Third session: patient-centered care
THE ROLE OF PREVENTION AND LIFE-STYLE

Salvatore Corrao

U.O.C. Medicina Interna II
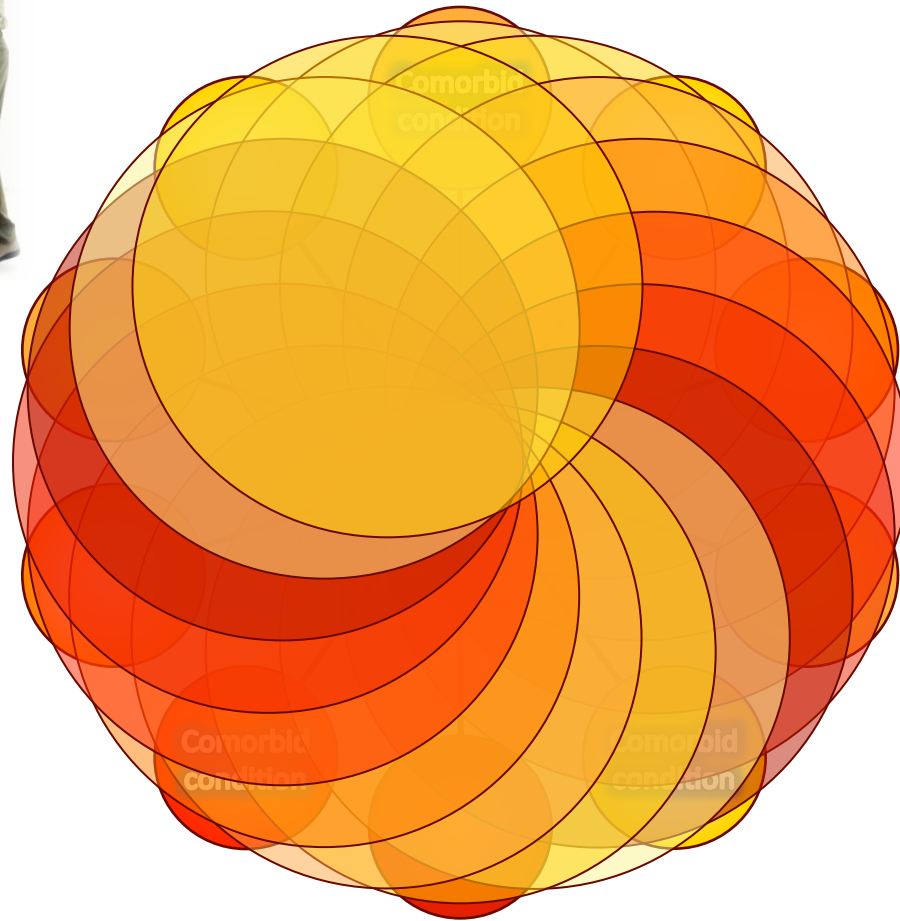**A.R.N.A.S. Civico – Di Cristina – Benfratelli**
Palermo

Di.Bi.M.I.S.
C.R.E.A.M.
Università degli Studi di Palermo

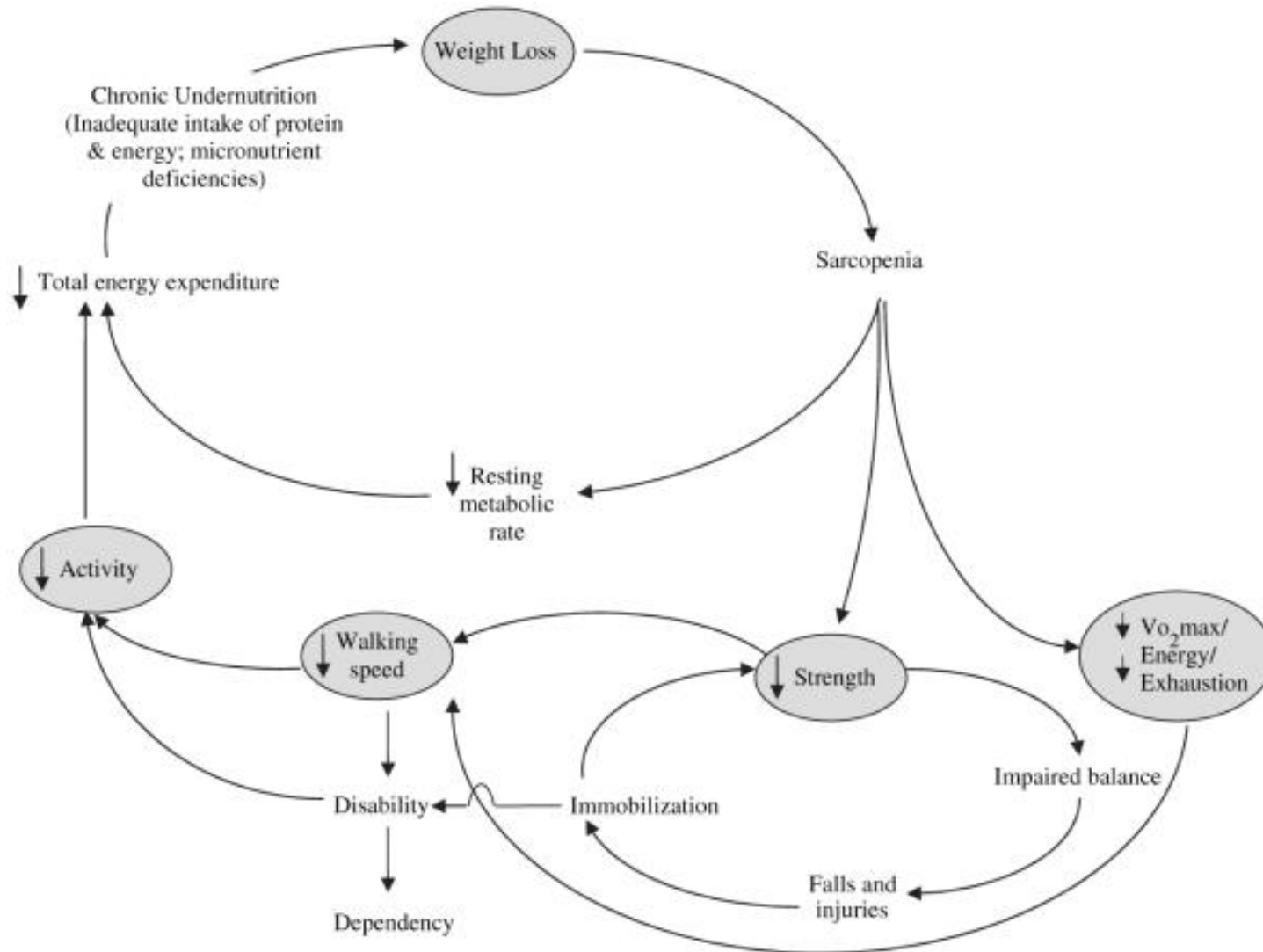# Co-morbidity does not reflect complexity in internal medicine patients.

