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**advant****GE**  
MANAGING FRAILITY

# Challenges of treating frail patients in geriatric services

Graziano Onder

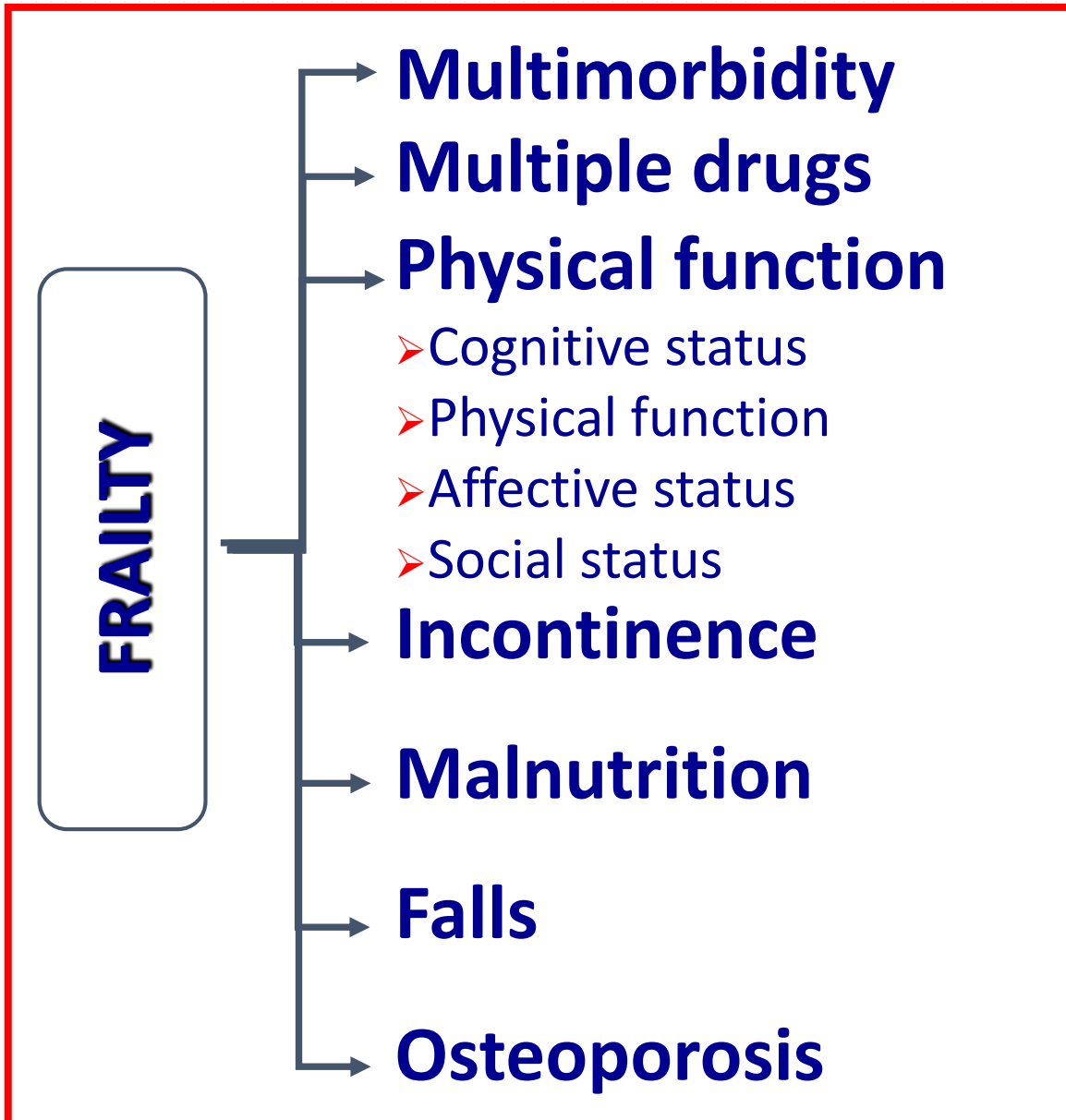
Università Cattolica del Sacro Cuore, Rome, IT

**KONFERENCA: OBVLADOVANJE KRHKOSTI DANES ZA JUTRI**  
**CONFERENCE: FRAILITY MANAGEMENT TODAY FOR TOMORROW**  
Kongresni center Brdo, November 22nd 2017

