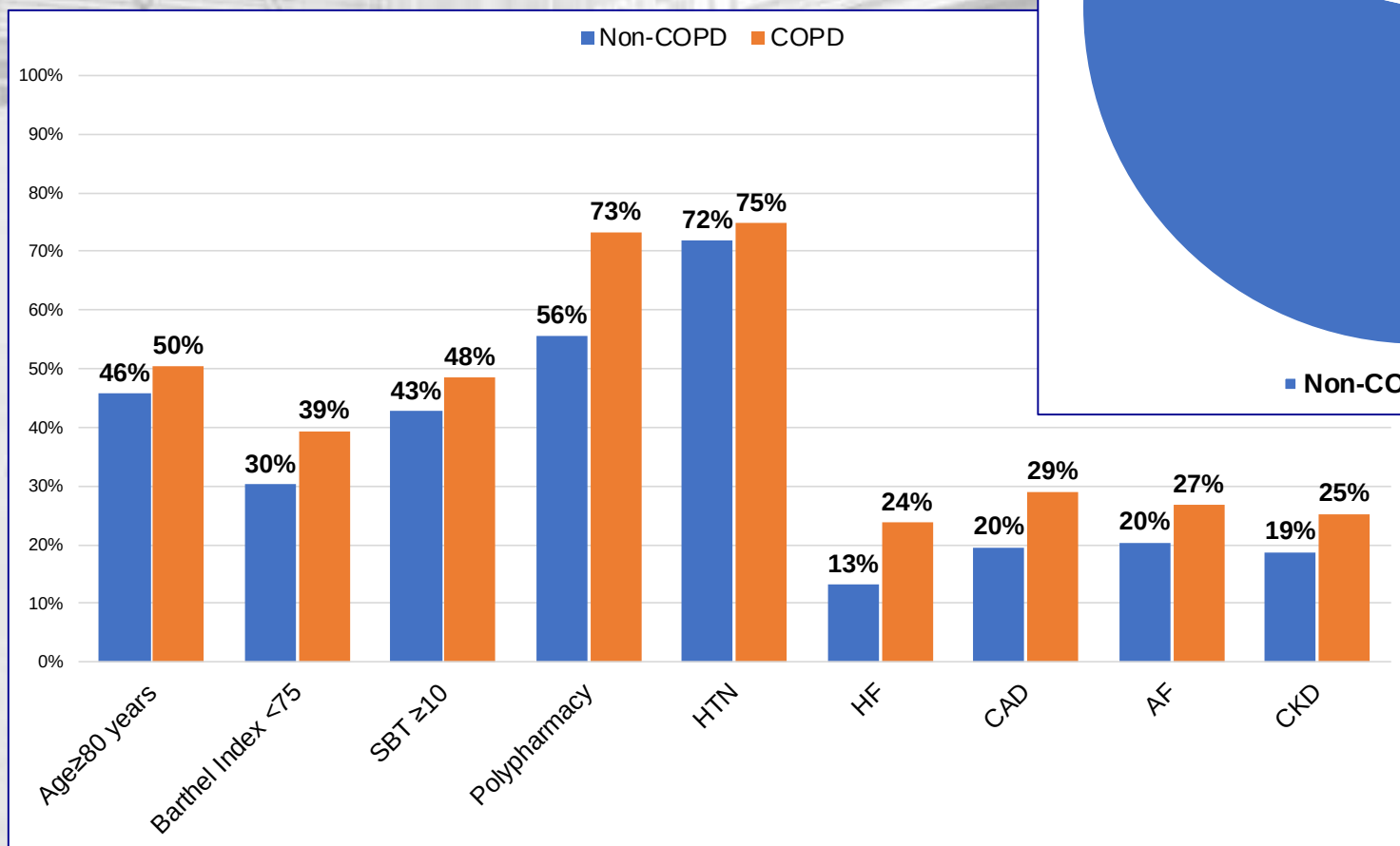
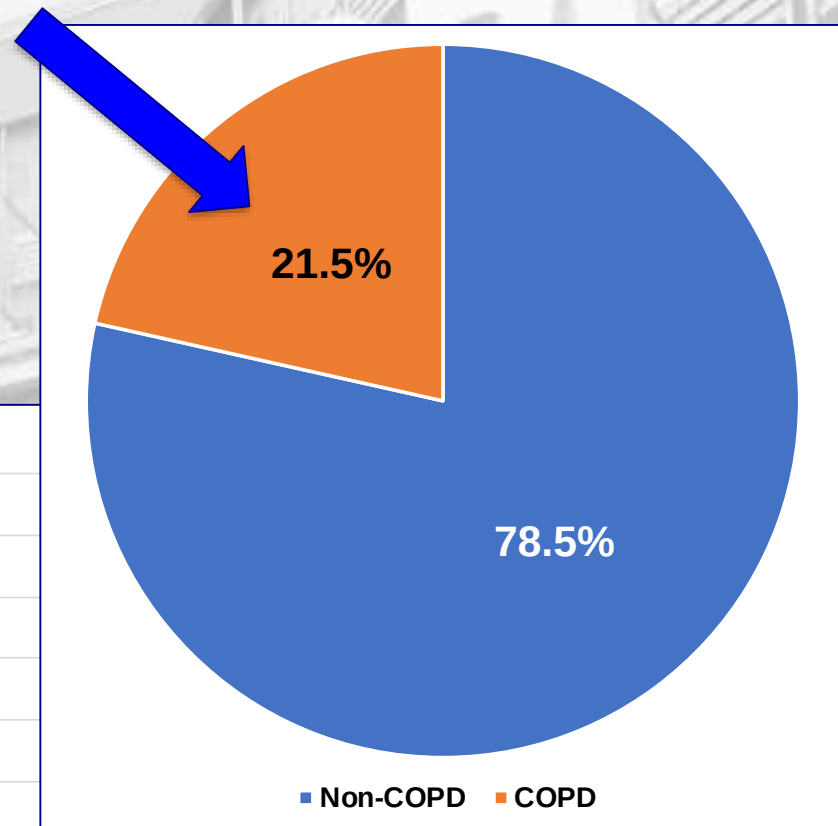