Frailty-defining criteria: Women's Health and Aging Studies (WHAS) and Cardiovascular Health Study (CHS)

Characteristics	CHS	WHAS

1. Weight loss	**Baseline:**
	Lost > 10 pounds unintentionally in last year
	Follow-up:
	(weight in previous year-current weight)/(weight in previous year)≥0.05 and the loss was unintentional
		Baseline:
		Either of:
		  i. (weight at age 60–weight at exam)/(weight at age 60)≥0.1
		  ii. BMI at exam < 18.5.
		
		Follow-up:
		Either of :
		  i. BMI at exam < 18.5
		  ii. (weight in previous year-current weight)/(weight in previous year)≥0.05 and the loss was unintentional

2. Exhaustion	Self report of either of:
	  i. felt that everything I did was an effort in the last week
	  ii. could not get going in the last week
		Self report of any of:
		  i. low usual energy level[1] (<=3, range 0-10)
		  ii. felt unusually tired in last month[2]
		  iii. felt unusually weak in the past month[2]

3. Low Physical Activity	Women: Kcal < 270 on activity scale (18 items) Men: Kcal < 383 on activity scale (18 items)	Women: Kcal < 90 on activity scale (6 items) Men: Kcal< 128 on activity scale (6 items)

4. Slowness	walking 15 feet (4.57m) at usual pace
	Women:
	  time >= 7 s for height <= 159 cm
	  time >= 6 s for height > 159 cm
	Men:
	  time >= 7 s for height <= 173 cm
	  time >= 6 s for height > 173 cm
		walking 4m at usual pace
		Women:
		  speed <= 4.57/7 m/s for height <= 159 cm
		  speed <= 4.57/6 m/s for height > 159 cm
		Men:
		  speed <= 4.57/7 m/s for height <= 173 cm
		  speed <= 4.57/6 m/s for height > 173 cm

5. Weakness	Grip strength Women: <= 17 kg for BMI <= 23 <=17.3 kg for BMI 23.1 - 26 <= 18 kg for BMI 26.1 - 29 <= 21 kg for BMI > 29 Men: <= 29 kg for BMI <= 24 <= 30 kg for BMI 24.1 - 26 <= 30 kg for BMI 26.1 - 28 <= 32 kg for BMI > 28	Grip strenth: Same as in CHS

[1]Rated on 0-10 scale, where 0 = "no energy" and 10 = "the most energy that you have ever had."
[2]If yes, there followed questioning "how much of the time" the feeling persisted; responses "most" or "all" of the time were considered indicative of exhaustion.

Fried LP, et al J Gerontol A Biol Sci Med Sci. 2001

# Cycle of frailty

Xue QLet al. J Gerontol A Biol Sci Med Sci 2008

To settle the question about *the role of prevention and life-style* in this population of patients, available data on the elderly, regarding multimorbidities and the main risk factors, have to be analyzed.
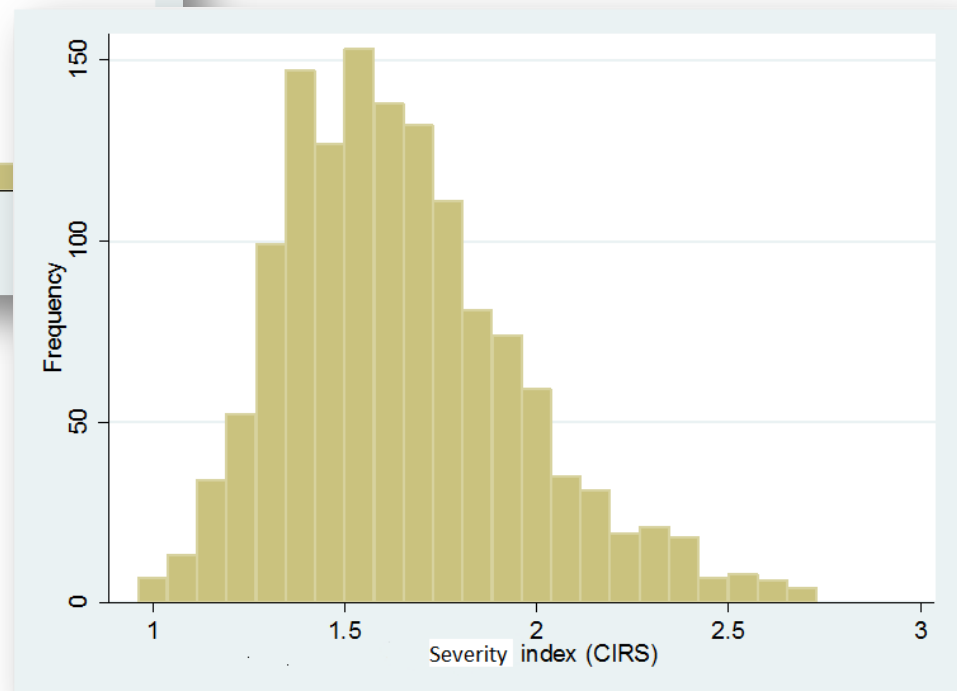
The REPOSI LESSON