ADVANTAGE JA

Joint Action on Prevention of frailty 2017-2019

# *The 'modern' patient (or... the frail and complex patient)*

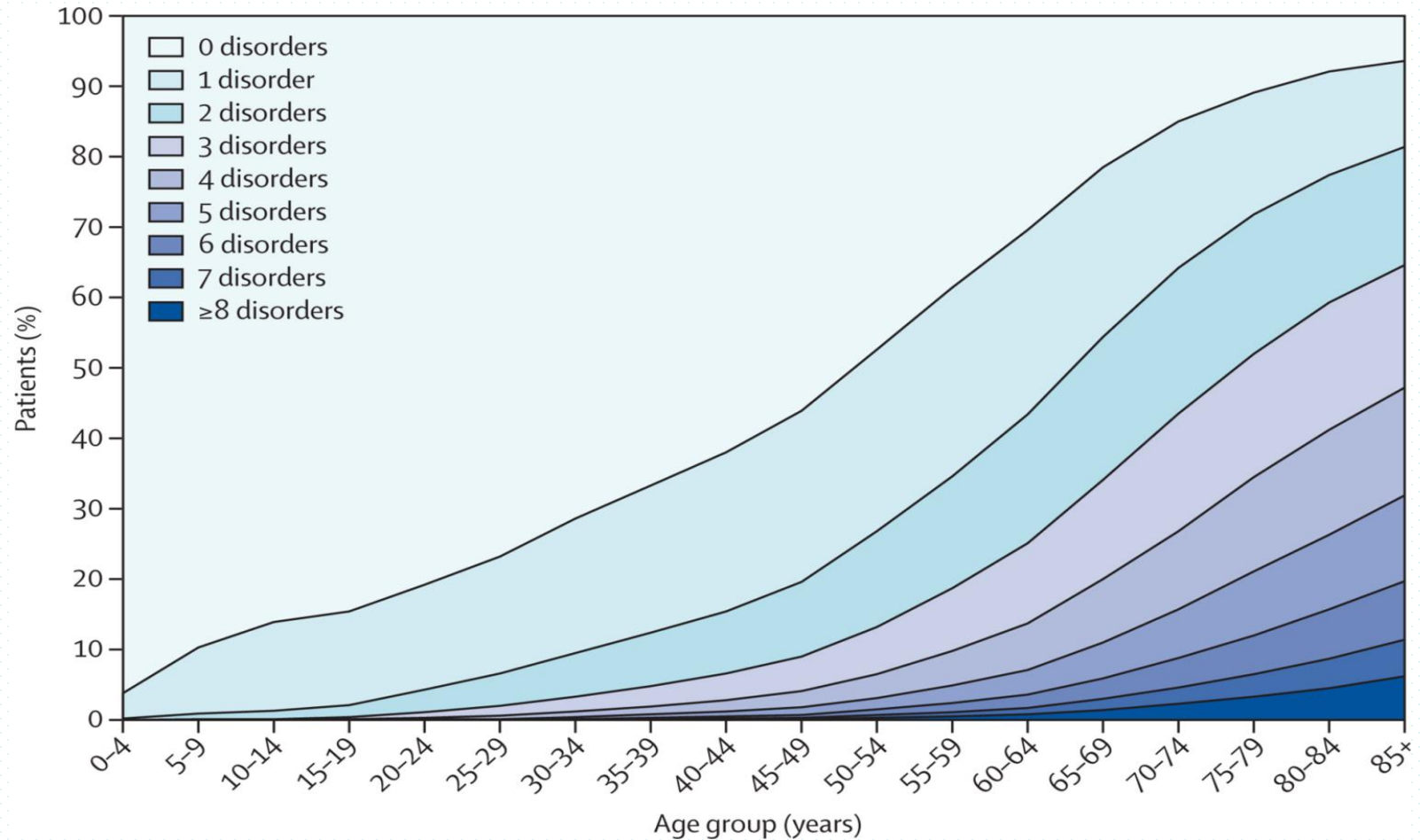


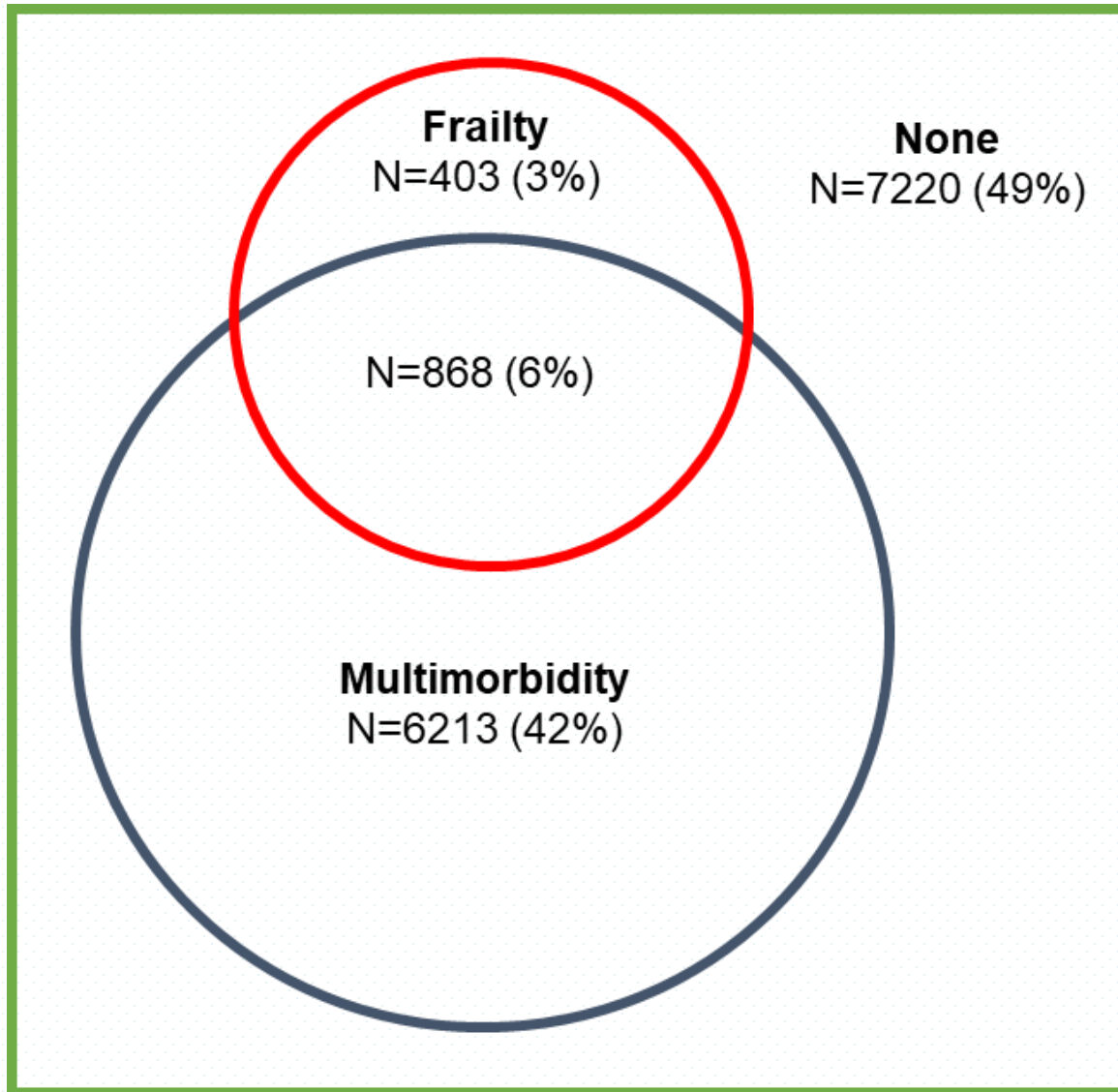
*Researchers have largely shied away from the complexity of multiple chronic conditions — avoidance that results in expensive, potentially harmful care of unclear benefit.*

# Multimorbidity

- Defined as  $\geq 2$  **chronic diseases**
- Prevalence  $\uparrow$  with age (>60% of people aged  $\geq 65$  y with multimorbidity - '**most common chronic condition**')
- Impact on **clinical outcomes** and health care **costs**
- Multimorbidity also affects processes of care and may result in complex care needs
- The **traditional single-disease approach inadequate** for multimorbidity

# Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study





## Frailty and multimorbidity overlap (pooled data from 9 studies; n=14704).

Frailty was defined according to the CHS criteria and multimorbidity defined as 2+ diseases.

