Fighting Fractures and Falls with Food: From Science to Practice

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Disclosures

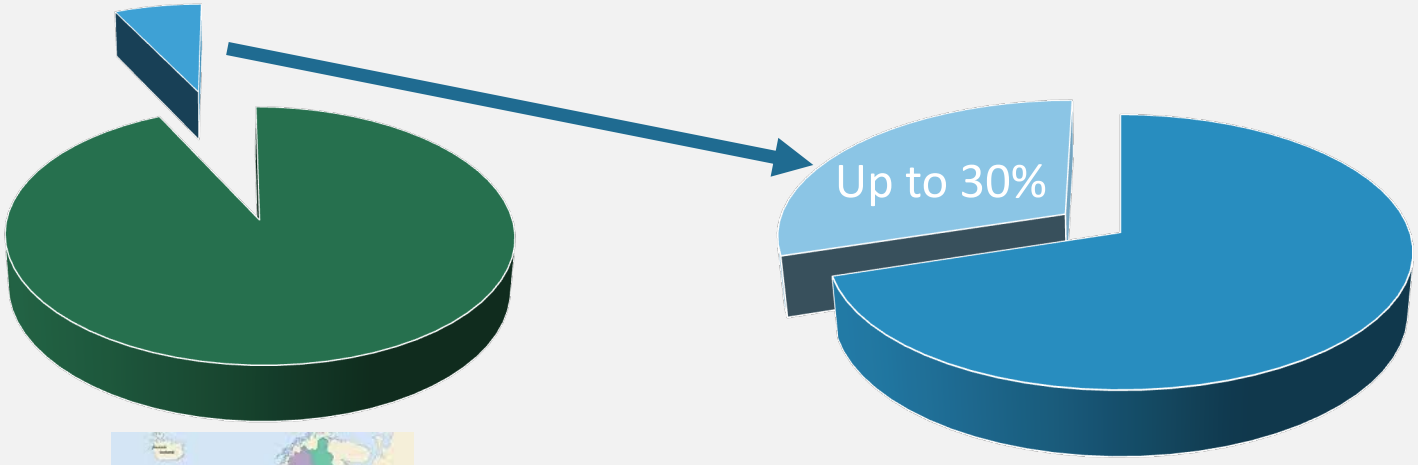
- Abbott: Advisory board / lecture fees
- UK Dairy Council: Expert group-healthy aging
- European Milk Forum: Travel support / lecture fees
- Nestle Health Sciences: Lecture fees
- Israel Milk Board: Lecture fees
- Research support

AUSTIN MEDICAL RESEARCH FOUNDATION

Hip Fracture Burden From Care Homes in Europe

2-13% > 65yo in care homes

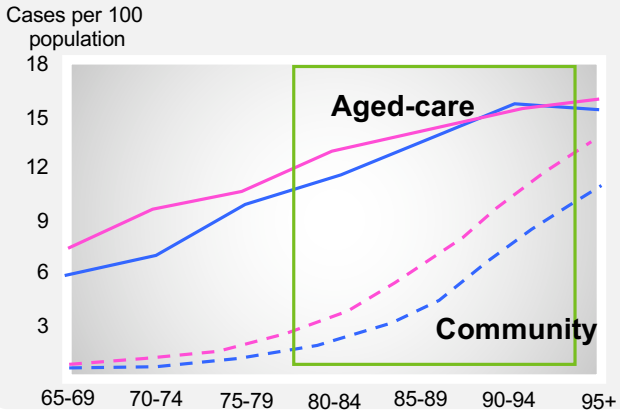
Hip Fractures



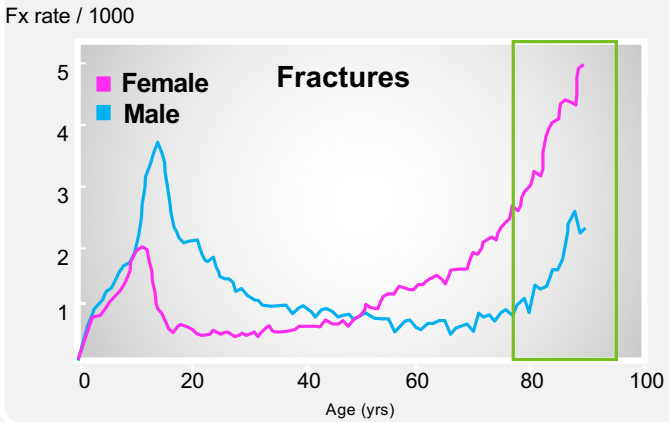
725,000 hip fractures in 2050

Ribbe et al. Age Ageing 1997; Cooper et al., Osteo Int, 1992; Bischoff-Ferrari et al. Bone, 2008

Falls & Fractures in Older Adults



- Falls rates **5 x higher** in aged-care
- **7-20%** of people aged 70+ years fall.
- **30-60%** of older adults in aged care fall.



- **Up to 30%** of hip fractures from aged-care
- Hip fractures cost
  - **€ 24,000** to health system
  - **€ 2,700** to the aged care home

Haagsma et al. Inj Prev, 2020; Tinetti et al. JAGS, 1987, Iuliano et al, BMJ 2021

Why Improve Nutrition in Aged Care Residents?