COPD POPULATION IN THE REPOSI REGISTRY

UOMINI: 61.43%

DONNE: 38,57%

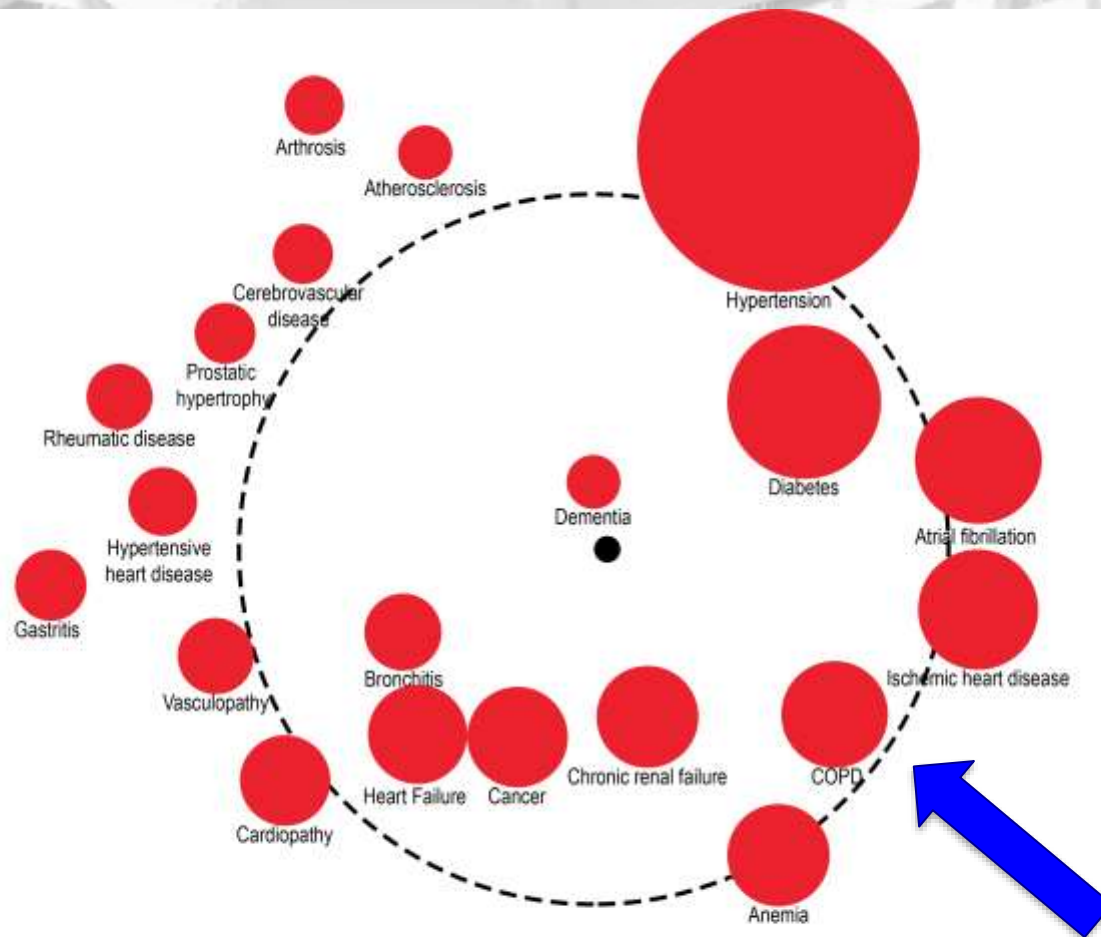
ETA' MEDIA: 80,03 (79.48 - 80.58)



