



UNIVERSITY
OF HELSINKI

IS THERE EVIDENCE ON EFFECTIVENESS OF PREVENTIVE INTERVENTIONS IN OLDER PEOPLE?

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DISCLOSURE:
No conflict of interest

Take a minute to think about...

- Are you afraid of causing falls when prescribing antihypertensives to your frail older patients?
- Have you encouraged your obese 80 year-old patient to loose weight while having painful osteoarthritis?
- Do you have means to prevent older people's falls?
- Does your community offer older people's own exercise groups?
- Have you been worried about your older patient who seems to be so lonely?

Outline of presentation

- Definitions and methodological considerations
- Evidence of prevention on risk factors in old age
- Evidence of prevention on geriatric syndromes
- Take-home-messages



**DEFINITIONS AND
METHODOLOGICAL
CONSIDERATIONS**

Risk /protective factors in middle age – how far in old age do they apply?

RISK FACTORS

- Age, male gender
- **Smoking**
- **High cholesterol**
- **High BB**
- **Obesity, diabetes**
- **Stress, depression**
- **Alcohol**

PROTECTIVE FACTORS

- **Exercise, muscle strength**
- **Healthy diet**
- **Social activity, "social capital"**
- Genes
- Education

GRADE A =

Several high quality trials with positive findings

GRADE B =

At least one high quality trial with positive finding

GRADE C =

Lower quality RCTs /controlled trials with positive findings

GRADE D =

Case studies, epidemiological studies

- **Primary prevention** intends to avoid the development of disease.
- **Secondary prevention** attempts to treat an existing disease in its early stage before significant complications.
- **Tertiary prevention** aims to reduce the negative impact of established disease by restoring function and QOL.