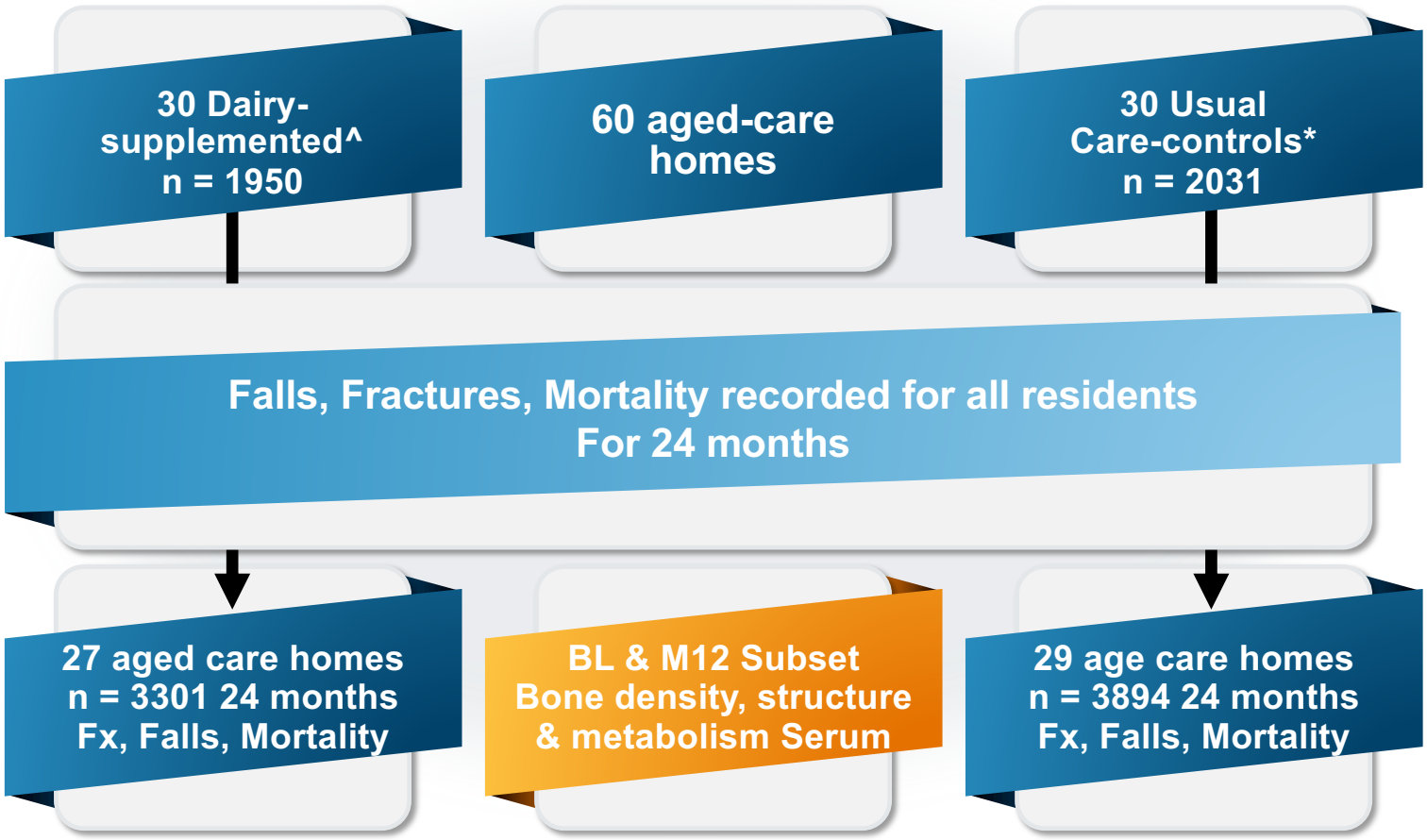
- Source of 30% of hip fractures in the community.
- Falls rates are 5 times higher than community peers.
- High rates of malnutrition.
- Calcium intake 635 mg/day
- Protein intake 0.8g / kg body weight
- Dairy intake 1.5 serving daily*

*250 ml milk, 200 g yoghurt, 40 g cheese

Bischoff-Ferrari et al. Bone, 2008, Aust Inst Health Welfare, 2012, Iuliano et al. J Nutr Health Aging, 2013

Can improved nutrition using a food-based approach reduce falls & fracture risk in older adults in living in aged-care homes?

Dairy and Fracture Study



Study Design

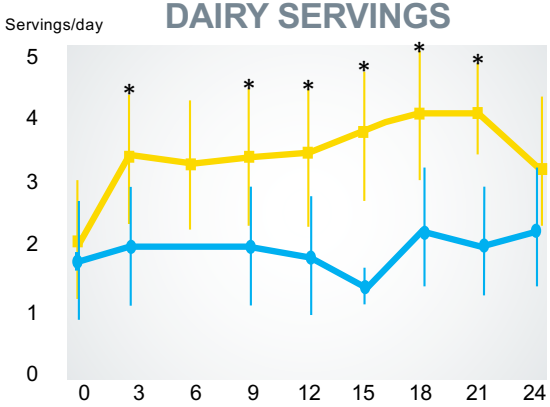
Food service supported to increase dairy options on the menu

Demographics of Aged Care Residents

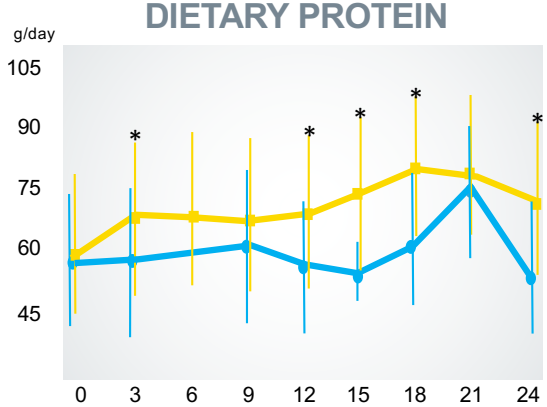
	Intervention n=3301	Controls n=3894
Women (n; %)	2194 (66%)	2680 (69%)
Age (yrs)	87 (8)	86 (8)
Height (m)	1·60 (0·1)	1·60 (0·1)
Weight (kg)	66.5 (15.6)	66.2 (15.8)
Medications (n)*	12 (6)	12 (7)
Medical Conditions (n)*	10 (5)	10 (7)
	n=170	n=130
25(OH)D (nmol/L)	72 (29)	73 (26)