COPD AND CLINICAL OUTCOMES

COPD vs. Non-COPD			
	Multivariate		
	OR	95% CI	p
Any Death	1.33	0.98-1.81	0.071
CV Death	1.66	1.04-2.67	0.034
Respiratory Death	2.14	1.00-4.59	0.051
Hospitalization	1.50	1.08-2.09	0.016
Hospitalization/Respiratory Death	1.60	1.17-2.18	0.003
Hospitalization/Any Death	1.51	1.17-1.95	0.001

COMORBIDOMA IN-HOSPITAL MORTALITY



REPOSI FRAILTY INDEX

Frailty models:

1. **Phenotype model:** defined by L. Fried as unintentional weight loss, exhaustion, low energy expenditure, slow gait speed and weak grip strength
2. **Cumulative deficit model:** Rockwood frailty index that consist in a cumulative sum of deficits (symptoms, signs, disabilities, and laboratory abnormalities)

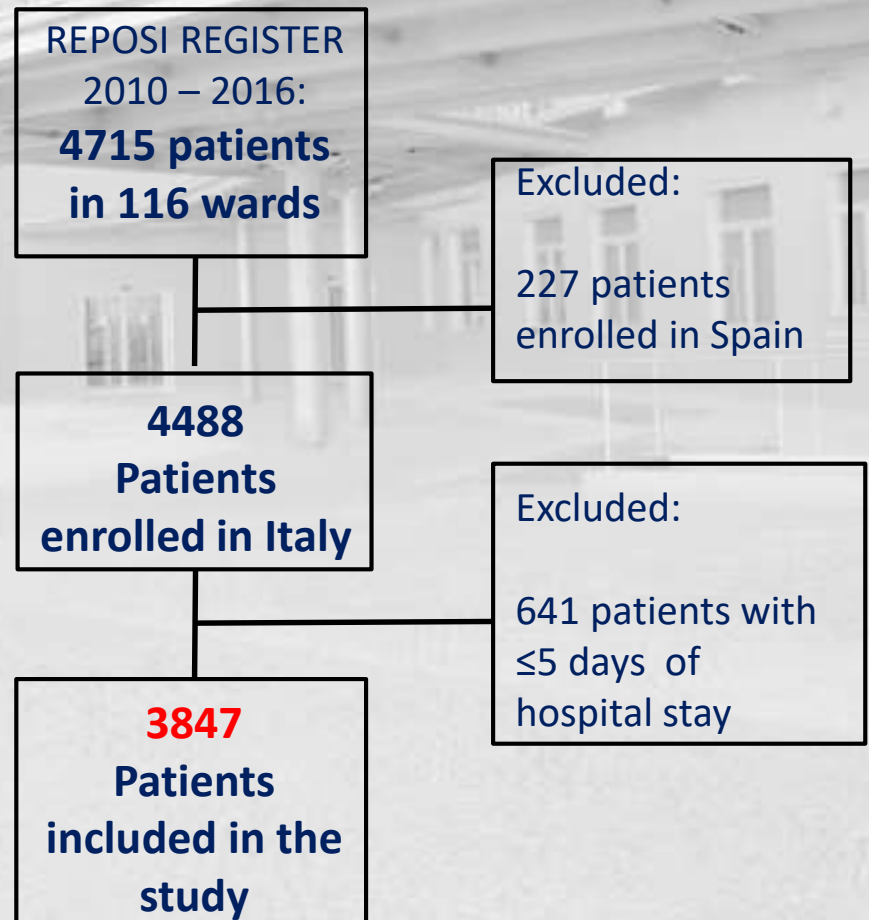
AIM OF THE STUDY

To develop a frailty index for hospitalized older patients and test its association with in-hospital mortality rate in the REPOSI register enrolled patients