Exercise, nutrition
ages

Treat
e.g. treating hypertension to prevent CV diseases

Preve
e.g. Stroke+atrial fibrillation
→warfarin



**ROOTS OF OLD AGE DISEASES
AND DISABILITIES ARE IN
MIDLIFE...**



Development of a disease takes 10 – 50 years



Prehypertension ► Hypertension + injury ► Hypertension + clinical disease

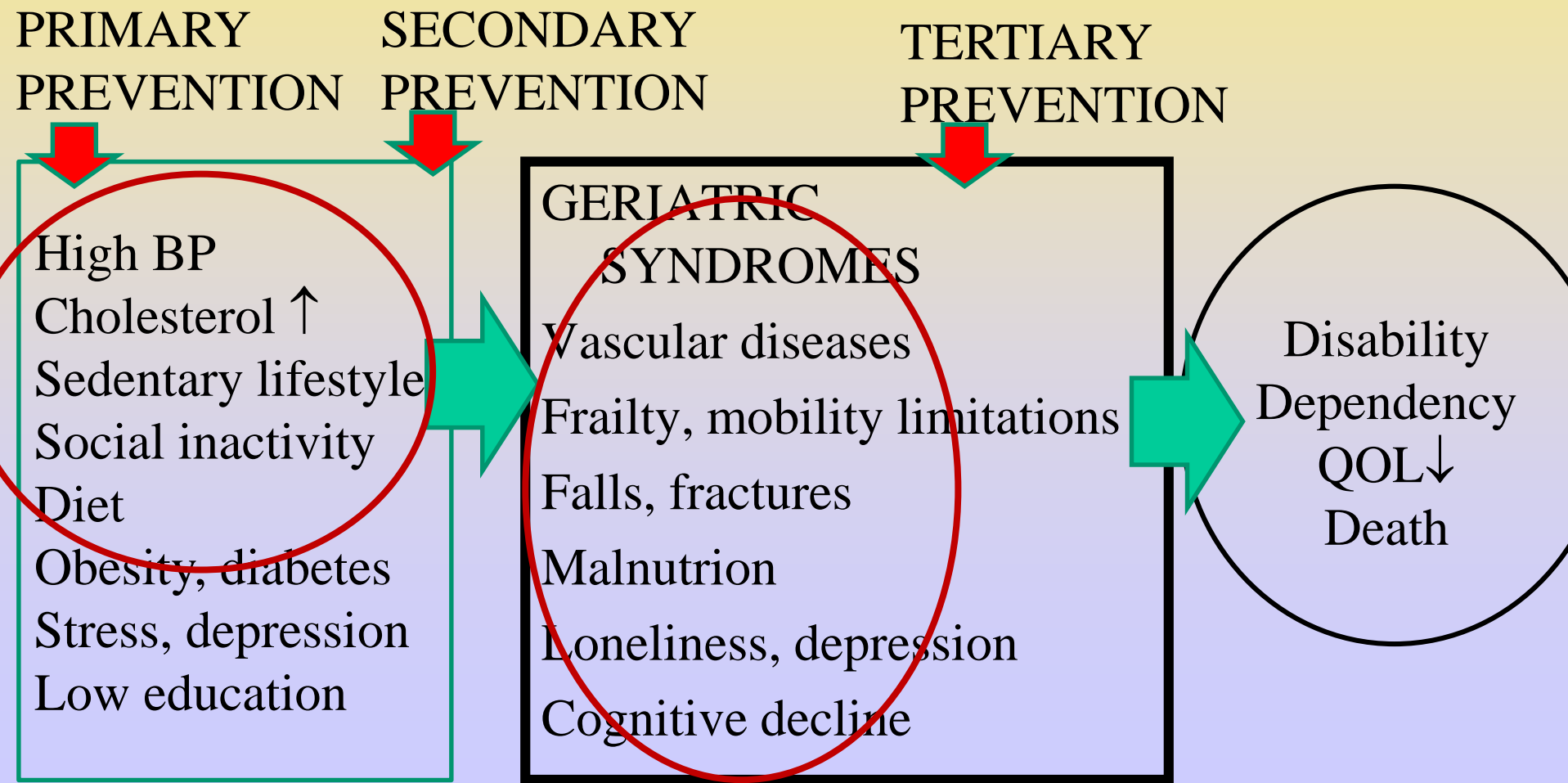


Cardiovascular risk

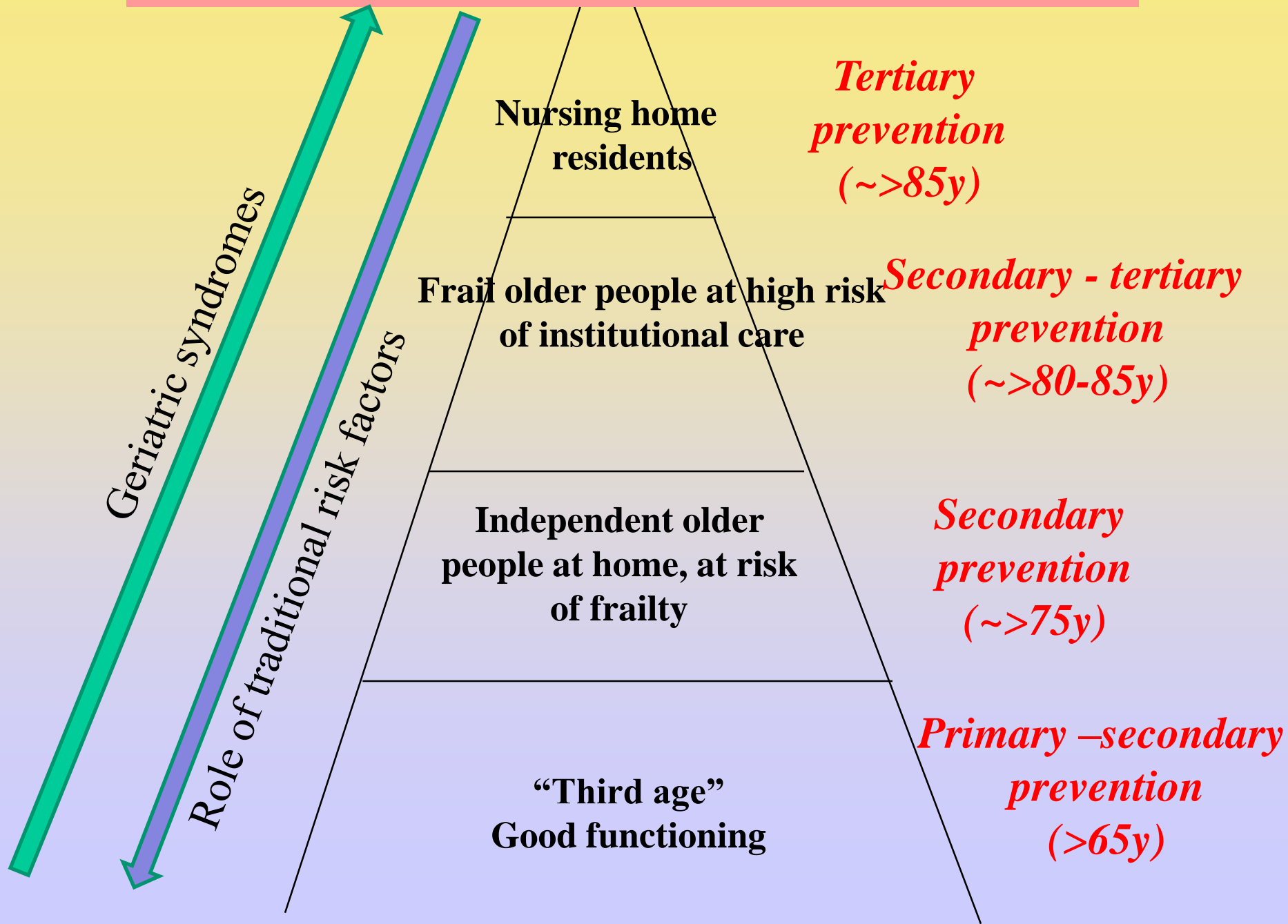


Starting treatment

TARGETS OF PREVENTION IN OLD AGE: Risk factors and Geriatric syndromes



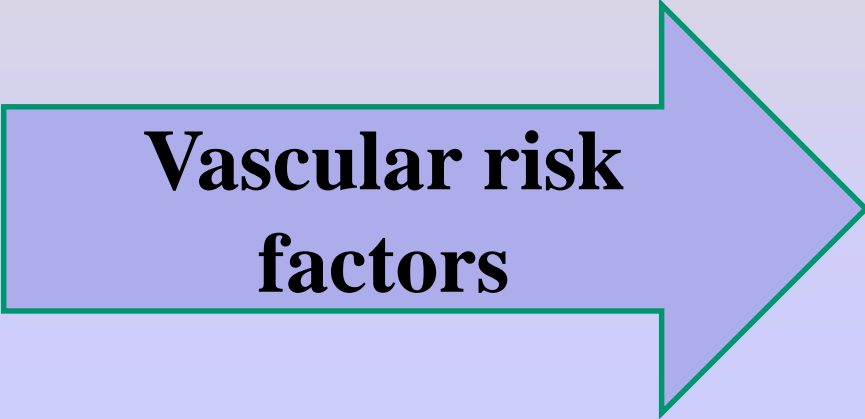
Heterogeneous target groups in old age





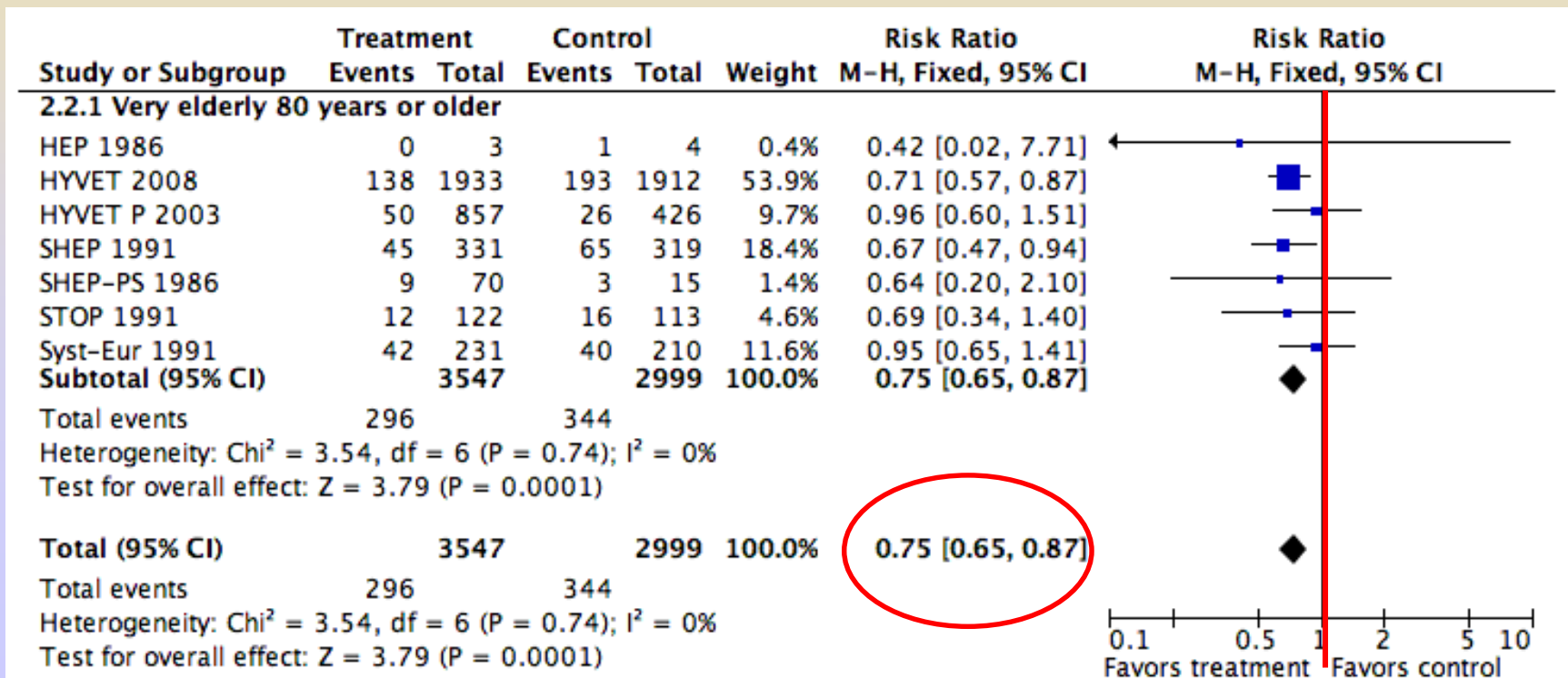
**TRADITIONAL RISK FACTORS
– IS THERE EVIDENCE?**

**Vascular risk
factors**

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Strong evidence: Treatment of hypertension

- BP↑ risk for stroke, CHD and cognitive decline
- Even >80y modest lowering of sBP reduces CV-events and mortality (Musini et al. Cochrane 2009)
- NNT 31 (5y) to prevent on CV event (fatal or nonfatal)



Further evidence...

- SPRINT trial: How low BP among old people?
- RCT (N=2637; 75y+): targets sBP <120 vs. sBP <140
- CV events HR 0.66 in <120 group vs. <140 group in 3 years follow-up
- Total mortality HR 0.67.
- No difference in outcomes among frail /non-frail subgroups
- No difference in hypotension, injurious falls

Are statins beneficial for older people?

- Primary prevention among 60-83y-olds (N=51351)

(Roberts et al. J Gerontol 2007):

Total mortality RR 0.85

- Secondary prevention among 60-83y-olds

(N=19569) (Afilalo et al JACC 2008):

Total mortality RR 0.78

NNT 28

- Statins should be safe:
 - rhabdomyolysis 3-4/100 000 person years.
 - Myopathy (CK \uparrow) 11/100 000 person years.
 - Muscle aches ? Sarcopenia?

Who benefits? → compare benefits/risks!

