Proyecto Prometeo 2

TRASPLANTE RENAL CON DONANTES Y RECEPTORES LÍMITE

8 Y 9 DE NOVIEMBRE 2019

MADRID

La fragilidad: la importancia de un hallazgo conceptual

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ACKNOWLEDGEMENTS/FUNDING

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TIME: sept 10, 2013

TIME: feb 23, 2015

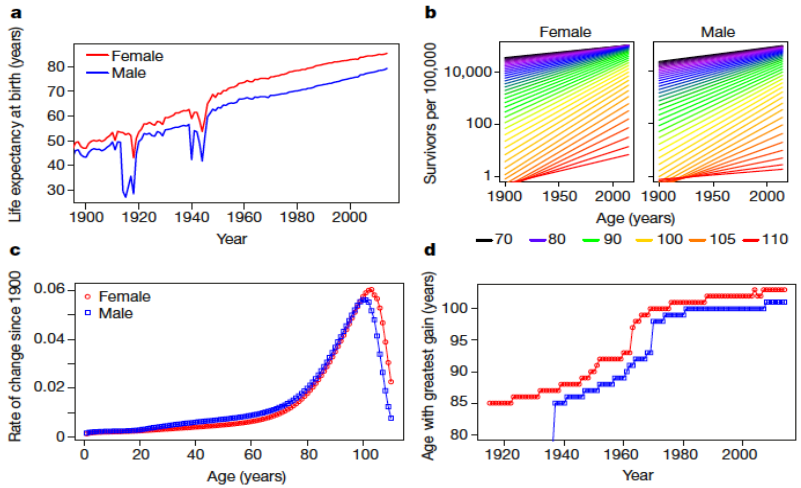
¿Es este el verdadero problema?

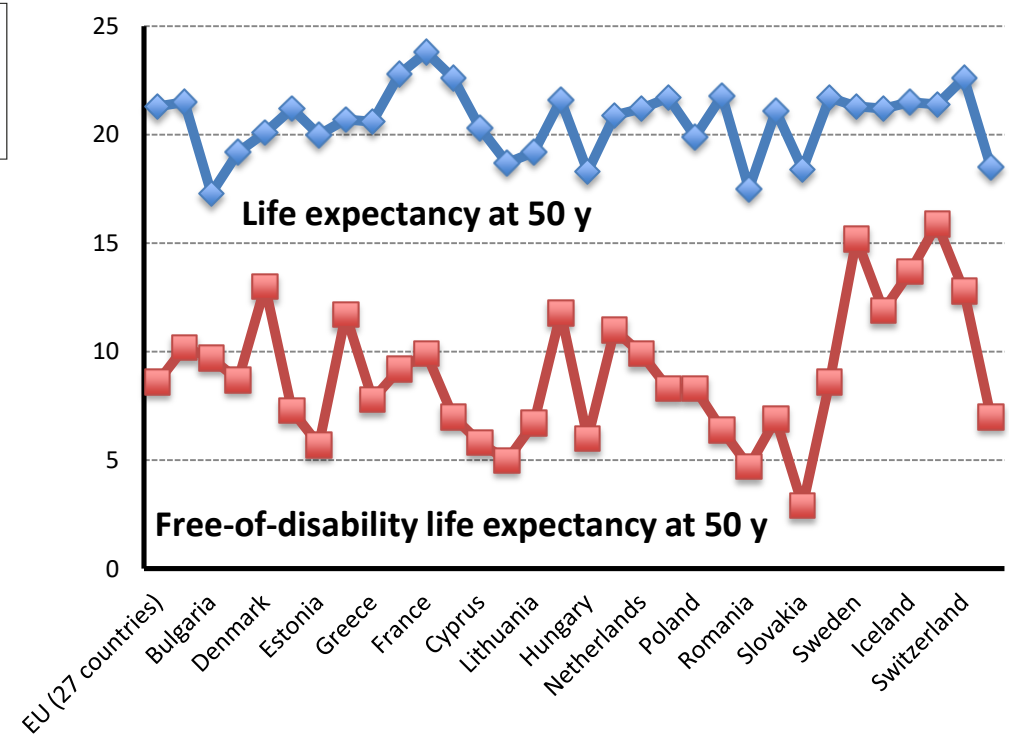
LONGEVIDAD VS. FUNCIONALIDAD

Evidence for a limit to human lifespan

Xiao Dong[1]*, Brandon Milholland[1]* & Jan Vijg[1,2]

Nature, October 2016





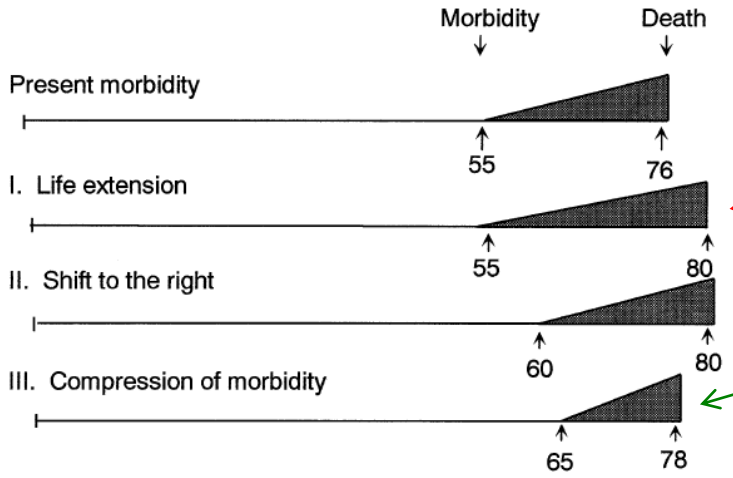


Figure 1. Possible scenarios for future morbidity and longevity. Present lifetime morbidity, portrayed as the shaded area, contrasted with three possible future scenarios. See text for discussion.

Fries JF. Ann Intern Med 2003:139: 455-459

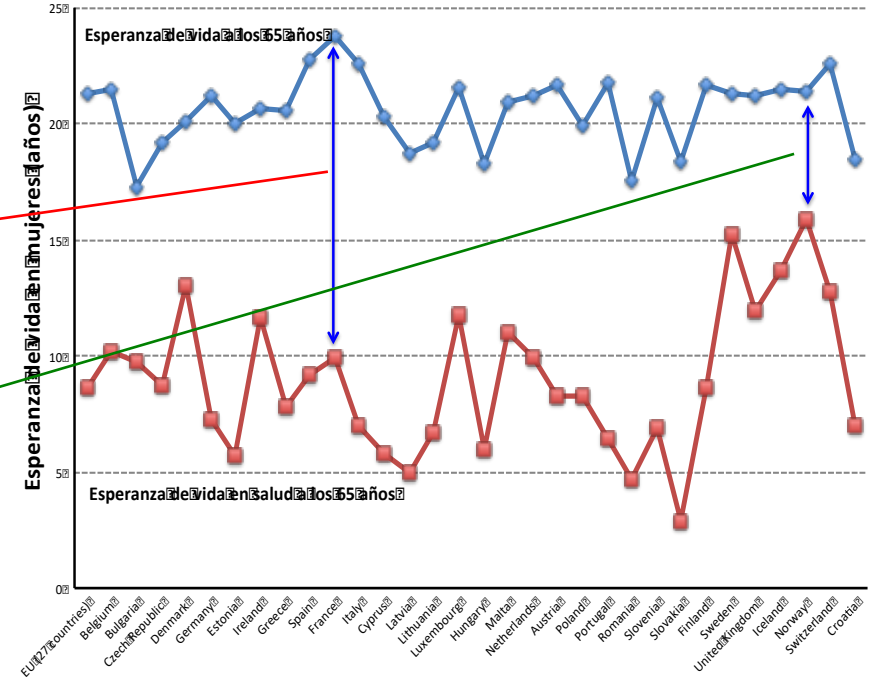
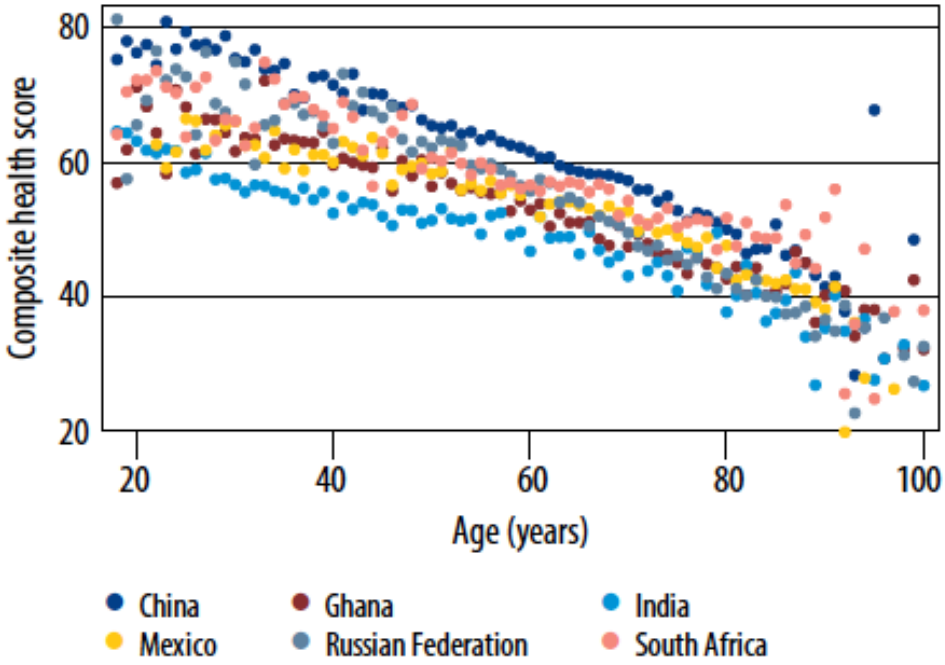


Fig 7

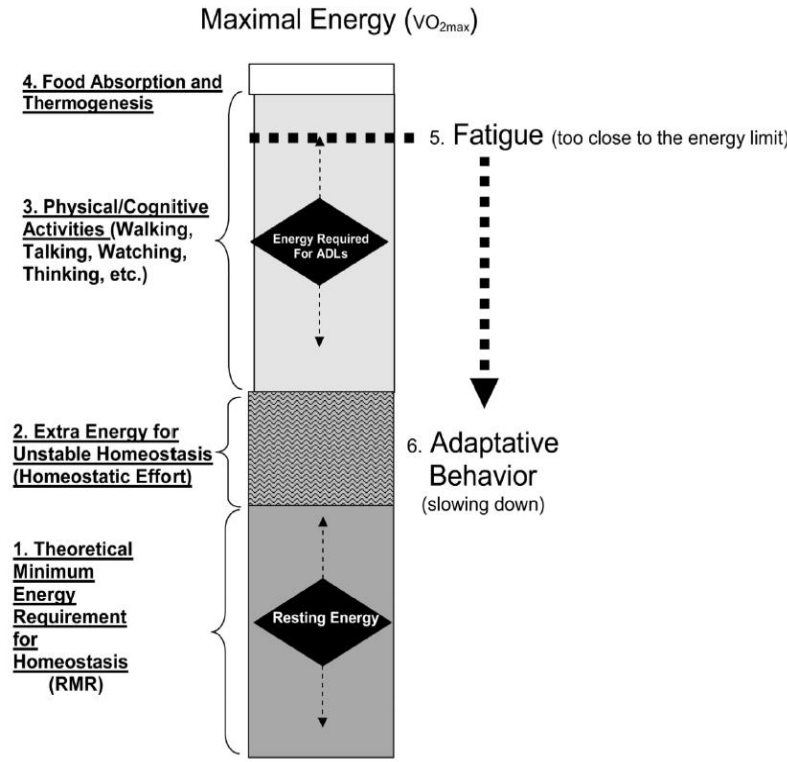
Fuente: Jagger y cols (EHLEIS team) 2008

El reto de las sociedades modernas

Fig. 3.16. Changes in intrinsic capacity across the life course



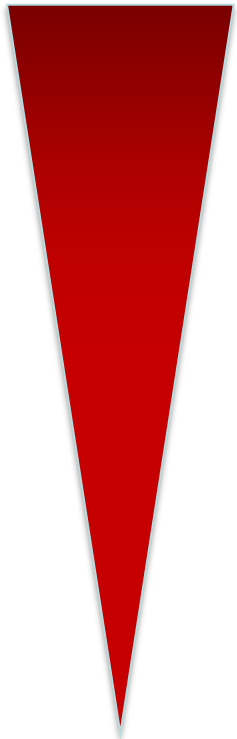
Note: Data on physical and mental capacities were derived from the WHO Study on global AGEing and adult health (SAGE) 2007–2010 (wave 1) (*34*) and then a vector of capacity was developed. Higher scores indicate higher intrinsic capacity.



The Energetic Pathway to Mobility Loss: An Emerging New Framework for Longitudinal Studies on Aging
Jennifer A. Schrack, J Am Geriatr Soc . 2010 October ; 58(Suppl 2): S329–S336.

De la enfermedad a la función

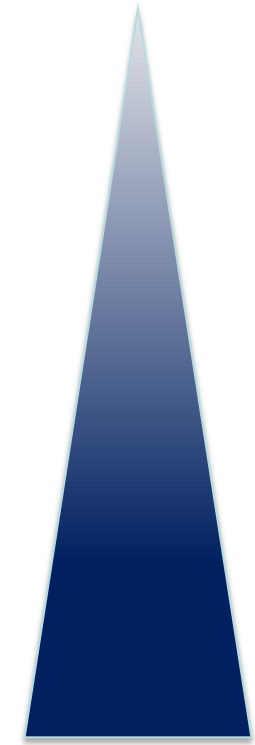
ENFERMEDAD



1. **Manifestaciones clínicas**
2. **Fisiopatología**
3. **Valor pronóstico**
4. **Marcadores de eficiencia**