# Comorbidity and social factors predicted hospitalization in frail elderly patients

Francesco Landi<sup>a,\*</sup>, Graziano Onder<sup>a,b</sup>, Matteo Cesari<sup>a,b</sup>, Christian Barillaro<sup>a</sup>,  
Fabrizia Lattanzio<sup>c</sup>, Pier Ugo Carbonin<sup>a</sup>, Roberto Bernabei<sup>a</sup>, on behalf of the  
SILVERNET-HC Study Group<sup>1</sup>

2004;57:832-836

Age  
65-74  
75-84  
85+

Loneliness

Economical pr.

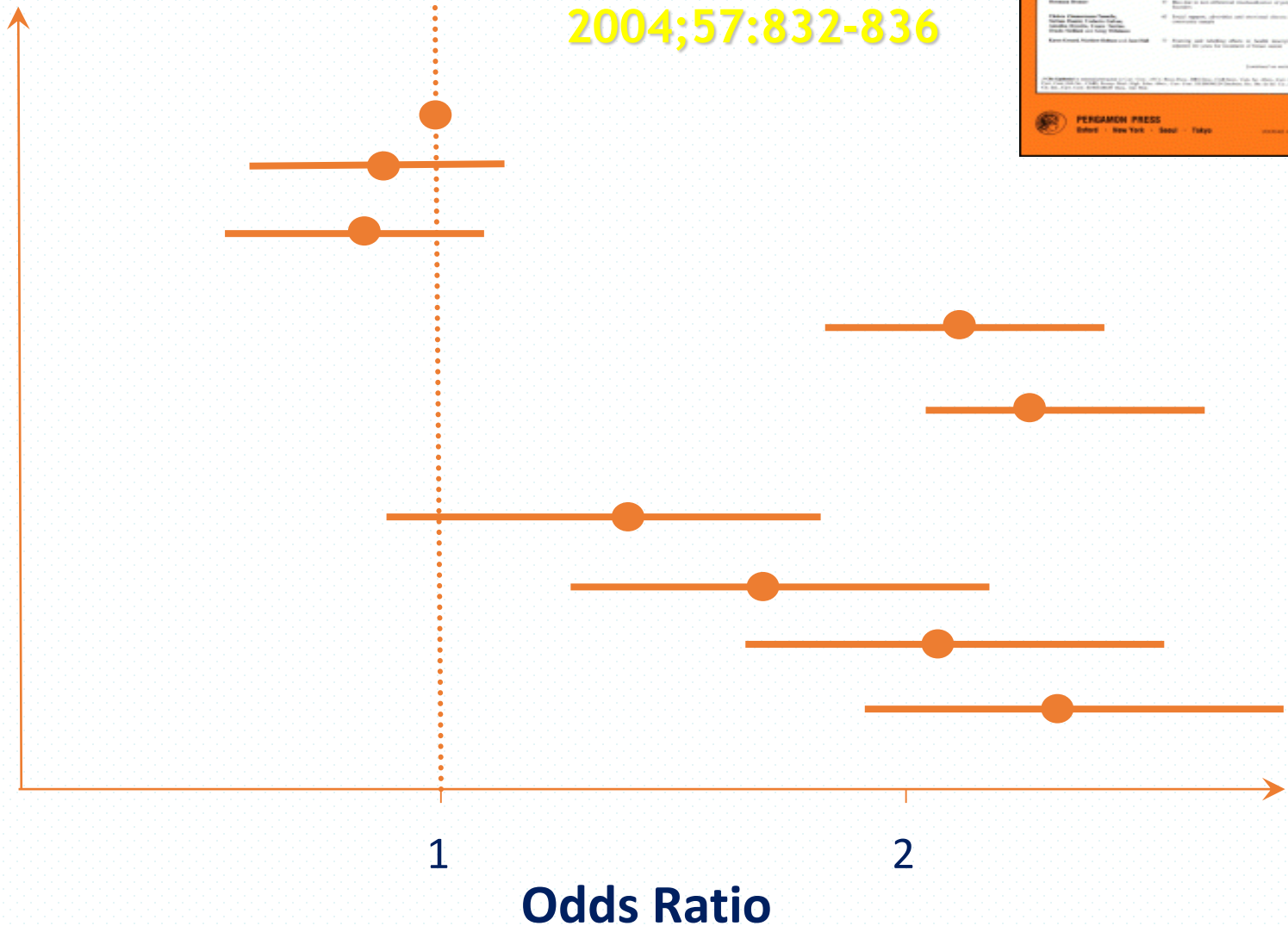
Diseases

1-2

3-4

5+

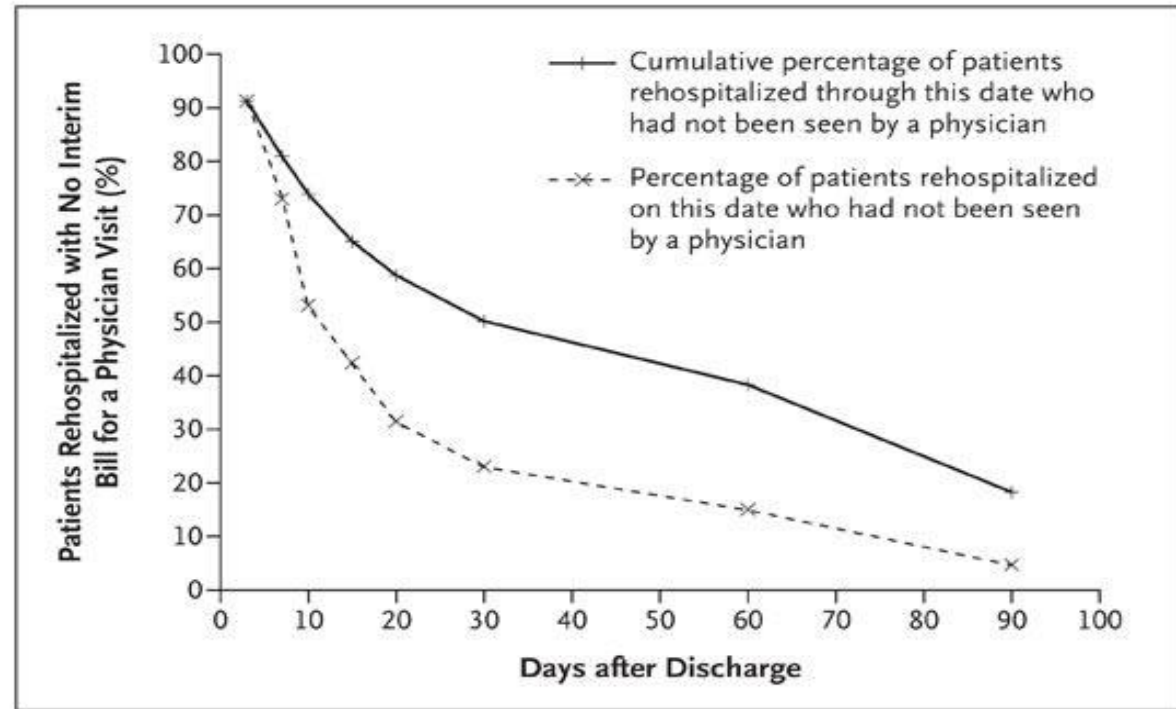
Former  
hospitalization



# Predictors of Rehospitalization within 30 Days after Discharge.

**Table 3. Predictors of Rehospitalization within 30 Days after Discharge.\***

Variable	Hazard Ratio (95% Confidence Interval)
Hospital's ratio of observed to expected hospitalizations†	1.097 (1.096–1.098)
National rehospitalization rate for DRG‡	1.268 (1.267–1.270)
No. of rehospitalizations since October 1, 2003	
0	1.00
1	1.378 (1.374–1.383)
2	1.752 (1.746–1.759)
≥3	2.504 (2.495–2.513)
Length of stay	
>2 times that expected for DRG	1.266 (1.261–1.272)
0.5–2 times that expected for DRG	1.00
<0.5 times that expected for DRG	0.875 (0.872–0.877)
Race‡	
Black	1.057 (1.053–1.061)
Other	1.00
Disability	1.130 (1.119–1.141)
End-stage renal disease	1.417 (1.409–1.425)
Receipt of Supplemental Security Income	1.117 (1.113–1.122)
Male sex	1.056 (1.053–1.059)
Age	
<55 yr	1.00