- Those with high risk (secondary prevention)
- Starting statins until age "83y"
- Do not stop a statin at age "83" if CV disease and no adverse effects
- Depends on "biological age"
- "The lower the better"

Patient case: 86y old woman with CHD, TIA

- TIAx2 (dysphasia), CHD, HF, orthostatic HT, hallucinations when pyelonephritis
- Independent in IADL and ADL, MMSE 27/30
- Aspirin 100mgx1, isosorbidedinitrate 5mg 1/2x1, enalapril 5mg 1/2x1, ibuprofene 800mg 1x1, me
- Up
- mu
- Bigg

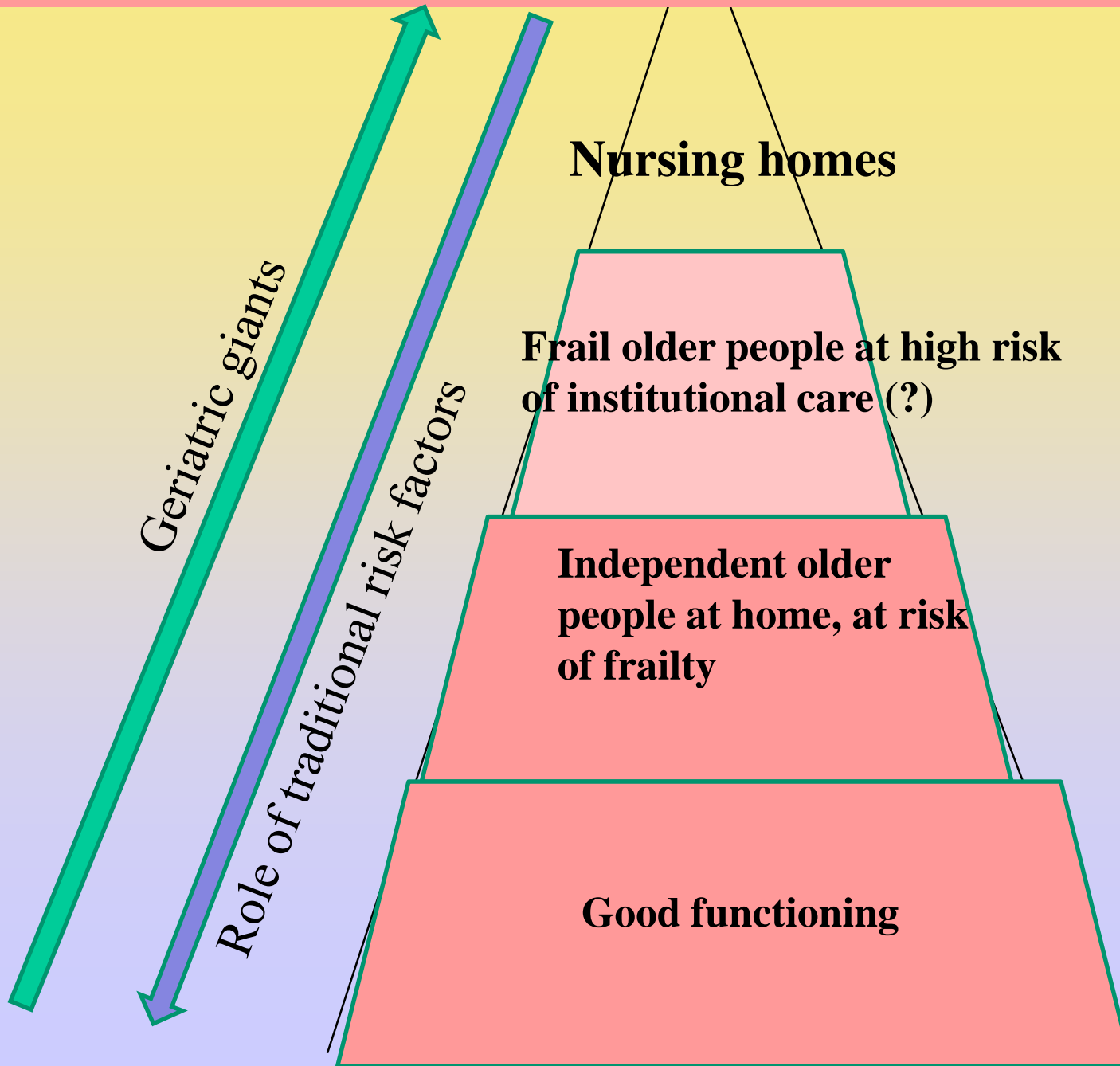
KEY ISSUES:
COMPREHENSIVE ASSESSMENT
PATIENT PREFERENCES
CONTINUITY OF CARE

Statin,
losartane, Vit D
clopidogrel Stop nitrate,
furosemide

PPI
Stop ibuprofene

Follow-up ne Re Stop trimetoprim ?

Strong evidence concerns in BP and chol lowering....





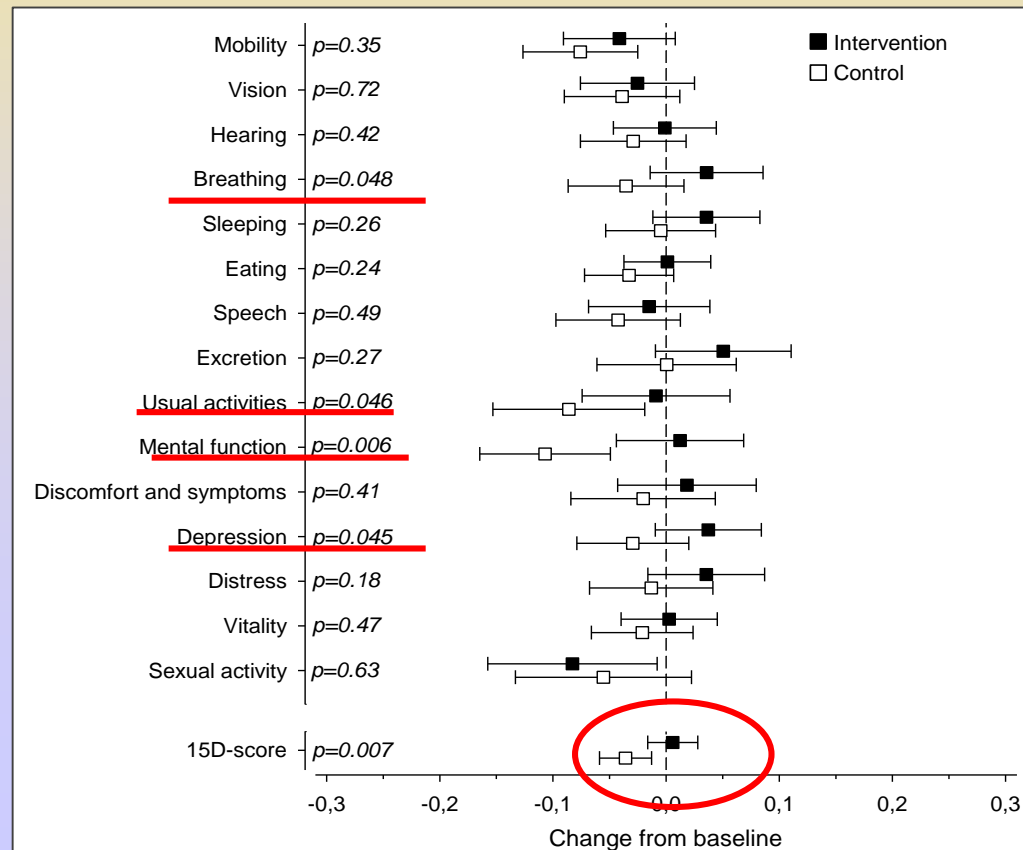
Nutrition

Paradoxes of nutrition among older people...