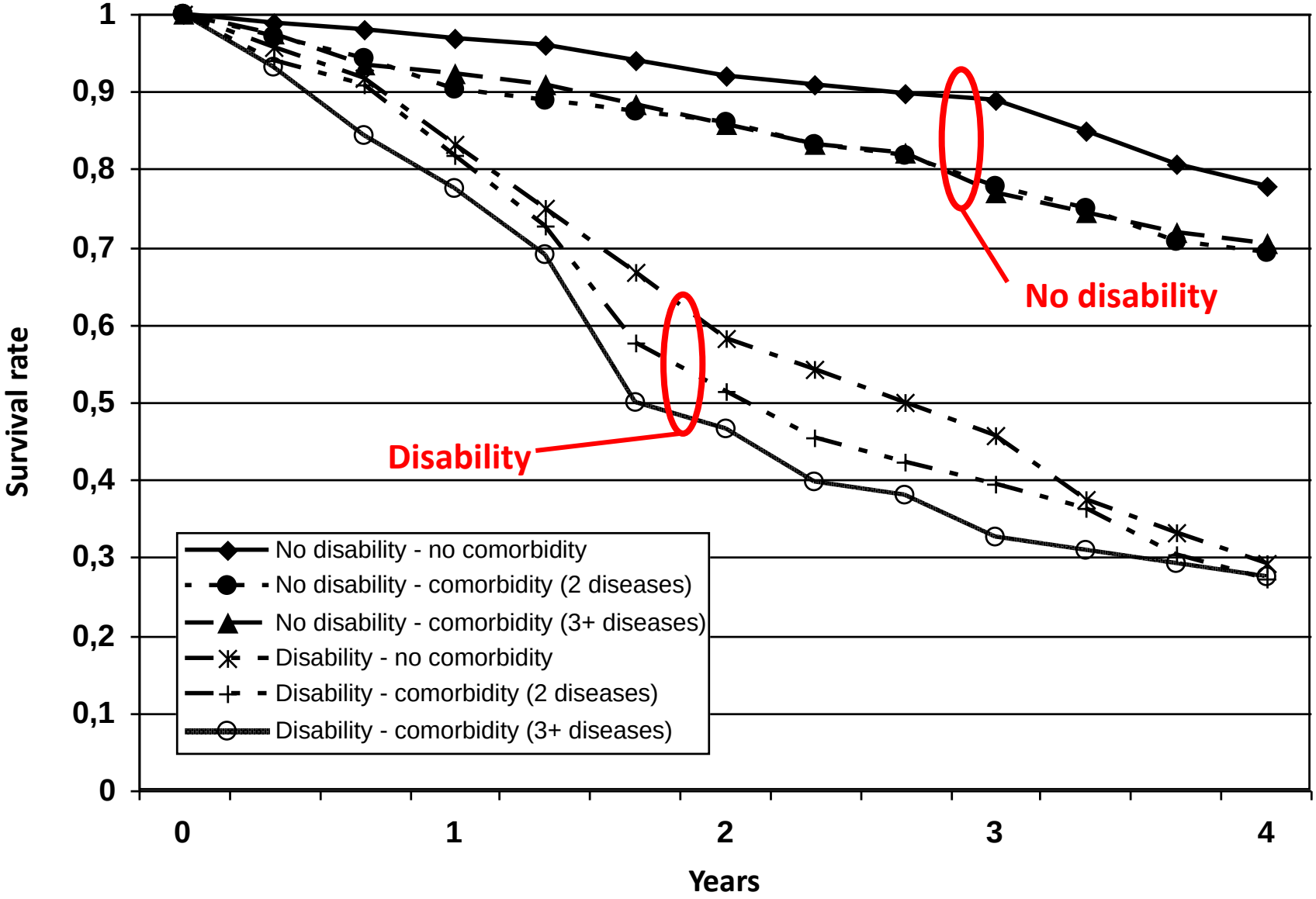
Manejo clínico
TOTALMENTE DISTINTO

FUNCION



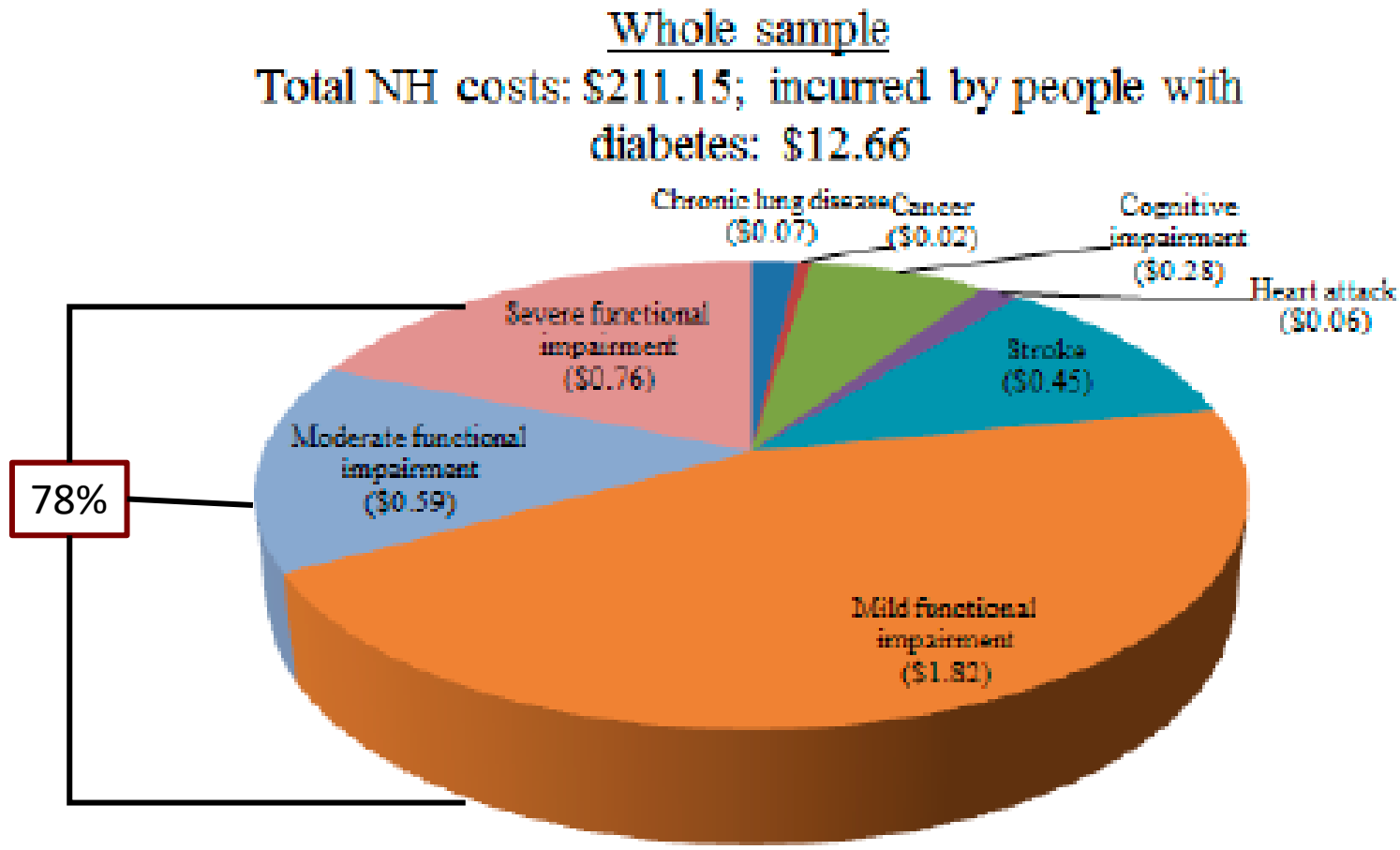
EDAD

La discapacidad, y no la multimorbilidad, predice la mortalidad en ancianos



Landi et al., J Clin Epidemiol 2010

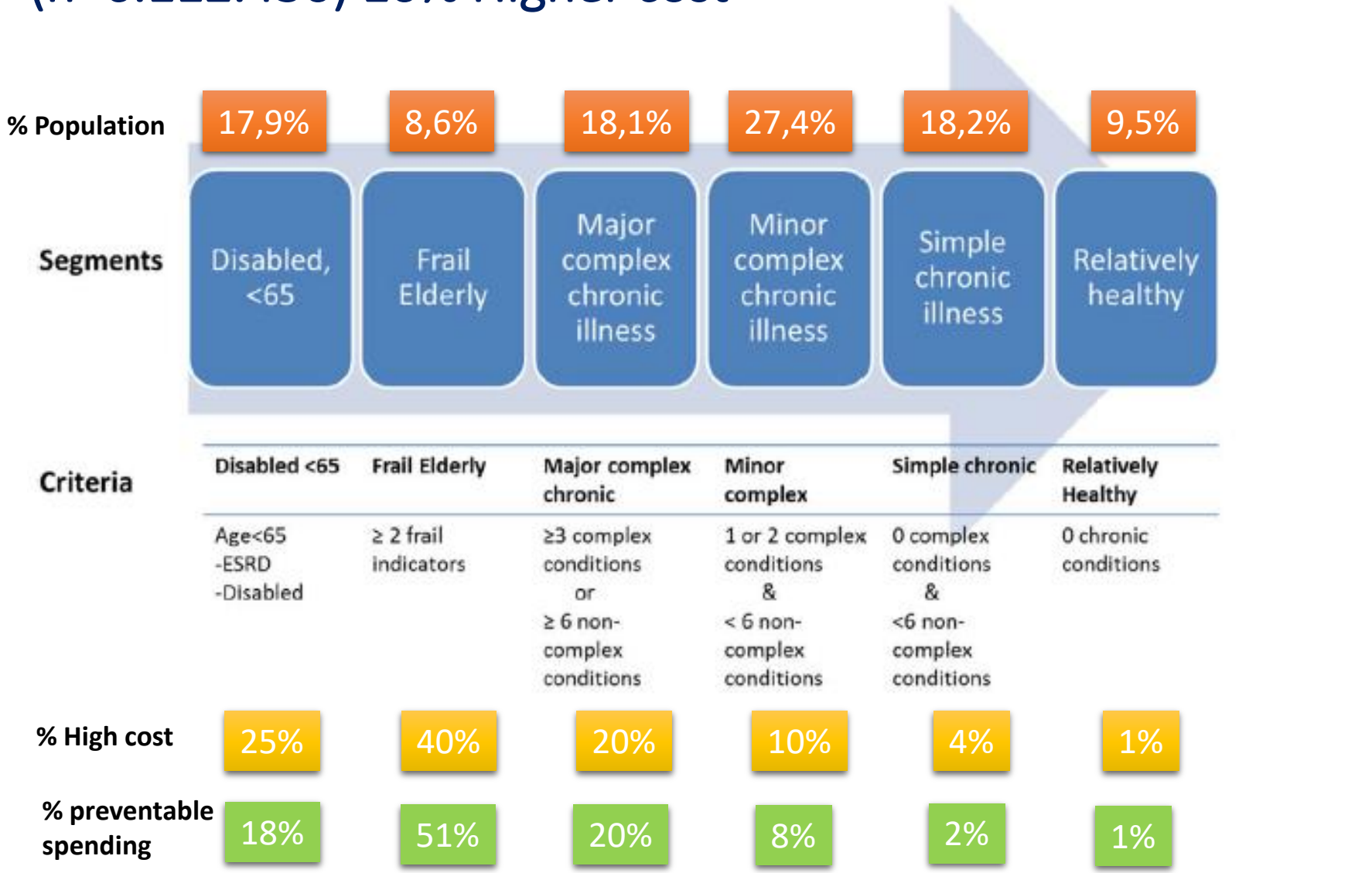
Gasto medio per capita por año en cuidados residenciales ajustados por PPP



university of groningen

Rodriguez-Sánchez B et al., JAMDA 2017

Health-care costs 2012: Medicare (n=6.112.450) 10% Higher cost



Joint KE. BMC Healthcare 2017; 5: 62-7

Figueroa JF. Ann Intern Med 2017; 167: 706-13

Me han vacunado contra la polio y las paperas,
la varicela, la tos ferina y el sarampión.
Luego me caí por las escaleras.

Charlie Brown - Charles M. Schulz

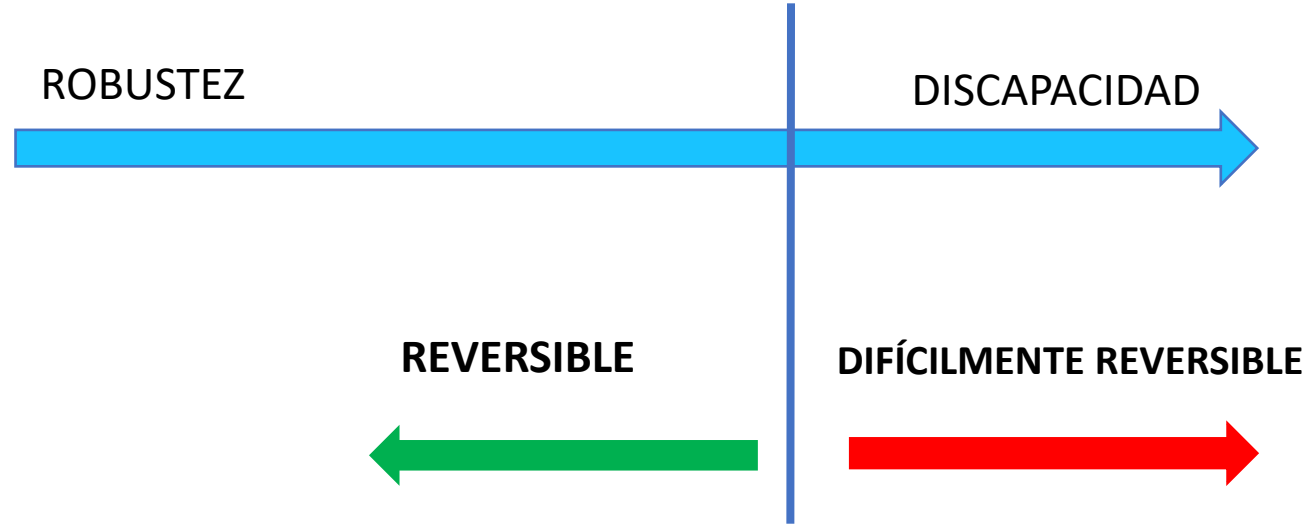
ATENCION AL VERDADERO OBJETIVO:

¡¡¡LA FUNCION!!!

INDEPENDIENTE-ROBUSTO

DEPENDIENTE-DISCAPACITADO

Pérdida progresiva de la capacidad para responder a las demandas



Ferrucci et al., 2002; Gill, Gahbauer, Allore, & Han, 2006; Strandberg & Pitkala, 2007; Xue, 2011; Pahor et al., 2014

Necesitamos

diagnosticar

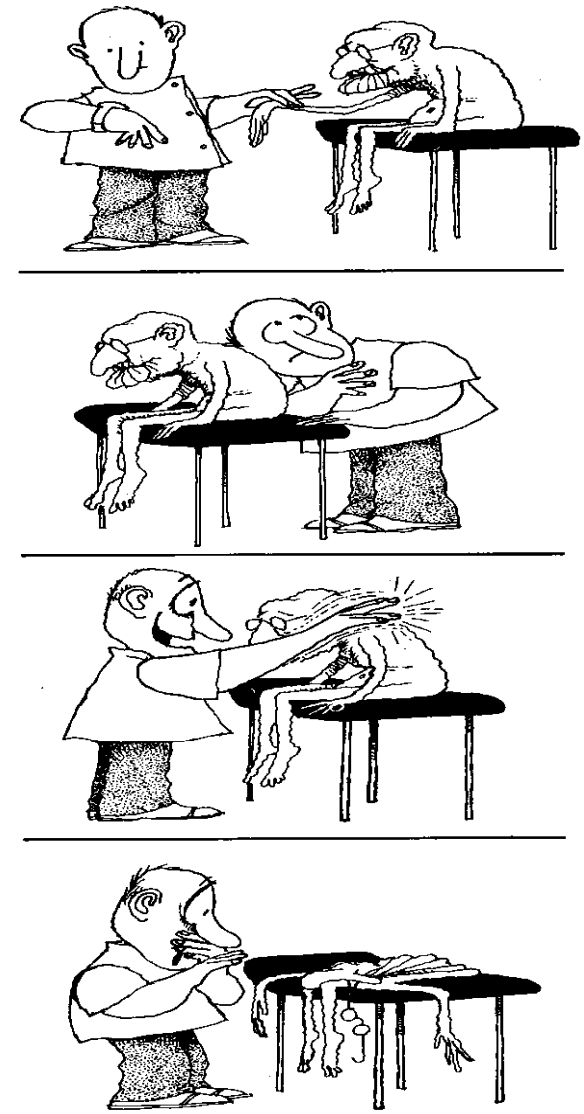
las **situaciones**

que preceden la

discapacidad

para intervenir

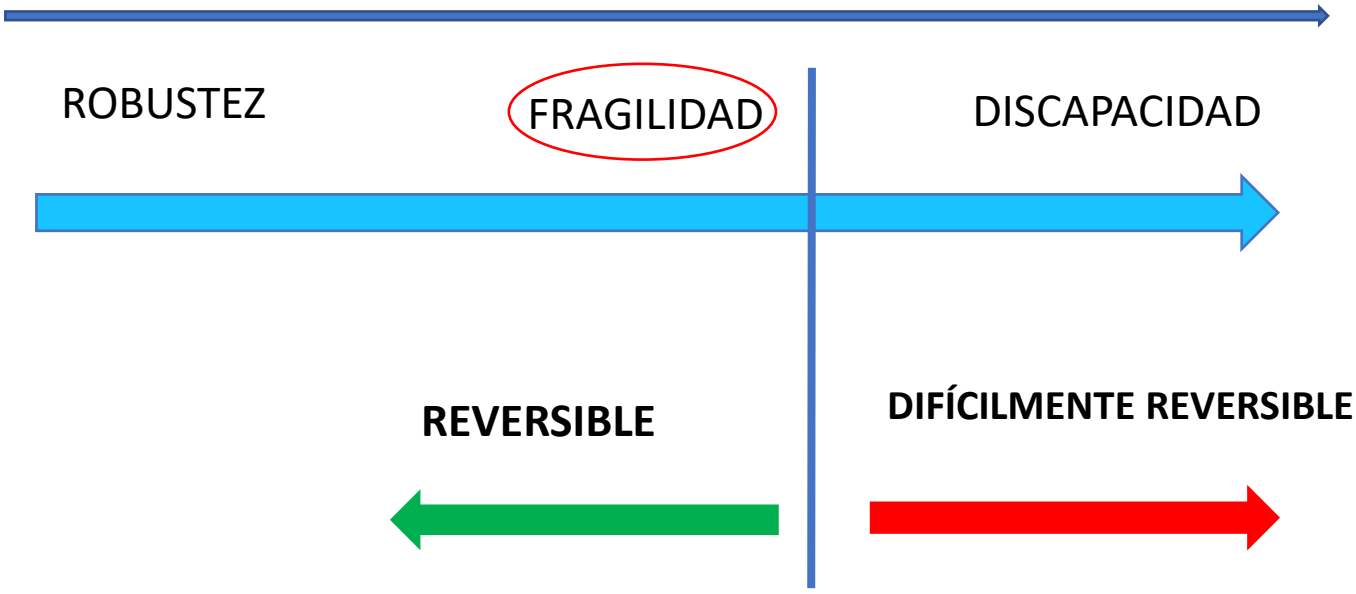
“a tiempo”