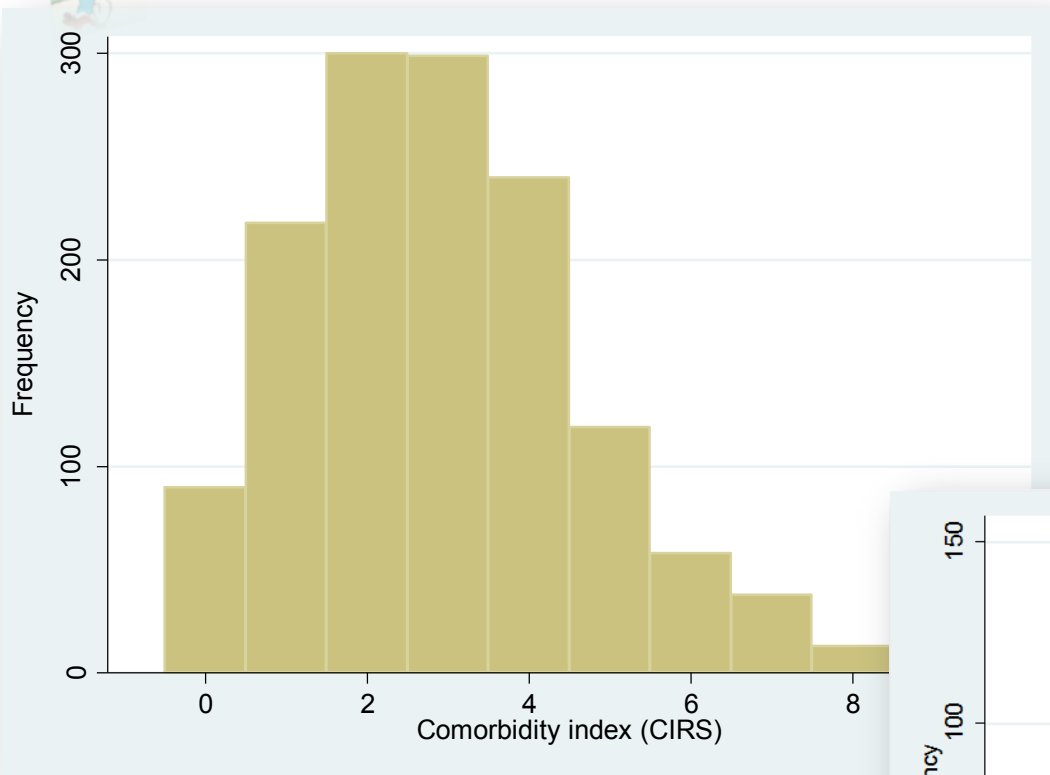**About 70 Internal Medicine and Geriatric wards involved (for each study)**
More than 4000 elderly patients recruited

2008
- the first study

2010
- with a follow-up at 3 months

2012
- with a follow-up at one-year
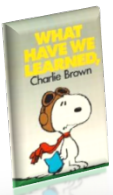
The REPOSI Patient (2010)

Reposi 2010

Variables	Data
Age (years)	79,4 (73,0-84,1)
Women	50,5 %
Lenght of hospital stay (days)	9 (6-14)
Politherapy at the admission (n)	5 (4-7)
Politherapy at discharge (n)	6 (4-8)
Politherapy 3 month follow-up (n)	6 (4-8)
Barthel score < 40	16,1 %
Cognitive impairment (SBT≥10)	47,5%
Probable depression (GDS≥2)	41,3 %
Patients underweight	3,9 %
Patients with moderate/severe obesity	5,1 %
Visceral Obesity	45,9%

Continuous and discrete variables are as median (1Q-3Q)

1. Drug-drug interactions in a cohort of hospitalized elderly patients. Pharmacoepidemiol Drug Saf. 2013 Aug 30.

2. Joint use of cardio-embolic and bleeding risk scores in elderly patients with atrial fibrillation. Eur J Intern Med. 2013 Sep 11.

3. Prophylaxis of venous thromboembolism in elderly patients with multimorbidity. Intern Emerg Med. 2013 Sep;8(6):509-20.

4. Comparison of disease clusters in two elderly populations hospitalized in 2008 and 2010. Gerontology. 2013;59(4):307-15.

5. Association of anticholinergic burden with cognitive and functional status in a cohort of hospitalized elderly: comparison of the anticholinergic cognitive burden scale and anticholinergic risk scale: results from the REPOSI study. Drugs Aging. 2013 Feb;30(2): 103-12.

6. Risk factors for hospital readmission of elderly patients. Eur J Intern Med. 2013 Jan; 24(1):45-51.

7. Adverse clinical events and mortality during hospitalization and 3 months after discharge in cognitively impaired elderly patients. J Gerontol A Biol Sci Med Sci. 2013 Apr;68(4):419-25.

8. Prevalence and characteristics of antidepressant drug prescriptions in older Italian patients. Int Psychogeriatr. 2012 Apr;24(4):606-13.

9. Association between clusters of diseases and polypharmacy in hospitalized elderly patients: results from the REPOSI study. Eur J Intern Med. 2011 Dec;22(6):597-602.

10. In-hospital death according to dementia diagnosis in acutely ill elderly patients: the REPOSI study. Int J Geriatr Psychiatry. 2011 Sep;26(9):930-6.

11. Prevalence and appropriateness of drug prescriptions for peptic ulcer and gastro-esophageal reflux disease in a cohort of hospitalized elderly. Eur J Intern Med. 2011 Apr;22(2):205-10.

12. Polypharmacy, length of hospital stay, and in-hospital mortality among elderly patients in internal medicine wards. The REPOSI study. Eur J Clin Pharmacol. 2011 May;67(5):507-19.

13. Factors affecting adherence to guidelines for antithrombotic therapy in elderly patients with atrial fibrillation admitted to internal medicine wards. Eur J Intern Med. 2010 Dec;21(6):516-23.

14. In-hospital death and adverse clinical events in elderly patients according to disease clustering: the REPOSI study. Rejuvenation Res. 2010 Aug;13(4):469-77.

High frequency (67% at discharge) of polypharmacy

number of drugs are significantly associated with the likelihood of readmission at 3 months.

Drugs with anticholinergic properties are associated with worse cognitive and functional performance

High frequency (63%) of inappropriate prescription of PPI

severe drug-drug interactions are frequent (24 %) and associated with 3-month mortality (Odds ratio: 2.62)

patients with cognitive impairment are more likely to die during hospitalization with a severity-dependent association

appropriate antithrombotic prophylaxis is taken by less than 50% of patients with atrial fibrillation, with an underuse of Vitamin K Antagonists prescription independently of the level of cardio-embolic risk.