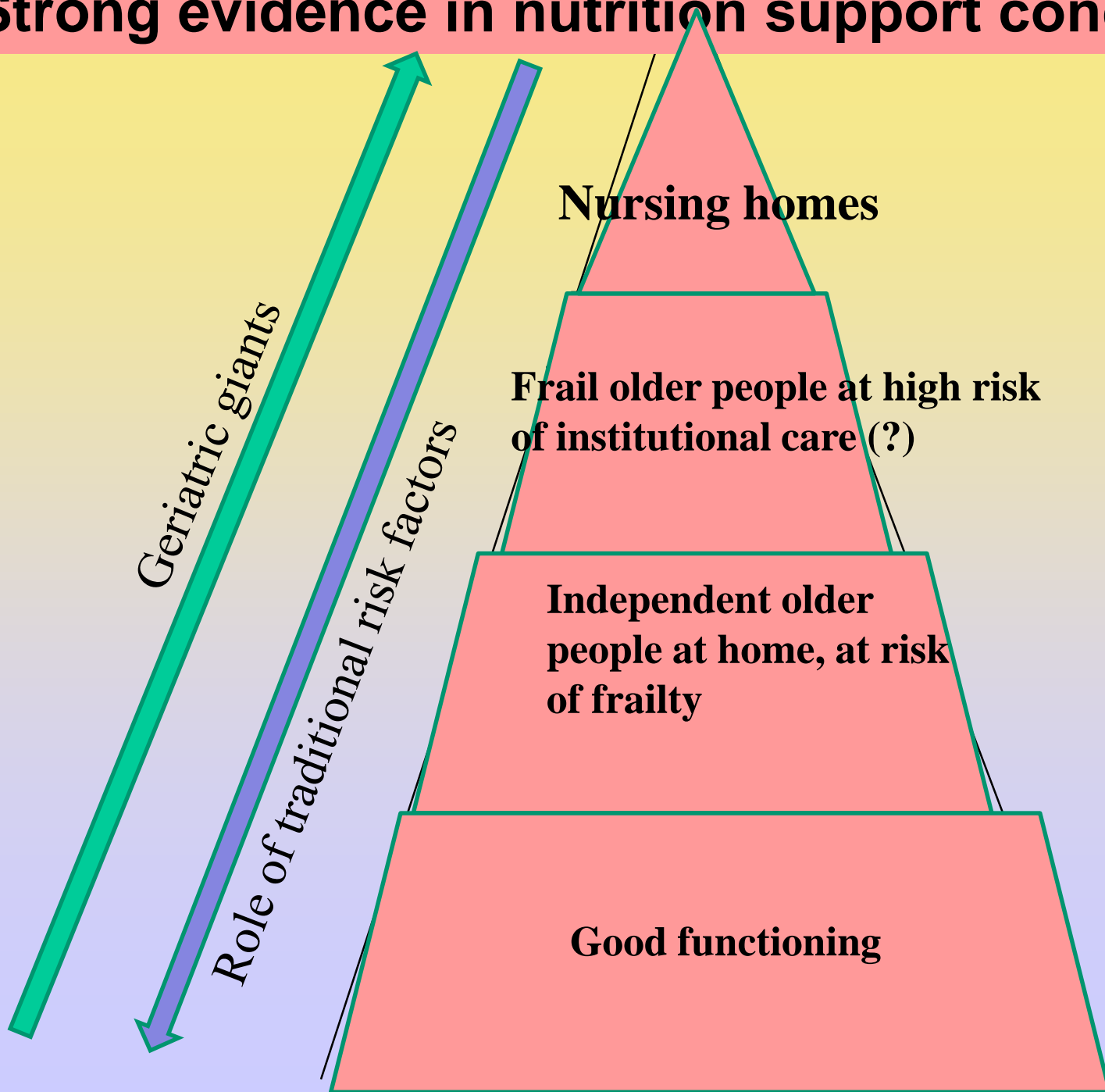
- Obesity may be risk factor among the youngest old
- >70y malnutrition is even stronger risk factor
 - Sarcopenia, frailty, disabilities, falls, fractures
 - Exposes to infections
- **Strong evidence:**
 - Protein & energy supplementation (62 trials, N>10'000) mortality RR 0.79
 - Vit D (20-25yg/d) reduces falls and fractures RR 0.81
- No evidence on other vitamin supplements

NuAD Trial

- 99 AD couples randomized into two arms
- Tailored nutrition guidance based on assessments in home visits, food diaries
- Protein intake increased
- Improved HrQOL
- Less falls



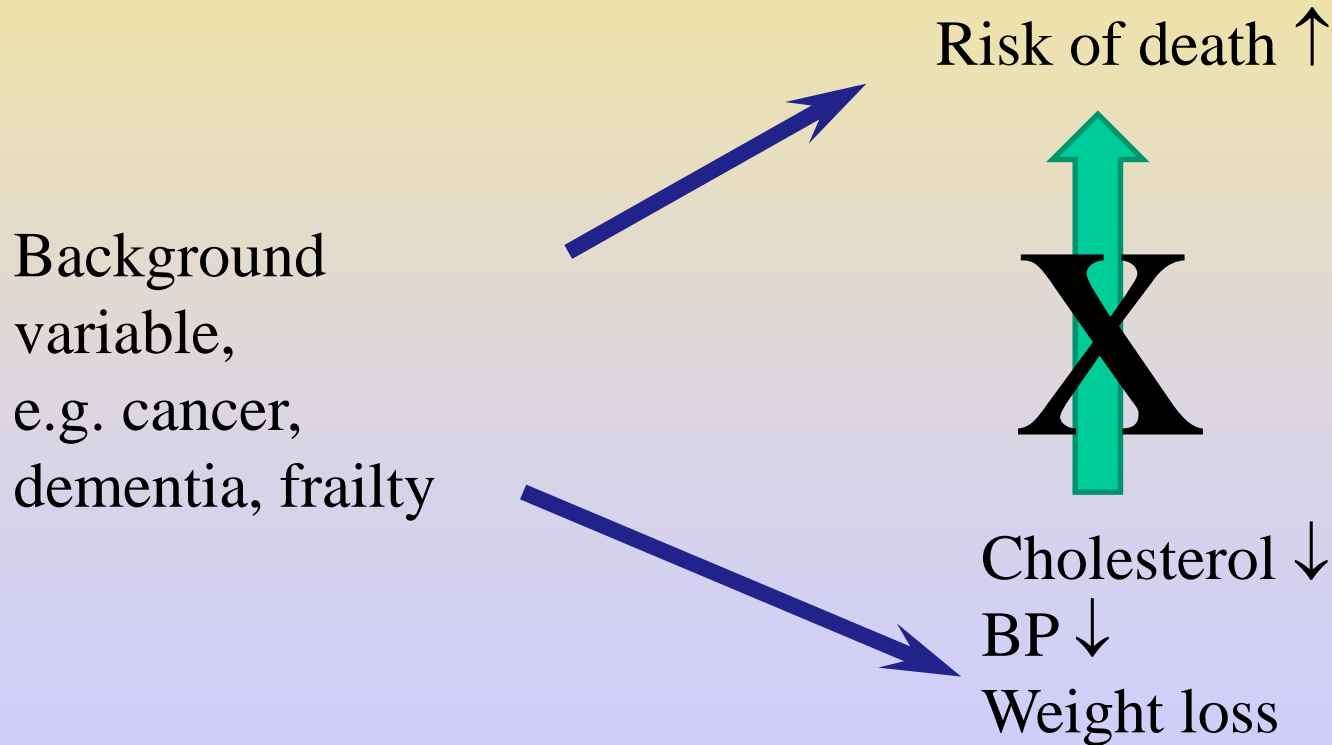
Strong evidence in nutrition support concerns





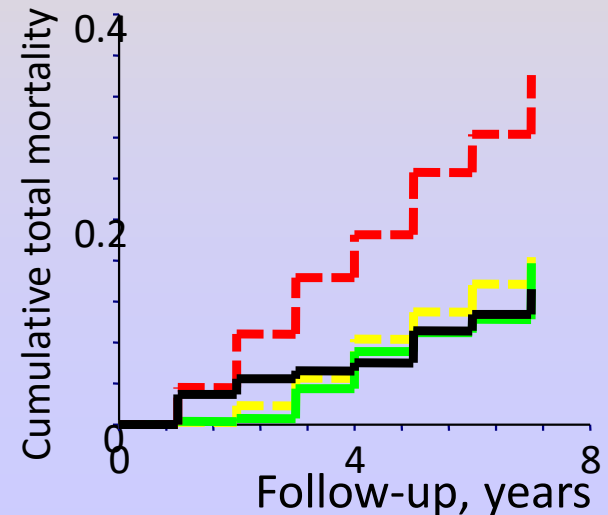
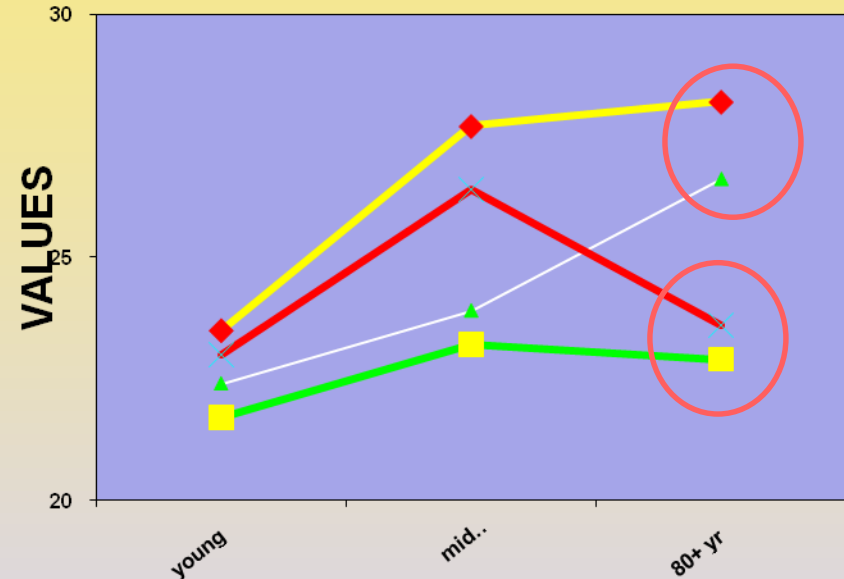
**OLD AGE PARADOXES – TO
WHOM DO THE RISK
FACTORS APPLY TO?**

Risk markers may turn upside down among >80y olds: chol, BP, obesity...