SÍNDROME DE FRAGILIDAD

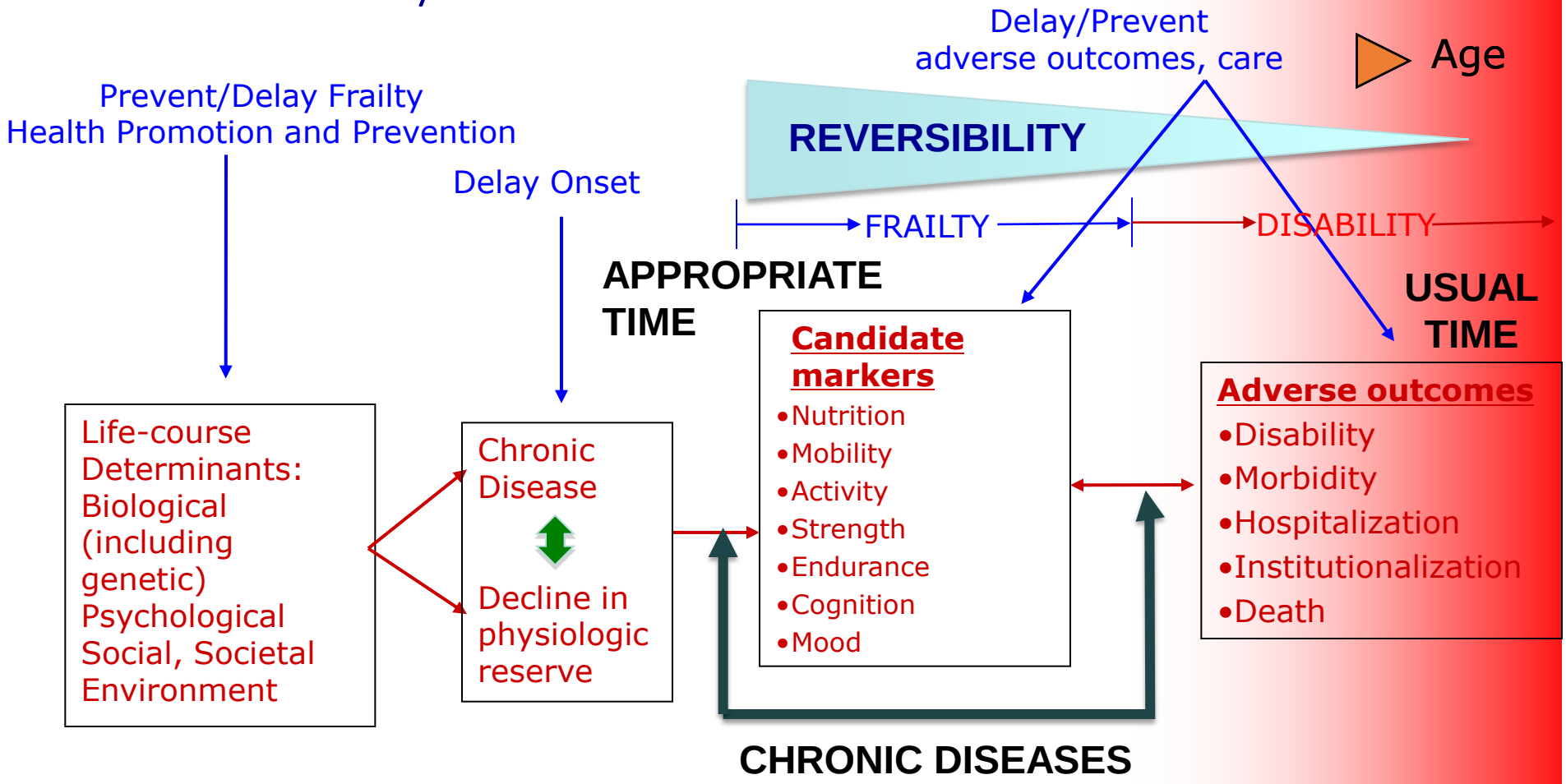
FRAILTY

Pérdida progresiva de la capacidad para responder a las demandas



Ferrucci et al., 2002; Gill, Gahbauer, Allore, & Han, 2006; Strandberg & Pitkala, 2007; Xue, 2011; Pahor et al., 2014

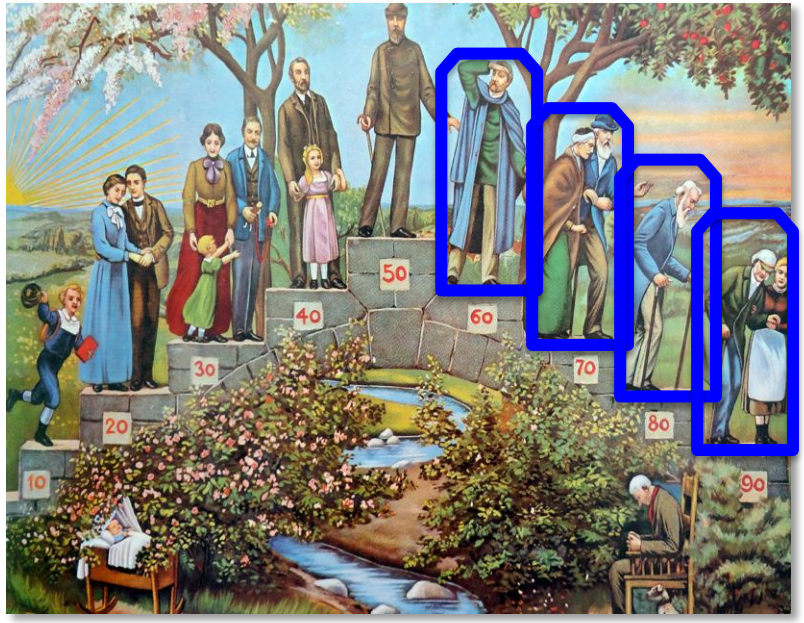
Frailty: a Complex Syndrome of Increased Vulnerability



Frailty in the clinical scenario

The aim of health care has changed substantially—after centuries of trying to live longer, the time for living better has come. This change in focus has two main

*Leocadio Rodriguez-Mañas, Linda P Fried
Lancet, March 2015



+

MULTIPLES
ENFERMEDADES/CONDICIONES

FRAGILIDAD

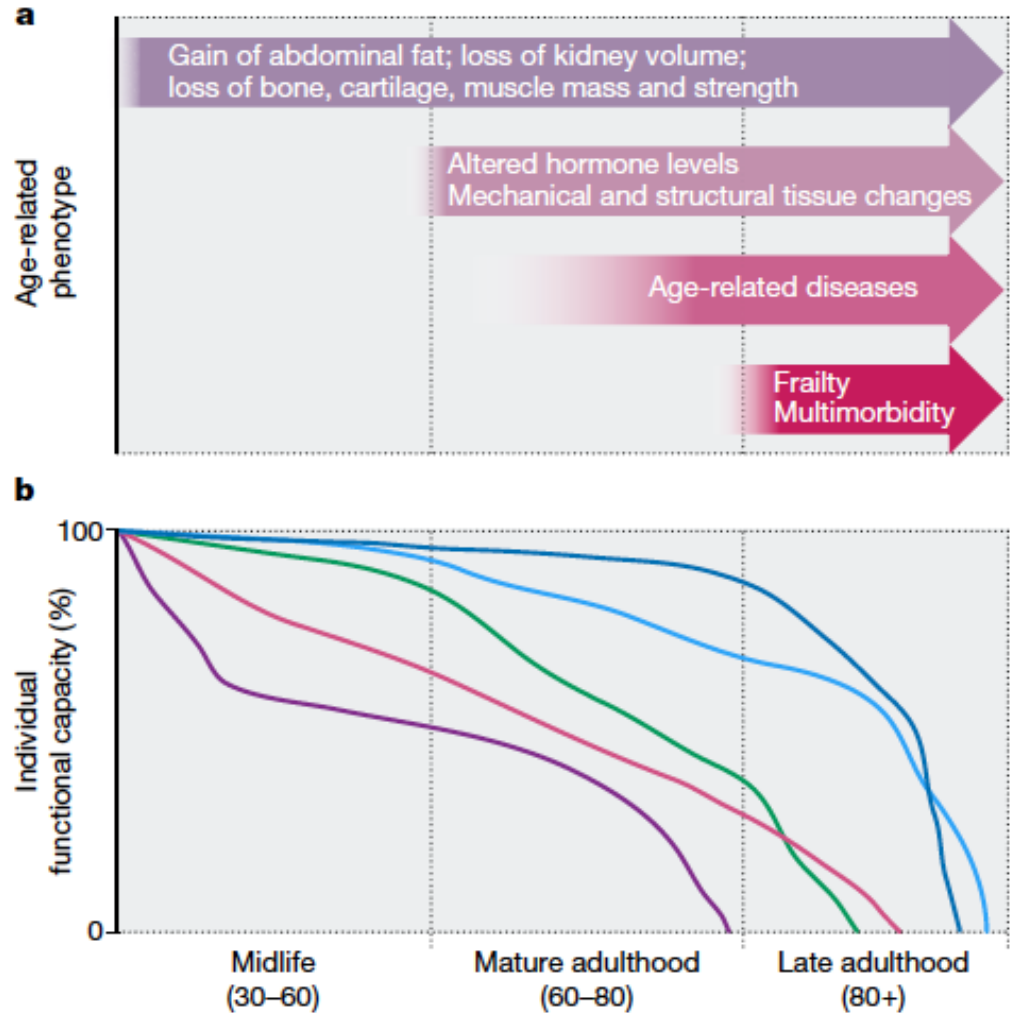
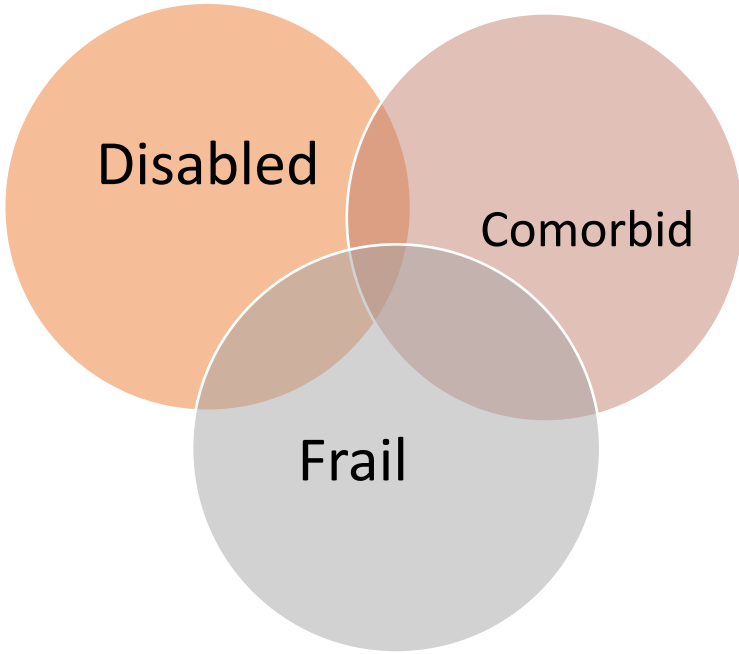


Fig. 3 | Schematic representation of the timing and progression of age-related phenotypes in adult humans. a, Age-related phenotypes include

Partridge L. et al., Nature, 2018

What is Frailty?

- A biological syndrome
- A state of increased vulnerability to stressors
- Decreased physiological reserve in multiple systems
- Limited capacity to maintain homeostasis
- Prevalence around 10% in different population's studies



Para el que contamos con muchos instrumentos de medida

Frailty Index
Frailty Clinical Scale
PRISMA
Groningen
Tilberg

Fenotipo de Fragilidad
Rasgo de Fragilidad
FRAIL
SPPB

Development and validation of a Hospital Frailty Risk Score focusing on older people in acute care settings using electronic hospital records: an observational study

Thomas Gilbert, Jenny Neuburger*, Joshua Kraindler*, Eilis Keeble, Paul Smith, Cono Ariti, Sandeepa Arora, Andrew Street, Stuart Parker, Helen C Roberts, Martin Bardsley, Simon Conroy*

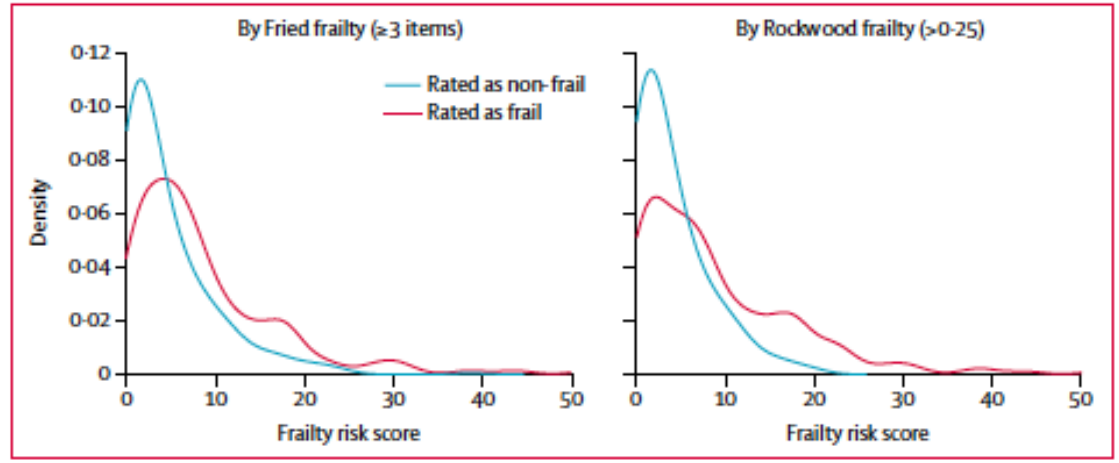
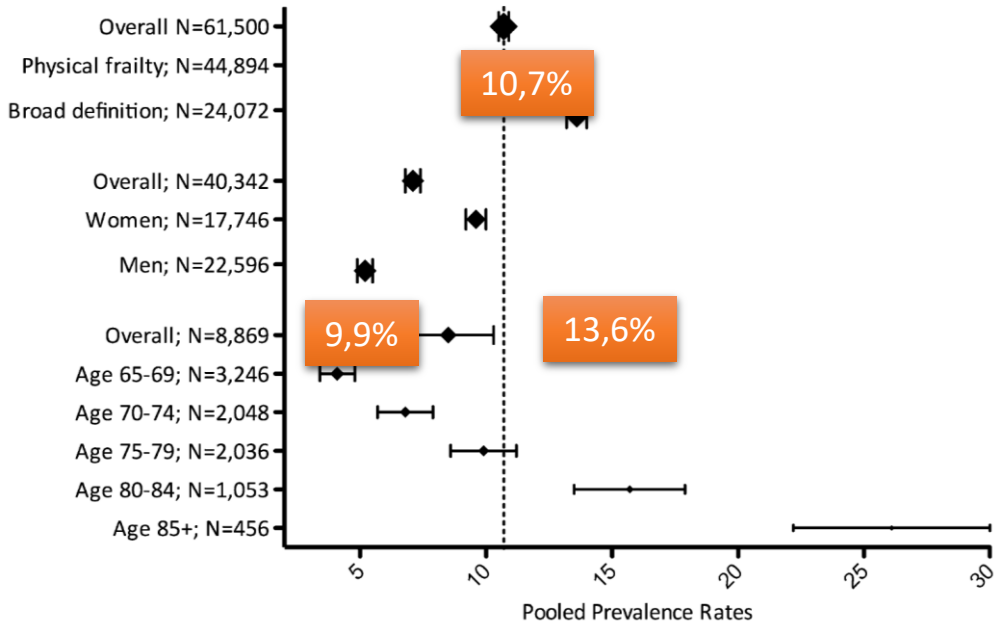


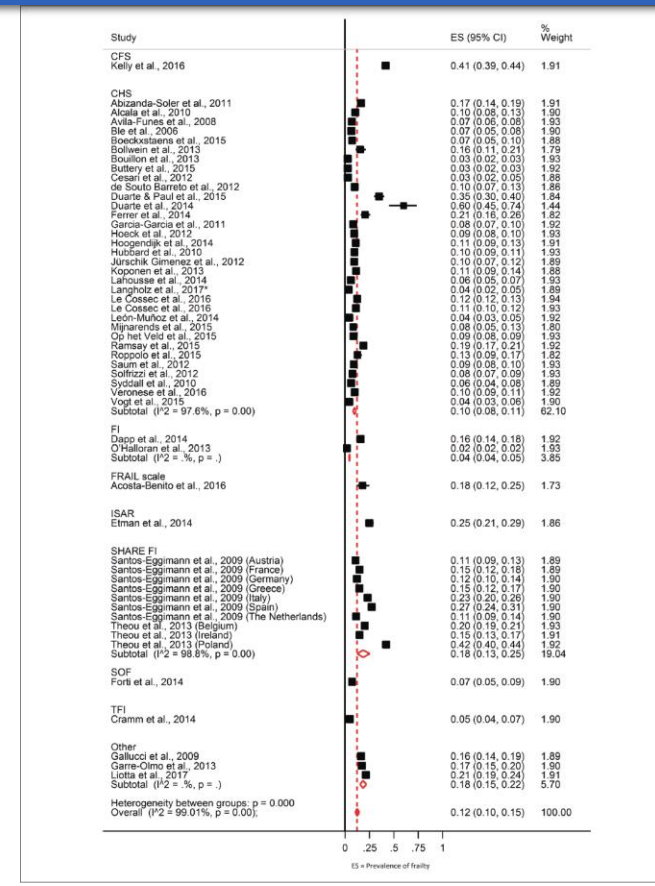
Figure 2: **Distribution of Hospital Frailty Risk Scores among patients identified as frail and non-frail by the Fried and Rockwood scales**

Conocemos su prevalencia

21 studies. 61.500 > 65 years. Frailty Phenotype or Frailty Index
Range 4-59,1%



62 studies. ADVANTAGE
Prevalence community 12% (IC95% 10-15)
Prevalencie population 18% (IC95% 15-21)