55–64 yr	0.983 (0.978–0.988)
65–69 yr	0.999 (0.989–1.009)
70–74 yr	1.023 (1.012–1.035)
75–79 yr	1.071 (1.059–1.084)
80–84 yr	1.101 (1.089–1.113)
85–89 yr	1.123 (1.111–1.136)
>89 yr	1.118 (1.105–1.131)



19.6% rehospitalized within 30 days  
 ...50.2% of the patients who were rehospitalized within 30 days, were not seen by a physician

# Care pathway for patients with multimorbidity or frailty

	First contact	Clinical assessment	Intervention
Definition	Screening for multimorbidity and frailty	Clinical assessment	Care of frailty or multimorbidity
How	Diseases count and frailty screening	Clinical judgement and risk stratification tools (for those with multimorbidity)	Multimorbidity care model or chronic care model
Who	GP or trained healthcare professional	GP	Clinical practice
When	Every contact the person may have with public health services	Once multimorbidity or frailty are identified	Once screened positively and the GP has certified the complexity of unmet clinical and non clinical needs

Onder G et al.  
*Eur J Intern Med* 2017

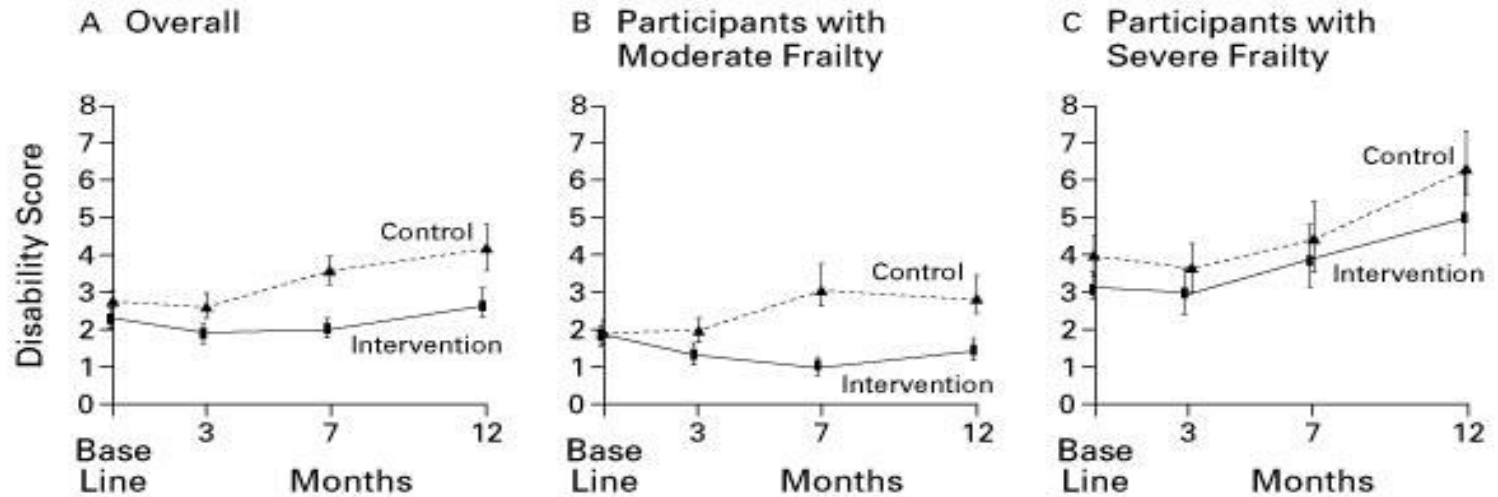




# Risk stratification/target identification

- Older population might have different characteristics
  - Benefits may vary depending on type of population
  - Risk stratification tools might help to:
    - target intervention to most care demanding population
    - target intervention on people that can take a benefit
- (Impactability)**