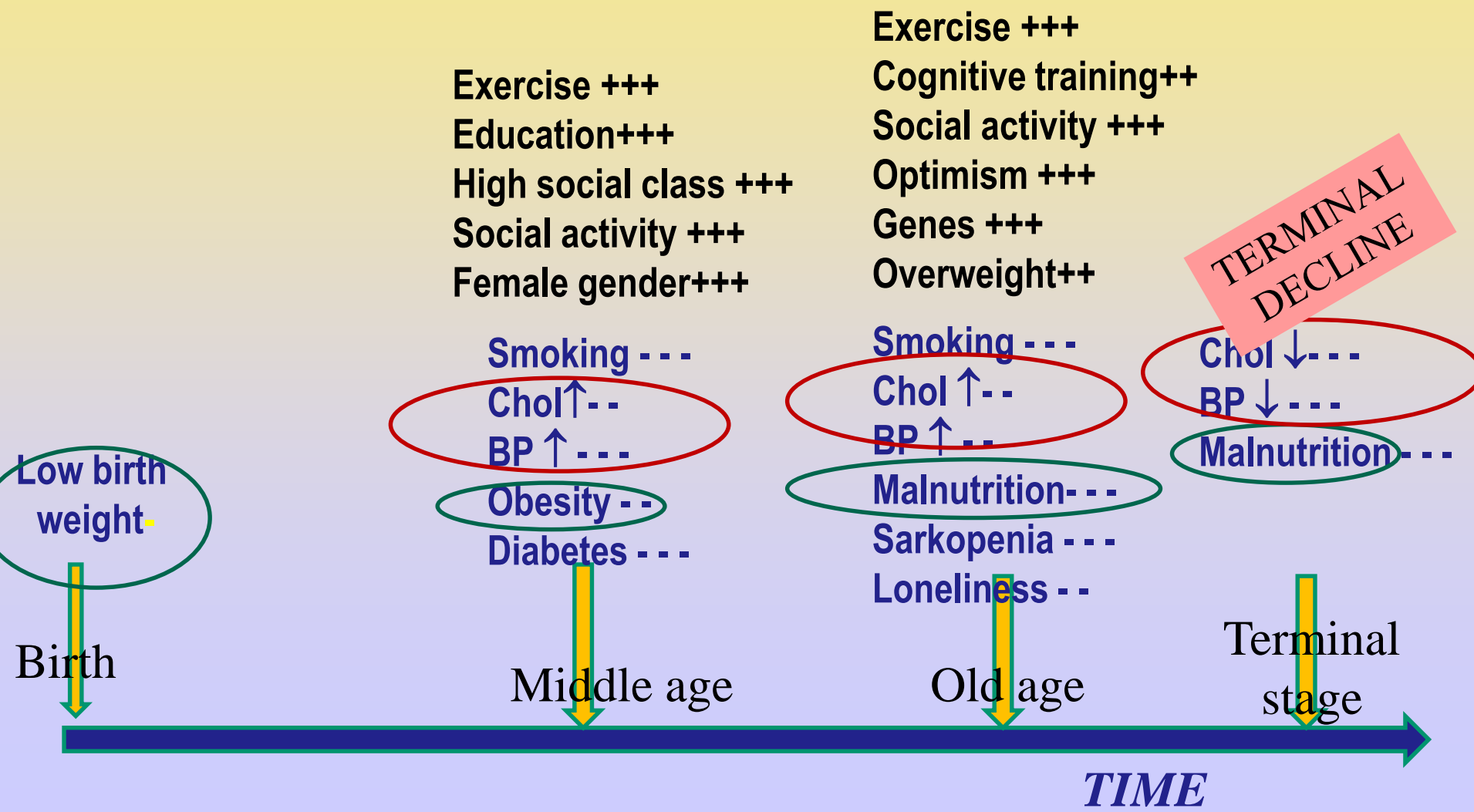


CONCEPT: TERMINAL DECLINE

- Before death
 - BP declines
 - Cholesterol values decrease
 - ALT decreases
 - Weight loss



RISK & PROTECTIVE factors/markers change during life span ...





**Exercise,
physical activity**

STRONG EVIDENCE: Exercise realizes successful aging!


- 121 randomized controlled trials (N=6700) on strength training in older adults (Liu & Latham Cochrane Database Syst Rev 2009):
 - Improves physical functioning (33 trials)
 - Decreases functional limitations (24 trials)
- Cohort studies: Physical activity in middle age decreases risk of cognitive decline and dementia in old age (Sofi et al. J Intern med 2011, Hamer & Chida. Psychol Med 2009)

Exercise and cognition

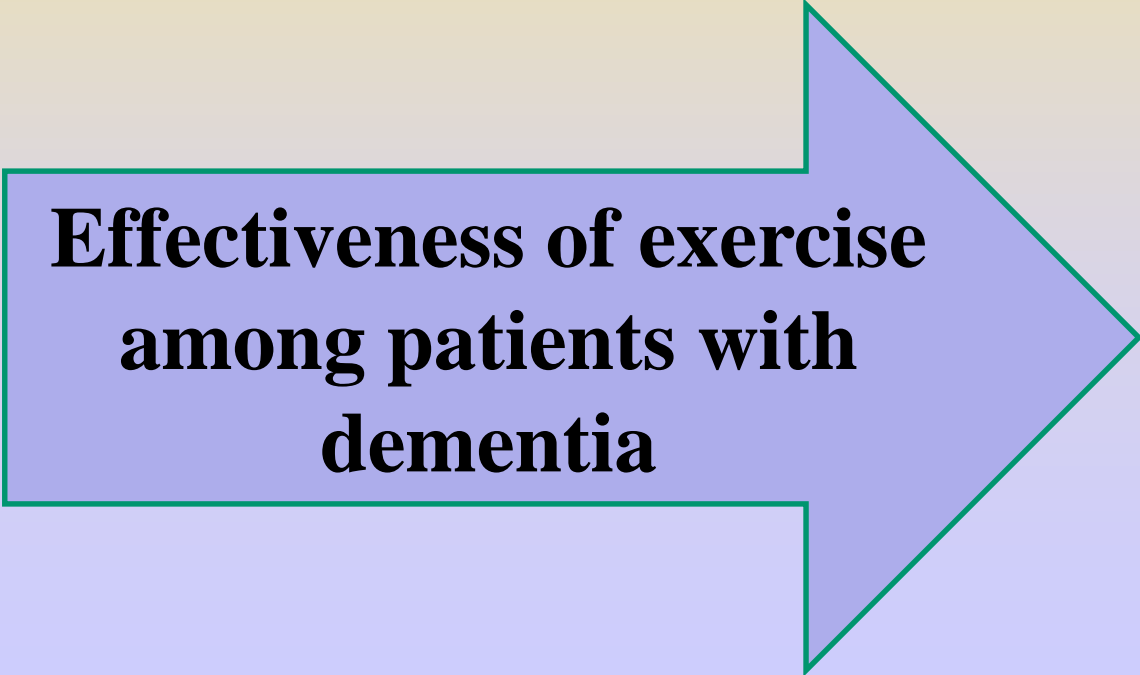
- Physical exercise (12 rcts) to improve cognitive functioning (Young et al. Cochrane 2015): no clear evidence
- Exercise may improve cognition in mild cognitive impairment (Öhman et al. Dem Geriatr Cogn Dis 2014)
- Aerobic training increases size of hippocampus (Erickson 2011)

FINGER study (Ngandu et al. Lancet 2015)

- Background: midlife cholesterol, BP, exercise activity, diet, smoking, obesity and education predict dementia
- 1260 older people (60-77y) at risk for cognitive decline were randomized into multicomponent intervention (exercise, healthy diet, cognitive training, BP & chol lowering) for one year vs. controls
- Among controls higher risk (OR 1.31) for cognitive decline compared with intervention