Collard RM. JAGS 2012; 60: 1487-92

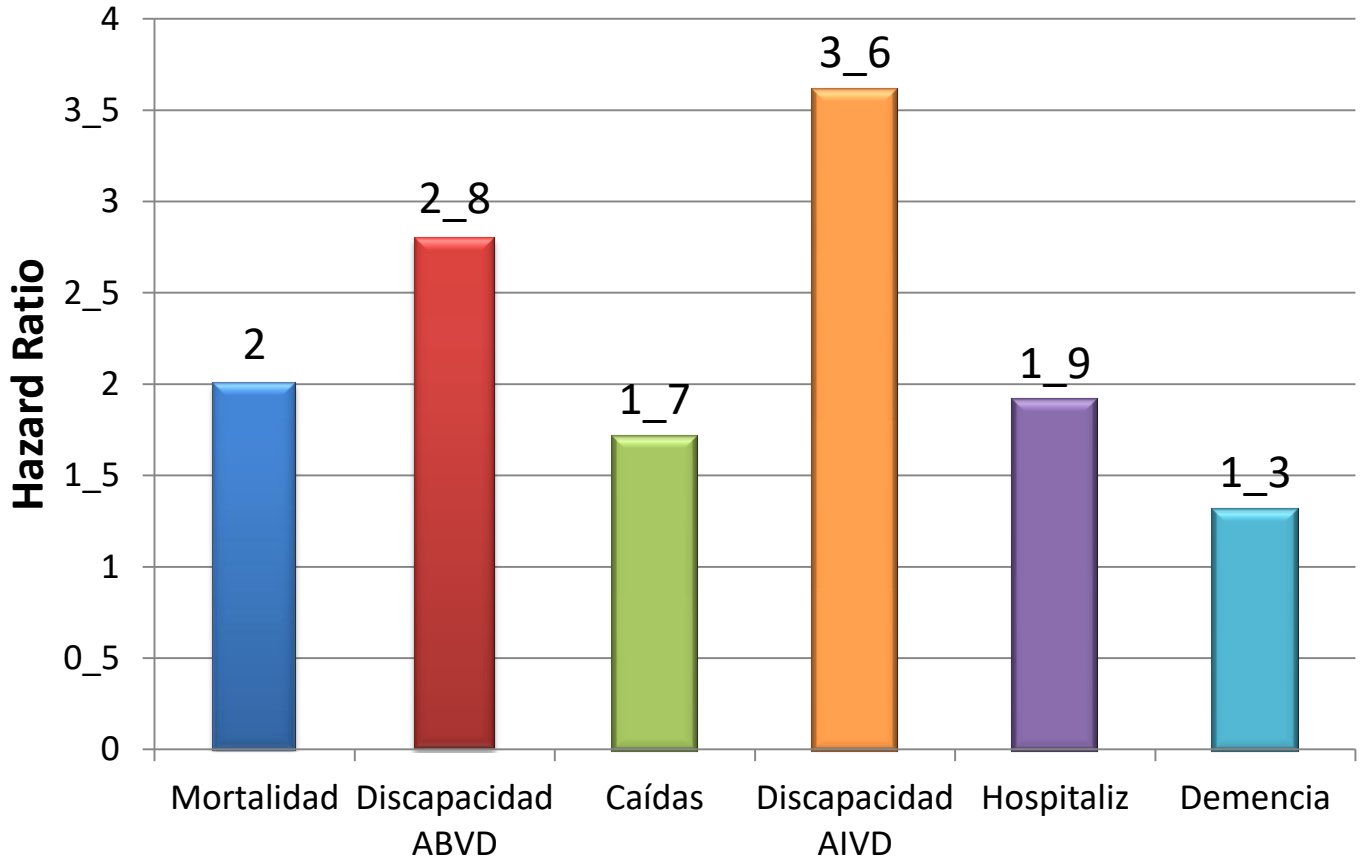
O´Caoimh. Ann Ist Supersanita 2018; 54: 226-38

Clasificación de fragilidad según medio clínico

Medio clínico	Fried (%)	FRAIL (%)	Tilbg (%)	Grng (%)	Rockw (%)	ISAR (%)	Bald (%)	G8 (%)	VES 13 (%)	Total (%)
Urgencias	50,51	**40,71**	68,14	**74,34**	47,46	78,76	--	--	--	**60,00**
Cardiología	61,39	41,36	65,55	62,32	42,47	--	--	--	--	54,61
Cirugía electiva	24,67	15,48	30,32	30,72	5,16	--	--	--	--	21,27
Cirugía Urgente	53,33	41,54	37,50	50,77	18,46	--	--	--	--	40,32
Oncología	47,92	30,00	36,00	40,00	**6,00**	--	14,28	**81,63**	34,69	36,31
Agregados	47,43	33,67	51,27	**53,23**	**28,34**	--	--	--	--	42,78

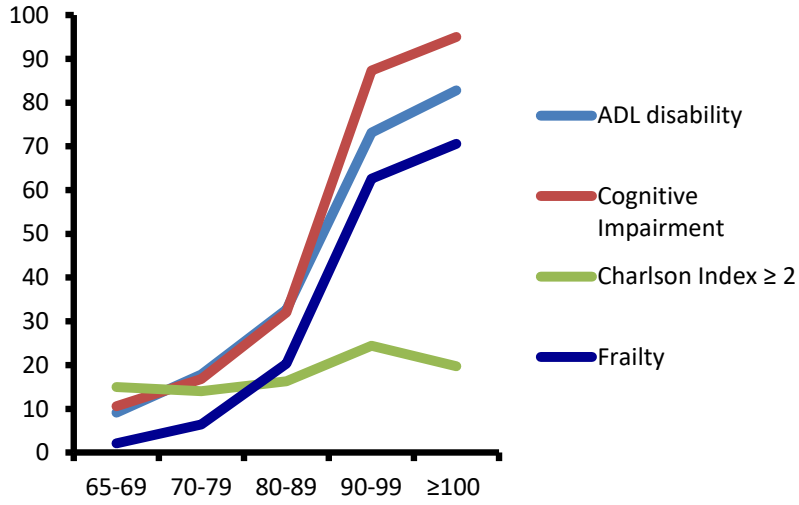
Meta-analisys (Kojima)

Consecuencias de la fragilidad

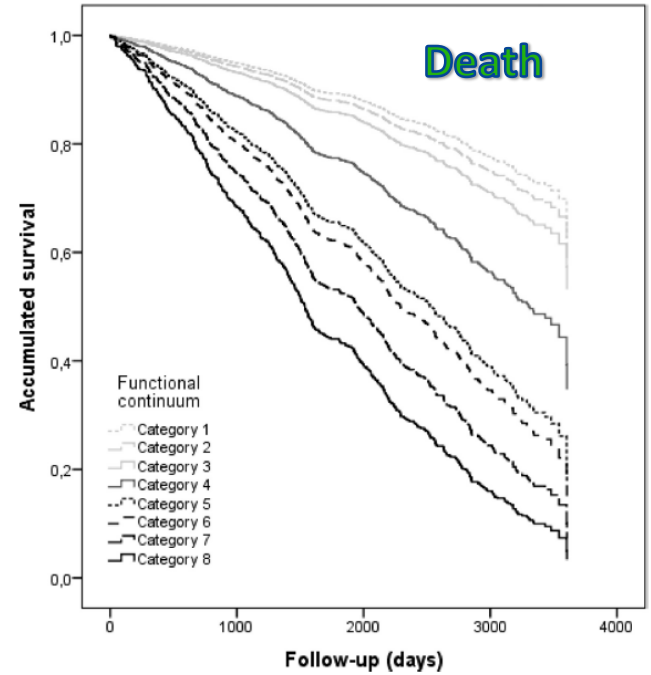


Kojima G. Age Ageing 2017; 13:1-8. J Epidemiol Community Health 2016; 70: 722-9. J Am Med Dir Assoc 2016; 17: 881-8. J Geriatr Phys Ther 2018; 41: 42-8. Disabil Rehabil 2017; 39: 1897-908.

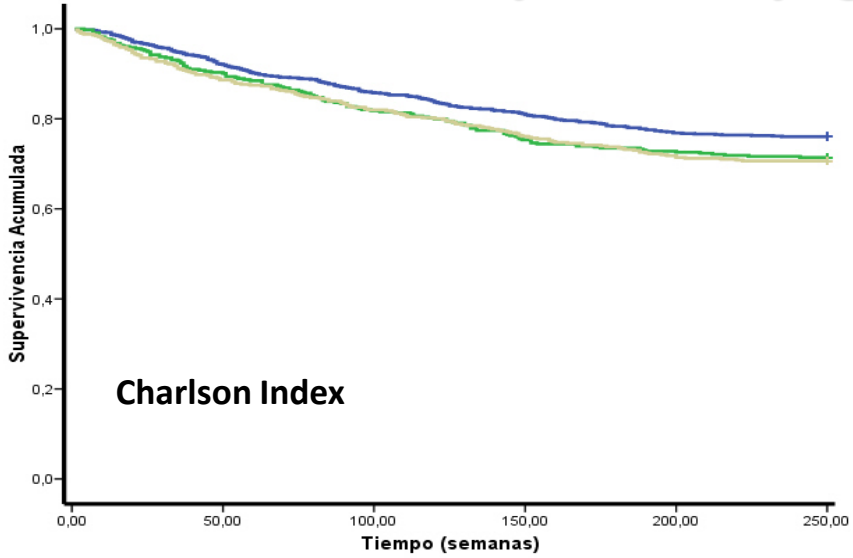
Toledo Study for Healthy Aging

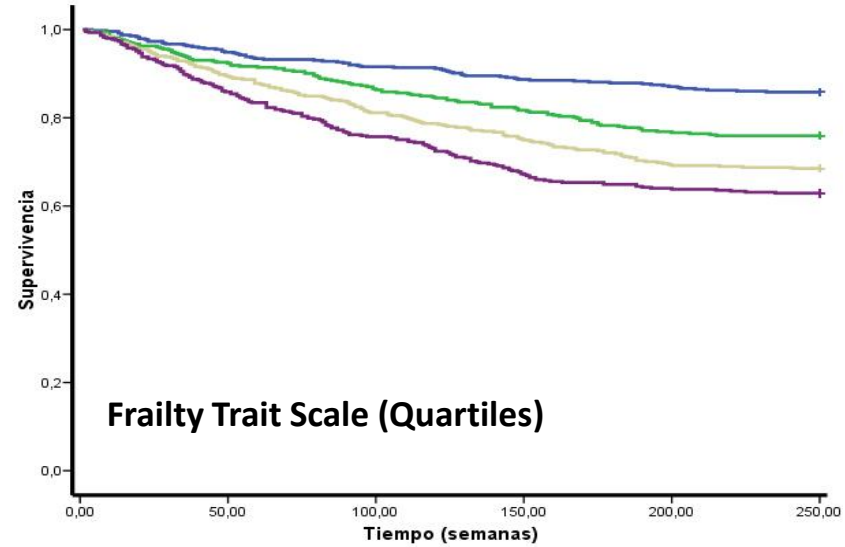


Hoogendijk et al 2019



Toledo Study for Healthy Aging– First hospitalization

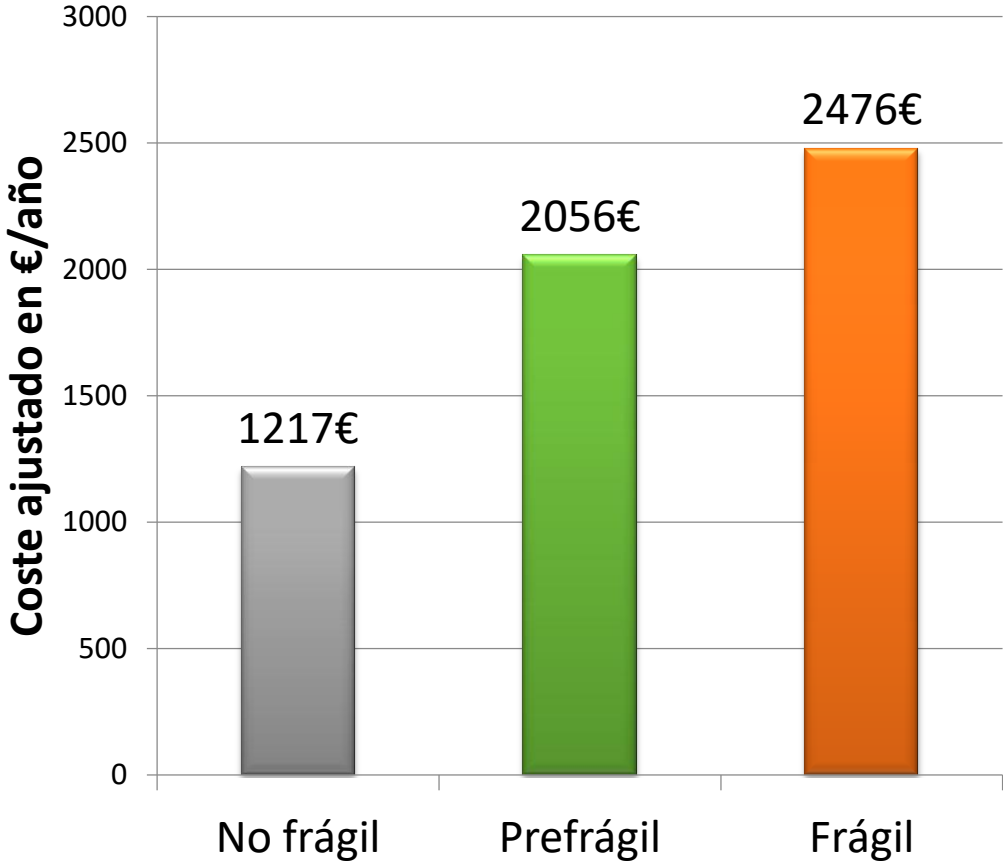


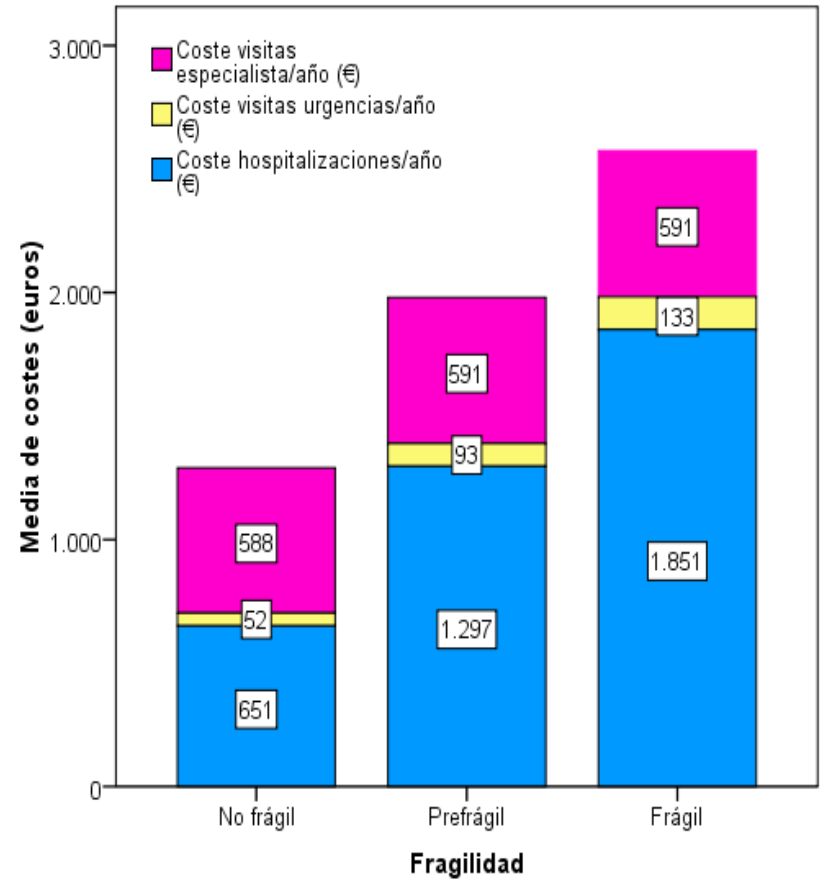


Fragilidad y costes hospitalarios

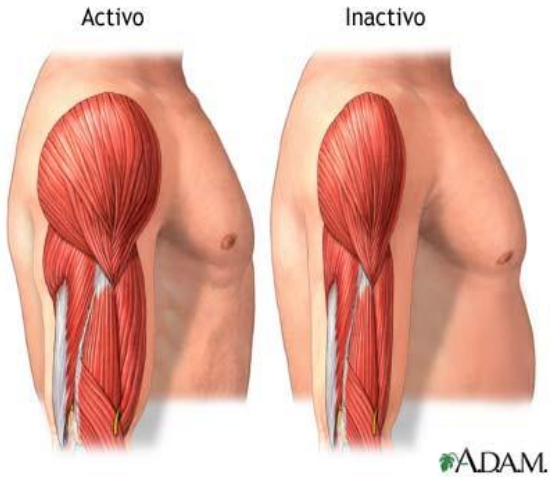
Estudio FRADEA

Costes por hospitalización, visitas a urgencias y a especialistas. Ajustado por edad, género y comorbilidad