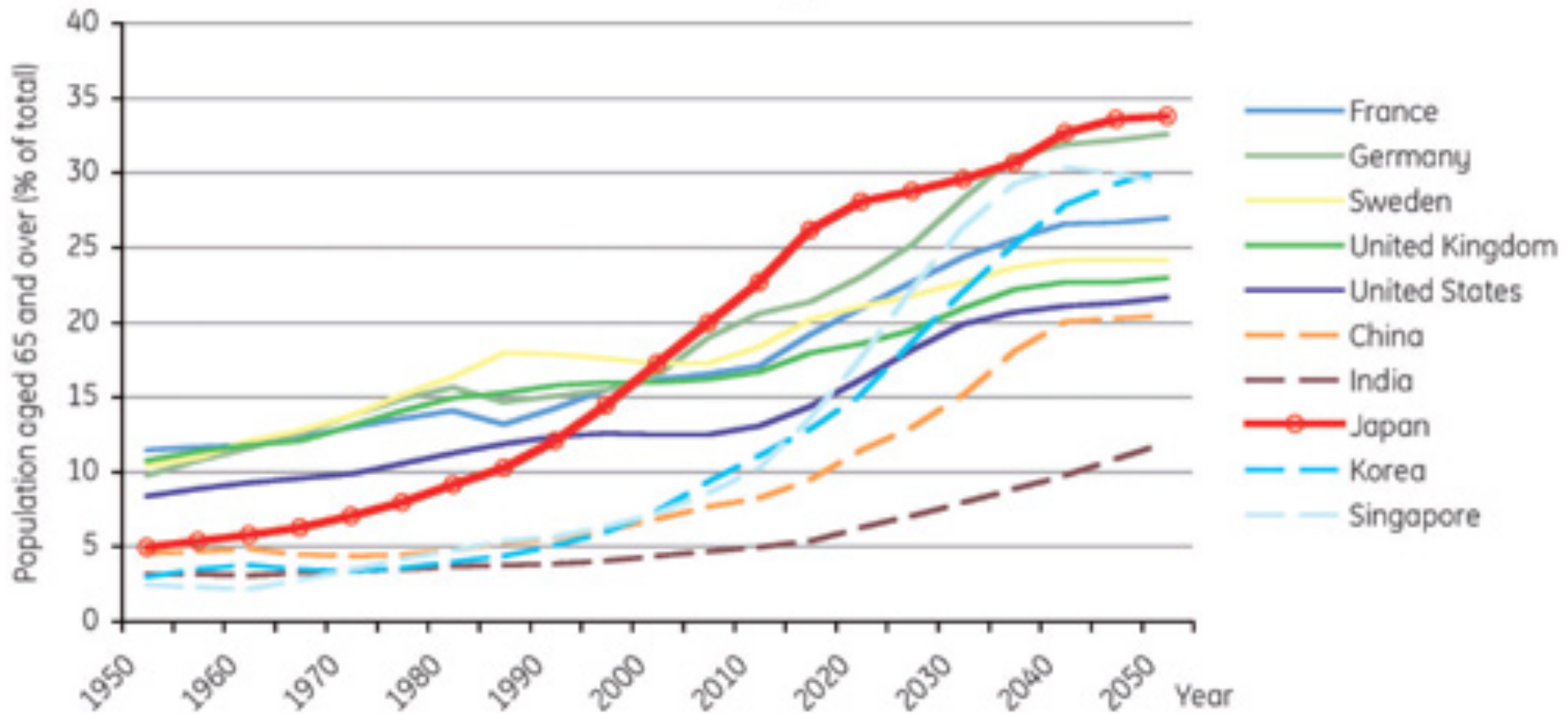# Lifestyle risk factors predict disability and death in healthy aging adults
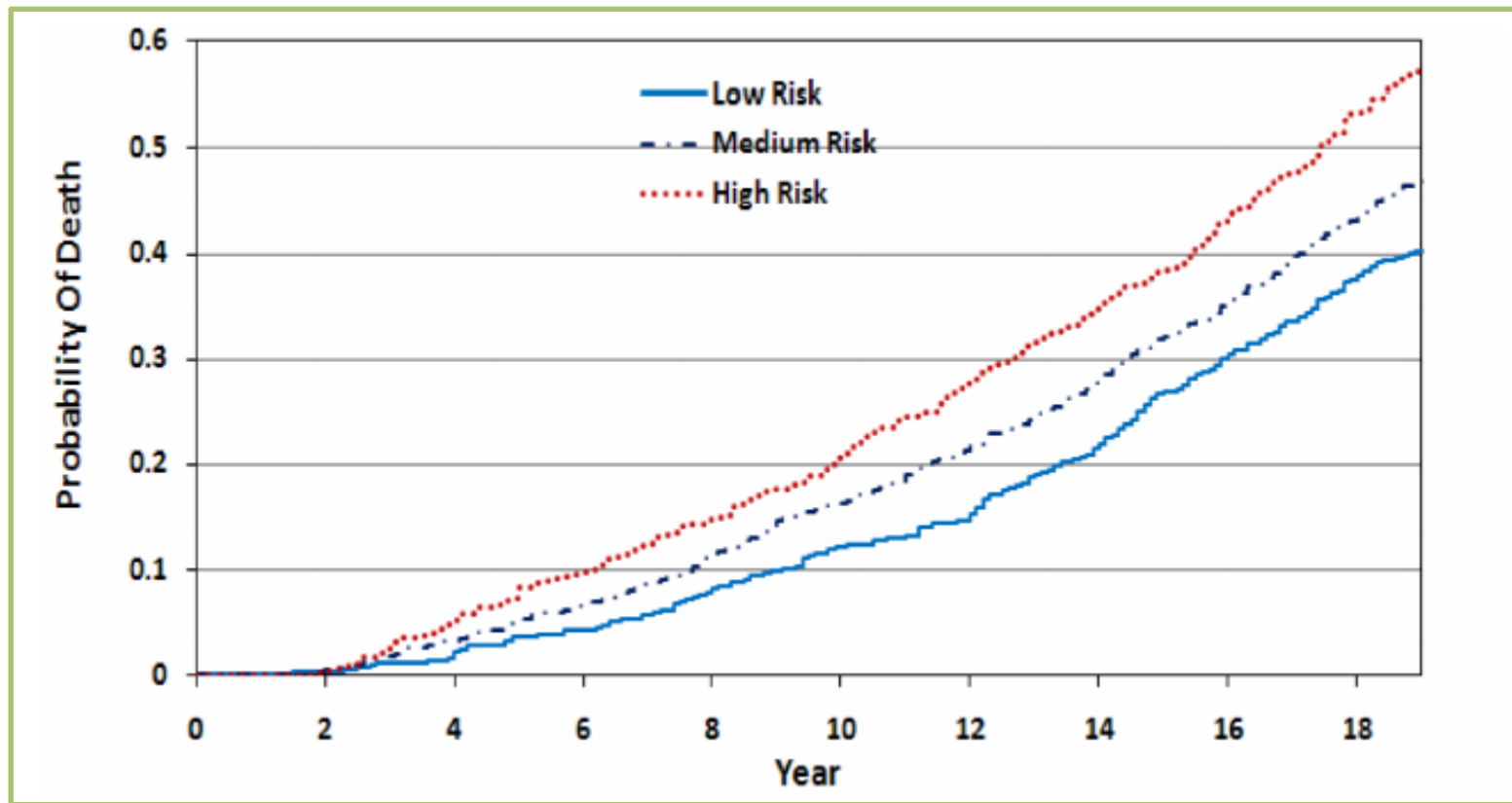
Kaplan-Meyer curve of probability of death by risk group