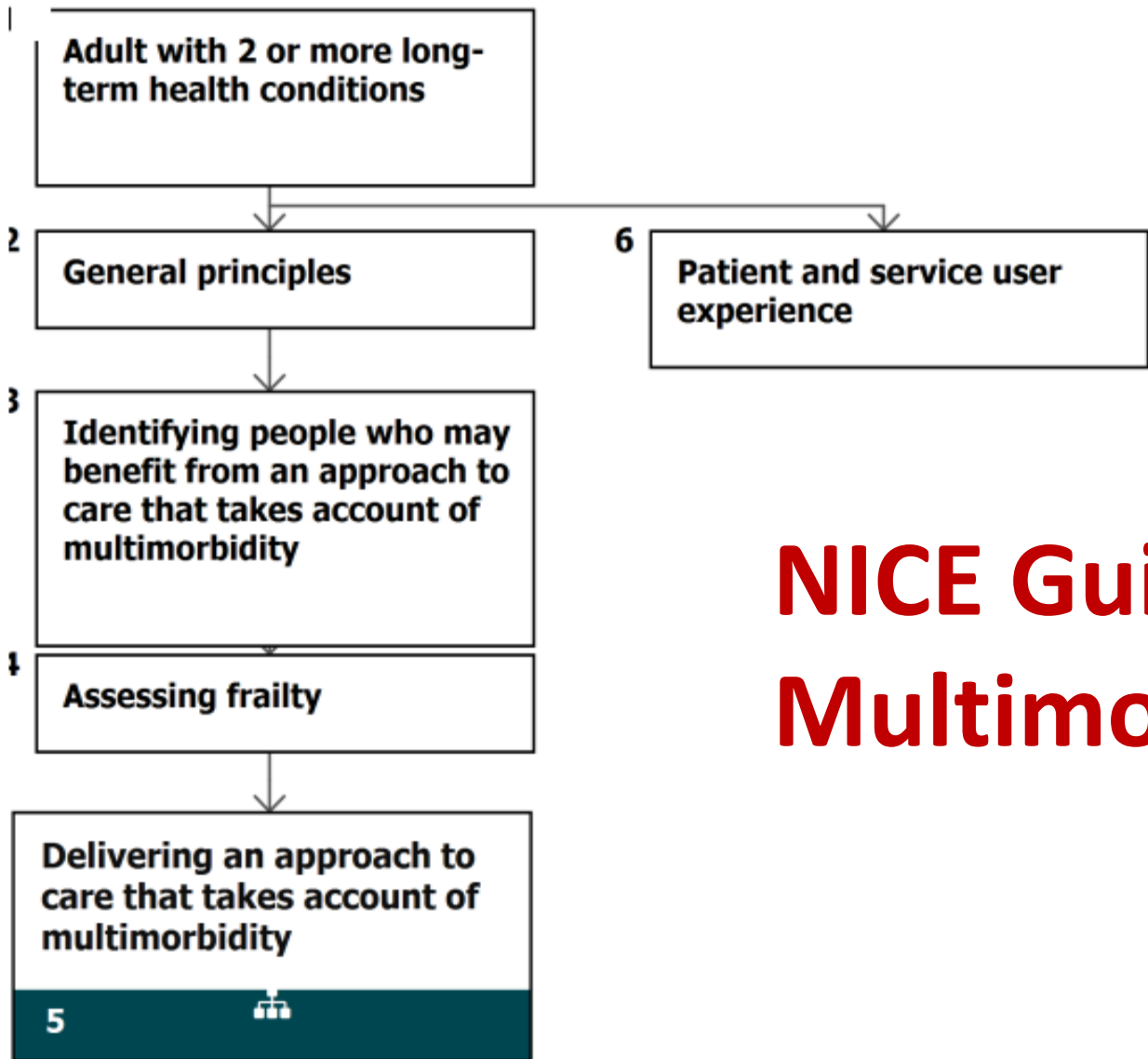
# A program to prevent functional decline in physically frail, elderly persons



	Base Line	3	7	12	Base Line	3	7	12	Base Line	3	7	12
No. of participants												
Intervention group	94	91	91	88	60	58	58	58	34	33	33	30
Control group	94	91	90	90	56	55	54	54	38	36	36	36
Disability score												
Intervention group	2.3	1.9	2.0	2.7	1.9	1.3	1.0	1.4	3.1	3.0	3.9	5.0
Control group	2.8	2.6	3.6	4.2	1.9	2.0	3.0	2.8	4.0	3.6	4.4	6.3
Change (%)	—	15	45	37	—	25	66	53	—	1.7	5.1	16s
P value	—	0.48	0.008	0.02	—	0.40	<0.001	0.005	—	0.95	0.87	0.50

# Risk stratification/target identification

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- Benefits may vary depending on type of population
- Risk stratification tools might help to:
  - target intervention to most care demanding population
  - target intervention on people that can take a benefit  
**(Impactability)**
  - select a reasonable number of patients (sensitivity and specificity)



# NICE Guidelines Multimorbidity

# Tools to screen and diagnose frailty

1. **CHS/Frailty criteria**
2. **Frailty Index of accumulative deficits (FI-CD)**
3. Frailty Index from CGA
4. Study of Osteoporotic Fractures Index (SOF)
5. Edmonton Frailty Scale
6. FRAIL Index
7. Clinical Frailty Scale
8. MPI
9. Tilburg Frailty Index
10. Prisma-7
11. Groningen Frailty Indicator
12. *Sharebrooke Postal Questionnaire*
13. *Gerontopole Frailty Screening tool*
14. Kihon Check list
15. *Inter-Frail*
16. FiND
17. Physical Frailty and Sarcopenia
18. FRAIL-NH
19. Frailty Trait Scale
20. SPPB
21. Gait Speed

# Frailty screening – Conclusions WP4 JA

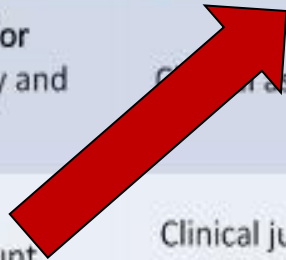
## ADVANTAGE

- We recommend that all persons older than 70 years should be screened for frailty.
- ... we propose a range of instruments to pick first in a screening phase...
- The choice of the tool should be contextualized to practice priorities and characteristics.