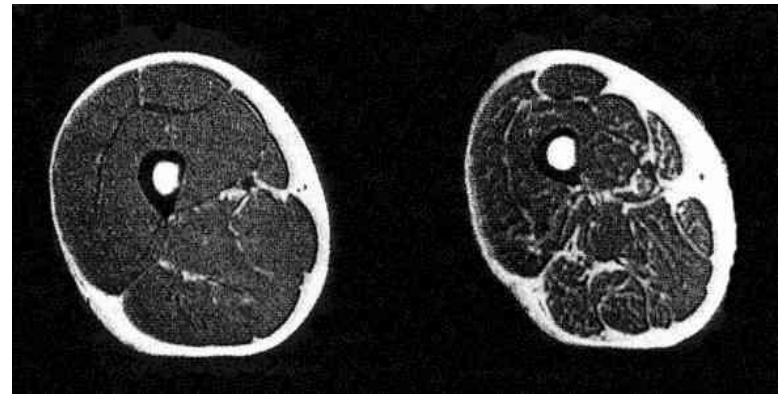




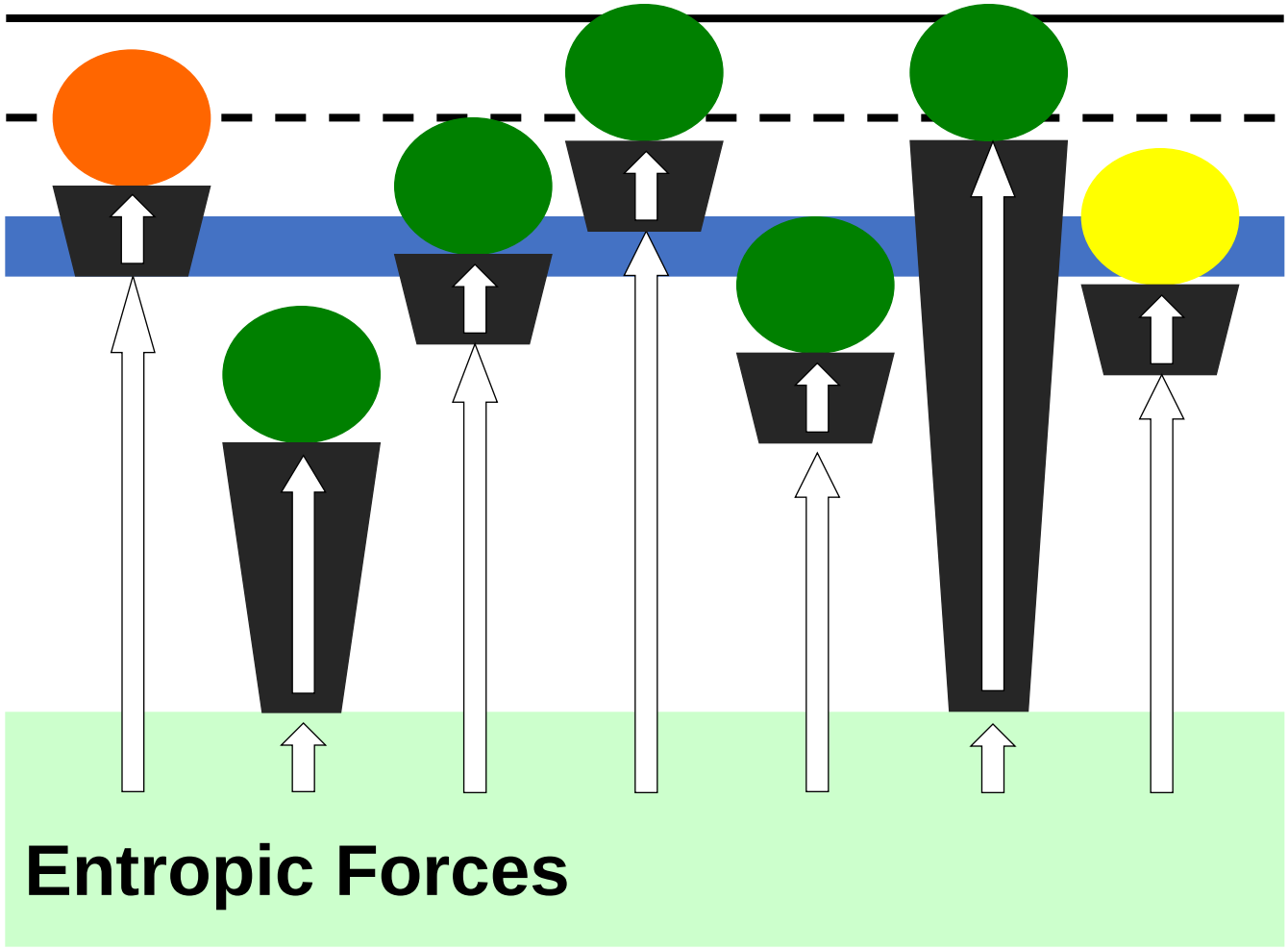
García-Nogueras I. JNHA 2017; 21: 207-14



FISIOPATOLOGIA DE LA FRAGILIDAD

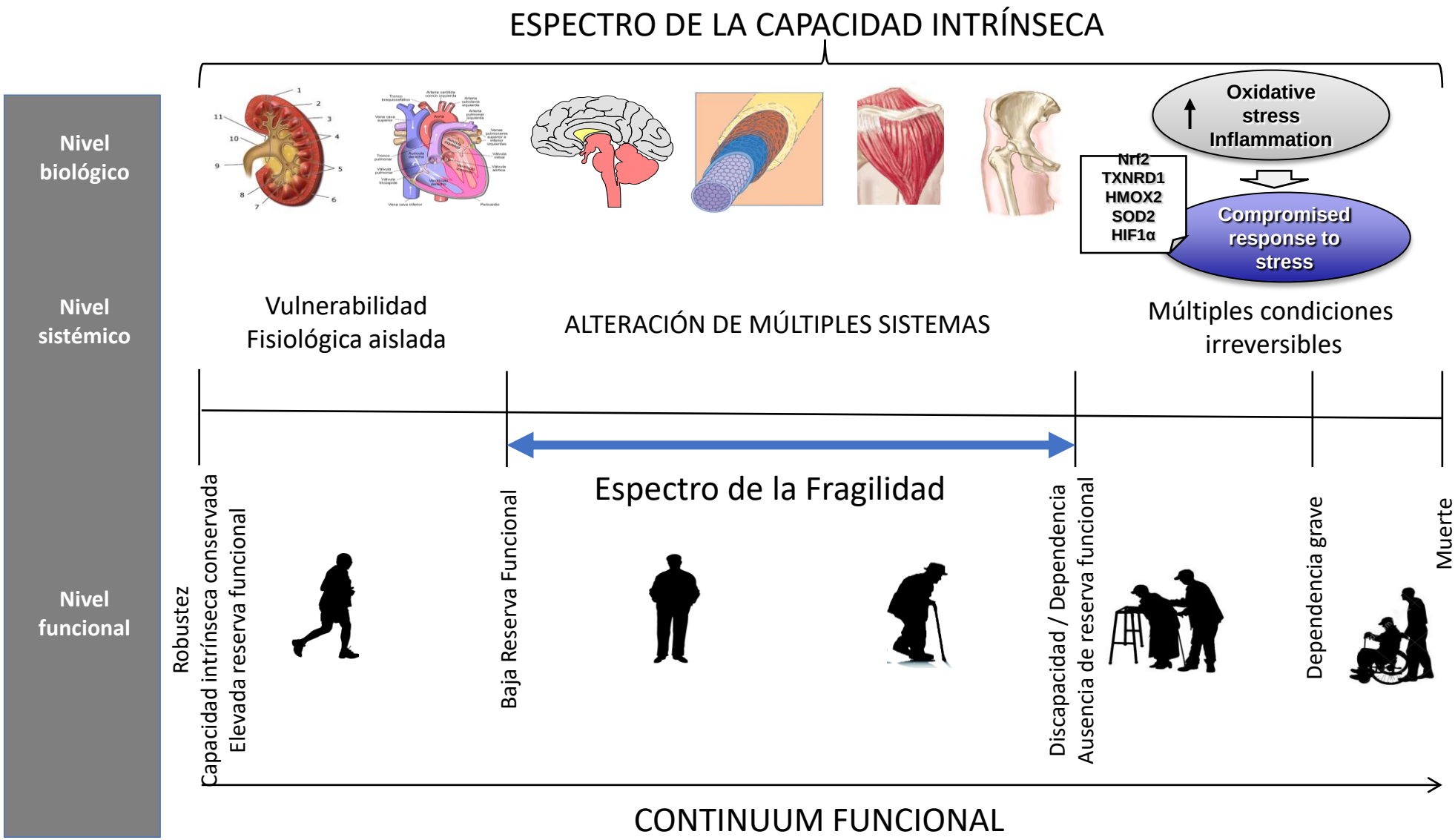


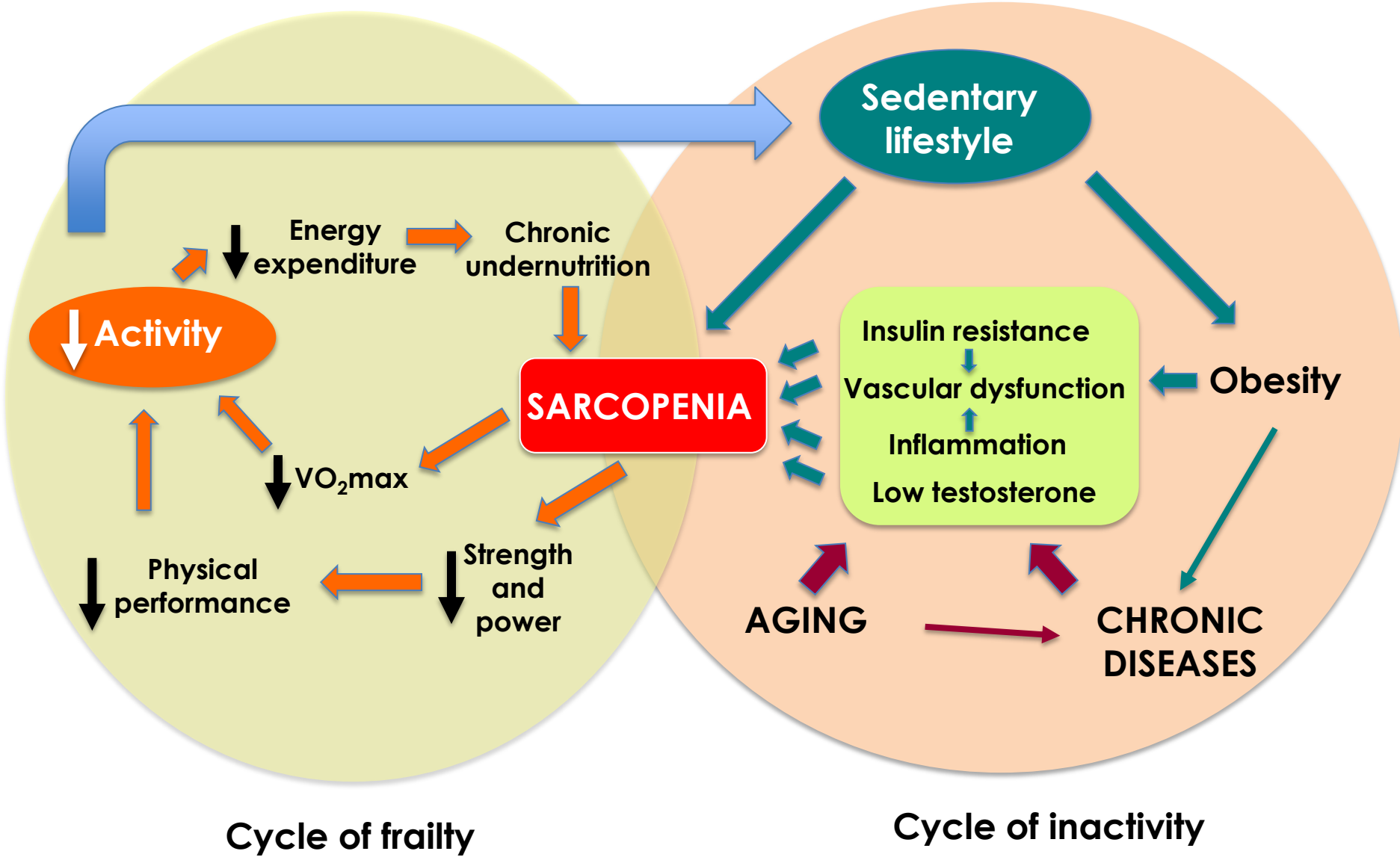
C. Age-related Frailty



Studenski S. *J Nutr Health Aging* 2009;13:729-32
Ferrucci L et al. *Genus* 2005;LXI:39-53

Fragilidad / Capacidad intrínseca





Angulo J, El Assar M, Rodríguez-Mañas L. Mol Aspects Med, 2016

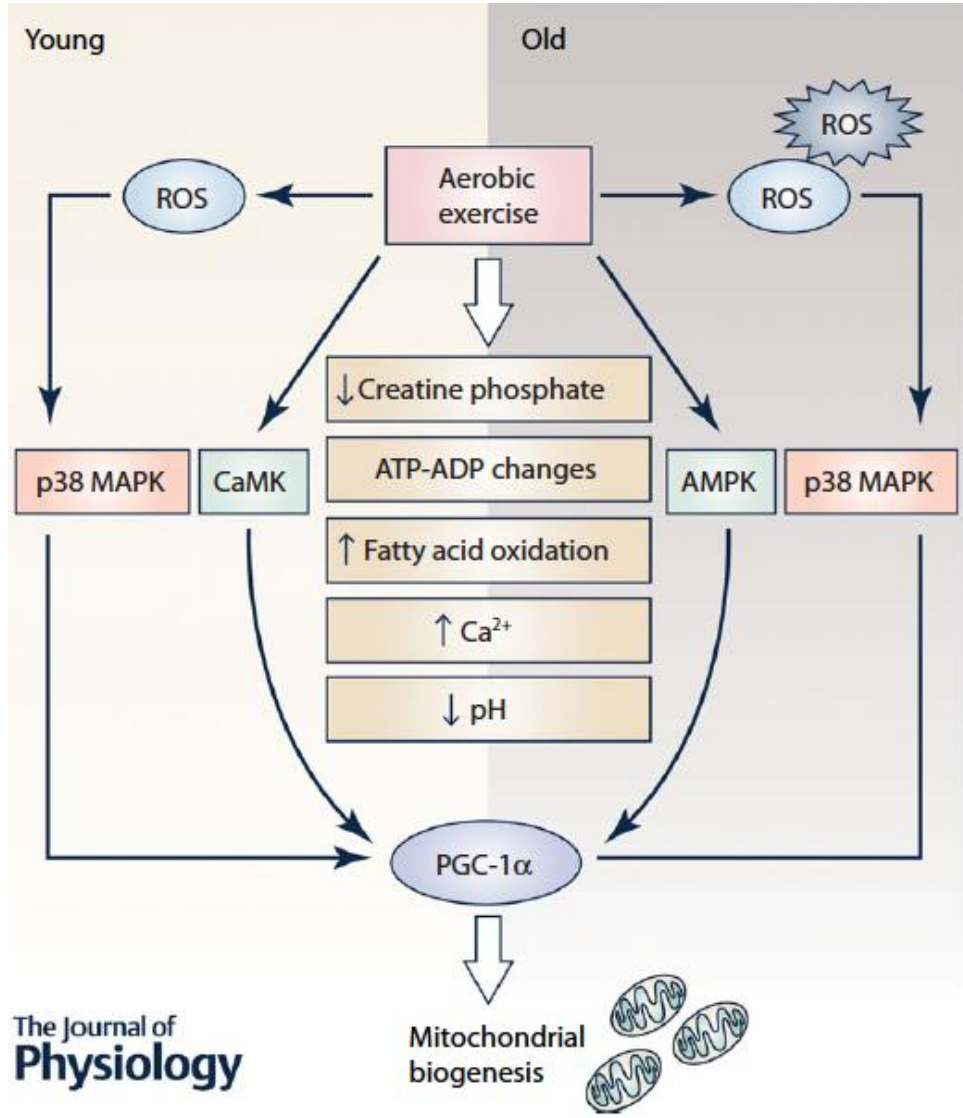
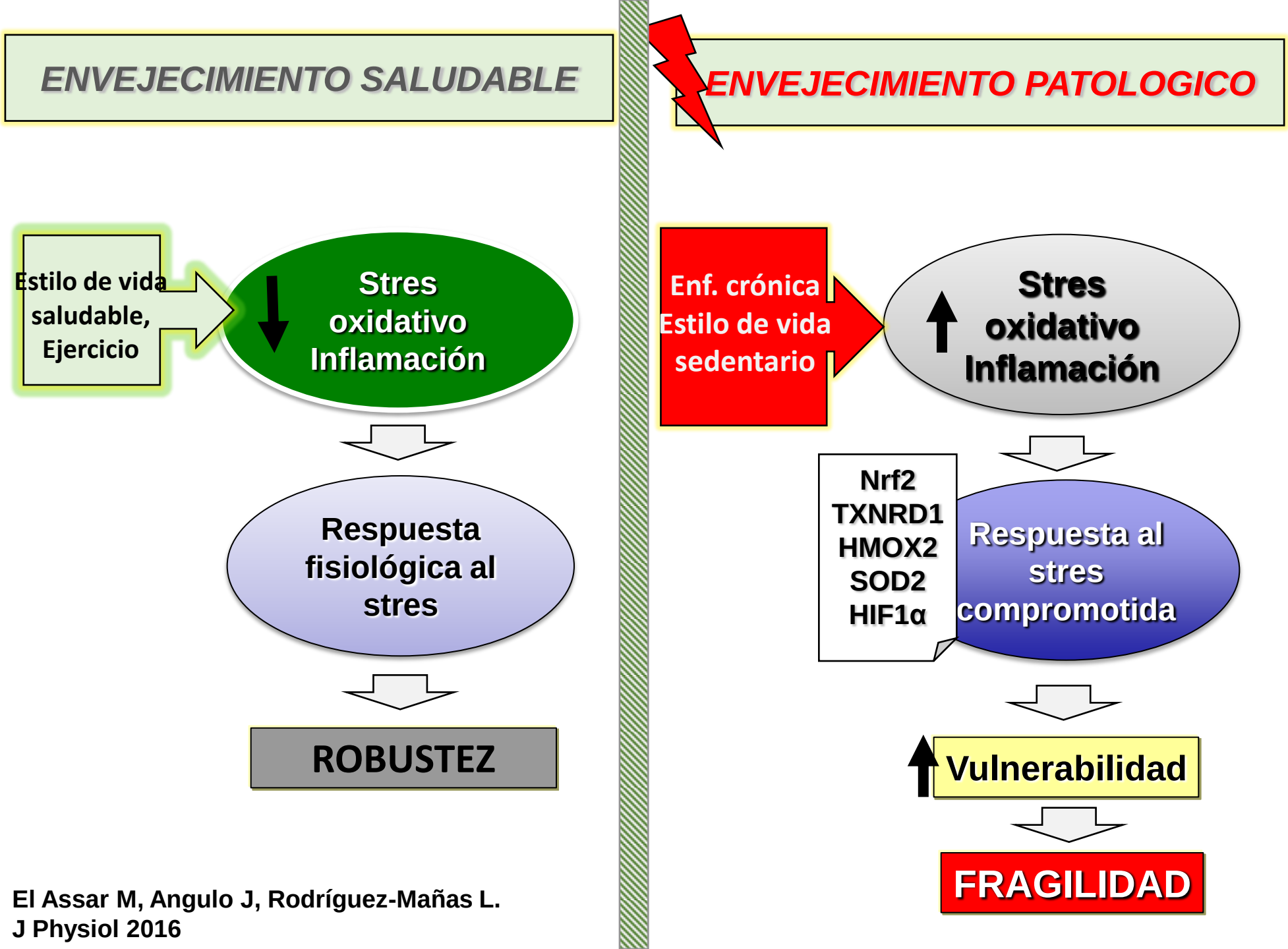


Figure 3. AMP kinase, calcineurin- and calmodulin-dependent kinases and mitogen activated protein kinases (MAPKs) like p38 are related to changes in cell metabolism during muscle contraction
They are involved in the rate of activation of PGC-1α, an important co-factor present in mitochondrial biogenesis. In the muscles from old animals these physiological pathways may be disrupted because their cells are under constant oxidative stress that activates p38 continuously, leading to a lack of reactivity of PGC-1α.