Probability of orthopedic fractures among patients with or without osteoporosis by gender and age group
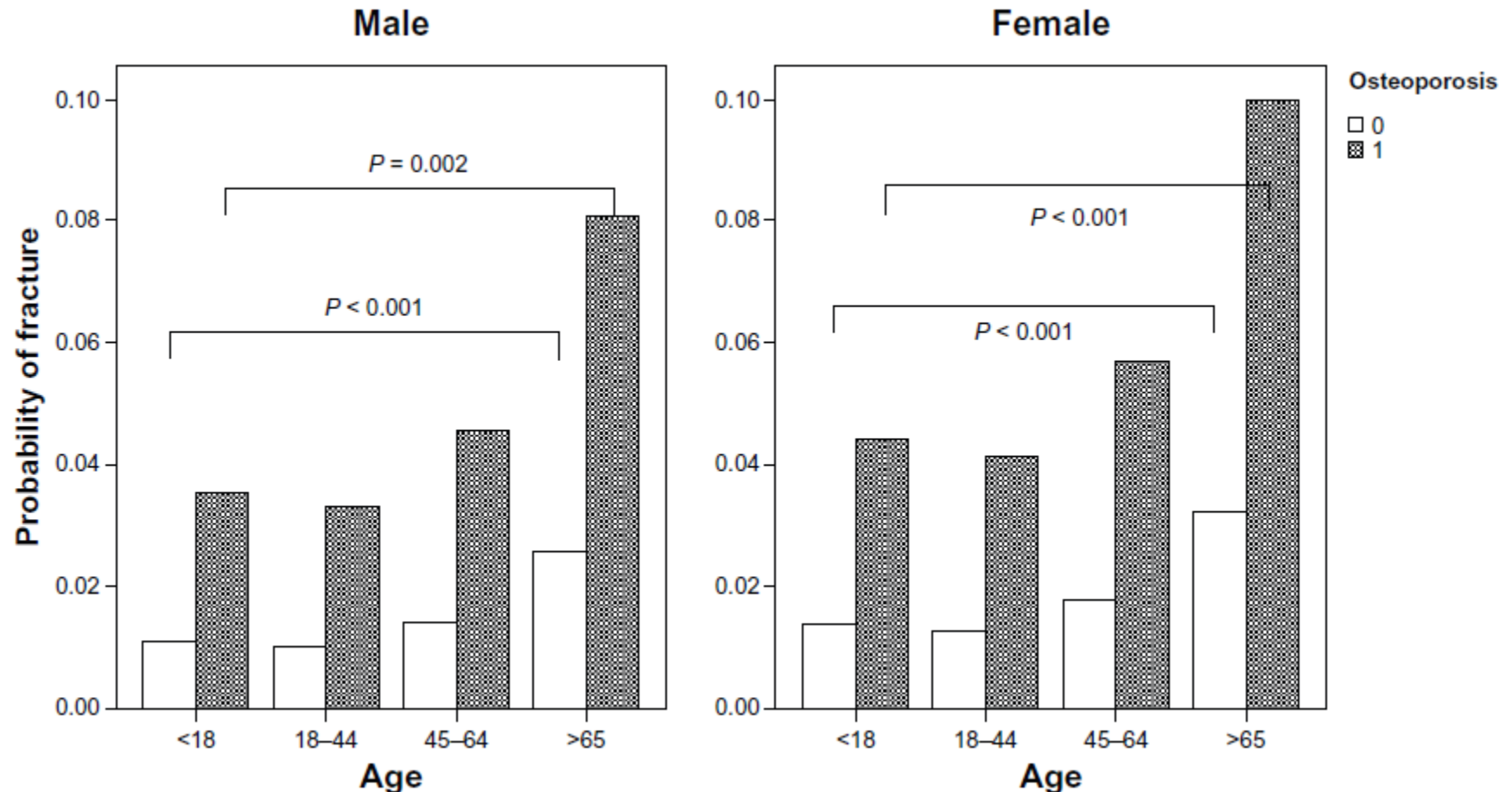
Pace of ageing by country (1950-2050): growth in the proportion of the elderly population (65 & over) in total population

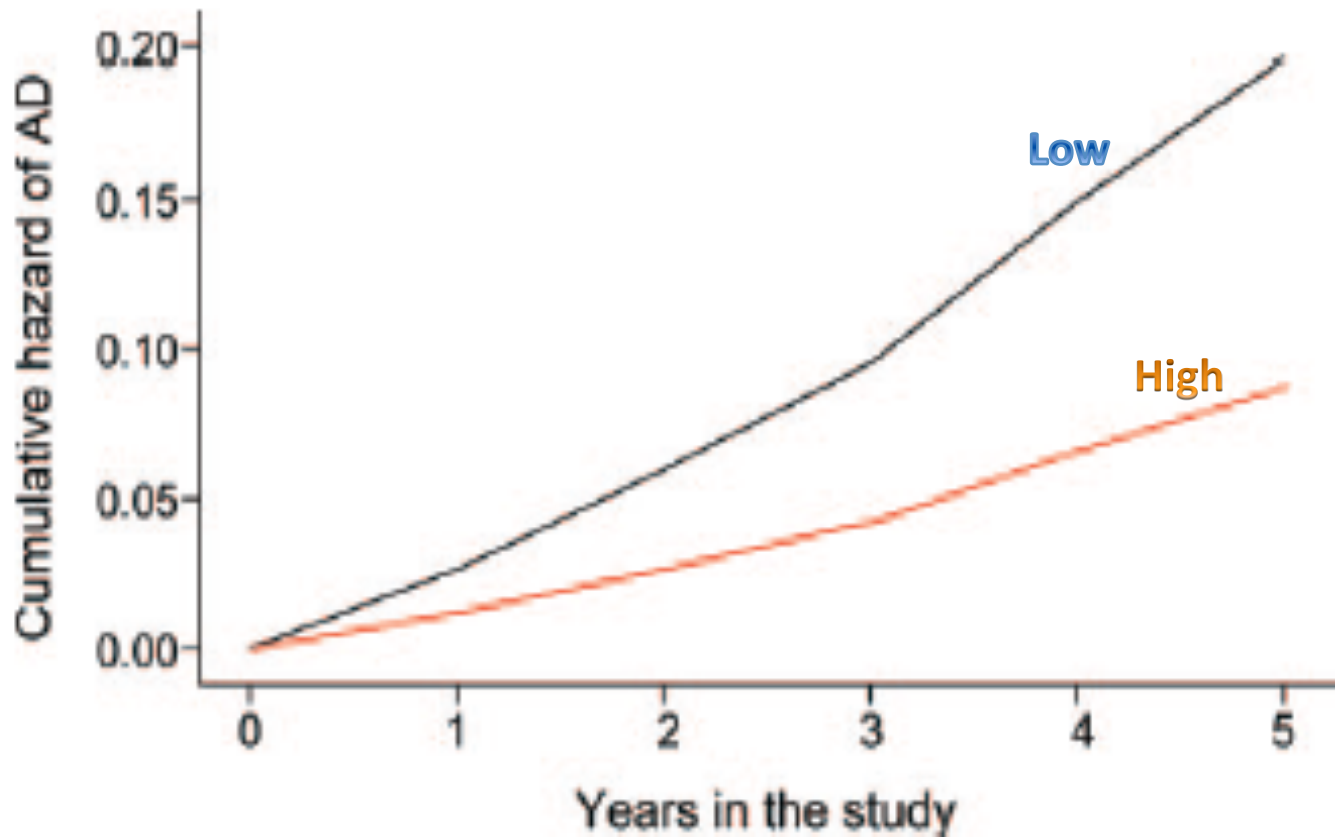# What kind of tools are available to cope with this scenario?