*Frailty measurements can be likened to ‘horses for courses’, wherein different frailty measurements are suited to different populations. Some are better for population-level frailty screening, whereas others are best suited for clinical screening, or for clinical assessment (Dent et al EJIM 2015)*

# Care pathway for patients with multimorbidity or frailty

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*Onder G et al.  
Eur J Intern Med 2017*



Time to face the challenge of multimorbidity. A European perspective from the joint action on chronic diseases and promoting healthy ageing across the life cycle (JA-CHRODIS)



Graziano Onder <sup>a,b,\*</sup>, Katie Palmer <sup>b</sup>, Rokas Navickas <sup>c,d</sup>, Elena Jurevičienė <sup>c</sup>, Federica Mammarella <sup>a,b</sup>, Mirela Strandzheva <sup>e</sup>, Piermannuccio Mannucci <sup>f</sup>, Sergio Pecorelli <sup>b</sup>, Alessandra Marengoni <sup>b,g</sup>, on behalf of the, Joint Action on Chronic Diseases and Promoting Healthy Ageing across the Life Cycle (JA-CHRODIS)

## Patients with MM at high risk (target for intervention):

- Disease patterns
- Low socioeconomic status
  - Low income
  - Poor social support
- Poor physical function
- Mental health problems
  - Depression
  - Cognitive impairment

**Need of comprehensive assessment and intervention**

*Monographic issue  
Eur J Intern Med 2015*

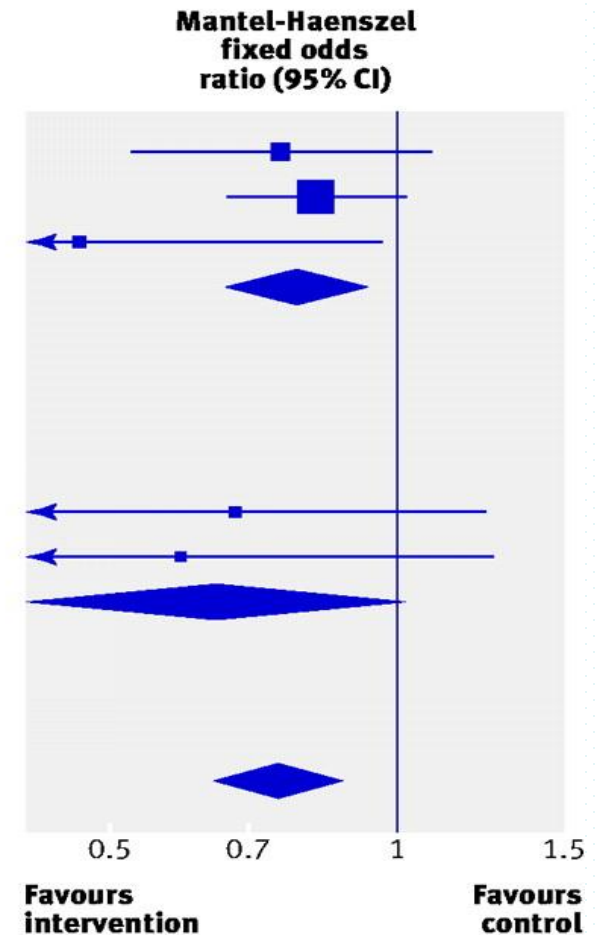




# CGA for older adults admitted to hospital

	No of events/total	
	Comprehensive geriatric assessment	Control
<b>Ward</b>		
Landefeld 1995 <sup>35</sup>	72/327	88/324
Counsell 2000 <sup>26</sup>	237/767	269/764
Rubenstein 1984 <sup>45</sup>	26/63	36/60
Subtotal (95% CI)	335/1157	393/1148
Test for heterogeneity: $\chi^2=2.19$ , df=2, P=0.33, I <sup>2</sup> =9%		
Test for overall effect: z=2.76, P=0.006		
<b>Team</b>		
McVey 1989 <sup>38</sup>	32/93	40/92
Thomas 1993 <sup>51</sup>	17/68	23/64
Subtotal (95% CI)	49/161	63/156
Test for heterogeneity: $\chi^2=0.08$ , df=1, P=0.78, I <sup>2</sup> =0%		
Test for overall effect: z=1.84, P=0.07		
<b>Total (95% CI)</b>	<b>384/1318</b>	<b>456/1304</b>
Test for heterogeneity: $\chi^2=2.81$ , df=4, P=0.59, I <sup>2</sup> =0%		
Test for overall effect: z=3.24, P=0.001		

Test for subgroup differences:  $\chi^2=0.54$ , df=1, P=0.46, I<sup>2</sup>=0%



OR for death or deterioration

	Costs	
	Intervention	Control
Cohen 2002, <sup>22</sup> US:		
Geriatric unit-usual care outpatient v usual care inpatient-usual care outpatient	\$36 592 (SD 1844)	\$38 624 (SD 2037)
Geriatric unit-geriatric outpatient v usual care inpatient-geriatric outpatient	\$35 935 (SD 1829)	\$35 951 (SD 1827)
Collard 1985, <sup>25</sup> US:		
Choate	\$4015.17 (SE 0.03)	\$4545.13 (SE 0.03)
Symmes	\$3591.42 (SE 0.03)	\$4155.54 (SE 0.02)
Fretwell 1990, <sup>27</sup> US	\$3148 (SD 7210)	\$4163 (SD 18 406)
Applegate 1990, <sup>19</sup> US:		
Geriatric unit (rehab diagnosis) v usual care (rehab diagnosis)	\$32 978 (SD 35 130)	\$18 409 (SD 16 555)
Geriatric unit (medical/surgical diagnosis) v usual care (medical/surgical diagnosis)	\$25 846 (SD 29 628)	\$15 248 (SD 13 152)
Asplund 2000, <sup>21</sup> Sweden (Swedish kroner)	10 800 (IQR 9300-12 300)	12 800 (IQR 11 500-14 100)
Counsell 2000, <sup>26</sup> US	\$5640	\$5754
Hogan 1987, <sup>30</sup> Canada	\$C98.36	\$C77.68
Landefeld 1995, <sup>35</sup> US	\$6608	\$7240
Nikolaus 1999, <sup>41</sup> Germany (deutschmark):		
Geriatric unit-early supported discharge	3 365 000 (\$1 922 400)	4 145 000 (\$2 368 300)
Geriatric unit only	3 983 000 (\$2 276 600)	
Rubenstein 1984, <sup>45</sup> US	\$22 597	\$27 826
Naughton 1994, <sup>40</sup> US	\$4525 (SD 5087)	\$6474 (SD 7000)
White 1994, <sup>52</sup> US	\$23 906	\$45 189

Many of the **hospital costs** seem to show a reduction in costs ... Some trials reported greater costs in the treatment group for hospitals. If **nursing home** costs are taken into consideration, the potential benefit of comprehensive geriatric assessment might be greater.