Improved Nutrient intake with Dairy Foods

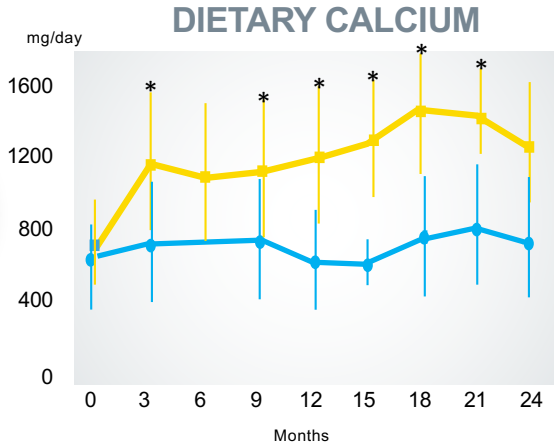
~3.5 Servings daily



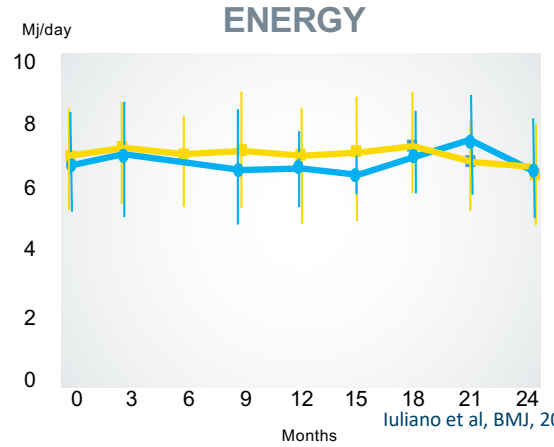
72g/day
1.1g/kg BW



~1100 Mg/day

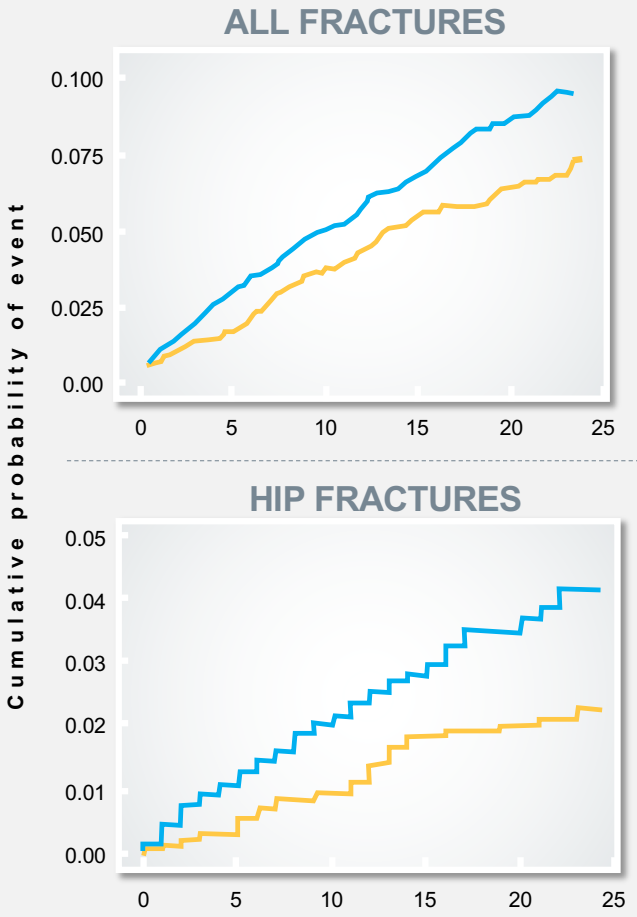


No Change



Iuliano et al, BMJ, 2021

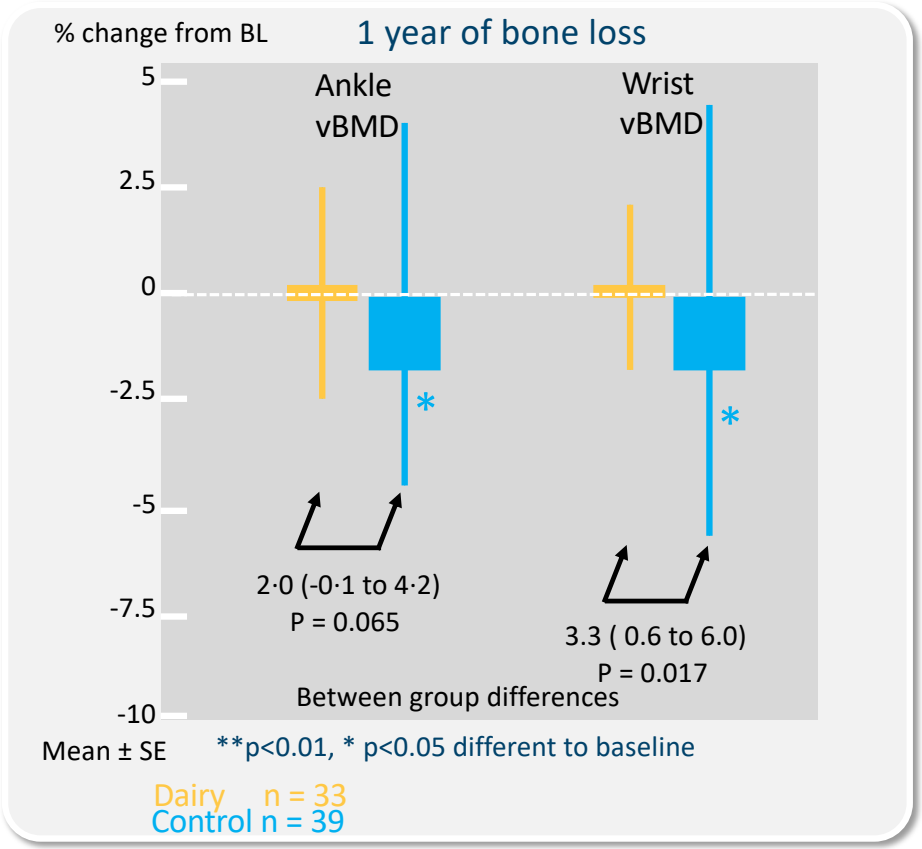
Reduced Fractures with Dairy Foods