Most of the existing frailty tools have been developed and validated in the frame of community-dwelling older adults

REPOSI FRAILTY INDEX

- 65 years or older patients
- Hospitalized in Italian REPOSI wards from 2010 to 2016
- Length of hospital stay ≥ 5 days



REPOSI FRAILTY INDEX

FRAILITY INDEX: The number of deficits that an individual has
The total number of deficits considered

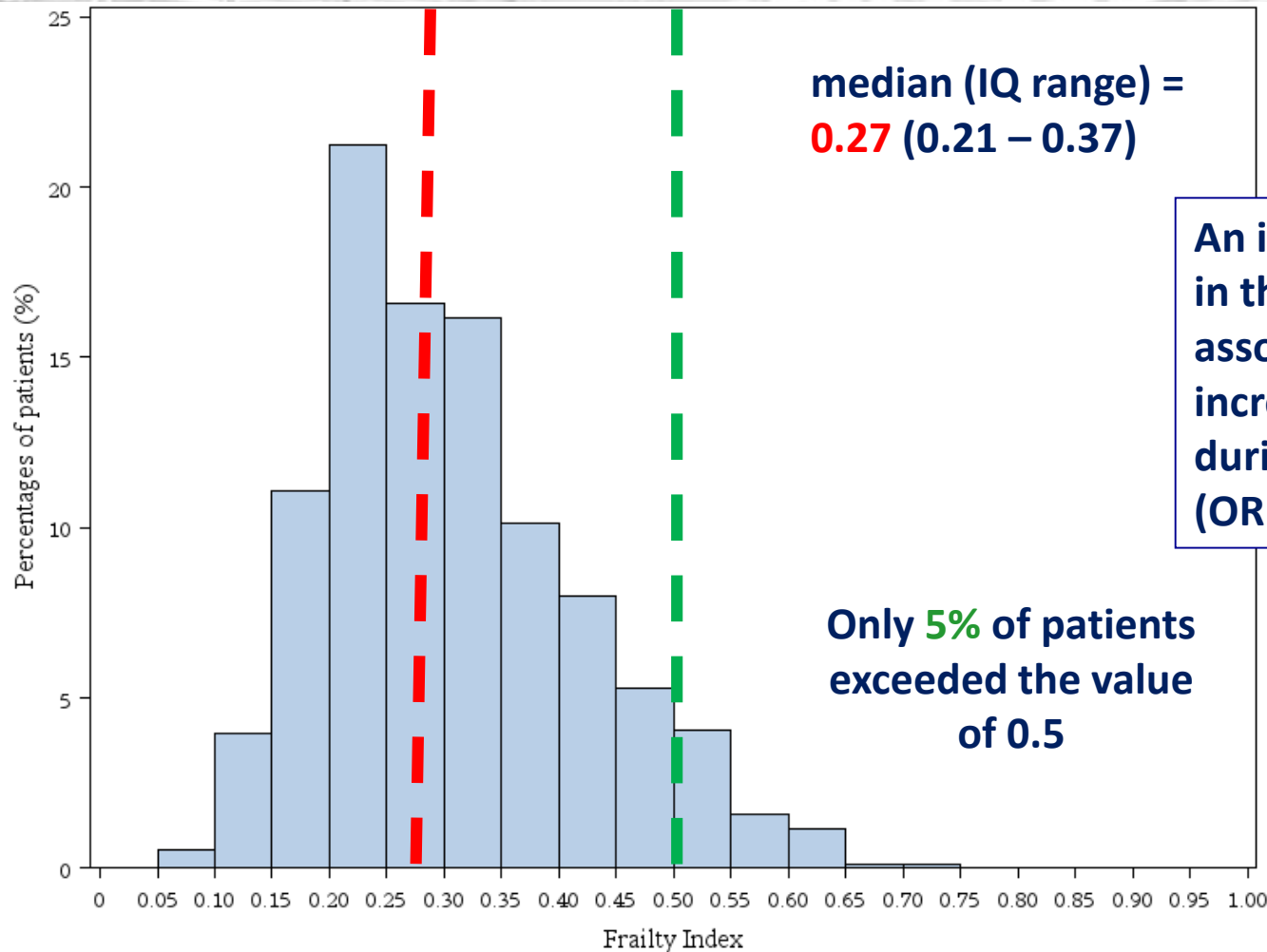
For example, if $\frac{10}{34} = 0.29$ Individual's Frailty Index