# Effect of Home Visits on Functional Impairment

## Type of Intervention

### No Multidimensional Assessment and Follow-up

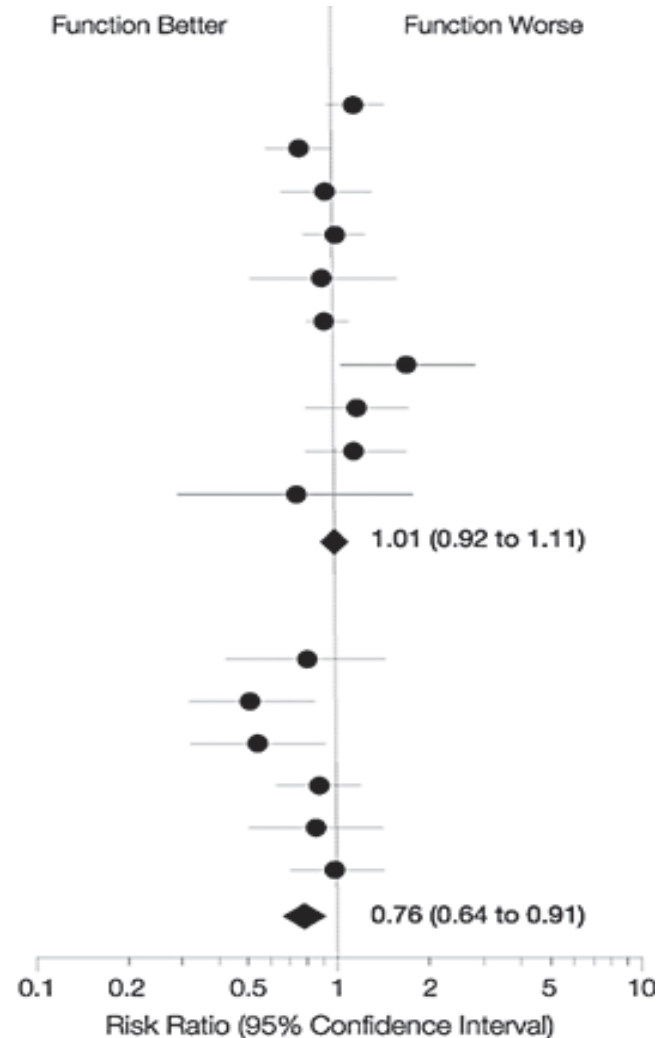
- Vetter et al,<sup>29</sup> 1984 (Gwent)
- Vetter et al,<sup>29</sup> 1984 (Powys)
- Sorensen et al,<sup>19</sup> 1988
- Carpenter and Demopoulos,<sup>20</sup> 1990
- McEwan et al,<sup>21</sup> 1990
- Vetter et al,<sup>31</sup> 1992
- Clarke et al,<sup>22</sup> 1992
- Pathy et al,<sup>30</sup> 1992
- van Rossum et al,<sup>16</sup> 1993
- Newbury et al,<sup>15</sup> 2001

### Overall

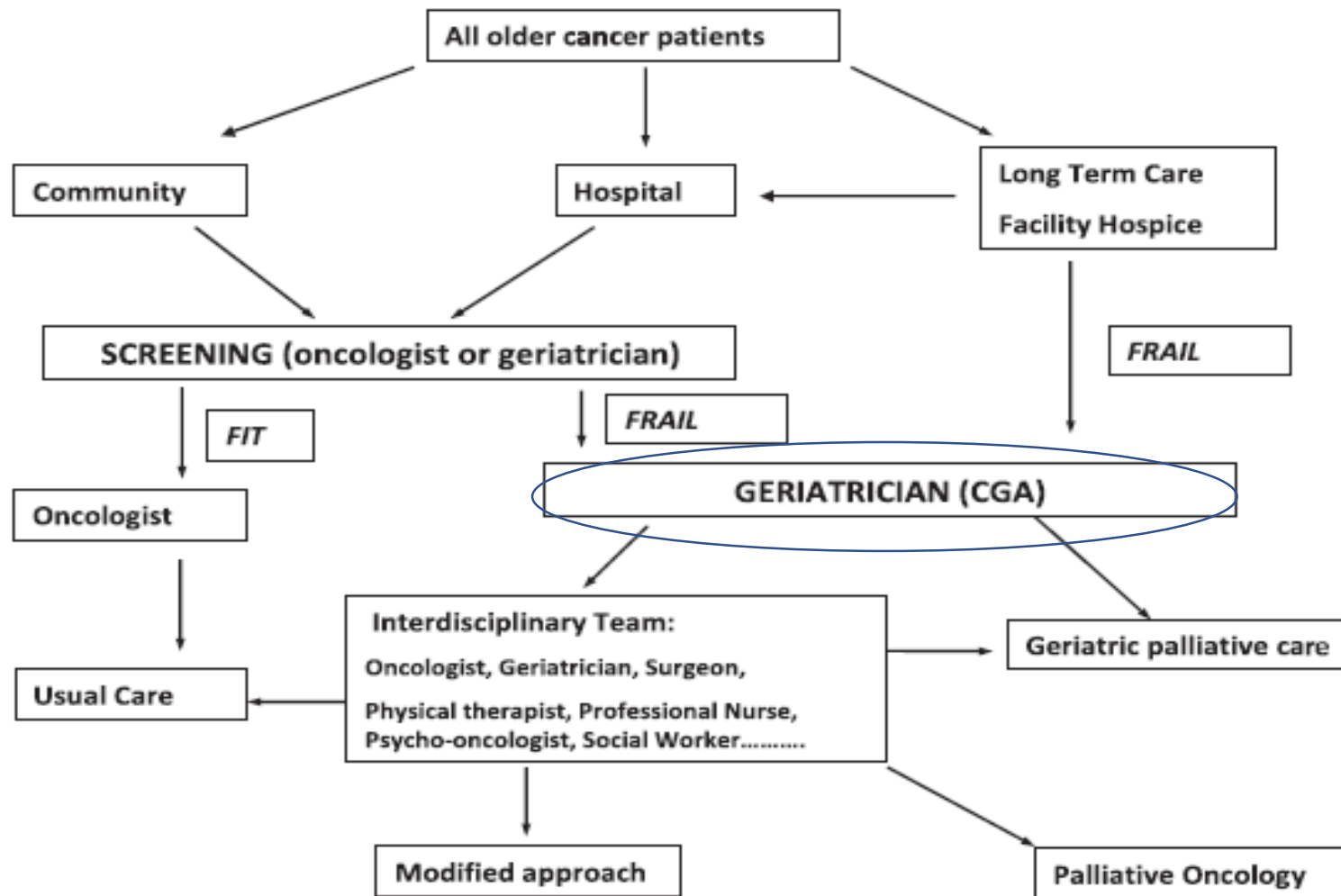
### Multidimensional Assessment and Follow-up