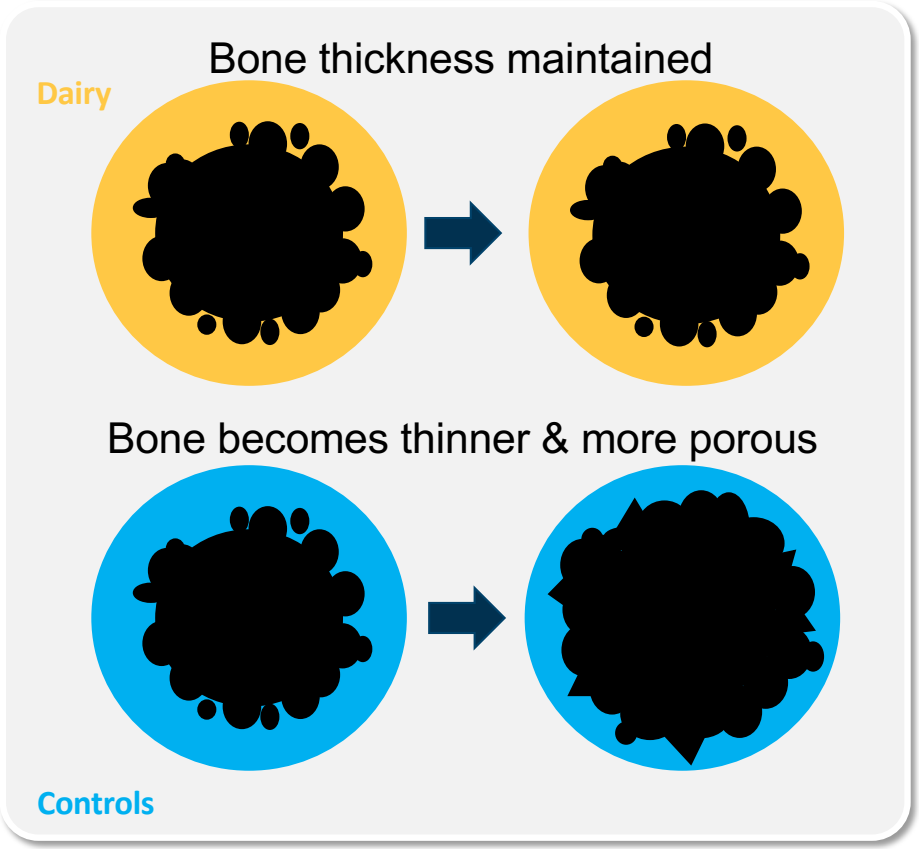


- **33% ↓ in all fractures**
- **Bone density maintained in dairy group, declined in controls**
- **Bone breakdown maintained in dairy group, increased in controls**
- **46% ↓ in hip fractures**

Iuliano et al, BMJ, 2021

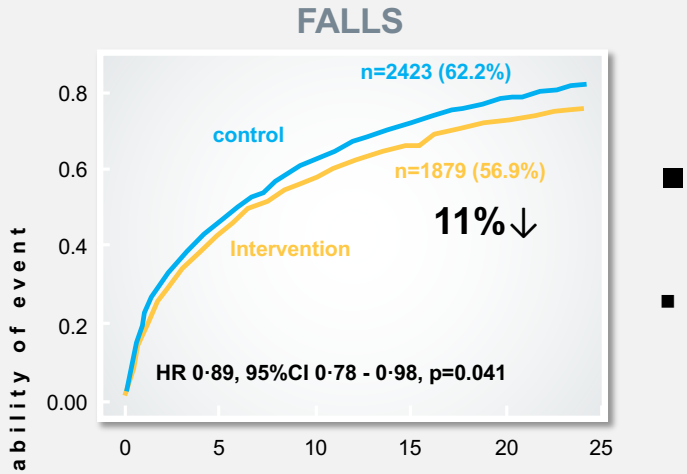
Dairy Foods & Bone Density in Older Adults