REPOSI FRAILTY INDEX

Variable/Deficit	Cut Point	Score			
BMI	< 21 Kg/m ²	1	Hypertension (Severity)	Yes (≥ 3)	1
	≥ 21 Kg/m ²	0		Yes (2)	0.5
BI - Hygiene (Grooming)	0 - 1	1		No	0
	3 - 4	0.5	Diabetes	Yes	1
	5	0		No	0
BI - Bathing	0 - 1	1	Kidney diseases	Yes	1
	3 - 4	0.5		No	0
	5	0	Respiratory disease	Yes	1
BI - Eating	0 - 2	1		No	0
	5 - 8	0.5	Heart failure	Yes	1
	10	0		No	0
BI - Using Toilet	0 - 2	1	Ischaemic heart disease	Yes	1
	5 - 8	0.5		No	0
	10	0	Tumours	Yes	1
BI - Climbing (up and down)	0 - 2	1		No	0
	5 - 8	0.5	Tyroid disorders	Yes	1
	10	0		No	0
BI - Dressing	0 - 2	1	Stroke/TIA/cerebrovascular	Yes	1
	5 - 8	0.5		No	0
	10	0	Upper gastrointestinal	Yes	1
BI - Fecal Incontinence	0 - 2	1		No	0
	5 - 8	0.5	Lower gastrointestinal	Yes	1
	10	0		No	0
BI - Urinary Incontinence	0 - 2	1	Liver diseases	Yes	1
	5 - 8	0.5		No	0
	10	0	Skeletal muscle diseases	Yes	1
BI - Mobility Impairment	0 - 3/0 - 1 - 3 [WheelChair]	1		No	0
	8 - 12/ 4 - 5 [WheelChair]	0.5	Psychiatric disease	Yes	1
	15	0		No	0
BI - Transferring	0 - 3	1	Neurologic	Yes	1
	8 - 12	0.5		No	0
	15	0	Dyslipidemias	Yes	1
Short Blessed Test (SBT)	20 - 28	1		No	0
	10 - 19	0.7	Depression	Yes	1
	5-9	0.3		No	0
	0-4	0	Anxiety	Yes	1
Anemia (Hb)	< 11 g/dL	1		No	0
	≥ 11 g/dL	0			
Platelet Count	< 100 or ≥ 320 [F] < 150 or ≥ 250	1			
	≥ 100 & < 320 [F] ≥ 150 & < 250	0			
White Blood Cells	< 4000 or > 10000 10 ³ /μl	1			
	≥ 4000 & ≤ 10000 10 ³ /μl	0			
Clearance	< 30 g/dL	1			
	≥ 30 g/dL	0			
			Total		34 Deficits

REPOSI FRAILITY INDEX

The frailty index was initially calculated on the complete case of 3200 (83.2%) patients.



An increasing score of 0.1 in the Frailty Index was associated with an increased likelihood to die during hospitalization (OR 1.05, 95%CI 1.03-1.07).

REPOSI FRAILITY INDEX* IN PATIENTS WITH COPD vs NO COPD

Variables	COPD (N=601)	No COPD (N=2599)
Frailty Index (mean $\pm$ SD)	0.34 (0.13)	0.29 (0.12)
Frailty Index ≤ 25	28.1	46.1
Frailty Index >25	71.9	53.9

*At hospital admission

PATIENTS WITH COPD

Frailty vs No Frailty

Variables	Frailty (FI $\geq$ 25)	No Frailty (FI<0.25)
Age (mean $\pm$ SD)	80.1 (6.8)	77.5 (7.0)
Sex		
- Male	61.3%	65.1%
- Female	38.7%	34.9%
Barthel Index*		
- 91-100	27.1%	85.8%
- 75-90	26.9%	13.0%
- <75	46.0%	1.2%
Short Blessed Test*		
- Normal	31.0%	44.4%
- Possible cognitive impairment	14.8%	22.5%
- Moderate cognitive impairment	37.7%	29.0%
- Severe cognitive impairment	16.5%	4.1%