- Fabacher et al,<sup>22</sup> 1994
- Tinetti et al,<sup>23</sup> 1994
- Stuck et al,<sup>7</sup> 1995
- Stuck et al,<sup>9</sup> 2000
- van Haastregt et al,<sup>14</sup> 2000
- Hebert et al,<sup>32</sup> 2001

### Overall



# Assessment and treatment of elderly patients with cancer



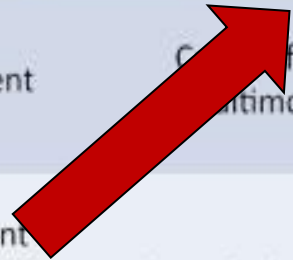
# Frailty assessment – Conclusions WP4 JA

## ADVANTAGE

...**the gold standard** for diagnosing the functional status of the person (that includes frailty status) **is the comprehensive geriatric assessment (CGA)**. It is therefore important, when screening is positive, to perform a CGA and to diagnose frailty by the use of validated scales, derived from the CGA...

# Care pathway for patients with multimorbidity or frailty

	First contact	Clinical assessment	Intervention
<b>Definition</b>	Screening for multimorbidity and frailty	Clinical assessment	Confirmation of frailty or multimorbidity
<b>How</b>	Diseases count and frailty screening	Clinical judgement and risk stratification tools (for those with multimorbidity)	Multimorbidity care model or chronic care model
<b>Who</b>	GP or trained healthcare professional	GP	Clinical practice
<b>When</b>	Every contact the person may have with public health services	Once multimorbidity or frailty are identified	Once screened positively and the GP has certified the complexity of unmet clinical and non clinical needs



*Onder G et al.  
Eur J Intern Med 2017*



# How to organize the care?

- Review (BMJ 2012 Sep 3;345:e5205) → Evidence on the care of patients with multimorbidity is limited...  
**Interventions had mixed effects...**



**Lack of standardization**

# Review of care pathways for Multimorbidity and Frailty

Scientific literature review + field survey

- **Programs varied** in the target patient groups, implementation settings, number of included interventions, and number of chronic care model components
- **Different components of the intervention were identified (comprehensive programs)**
- **Effectiveness of the programs rarely evaluated**



*Hopman et al. Health Policy. 2016*





# Good Clinical Practices



	POTKU, Finland	Clinic for Multimorbidity and Polypharmacy, Denmark	Strategy for Chronic Care Valencia Region, Spain
<b>Main aim:</b>	Improve patient-centredness	Substitution, support primary care	Improve delivery of integrated care
<b>Target group:</b>	Chronic patients	Chronic patients with more complex needs	Patients with ‘highly complex needs’
<b>Based in:</b>	Primary care	Diagnostic clinic in hospital	Primary care + hospital care
<b>Care model:</b>	PC doctor/nurse teams, individual care plan	teams of specialists/others, ‘one day’-service, treatment plan for care by PC doctor	Community nurse case manager + hospital nurse case manager, joint monitoring

# Develop a common model for multimorbidity management

## Delivery system design

- Comprehensive assessment
- Coordinated team
- Individualized care plans
- Case manager

## Decision support

- Implementation of EBM
- Team training
- Consultation system

## Self management

- Tailor Self-management
- Options for self management
- Shared decision making

## Clinical information system

- Electronic patients records
- Exchange patients infos
- Uniform coding
- Patient operated technology

## Community resources

- Access community resources
- Involvement of social network

*Palmer K et al. Health policy 2017*

# Develop a common model for multimorbidity management

16 components identified

For each component:

- Description and aims
- Key characteristics
- Relevance to multimorbidity patients

The model derives from *expert opinion*.

Its applicability should be tested in pilot actions



The CHRODIS PLUS Joint Action of the European Union supports Member States through cross-national initiatives identified in the JA-CHRODIS (2013-2016) to reduce the burden of chronic diseases.

CHRODIS PLUS promotes the **implementation of policies and practices** with demonstrated success in closely monitored implementation experiences.

# Assess outcomes



- Organize your practice
- Follow up and reassess
- **Assess outcomes**



**Assess and  
understand you  
own evidence**

# Good Clinical Practices



	Quality of care	Patient outcomes	Utilization / costs
POTKU, Finland	Patients with individual care plan more positive (PACIC). Care providers experience improved quality.		Use of primary care decreased (2012-2014), except phone calls to nurses.
Clinic for Multimorbidity and Polypharmacy, Denmark	Improved quality and coordination of care according to care providers involved		“The multimorbidity clinic results in a more efficient use of hospital resources.”
Strategy for Chronic Care Valencia Region, Spain		Between 2011 and 2013 decrease of older people with polypharmacy of 34 300 (-10%).	In 2012-2014, > 200 000 patients with polypharmacy reviewed and 100 000 drug prescriptions changed, resulting in decrease of expenditures on drugs, from 19.5 million Euros in 2012 to 7.3 million in 2014.

# Conclusions

Challenge related to complexity of frail patients

Key steps of geriatric practices:

- Screening → site specific
- Assessment patients → CGA
- Intervention → integrated care model
- Assessment of outcomes

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