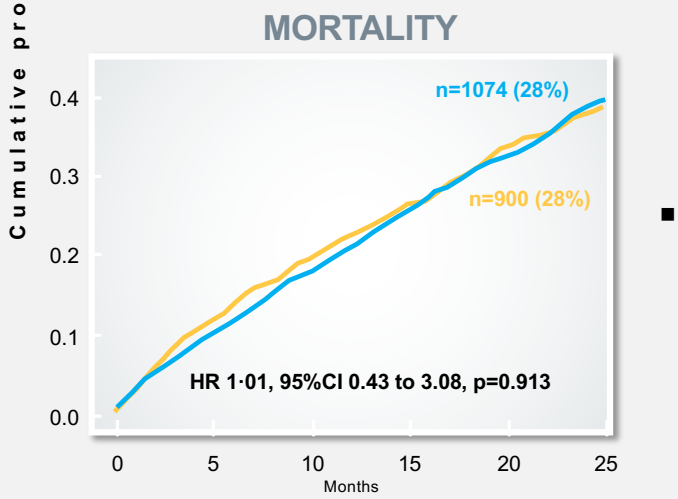




Iuliano et al, BMJ, 2021

Reduced Falls & Unchanged Mortality with Dairy Foods

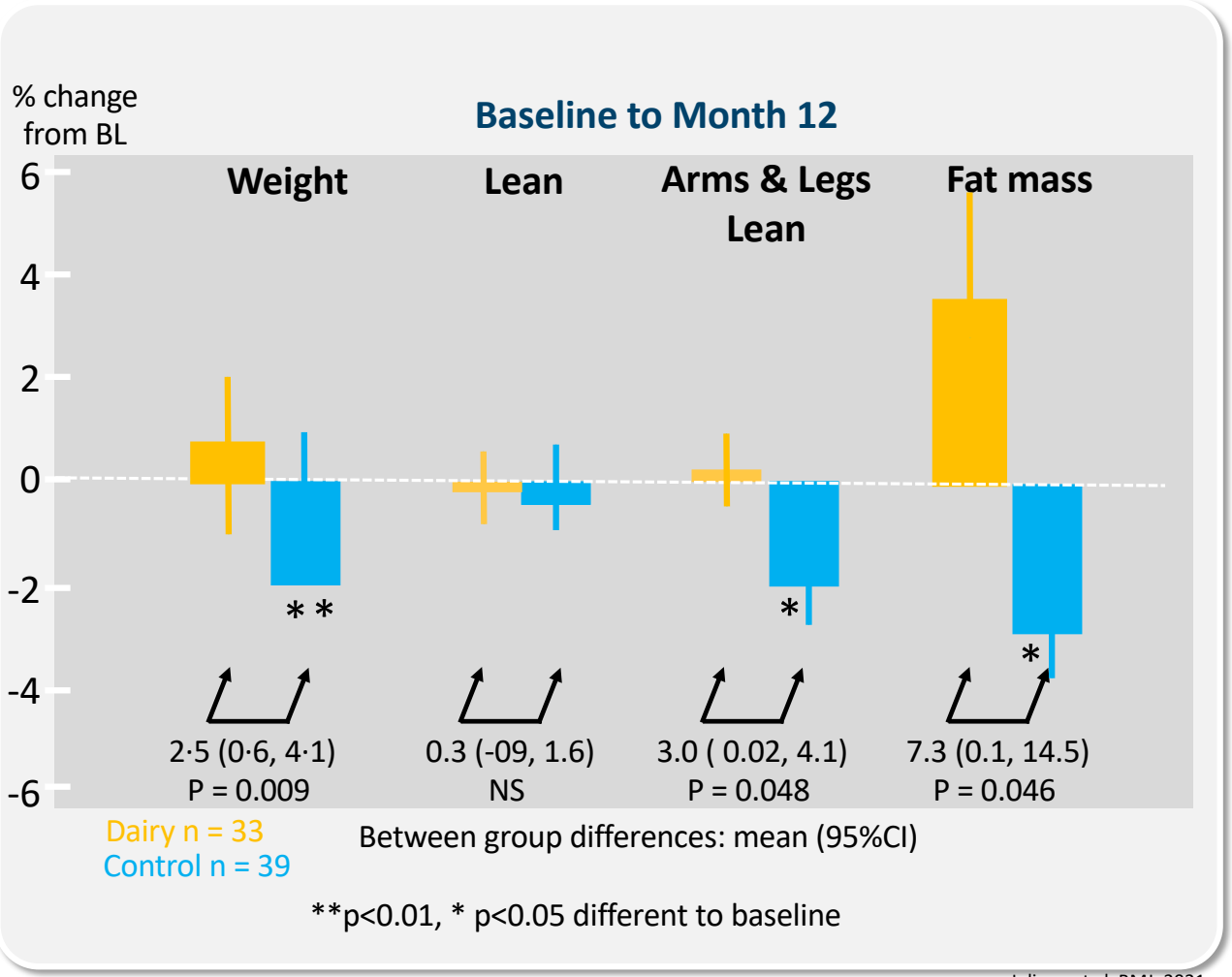




- **11% ↓ in falls**
- **Maintained:**
  (i) weight
  (ii) muscle at arms & legs
  (iii) nutritional status
- **Same life expectancy with fewer falls & fractures**

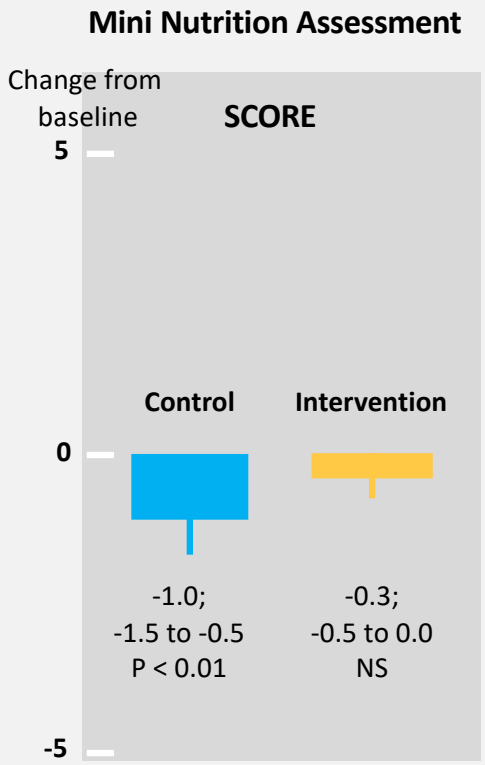
Iuliano et al, BMJ, 2021

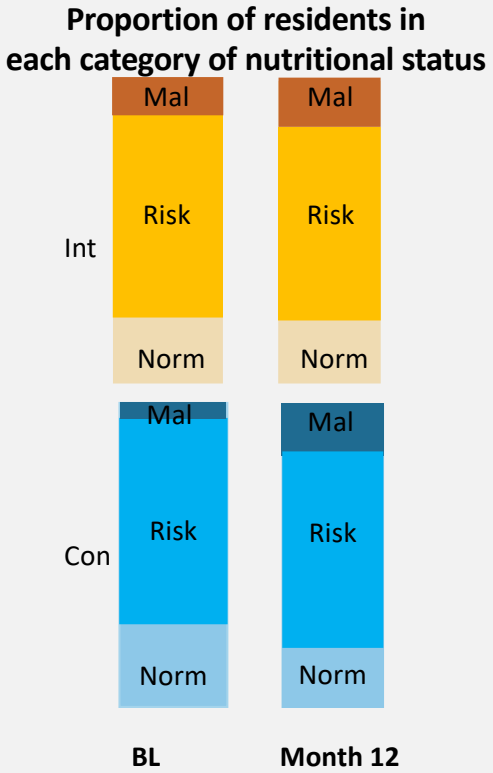
Weight & Lean Mass of Arms & Legs Maintained with Dairy Foods