Viña J, Rodriguez-Mañas L, Salvador-Pascual A, et al
J Physiol 2016



El Assar M, Angulo J, Rodríguez-Mañas L.
J Physiol 2016

Hospital Universitario de Getafe
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Comunidad de Madrid

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FUNDACIÓN DE INVESTIGACIÓN BIOMÉDICA
SaludMadrid Hospital Universitario de Getafe

EPIDEMIOLOGÍA
CC BASICAS

MEDIOS
CLÍNICOS
y
PRÁCTICA
CLÍNICA

INTERVENCIÓN:

MULTIDISCIPLINAR

EJERCICIO FÍSICO

Frailty in the clinical scenario

The aim of health care has changed substantially—after centuries of trying to live longer, the time for living better has come. This change in focus has two main

*Leocadio Rodriguez-Mañas, Linda P Fried

Lancet 2015; 385: e7-9

Frailty in the clinical scenario

Lancet, 2015

1.- No hay evidencia sobre las consecuencias de detectar y manejar la fragilidad. Si diagnosticar cualquier condición genera cambios en el manejo del paciente, la Condición será buscada y diagnosticada. Si no es así, será ignorada
(J Morley, Philadelphia 2016)

2.- Necesitamos biomarcadores

3.- Necesitamos tratamientos

Rodriguez-Mañas L & Fried LP 2015

assist clinicians, we need to identify the most efficient definition of frailty for screening and diagnosis, and a defined pathway leading the clinician from diagnostic suspicion toward diagnostic confirmation and prognosis. Finally, there should be clearly defined interventions.

than of any single system. However, the role of biomarkers needs to be defined to improve the risk assessment, diagnosis, and prognosis of frailty that are currently based on the assessment of anthropometric and impairment variables. The combination of clinical (the components of the current definition) and laboratory biomarkers will probably strengthen early detection and prognostication.

There is a shortage of well designed clinical trials to assess the short-term and long-term efficacy of medical interventions for frailty. Although some interventions

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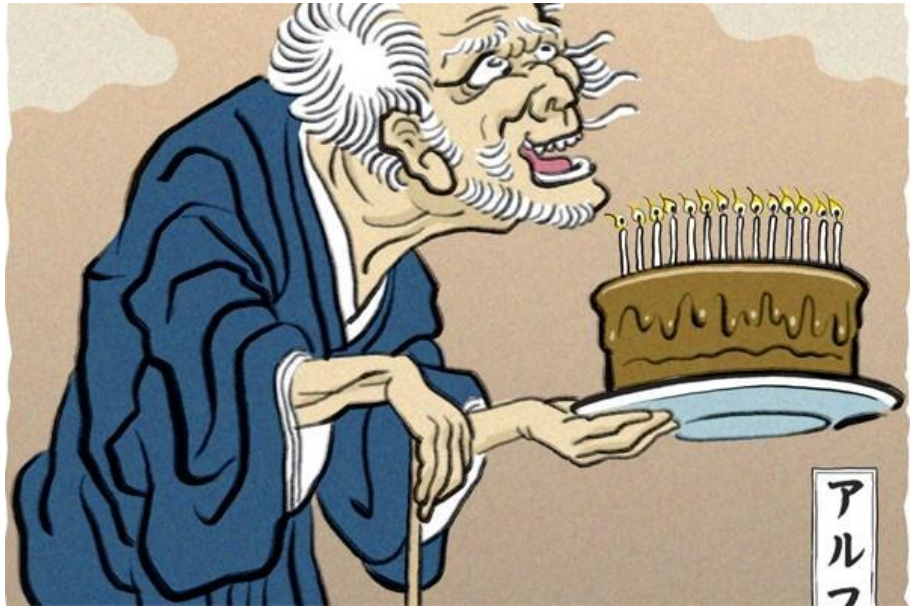


¿Cuales son los desafíos?
¿Cuales son las prioridades de investigación?

EL ESPECTRO DE LA INVESTIGACION SOBRE FRAGILIDAD





Genetica
Stem cell
Inflamación
Moleculas

Musculo
Vasos
Cerebro

Concepto

Población

Paciente

Bases moleculares

Modelos animales

Marco teórico

Epidemiología
Salud Pública

Fisiopatología
Diagnostico
Manejo

Ciencia Bäsica

Biología integradora y de sistemas

Refinamiento de definición
Pruebas de concepto

Investigación en población/cohortes

Investigación clínica

Retos clínicos de investigación en fragilidad

Mejoría de la precision diagnóstica/Generación de rutas clínicas

- **Nosología: Subtipos clínicos de fragilidad**
- **(sarcopenic vs no sarcopenic, etc)**
- **Diferentes poblaciones, ¿diferentes fenotipos?**
- **Diferentes medios clinicos**
- **Diferentes riesgos a lo largo del espectro de la fragilidad**
- **Riesgos diferenciales. Asociación fragilidad & enfermedad**
- **Biomarcadores (clinicos, lab e imagen)**

Mejoría de los abordajes terapéuticos

- **Cambiar la metodología de la validación (agencias reguladoras)**
- **Cambiar los objetivos y resultados**
- **Validación de tratamientos no farmacológicos (nutrición, AF…)**
- **Validación de ambientes y modelos de atención**
- **TICs y otras tecnologías**

Table 3: Combining both frailty and sarcopenia

N=1611		Frailty		
		Robust	Pre-Frail	Frail
EWGSOP	Sarcopenic	182 (17.3)	141 (29.3)	29(40.3)
	Non-sarcopenic	867 (82.7)	340 (27.2)	43 (59.7)
FNIH	Sarcopenic	348 (33.3)	303 (62.9)	54 (76.1)
	Non-sarcopenic	698 (66.7)	179 (37.1)	17 (23.9)
Quintiles	Sarcopenic	31 (3.0)	84 (17.5)	29 (40.8)
	Non-sarcopenic	1014 (97.0)	397 (82.5)	42 (59.2)

8%

7,8%

ESTUDIO TOLEDO ENVEJECIMIENTO SALUDABLE

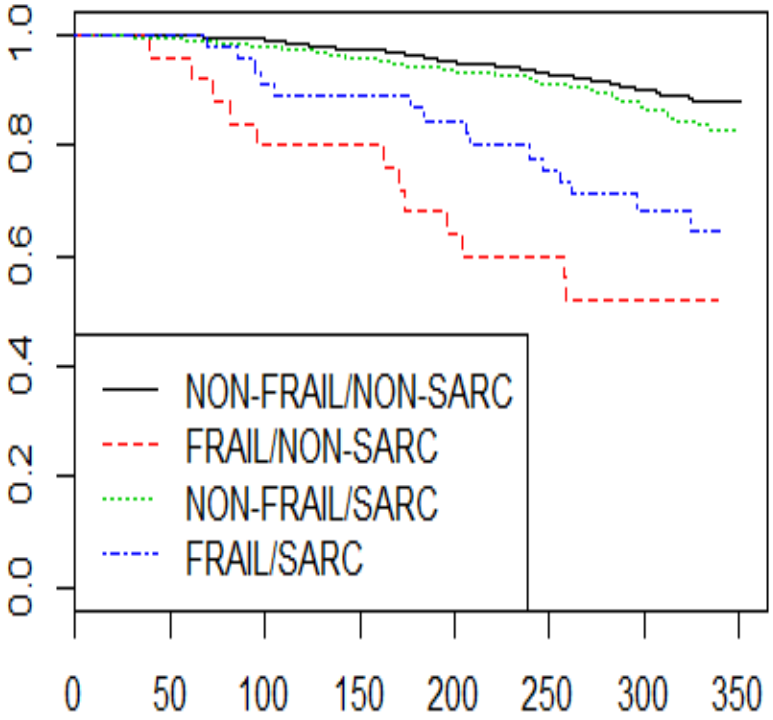
TOLEDO STUDY FOR HEALTHY AGING

Davies B, F García-Garcia FJ, Ara I, Walter S, Rodriguez-Mañas L JAMDA, 2017

Table 4. Sensitivity and specificity

N=1611	Frailty			
	Sensitivity	Specificity	PPV	NPV
EWGSOP	0.60 (0.47, 0.71)	0.21 (0.19, 0.23)	0.03 (0.02, 0.05)	0.92 (0.88, 0.94)
FNIH	0.24 (0.14, 0.35)	0.43 (0.40, 0.45)	0.02 (0.01, 0.03)	0.92 (0.90, 0.94)
Quintiles	0.60 (0.47, 0.71)	0.08 (0.06, 0.09)	0.03 (0.02, 0.04)	0.80 (0.73, 0.86)

MORTALIDAD



DISCAPACIDAD

	OR	CI	P value
Non-frail / non-sarcopenic	1		
Non-frail / sarcopenic	1.67	1.22-2.30	0.001
Frail / non-sarcopenic	2.53	0.80-7.96	0.11
Frail /sarcopenic	3.03	1.26-7.26	0.01

Hospital Universitario de Getafe
SaludMadrid
Comunidad de Madrid

Gobierno de España · Ministerio de Economía, Industria y Competitividad · Instituto de Salud Carlos III
ciberfes

FUNDACIÓN DE INVESTIGACIÓN BIOMÉDICA
SaludMadrid Hospital Universitario de Getafe

frailclinic

- Surge el proyecto
- Financiado por la DG SANCO, EU.
- Estudio transversal, multicéntrico, multinacional
- Lugar de desarrollo de la investigación: **España**, Italia y Reino Unido
- Cinco centros hospitalarios:
  - **Hospital Universitario de Getafe (Madrid, España)**
  - **Hospital Universitario Monte Naranco (Asturias, España)**
  - Ospedale San Raffaele (Roma, Italia)
  - Universita Cattolica del Sacro Cuore (Roma, Italia)
  - Hospital de Luton (Luton)
- Medios clínicos: Urgencias, Cardiología, **Cirugía general electiva, Cirugía general** urgente y Oncología

FASE OBSERVACIONAL

Visita Basal

Seguimiento 12 meses

- Fried criteria
- FRAIL Scale
- Tilburg Frailty Indicator
- Gröningen Frailty Indicator
- Clinical Frailty Scale or Rockwood modified
- ISAR scale (specific for Emergency Room)
- Balducci criteria (specific for Oncology)
- G8 criteria (specific for Oncology)
- VES 13 Scale.

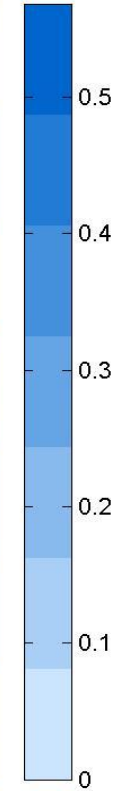
Visita de seguimiento

Fragilidad (escala FRAIL)
Institucionalización
Discapacidad (Barthel)
Mortalidad

IMPLEMENTAMOS ESTAS ESCALAS A LOS MISMOS PACIENTES
EN EL MISMO MOMENTO
POR EL MISMO INVESTIGADOR

¿Cuál es el grado de concordancia?

	FTS	Fried	Frail	Gerontopole	FI CFS	Share	FI 35
FI 35	0.55	0.39	0.31	0.45	0.52	0.38	
Share	0.37	0.43	0.33	0.48	0.47		0.38
FI CFS	0.54	0.46	0.38	0.56		0.47	0.52
ontopole	0.41	0.51	0.34		0.56	0.48	0.45
Frail	0.32	0.46		0.34	0.38	0.33	0.31
Fried	0.39		0.46	0.51	0.46	0.43	0.39
FTS		0.39	0.32	0.41	0.54	0.37	0.55



- **ÍNDICE KAPPA**

(Landis & Koch, 1977)

- <0: Menos acuerdo que el atribuido al azar.
- 0.01-0.20: Acuerdo escaso.
- 0.21-0.40: Acuerdo pobre.
- 0.41-0.60: Acuerdo moderado.
- 0.61-0.80: Acuerdo considerable.
- 0.81-0.99: Acuerdo casi perfecto.

¿Qué pasa al año de seguimiento ?

Capacidad de predicción de escalas 1 año

FRAILTY TOOL	FRAILTY STATUS *		READMISSIONS		INSTITUTION		INCIDENT DISABILITY**		MORTALITY	
	p	OR	p	OR	p	OR	p	OR	p	OR
Fried criteria	**<0.05**	4,7 (2,3-8,6)	**<0.05**	1,9 (1,3-2,7)	0.16	2,8 (0,7-11,9)	**<0.05**	2,3 (1,5-3,5)	**<0.05**	2,6 (1,6-4,2)
FRAIL scale	**<0.05**	0,5 (0,3-0,9)	**<0.05**	2,7 (1,8- 4)	**<0.05**	8,7 (1,7-44,3)	**<0.05**	2,5 (1,6-3,9)	**<0.05**	3,8 (2,4-6,0)
Gröningen	0.73	0,9 (0,5-1,5)	**<0.05**	2,0 (1,4-3)	N insuficiente		**<0.05**	2,0 (1,4-3,1)	0.053	1,6 (1-2,6)
Tilburg	0.84	1,1 (0,6-1,8)	**<0.05**	1,8 (1,2-2,6)	N insuficiente		**<0.05**	2,5 (1,7-3,7)	**<0.05**	1,9 (1,2-3,0)
Clinical Frailty Scale	0.41	1,3 (0,7-2,3)	**<0.05**	2,5 (1,6-3,8)	0.10	3,2 (0,8-13,1)	**<0.05**	3,5 (2,2-5,7)	**<0.05**	2,3 (1,4-3,7)