Areas of intervention

1. Maintain a good health status in the elderly

2. Prevent adverse events and comorbidities

3. Disability prevention

Total daily physical activity and risk of Alzheimer disease in old age

Alzheimer disease incidence by high or low physical activity levels and Mediterreanean-type diet adherence score
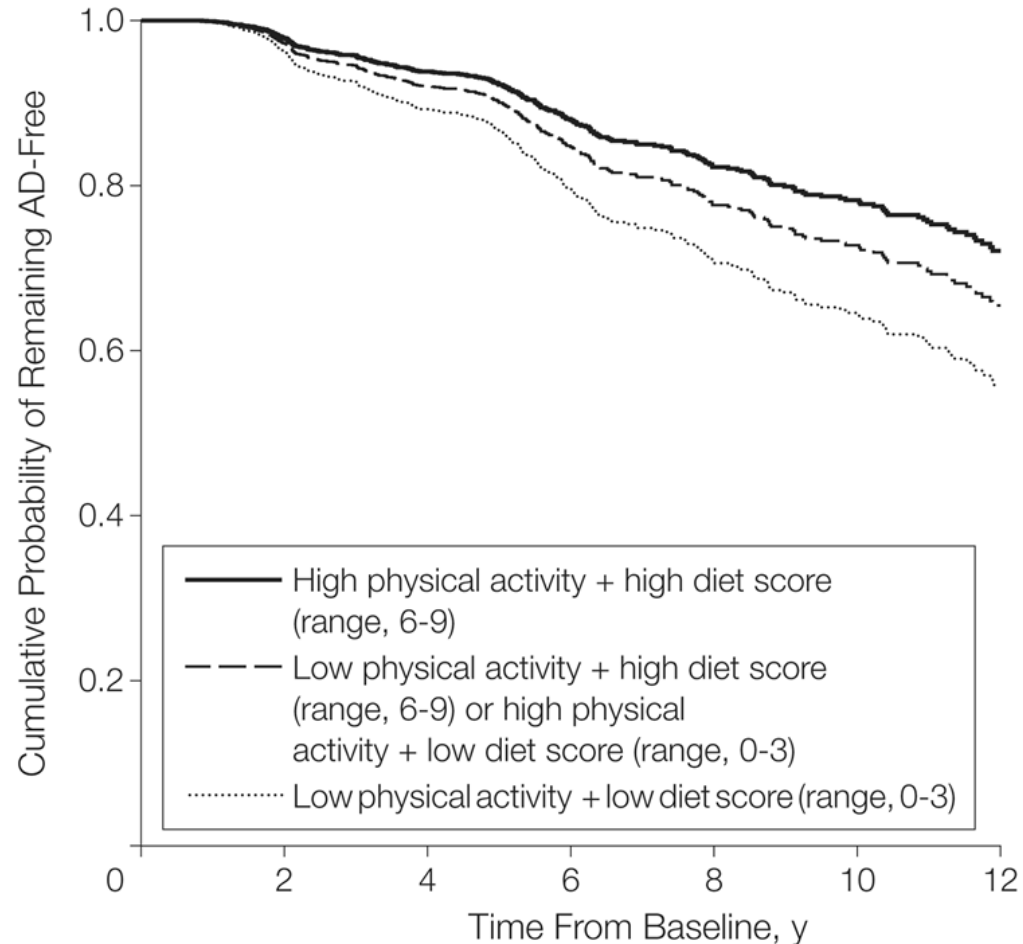
Sample-six month progressive resistance exercise model for healthy, older adults

Training Dosage	Weeks 1-8				Weeks 9-16				Weeks 17-24			
	Weeks 1-2	Weeks 3-4	Weeks 5-6	Weeks 7-8	Weeks 9-10	Weeks 11-12	Weeks 13-14	Weeks 15-16	Weeks 17-18	Weeks 19-20	Weeks 21-22	Weeks 23-24
Volume (# Sets/muscle group)	1	1	1-2	1-2	2	2	2	2-3	2-3	2-3	2-3	2-3
Intensity (Training Load)	15-20 RM	15-20 RM	15 RM	15 RM	12 RM	12 RM	10 RM	10 RM	8-10 RM	8-10 RM	6-8 RM	6-8 RM
Frequency/Split	1-2/Full Body	1-2/Full Body	2/Full Body	2-3/Full Body	2-3/Full Body	2-3/Full Body	3/Full Body	3/Full Body	3/Full Body	3/Full Body -or- Split: 2 Upper/2 Lower	Split: 2 Upper/2 Lower	Split: 2 Upper/2 Lower
Training Agenda	Familiarization	Familiarization	Familiarization	Muscular Endurance	Muscular Endurance & Hypertrophy	Muscular Endurance & Hypertrophy	Muscuolar Hypertrophy & Strength	Muscuolar Hypertrophy & Strength	Muscuolar Hypertrophy & Strength	Muscular Strength	Muscular Strength	Muscular Strength
Rest Period Between Sets (sec)	n/a	n/a	60-90 sec	60-90 sec	90 sec	90 sec	90 sec	90-120 sec	90-120 sec	120 sec	120-180 sec	120-180 sec
Mode (Exercise choices)	Body Weight; Postural / Stabilization; Selectorized Machines	Body Weight; Postural / Stabilization; Selectorized Machines	Body Weight; Postural / Stabilization; Selectorized Machines	Body Weight; Postural / Stabilization; Selectorized Machines	Postural / Stabilization; Selectorized Machines	Postural / Stabilization; Selectorized Machines; Free Weights	Postural / Stabilization; Selectorized Machines; Free Weights	Postural / Stabilization; Selectorized Machines; Free Weights	Selectorized Machines; Free Weights	Selectorized Machines; Free Weights	Selectorized Machines; Free Weights	Selectorized Machines; Free Weights