Iuliano et al, BMJ, 2021

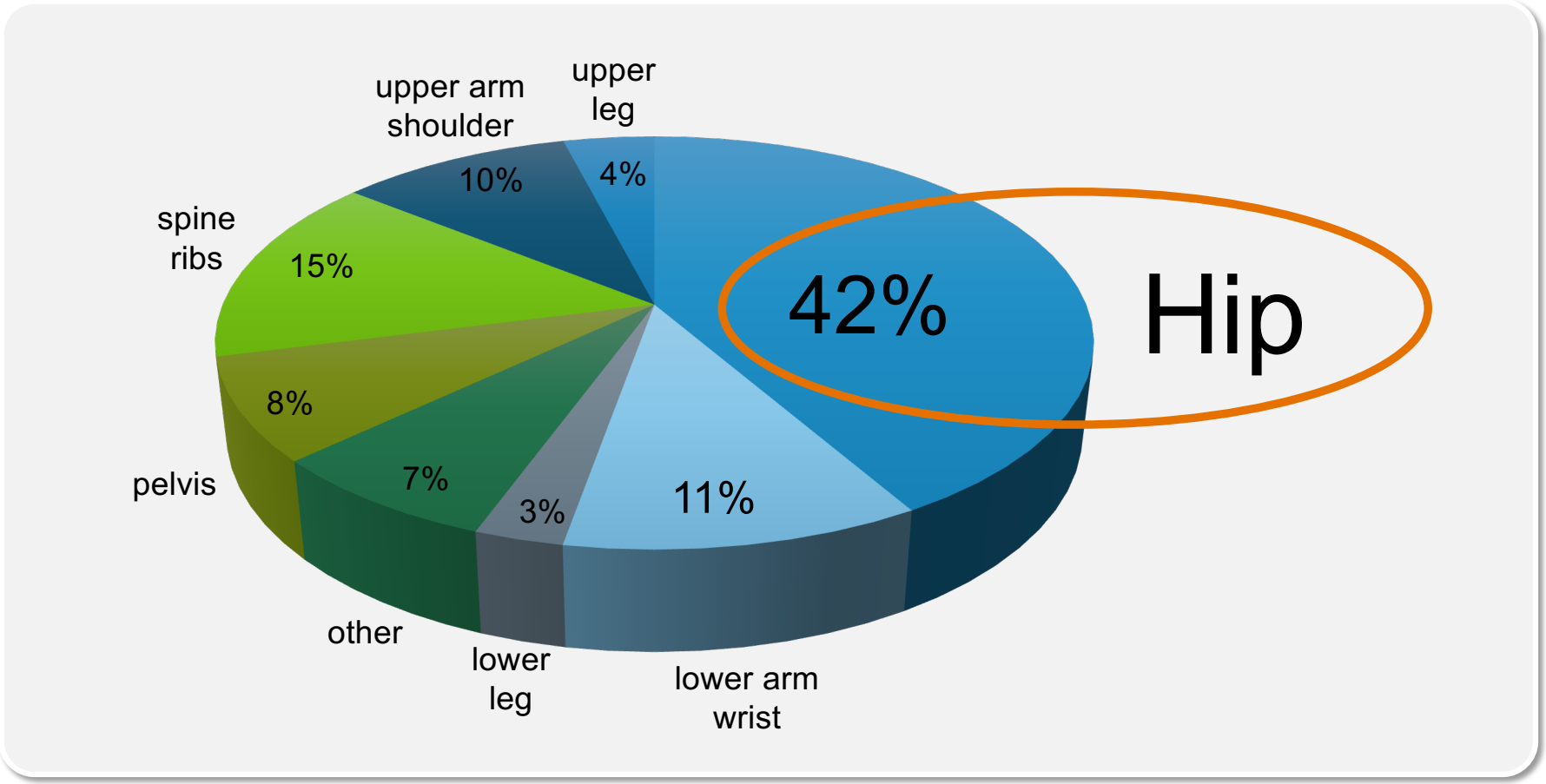
Nutritional Status Maintained with Dairy Foods