*At hospital admission

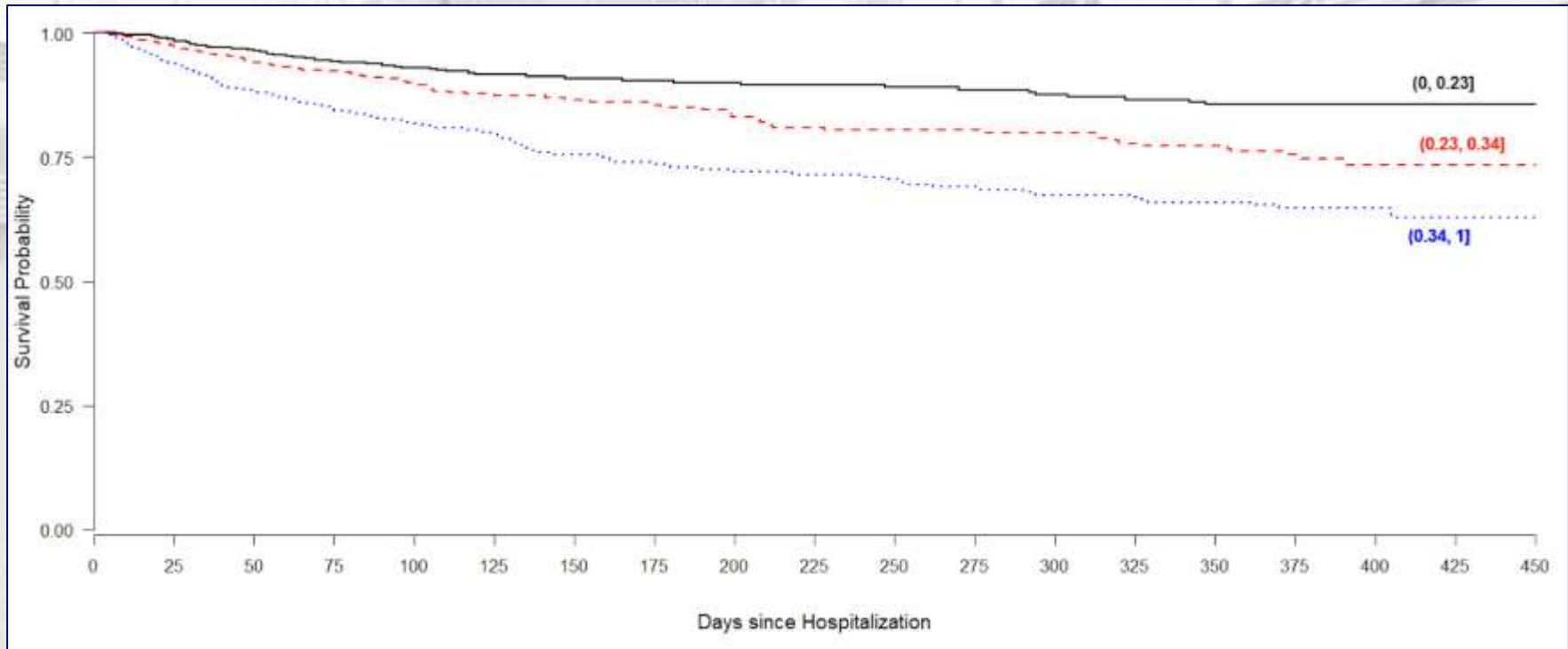
COMORBIDITY* IN PATIENTS WITH COPD

Frailty vs No Frailty

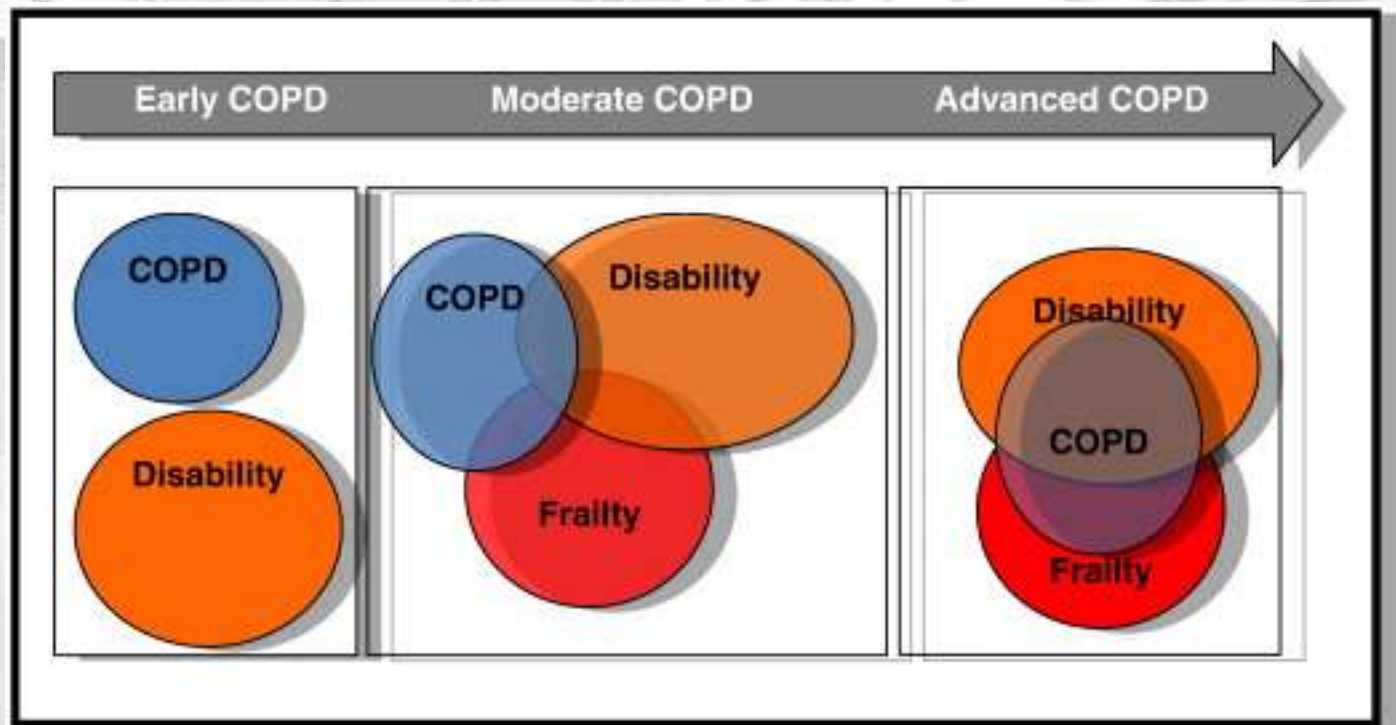
Variables	Frailty (FI $\geq$ 25)	No Frailty (FI<0.25)
Diabetes	41.0%	21.9%
Ischemic Heart Disease	40.2%	14.2%
Heart Failure	32.2%	8.9%
Cerebrovascular Diseases	25.5%	7.7%
Neurologic Disorders	28.9%	8.9%
Psychiatric Disorders	22.0%	7.7%
Depression	15.7%	3.5%
Chronic Kidney Disease	38.2%	13.6%
Musculoskeletal Diseases	32.9%	17.8%

*At hospital admission

Kaplan and Meier survival curves according to 33rd and 67th percentiles of the frailty index



The frailty index was associated with in-hospital mortality (Odds Ratio [OR] 1.605; 95% CI: 1.375 – 1.873 for each 0.1 FI increment), when adjusting for age and gender. The frailty index was also associated with overall mortality (HR = 1.46, 95% CI: 1.32 – 1.62).



COSA FARE?

- Il punto critico dell'assistenza ai pazienti fragili è lo **straordinario numero di variabili** che intervengono a **determinare l'aumento della vulnerabilità individuale**, **interagenti** tra loro con **effetti spesso imprevedibili**.
- La sua **prevenzione**, allo stato attuale, consiste nello **stabilizzare il sistema stesso nel suo insieme**.
- La semplice **correzione di uno dei fattori** implicati nel fenomeno fragilità **può non essere sufficiente** per correggere il fenomeno.
- **L'attività fisica** aumenta la forza, la massa muscolare, abbassa la pressione sanguigna, migliora la sensibilità all'insulina e la tolleranza al glucosio, può modulare i fattori responsabili dell'infiammazione, alcune funzioni ormonali e la funzione mitocondriale.
- Quindi, se si volesse scegliere un'intervento per stabilizzare i diversi sistemi coinvolti nella fragilità, **l'attività fisica potrebbe costituire un buon modello**.