**INTERVENING GERIATRIC
SYNDROMES – IS THERE
EVIDENCE? EXAMPLES OF
TERTIARY PREVENTION**



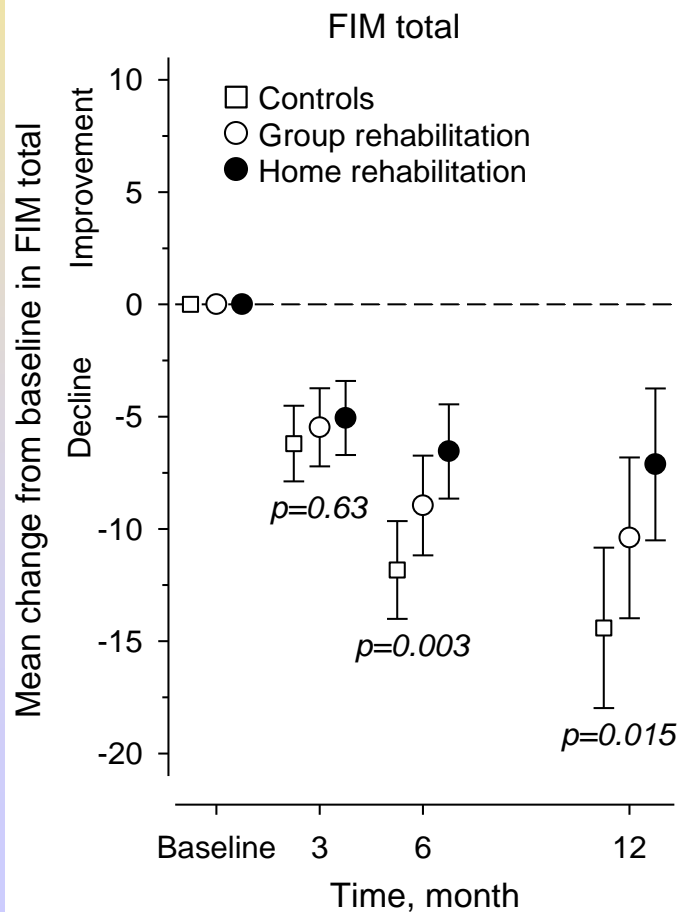
**Effectiveness of exercise
among patients with
dementia**

FINnish ALzheimer patients' EXercise study (FINALEX trial) (RCT)...

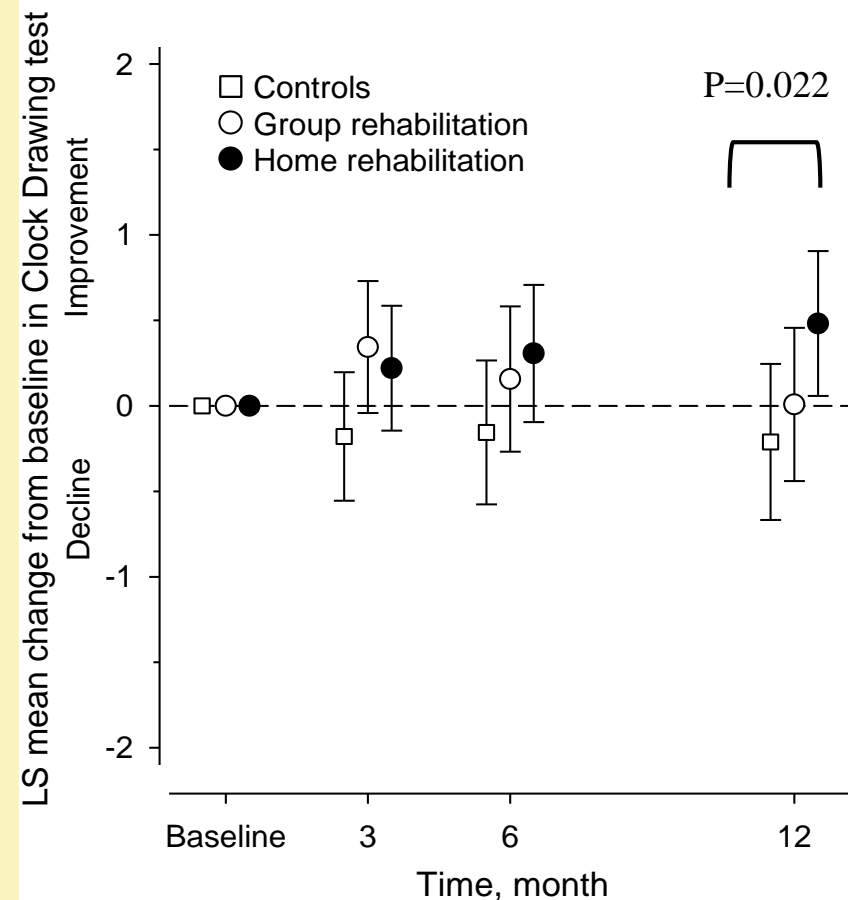
- 210 patients with Alzheimer's disease
- Randomized into:
 - Physiotherapist tailoring home-based exercise
1hour x 2/wk for 12 months
 - Group-based exercise in day center 4hours x2/wk
for 12 months
 - Controls in normal communal care

FINALEX, results:

Prevents disability



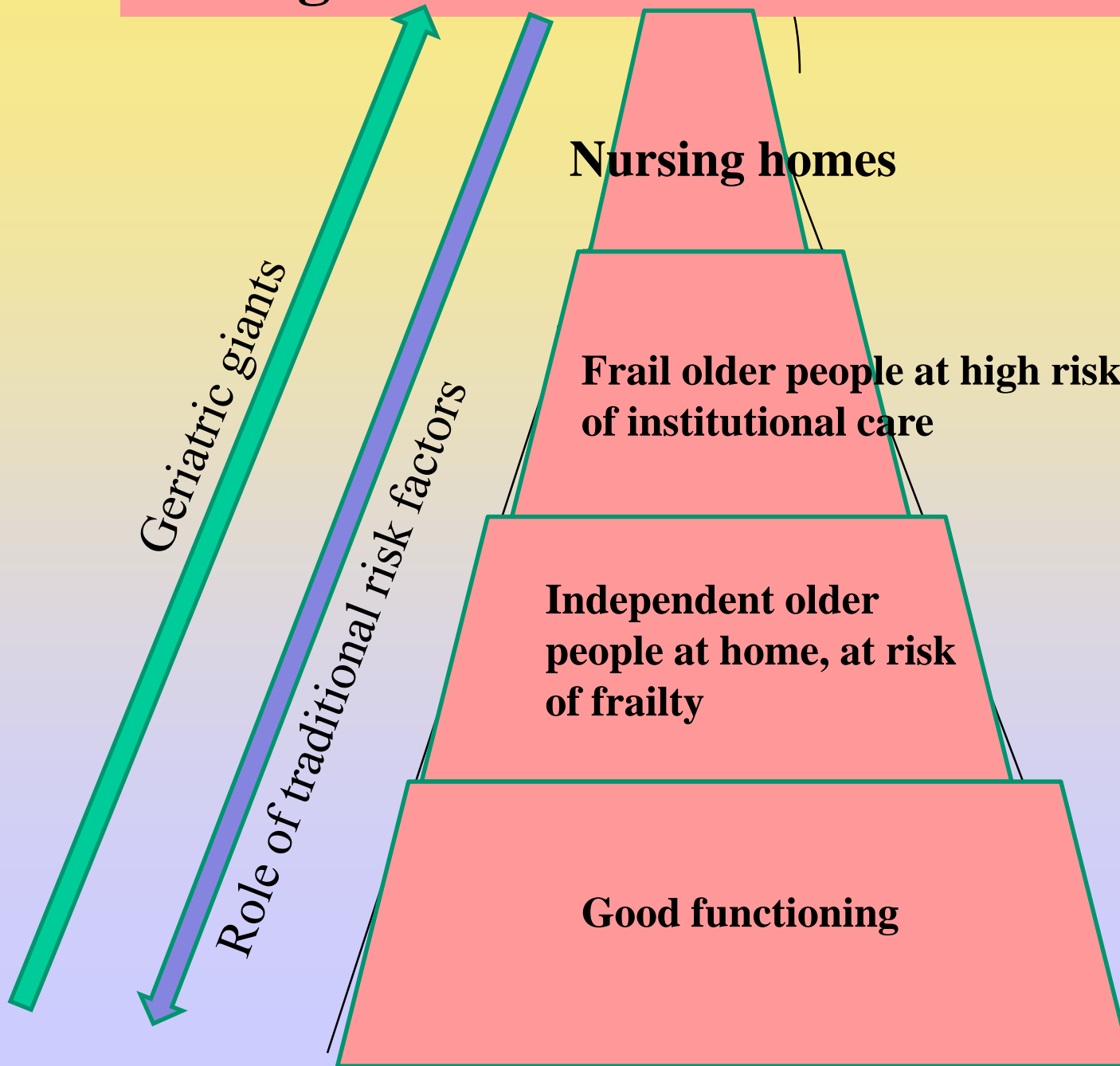
Improves cognition



Use and costs of health and social services

- Control group (C) **25 618€**/ person year
- Group exercise **16 567€**/ person year (p=0.031)
 - Exercise costs 7194€/person
- Home-based exercise **18 854€**/ person year (p=0.13)
 - Exercise costs 5994€/person
- Exercise intervention improved functioning without increasing health and social care costs