Volume: The number of RE sets for a given muscle group, per training session. **Intensity**: Resistance load that corresponds with a maximal number of repetitions (RM) (eg, 10RM: load that corresponds with approximately 10 allowable repetitions). **Frequency**: The number of times per week each muscle group should be trained. **Split**: The general partitioning of RE for specific body parts (eg, Full Body: resistance exercises are performed for all major muscle groups in a given session). **Training Agenda**: The respective purpose (or goal) for a given period of RE (ie, Familiarization: A period of time devoted to gaining familiarity with the resistance exercises, as well as general physiological adaptation). **Rest Period between Sets**: The minimum amount of time devoted to rest/recovery between successive sets of RE for a given muscle group. **Mode**: The type of RE movements and loading parameters. *Body weight* RE comprises movements in which the patient's body mass is used as resistance (eg, calisthenics including body weight chair stand, squat, lunge, supine hip extension raises, etc.). *Postural/Stabilization* exercises are specific isometric postural and dynamic exercises (eg, forward and lateral planks, trunk curl-ups, supine straight-leg hip flexion, etc.) intended to improve low back health, posture, and joint stabilization. *Selectorized machines* represent standard resistance exercise machines (eg, Cybex, Nautilus, FreeMotion, etc.). *Free weight* exercises take place through the use of free-moving implements (eg, barbell chest press, dumbbell biceps curl, etc.).

Evidences about the effects of exercise and progressive resistance training on degenerative muscular function associated with aging

- **Resistance exercise is very effective for eliciting strength gain and increasing in lean body mass,**

- **there is a dose-response relationship such that volume and intensity are strongly associated with positive adaptations.**

Prev Med. 2009;48(1):9-19.
Ageing Res Rev.2010;9(3):226-237.
Strength Cond J. 2010;32(3):52-63.

J Gerontol A Biol Sci Med Sci. 2004;59(1):48-61.
Cochrane Database Syst Rev. 2009(3):CD002759.
Med Sci Sports Exerc.2011;43(2):249-258.

Review

Effectiveness of Nutritional Supplementation on Muscle Mass in Treatment of Sarcopenia in Old Age: A Systematic Review

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Keywords:
Sarcopenia
oral supplement
muscle mass
fat-free-mass

ABSTRACT

Background: Much interest has been focused on nutritional treatment of sarcopenia, loss of muscle mass and performance associated to aging; however, its benefits are unclear.

Objective: To analyze the relevance of nutritional treatment of sarcopenia and assess the effects of supplementation on muscle mass and function within the aged population.

Methods: We searched Medline and the Cochrane Library for controlled trials published between 1991 and 2012. We have assessed the quality, type of intervention, the cohort used, the way muscle mass was measured, and the outcomes of the various studies.

Results: We have included 17 studies, with a total of 1287 patients, aged between 65 and 85 on average. An improvement in muscle mass was proven, whether measured with bioelectrical impedance analysis or dual energy x-ray absorptiometry, and an improvement in strength was also proven.

Conclusion: Nutritional supplementation is effective in the treatment of sarcopenia in old age, and its positive effects increase when associated with physical exercise. The main limitation of this treatment is lack of long-term adherence. A healthy diet associated with a physically active lifestyle and possibly with aerobic exercise are the basis of healthy aging, which is the aim of all doctors treating aged people must seek.

Vitamin D supplementation in Vascular Parkinsonism patients with low serum vitamin D causes decreased risk of falls and hip fractures