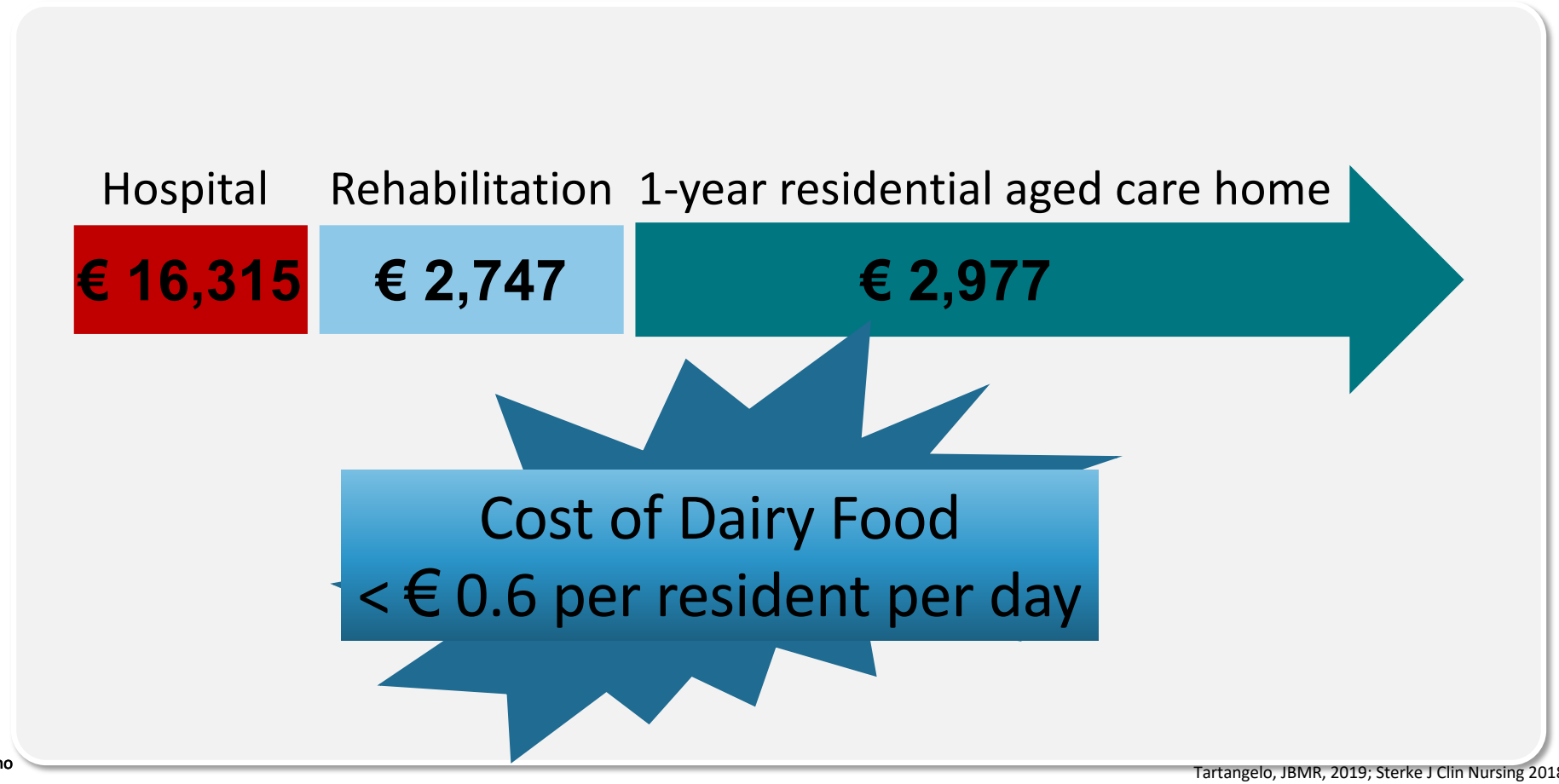


Iuliano et al., J Nurt Health Ageing, 2023

Fractures Types in Aged Care

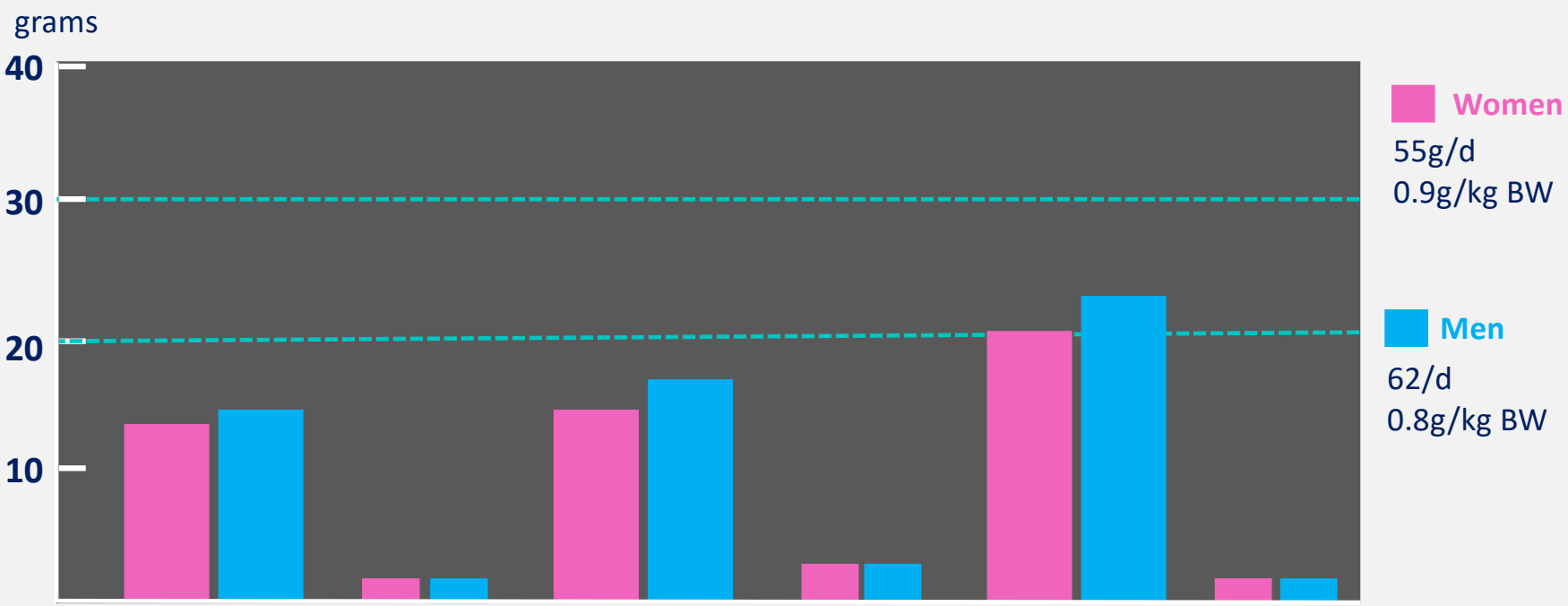


Cost of Hip Fractures in Aged Care



Tartangelo, JBMR, 2019; Sterke J Clin Nursing 2018

Protein Intake in Older Adults in Aged Care



50,000 menu items

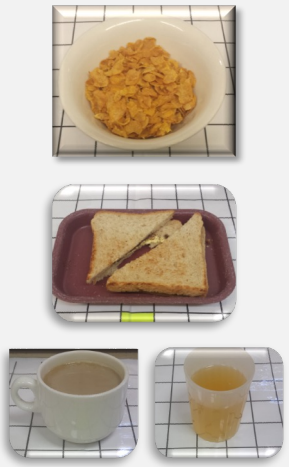
Sample menu: most consumed items

In review: Nutr Diet

Food Consumption in Older Adults in Aged Care Homes

Breakfast

Cereal
Toast
Tea/coffee
Juice



Lunch

Meat
Vegetables
Non-dairy dessert
Non-milk drink

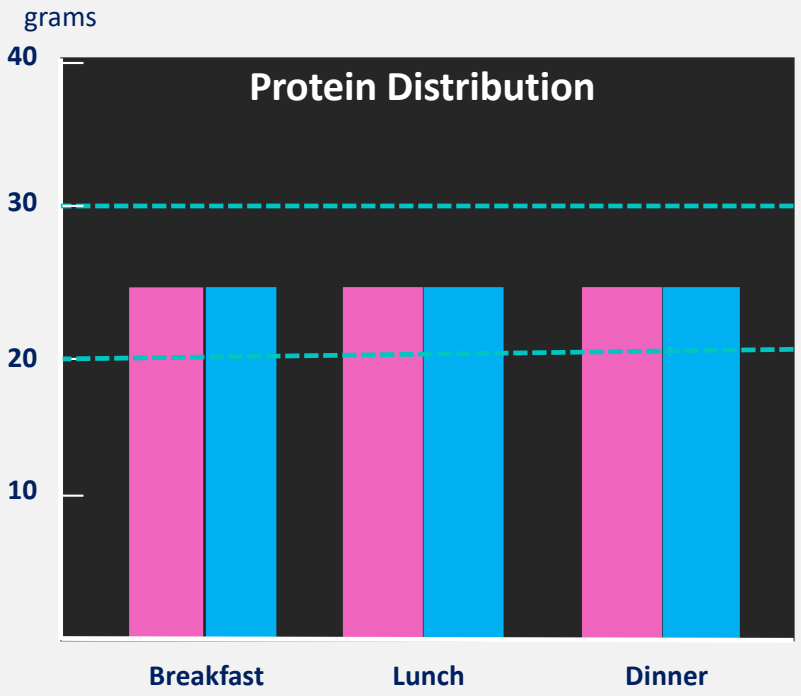
Dinner

Soup-min protein
Salad-min protein
Sandwich-protein