Strong evidence of exercise concerns....





**Preventing falls
and fractures**

Preventing falls among older people...

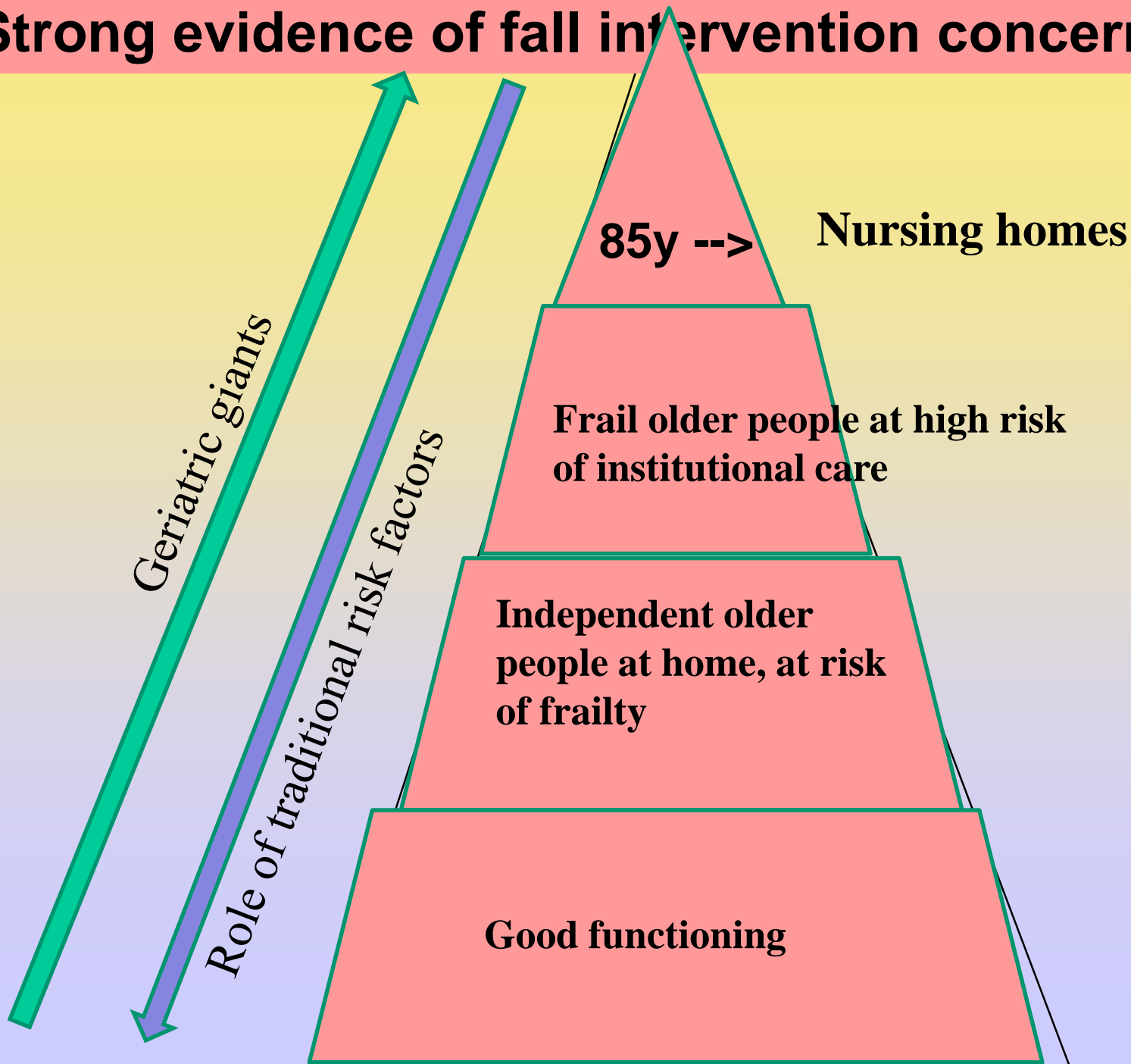
- 111 RCTs in home-dwelling older people (N>55'000)
- Strong evidence (AGS 2011) :
 - Multicomponent interventions (morbidities, drugs, exercise, education, environment)
 - Reducing the use of psychotropic drugs (RR 0.34)
 - Optimizing the use of drugs (RR 0.61)
 - Group exercise training (RR 0.78)
 - Individual exercise training (RR 0.66)
 - Vitamin D (RR 0.81)

FINALEX, effects on falls...

	Group based exercise (N=62)	Home-based exercise (N=63)	Controls (N=66)	P-value¹
Falls, total no	101	83	171	
Incidence rate	1.86	1.35	3.07	0.0052