White: Clinical items other than function
Orange: functional items
Yellow: omics

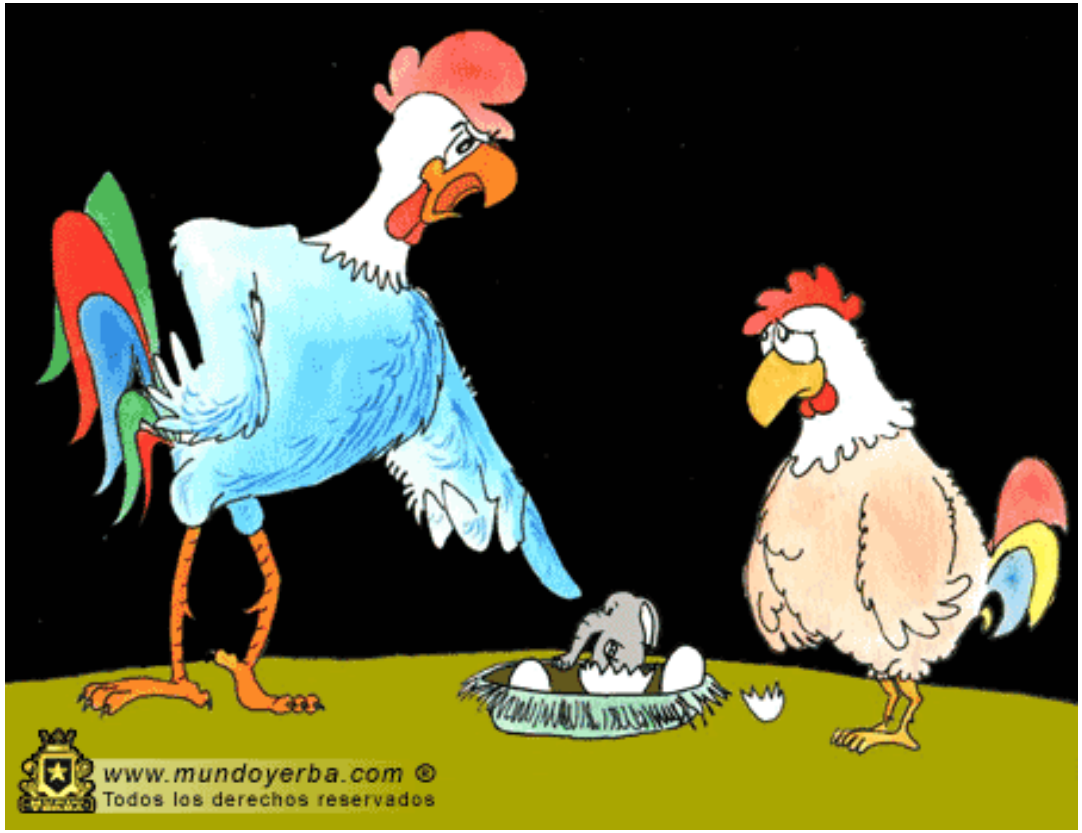
Incl. ABVD / AIVD

VARIABLE	% in MM
DEPRESSION	58.93%
AGE	56.25%
IADL_5items	48.21%
ADL_2_dressing	43.75%
GENDER	32.14%
ADL_1_bathing	26.79%
IADL_2_shopping	24.11%
Sum_Lutein_Zeaxanthin	20.54%
IADL	19.64%
hsa.miR.451a	18.75%
IADL_6_transports	16.07%
SDP	16.07%
WAIST_CIRC	15.18%
HEARTHcoded	13.39%
hsa.miR.125b.5p	13.39%
25_hydroxyvitamin_D3	13.39%
CONGESTIVE_HEART_FAILURE	12.50%
RAGE_mean	11.61%
56884 (Mosaiques)	11.61%

Excl. ABVD / AIVD

VARIABLE	% in MM
AGE	68.75%
DEPRESSION	65.63%
25_hydroxyvitamin_D3	41.67%
WAIST_CIRC	33.33%
hsa.miR.96.5p	23.96%
Sum_Lutein_Zeaxanthin	23.96%
Retinol	22.92%
56884 (Mosaiques)	21.88%
AP_U.L	18.75%
pro.BNP	18.75%
hsa.miR.194.5p	15.63%
IL6_ELISA_pg.MI	15.63%
SDP	13.54%
HEIGHT	12.50%
hsa.miR.451a	12.50%
CH_CH2_CH	12.50%
TROPONIN_T	9.38%
GENDER	7.29%
White_Blood_Cells_nK...L	7.29%

¿Qué sugieren estos hallazgos?

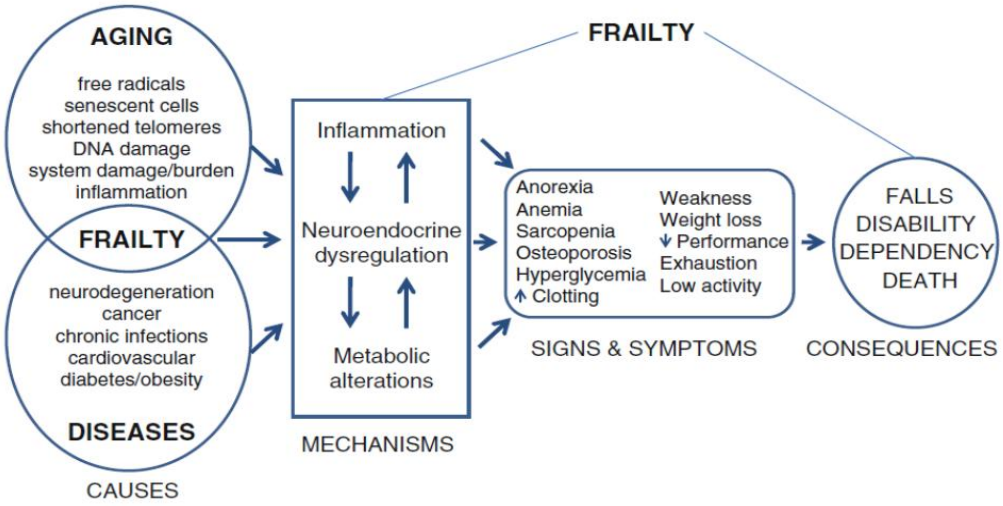


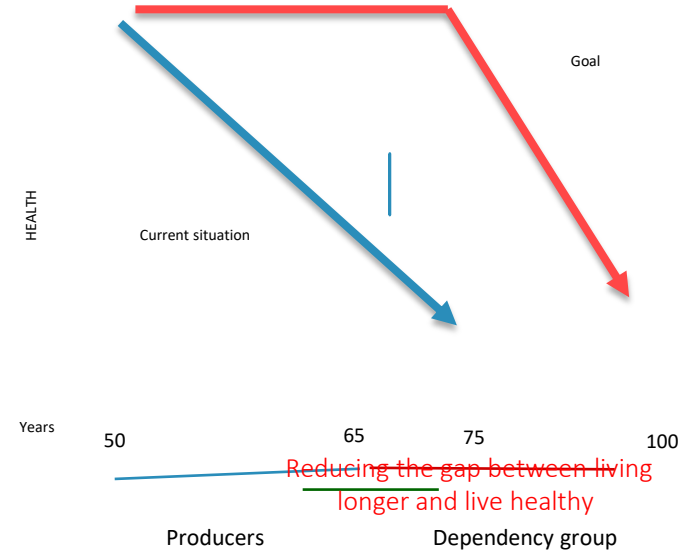
QUE HAY VARIOS FENOTIPOS DE FRAGILIDAD

- Con diferentes bases fisiopatológicas
- Con diferentes características clínicas
- Con diferentes pronósticos
- Con diferentes tratamientos

GUIAS CLINICAS

Frailty: an age associated, biological syndrome characterized by decreased biological reserves, due to deregulation of several physiological systems, which puts an individual at risk when facing minor stressors, and is associated with poor outcomes.





¿Qué pasa si intervenimos en estos pacientes frágiles ?

FASE DE INTERVENCIÓN

GRUPO CONTROL
Tratamiento habitual

GRUPO INTERVENCION
Tratamiento habitual
+
Recomendaciones del geriatra

RESULTADOS:

- Dos tipos de análisis: Intention To Treat /Per protocol
- Outcomes evaluados:
  - Primarios: Mortalidad, readmisiones hospitalarias, institucionalización,
  - Secundarios: ABVD, AIVB, visitas a Urgencias, mejoría en el status de fragilidad.

- A nivel global (I):
  - Menor riesgo de muerte a los 3 meses (OR 0.29) y a los 12 meses (0.56)
  - Menor riesgo de emperoramiento en las ABVD (0.67) y en AIVD a los 3 meses (0.71)

LOS BENEFICIOS SE OBSERVAN EN EL ANALISIS PER PROTOCOL

MID Frail

ORIGINAL ARTICLE

Journal of Cachexia, Sarcopenia and Muscle (2019)
Published online in Wiley Online Library (wileyonlinelibrary.com) **DOI:** 10.1002/jcsm.12432

Effectiveness of a multimodal intervention in functionally impaired older people with type 2 diabetes mellitus

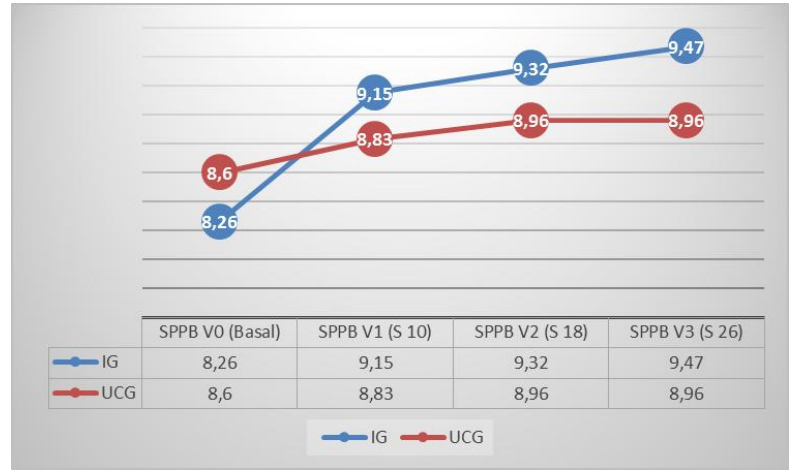
Leocadio Rodriguez-Mañas[1*], Olga Laosa[2], Bruno Vellas[3], Giuseppe Paolisso[4], Eva Topinkova[5], Juan Oliva-Moreno[6], Isabelle Bourdel-Marchasson[7], Mikel Izquierdo[8], Kerry Hood[9], Andrej Zeyfang[10], Giovanni Gambassi[11], Mirko Petrovic[12], Tim C. Hardman[13], Mark J. Kelson[14], Ivan Bautmans[15], Gabor Abellan[3], Michelangela Barbieri[4], Luz M. Peña-Longobardo[6], Sophie C. Regueme[7], Riccardo Calvani[11], Stefanie De Buyser[12], Alan J. Sinclair[16] & on behalf of the European MID-Frail Consortium

MID Frail

Table 3 Result of analysis of the primary outcome (SPPB) and sensitivity analyses.

	Baseline Mean (95% CI)	1 year Mean (95% CI)	Unadjusted mean difference (1 year follow-up—baseline) (95% CI)	Adjusted[a] mean difference (95% CI)	*P*-value	ICC
Primary analysis						
Usual care (*n* = 381)	8.83 (8.58 to 9.09)	8.71 (8.41 to 9.01)	0.66 (0.22 to 1.1)	0.85 (0.44 to 1.26)	<0.001	0.066
Intervention (*n* = 233)	8.55 (8.22 to 8.87)	9.37 (9.04 to 9.70)				
Sensitivity analysis A						
Usual care (*n* = 491)	8.62 (8.39 to 8.86)	8.32 (8.02 to 8.62)	0.46 (0.42 to 0.50)	0.83 (0.58 to 1.11)	0.003	0.062
Intervention (*n* = 353)	8.19 (7.91 to 8.46)	8.78 (8.44 to 9.12)				
Sensitivity analysis B						
Usual care (*n* = 513)	8.58 (8.35 to 8.81)	8.30 (8.00 to 8.59)	0.39 (0.34 to 0.43)	0.81 (0.51 to 1.11)	0.003	0.040
Intervention (*n* = 451)	8.07 (7.81 to 8.32)	8.69 (8.37 to 9.00)				

ICC, interclass correlation coefficient.
[a]Adjusted for baseline SPPB, age, gender, frailty, co-morbidities, and clustering by site.



Rodriguez-Mañas et al., 2019

Journal of Cachexia, Sarcopenia and Muscle 2019
DOI: 10.1002/jcsm.12432

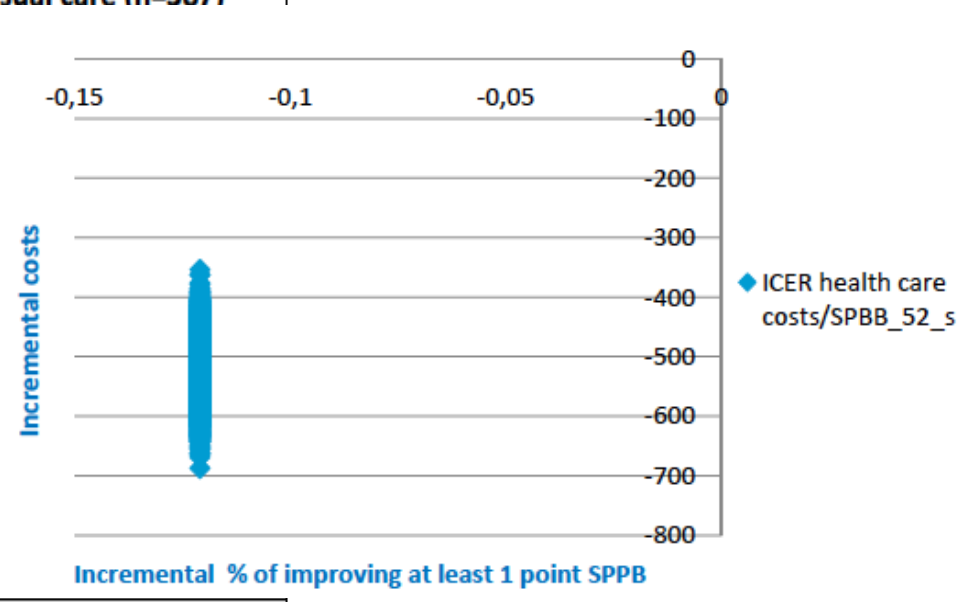
ANALISIS DE COSTES

ICER considerando costes en relación a % de los que mejoran al menos 1 punto en SPPB

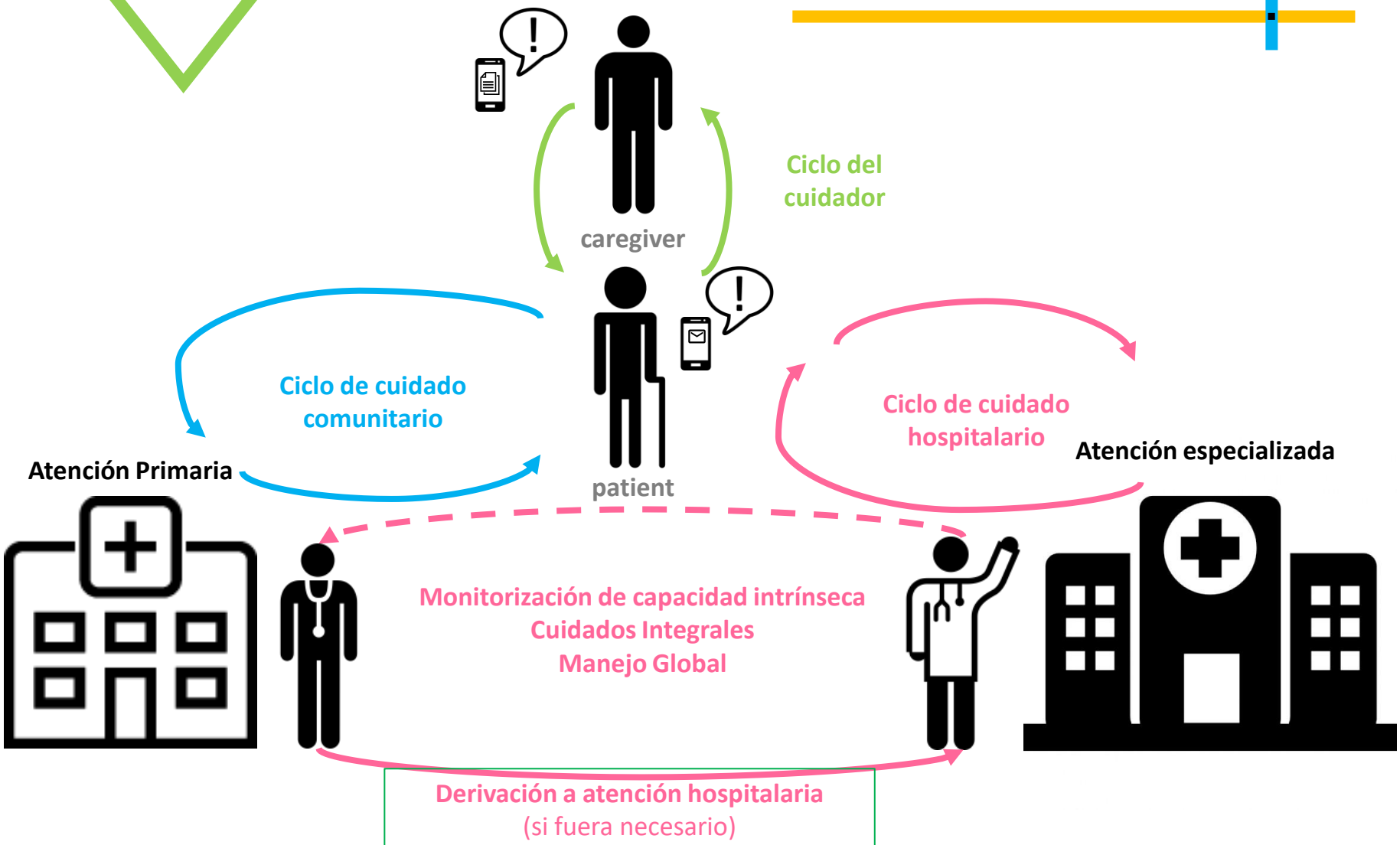
Table 15. Mean annual total care cost by groups. (EUR 2016 per patient)