Linda P. Fried, epidemiologist and geriatrician at Columbia University



FOCUS

 FOCUS

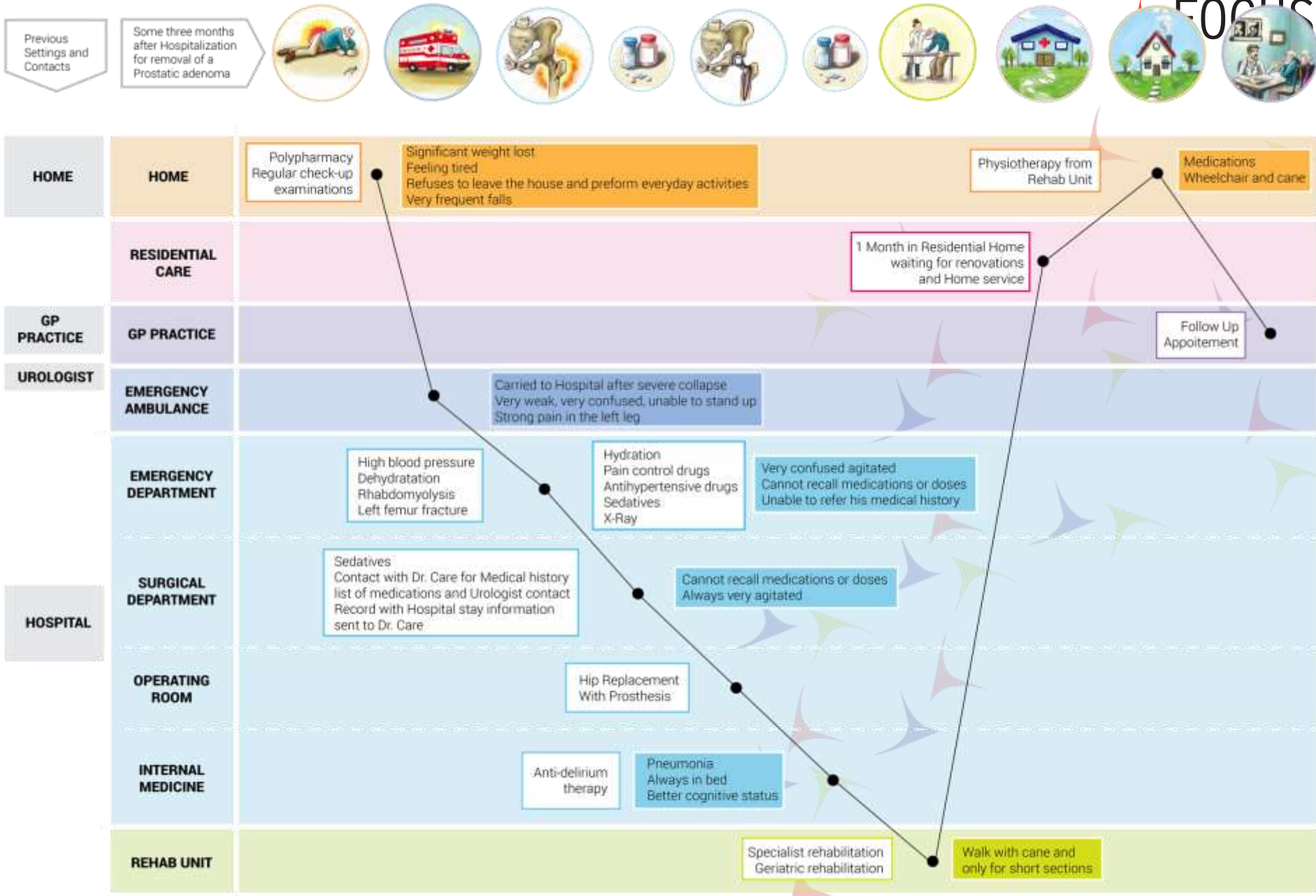
<http://focus-aha.eu/about>

Interventions reducing frailty / postponing its progress

- Exercise programs delivered in group with (GRADE B) or without (GRADE A) home-based practice
- Nutritional supplementation (GRADE A)
- Exercise and nutritional supplementation (GRADE B)
- Combined treatment (GRADE B)
- Cognitive training (GRADE B)



**Frailty management
Optimisation through EIP
AHA Commitments and
Utilisation of
Stakeholders input**



QUALE APPROCCIO?

Table 4.3. Conventional care versus older-person-centred and integrated care

Conventional care	Older-person-centred and integrated care
Focuses on a health condition (or conditions)	Focuses on people and their goals
Goal is disease management or cure	Goal is maximizing intrinsic capacity
Older person is regarded as a passive recipient of care	Older person is an active participant in care planning and self-management
Care is fragmented across conditions, health workers, settings and life course	Care is integrated across conditions, health workers, settings and life course
Links with health care and long-term care are limited or non-existent	Links with health care and long-term care exist and are strong
Ageing is considered to be a pathological state	Ageing is considered to be a normal and valued part of the life course

Grazie per l'attenzione .

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***Insanity: doing the same thing
over and over again and
expecting different results.***

Albert Einstein



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