1 Tested with Poisson's regression model

Strong evidence of fall intervention concerns

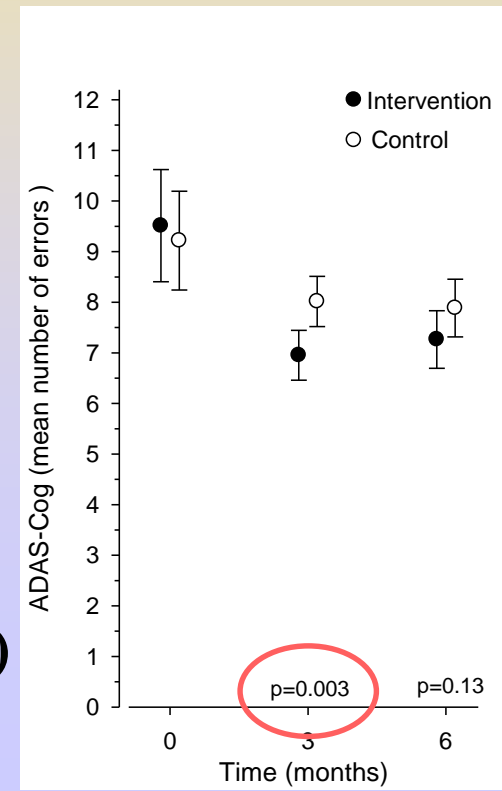


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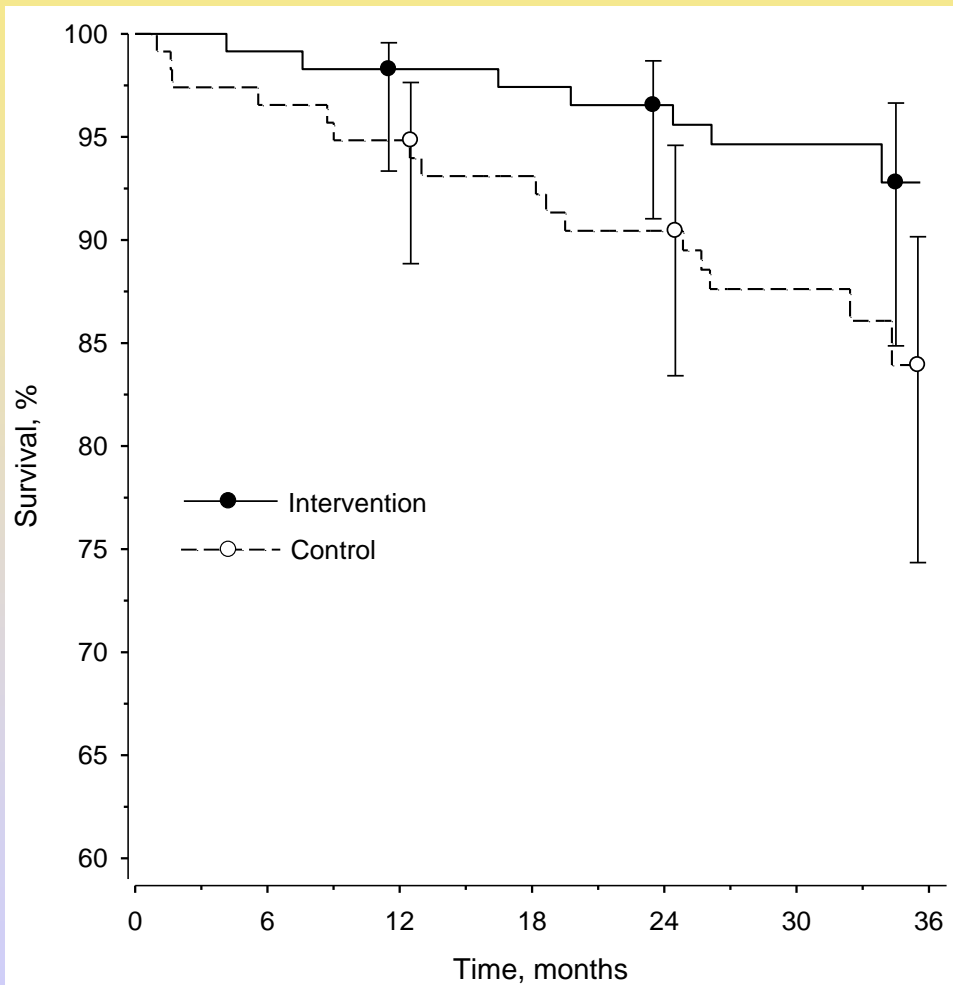
Loneliness

Loneliness predicts cognitive decline, disabilities and death...

- **Participants:** lonely older people (RCT; N=235, mean age 80)
- **Intervention:** psychosocial group intervention to empower older people, support their self-management skills and active agency. Facilitation of peer support + group dynamics.
 - 8/group . 1 day/wk for 3 months
 - Contents: art activities, exercise, writing, interaction
- Results:
 - More friends, QOL improved,
 - cognition improved
- **Use of health services decreased 34% (p=0.020)**



Risk of death decreased in 3 years...

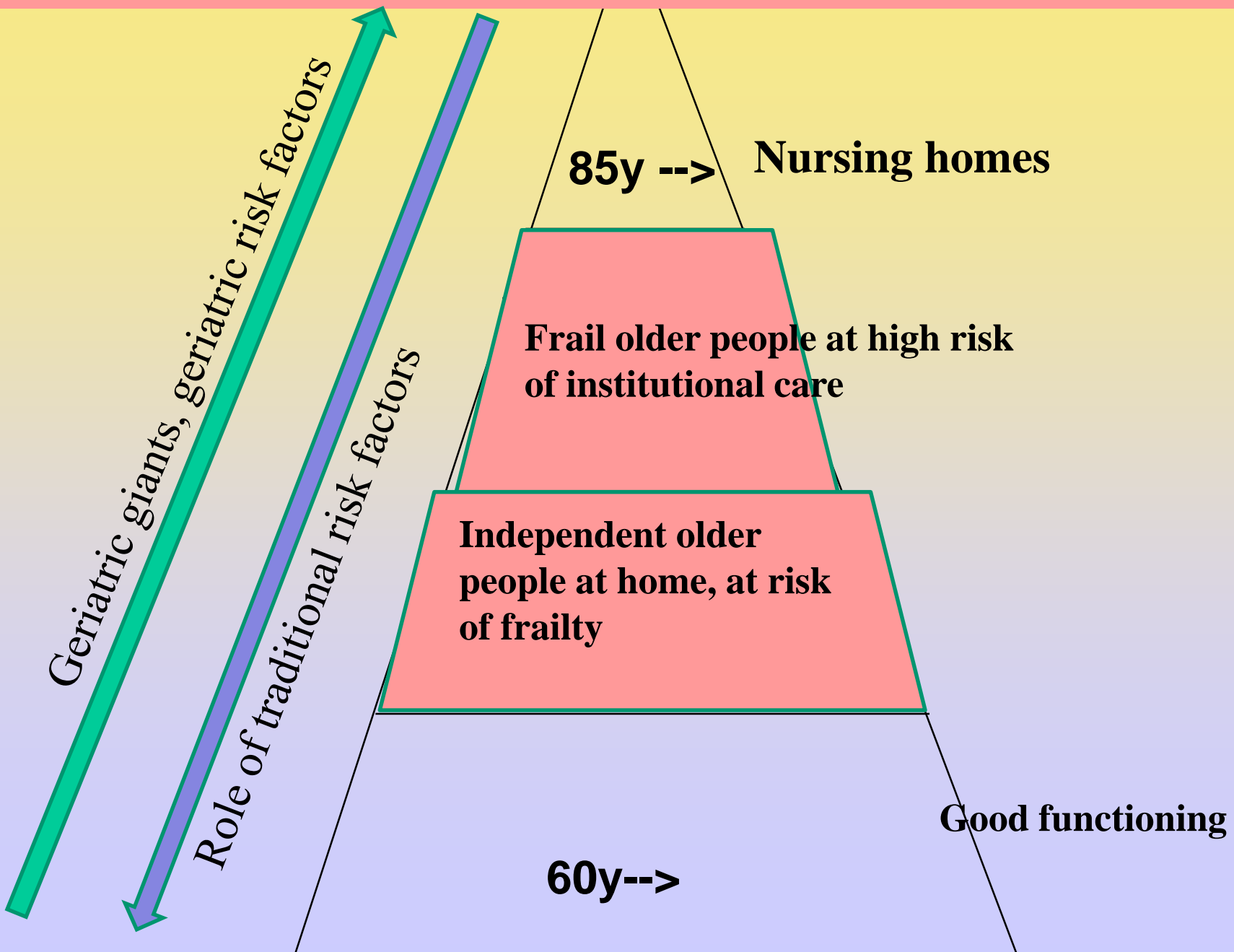


Mortality

HR 0.39 (95% CI 0.15 to 0.98)

P=0.044

Grade B evidence of group intervention concerns



**ESSENTIAL CONCEPTS
IN PREVENTIVE
INTERVENTIONS→**

**Not only WHAT but
HOW!**

Prevention relies on patient's active agency!

- Being a bystander in life and not having meaningful roles →
 - no motivation to take care of yourself

Self-management

- Self-management is patient's ability to organize his/her life under the influence of a chronic disease, to engage in activities and to use knowledge to protect and promote health.
- Evidence in asthma, heart failure, diabetes...

Self management concepts

- Patient **empowerment** → to be an active agent of your own life
- **Self-efficacy, mastery**
 - Problem solving skills, self-awareness to make own decisions and take responsibility for them
 - Planning one's own actions, make objectives for them and make plans for the future

How to support self-management?

- Patient-centeredness, support autonomy
- Optimism: Point out strengths + resources → Positive feedback
- Partnership! Patient gets a feeling of an equal relationship with professionals: dares to ask questions, feeling of self-efficacy
- Coaching! Ability to find information and to solve problems



**CONCLUSIONS AND
TAKE HOME MESSAGES**

TARGETS OF PREVENTION IN OLD AGE:

Risk factors and Geriatric syndromes

Exercise
High BP
Cholesterol ↑
Social capital
Obesity, diabetes
Diet
Stress, depression
Education



GERIATRIC GIANTS
Vascular diseases
Mobility limitations
Falls, fractures
Malnutrition, frailty
Loneliness, depression
Cognitive decline



Disability
Dependency
Institutionalization
QOL ↓
Death

Take home messages

- There is **plenty of evidence on prevention** targeted on both risk factors and geriatric syndromes
- **Target** your intervention on those who benefit
- Take into account your **patient's preferences** – prevention relies on **empowerment, motivation, active agency!**

Optimizing drug treatment in institutional care

- Wards in assisted living facilities were randomized → nurses received training in harmful drugs for older people vs controls
- N=227
- Less falls
- Improved QOL