	Intervention (n=236) Mean (SD)	Usual care (n=387)
Intervention Costs	331.75 (127.75)	
Primary Care Costs	506.14 (1,698.07)	
Medical visits, specialist	244.73 (275.51)	
Medical test/examinations	142.69 (201.15)	
Hospitalizations	540.93 (2,113.08)	
Health-care cost	**1,766.25 (3,159.89)**	
ΔFormal care cost	-18.22 (3,245.17)	
ΔInformal care costs	-255.90 (6,297.36)	
Δ Non healthcare cost	**-274.12 (6,387.03)**	**-27.89 (4,323.04)**
Total Care cost (HC Cost + Δ non HC Cost)	**1,492.12 (7,455.79)**	**2,166.88 (6,736.83)**

8. Note: SD: standard deviation



POSITIVE


caregiver
patient
Ciclo del cuidador
Ciclo de cuidado comunitario
Ciclo de cuidado hospitalario
Atención Primaria
Atención especializada
Monitorización de capacidad intrínseca
Cuidados Integrales
Manejo Global
Derivación a atención hospitalaria
(si fuera necesario)

Van Pilsum Rasmussen et al. BMC Nephrology (2018) 19:8
DOI 10.1186/s12882-017-0806-0

BMC Nephrology

RESEARCH ARTICLE Open Access

Engaging clinicians and patients to assess and improve frailty measurement in adults with end stage renal disease

Sarah Van Pilsum Rasmussen[1], Jonathan Konel[1], Fatima Warsame[2], Hao Ying[1], Brian Buta[3], Christine Haugen[1], Elizabeth King[1], Sandra DiBrito[1], Ravi Varadhan[4], Leocadio Rodríguez-Mañas[5], Jeremy D. Walston[2], Dorry L. Segev[1,5*] and Mara A. McAdams-DeMarco[1,5,6*]

Table 1 ESRD patient survey population characteristics by measured frailty status

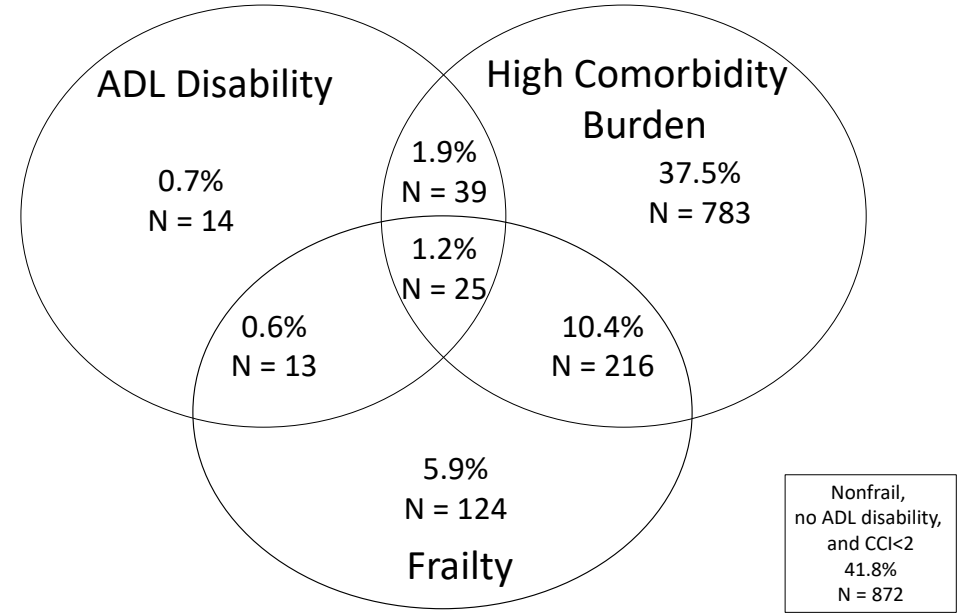
Participant Characteristics	Frail n (%) 95 (20.65)	Not frail n (%) 365 (79.35)	Overall n (%) 460
Sex			
Female	35 (36.8)	143 (19.2)	178 (38.7)
Race			
White	40 (42.1)	173 (47.4)	213 (46.3)
African American	50 (52.6)	159 (43.6)	209 (45.4)
Asian	3 (3.2)	17 (4.7)	20 (4.4)
Native Hawaiian/Pacific Islander	0 (0)	2 (0.6)	2 (0.4)
Other	2 (2.1)	14 (3.8)	16 (3.5)
Age			
< 30	2 (2.1)	19 (5.2)	21 (4.6)
30–39	8 (8.4)	37 (10.1)	45 (9.8)
40–49	16 (16.8)	69 (18.9)	85 (18.5)
50–59	27 (28.4)	113 (40.0)	150 (30.4)
60–69	34 (35.8)	93 (25.5)	127 (27.6)
≥ 70	8 (8.4)	34 (9.3)	42 (9.1)

Nephrology
American Journal of

Original Report: Transplantation

Comorbidity, Frailty, and Waitlist Mortality among Kidney Transplan Candidates of All Ages

Pérez Fernández M.[a] · Martínez Miguel P.[a] · Ying H.[b] · Haugen C.E.[b] · Chu N.M.[c] · Rodríguez Puyol D.M.[a] · Rodríguez-Mañas L.[d] · Norman S.P.[e] · Walston J.D.[f] · Segev D.L.[b,c] · McAdams-DeMarco M.A.[b,c]



	Risk of Mortality	
	1-point increase in CCI score, HR (95% CI)	High Comorbidity Burden, HR (95% CI)
Overall risk	1.08 (1.03-1.13)	1.38 (1.01-1.89)
Frailty		
Nonfrail	1.10 (1.05-1.15)	1.66 (1.17-2.35)
Frail	1.02 (0.92-1.12)	0.75 (0.44-1.29)
P for interaction	0.16	0.01
Age		
<65	1.10 (1.05-1.15)	1.75 (1.22-2.52)
≥65	1.02 (0.92-1.13)	0.97 (0.60-1.56)
P for interaction	0.16	0.04
Race		
Non-black	1.13 (1.06-1.21)	1.72 (1.16-2.55)
Black	1.04 (0.97-1.11)	1.03 (0.67-1.59)
P for interaction	0.31	0.06
Sex		
Male	1.10 (1.05-1.15)	1.53 (1.05-2.24)
Female	1.02 (0.93-1.13)	1.17 (0.74-1.85)
P for interaction	0.17	0.33

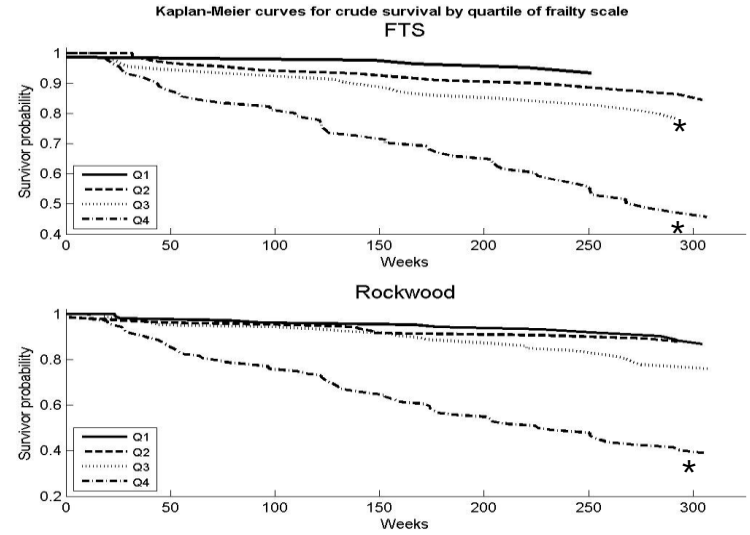
Frailty, but not disease, accounts for the excess of mortality and disability risks, in older people with DM (Toledo Study of Healthy Ageing)

	Model 1. Death with Charlson						
	FTS				Rockwood FS		
Variable	HR	LL	UL		HR	LL	UL
Age	**1,068**	**1,022**	**1,116**		**1,075**	**1,037**	**1,114**
Sex (female)	**0,510**	**0,328**	**0,795**		**0,540**	**0,366**	**0,797**
Charlson Index	1,009	0,894	1,138		0,987	0,882	1,104
Disability	1,292	0,748	2,231		1,095	0,653	1,839
Frailty I.*	**1,042**	**1,025**	**1,059**		**1,063**	**1,041**	**1,085**
Frailty I.**	**1,229**	**1,134**	**1,333**		**1,356**	**1,222**	**1,503**
Frailty I.***	**1,511**	**1,286**	**1,776**		**1,838**	**1,494**	**2,260**

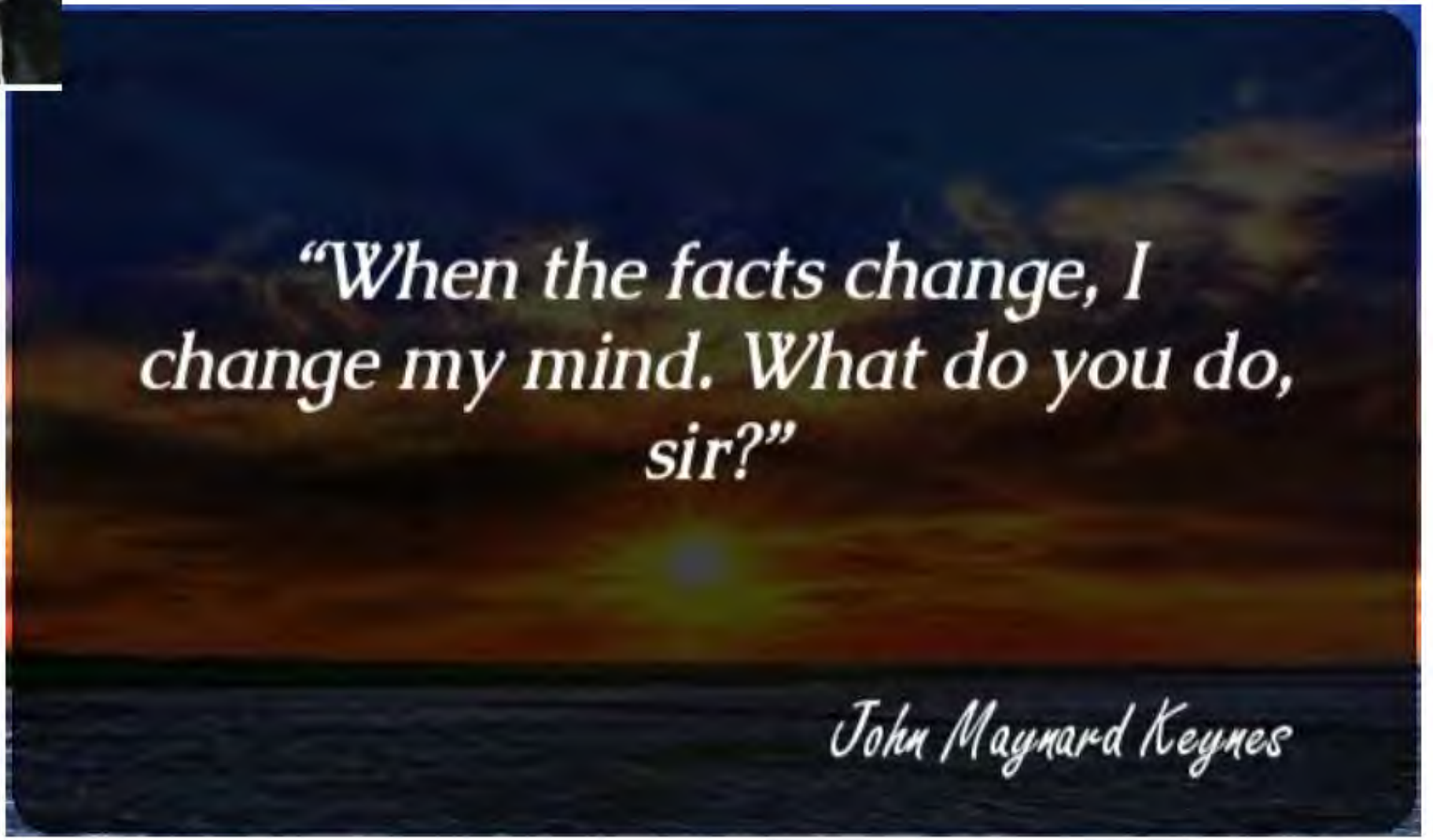
	Model 3: Incident disability with Charlson						
	FTS				Rockwood FS		
Variable	OR	LL	UL		OR	LL	UL
Age	1,051	0,980	1,127		**1,092**	**1,026**	**1,161**
Sex (female)	1,475	0,759	2,868		**2,077**	**1,152**	**3,744**
Charlson Index	1,129	0,951	1,341		1,042	0,879	1,235
Frailty I.*	**1,031**	**1,005**	**1,058**		**1,053**	**1,012**	**1,095**
Frailty I.**	**1,165**	**1,025**	**1,325**		**1,292**	**1,060**	**1,576**
Frailty I.***	**1,358**	**1,050**	**1,757**		**1,670**	**1,123**	**2,482**

ESTUDIO TOLEDO ENVEJECIMIENTO SALUDABLE

TOLEDO STUDY FOR HEALTHY AGING



Castro M et al., JAMDA 2016


"When the facts change, I change my mind. What do you do, sir?"
John Maynard Keynes

TITLE: THE THIRD TRANSITION – the Clinical Evolution oriented to the Contemporary Older Patient

Authors and affiliation

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Alan J Sinclair, MD, PhD
Diabetes Frail Ltd, UK and University of Aston, UK

DEMOGRAPHIC TRANSITION → **EPIDEMIOLOGIC TRANSITION** → **CLINICAL TRANSITION**

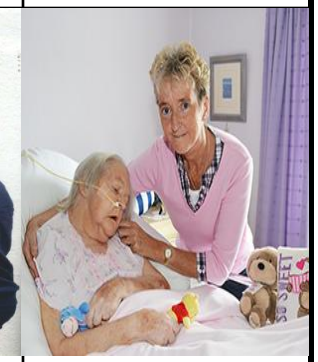
JAMDA, 2017

La fragilidad como un estado functional dinámico

CUIDADOS CENTRADOS EN

Prevenir la fragilidad	Prevenir la Discapacidad Tratar la Fragilidad	Prevenir la Discapacidad Tratar el Declinar Funcional	Prevenir la Dependencia Tratar la Discapacidad	Manejar la Dependencia

Potencial reversibilidad del Declinar funcional

	Robusto	Frágil	Limitación Funcional	Discapacidad	Dependencia
Definición					
Intervenciones	**Qué** **Cómo** **Dónde** ?	**Qué** **Cómo** **Dónde** ?	**Qué** **Cómo** **Dónde** ?	**Qué** **Cómo** **Dónde** ?	**Qué** **Cómo** **Dónde** ?

LA TERCERA TRANSICIÓN

ROMPIENDO LA INERCIA CLINICA

CURAR

ENFERMEDAD

SUPERVIVENCIA

HACER

LARGO PLAZO

REACTIVA

CUIDADOS EPISODICOS

CUIDAR

FUNCION

CALIDAD DE VIDA

RATIO RIESGO/BENEFICIO

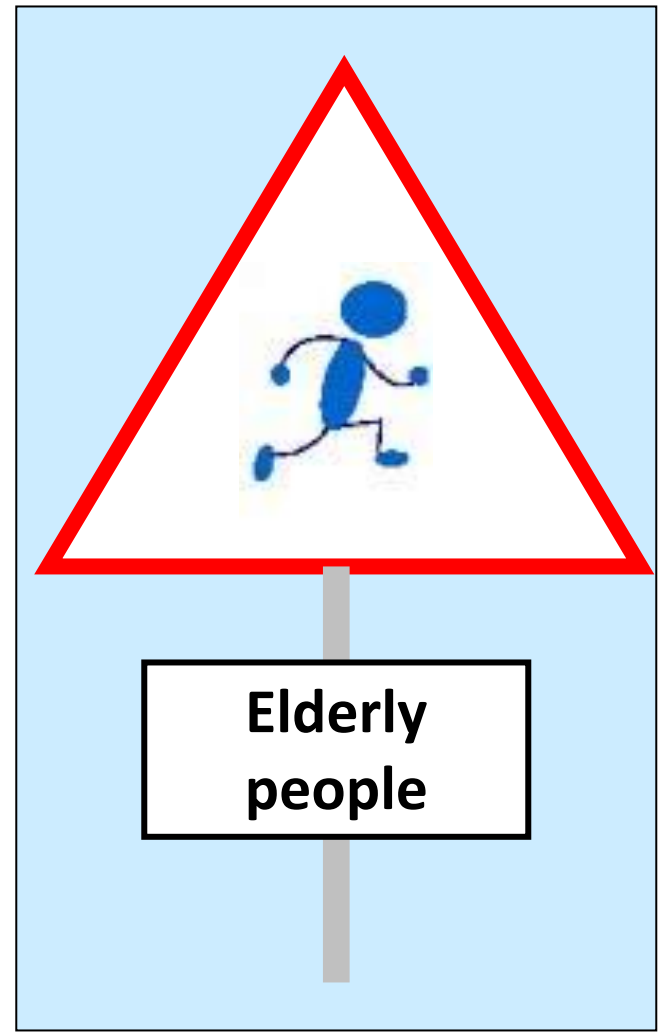
MARCO TEMPORAL

PREVENTIVA

ATENCION INTEGRAL/CONTINUA

Rodriguez-Mañas et al., JAMDA 2017
Rodriguez-Mañas et al, ADVANTAGE proposal, 2016

NUESTRO OBJETIVO ES:



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