Comparison of Cost-Effectiveness of Vitamin D Screening with That of Universal Supplementation in Preventing Falls in Community-Dwelling Older Adults
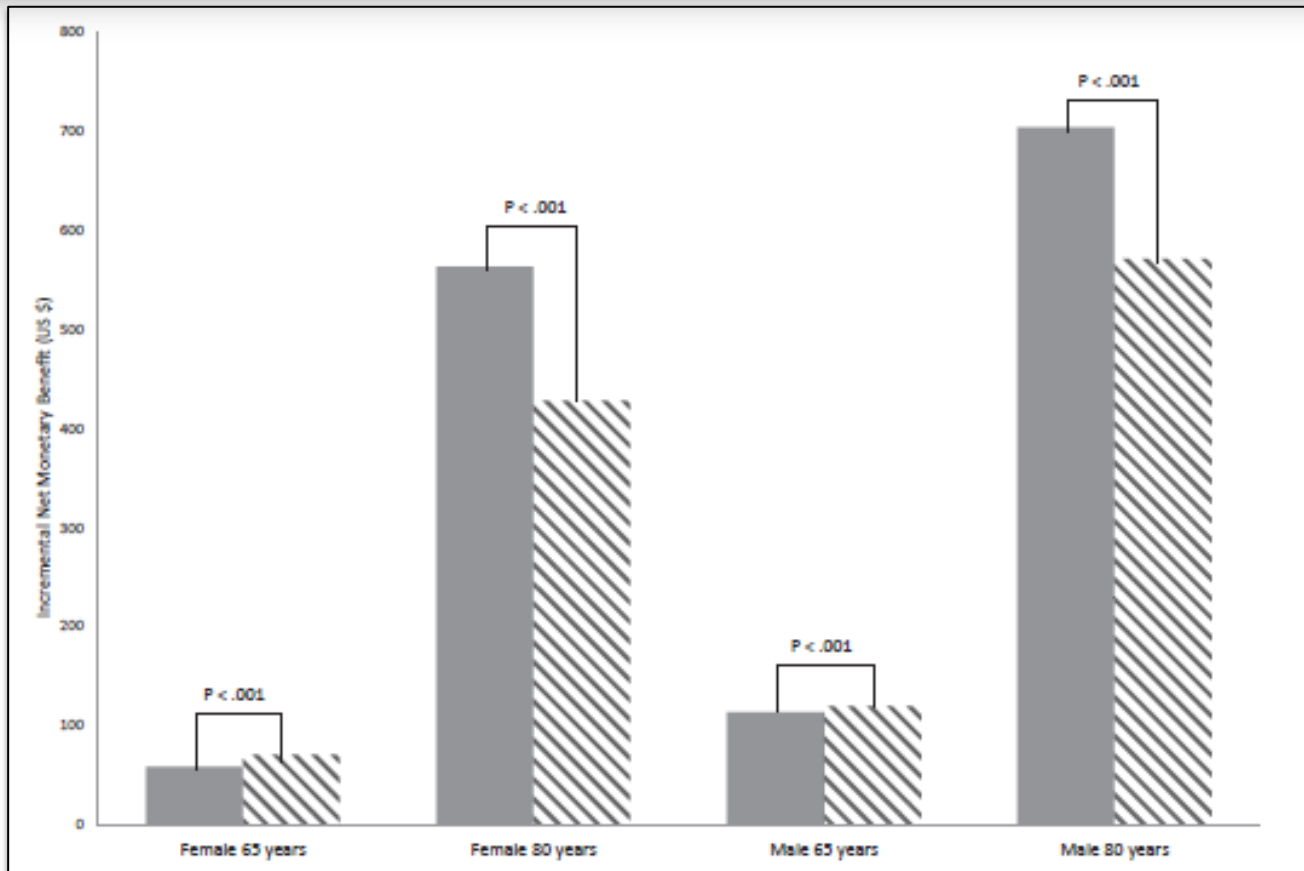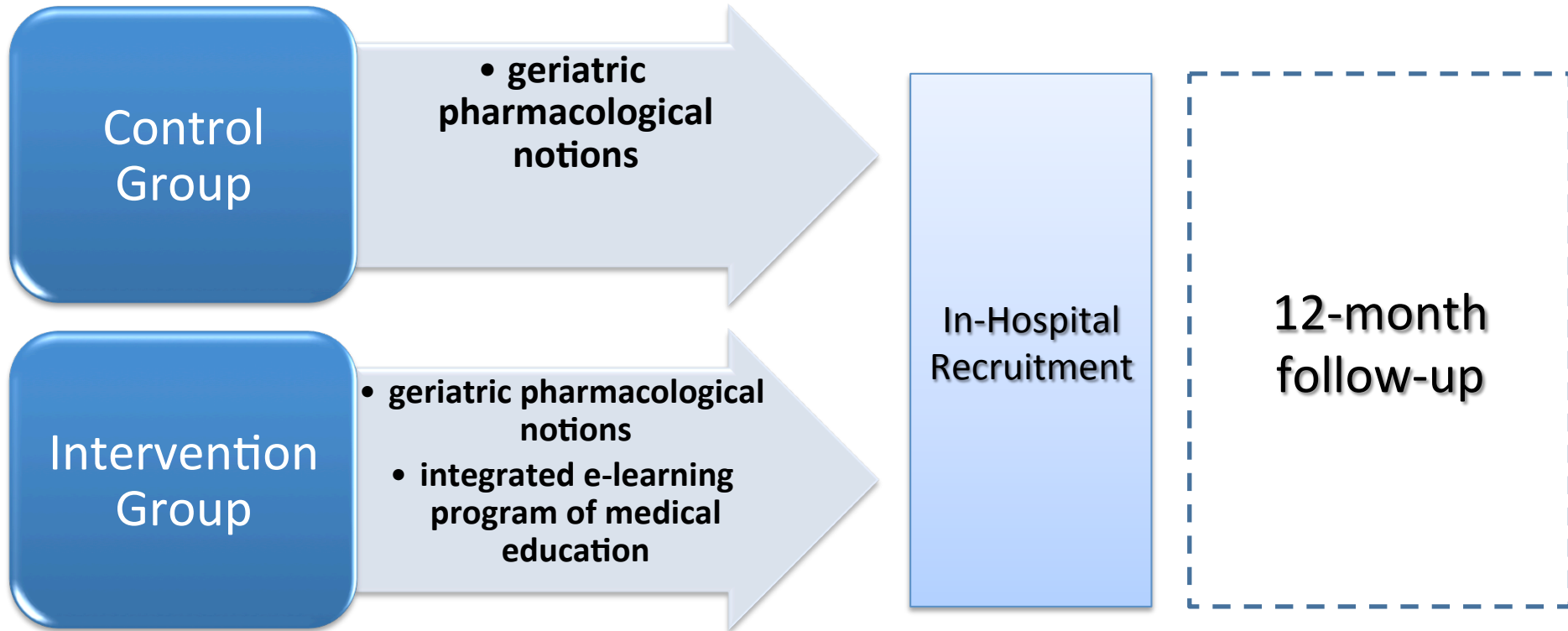

Incremental net monetary benefit according to subgroup of and sex. Population screening (solid bars) and universal supplementation (striped bars).

The ELICADHE-AIFA Project

Design: cluster randomized single-blind controlled study
Pilot phase: 20 Geriatric and internal medicine Units

Control Group

- geriatric pharmacological notions

Intervention Group

- geriatric pharmacological notions
- integrated e-learning program of medical education

In-Hospital Recruitment

12-month follow-up

Primary endpoints: prescription of potentially inappropriate drugs or potential drug-drug interactions in hospitalized elderly

Secondary end-points: length of hospitalization, in-hospital and overall mortality, re-hospitalization, institutionalization and persistence of the effect of improving quality of drug prescribing during a follow-up of 12 months.

Needs of specific interventional programs

- **Lifestyle modifications**

  - **Diet**

  - **Physical activity**

  - **Smoking , etc.**

- **Decreasing polypharmacy**

- **Greater attention to the risk of drugs interactions**

- **Best medication appropriateness**

- **Assessment and management of sarcopenia and osteoporosis**

The internist approach to clinical complexity associated to aging and the geriatric management of frailty must play a leading role focusing on the patient and not simply on the disease, managing clinical complexity, and promoting health-care pathway to reduce hospital and health-care utilization.

However, to save health systems and make healthcare sustainable in the future, the only prospective is to plan long-term programmes of primary prevention and preventive programmes to limit the incidence of complications and disability.

The elderly of the future ..?