Non-milk drink

Snacks

Biscuit / cake
Tea/coffee

Improving Protein Distribution with Food



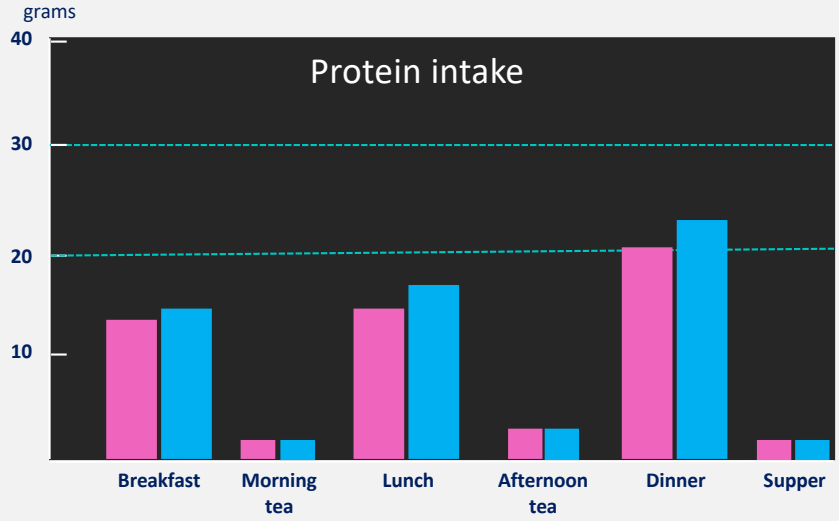
Breakfast
Scrambled eggs + cheese 18 g
Bacon short cuts 8 g
Bread slice 2g
= 28 grams protein

Lunch
Roast beef 15 g
Vegetable mornay 8 g
Custard + fruit 4 g
= 27 grams protein

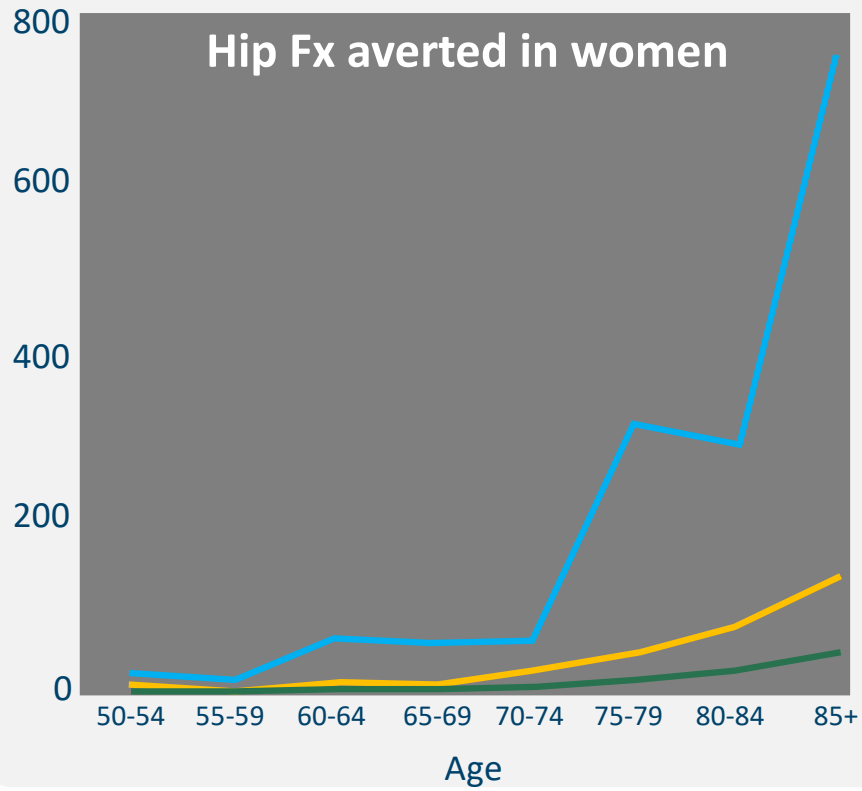
Dinner
Soup + cheese 7 g
Cheese quiche 17 g
= 25 grams protein

Improving Protein Distribution with Food

- Multiple options across the day
- Consider if snacks are consumed
- Residents' preferences
- Staff engagement
  - Skill levels
  - Facilities available



Hip Fractures Averted With Increased Dairy Consumption

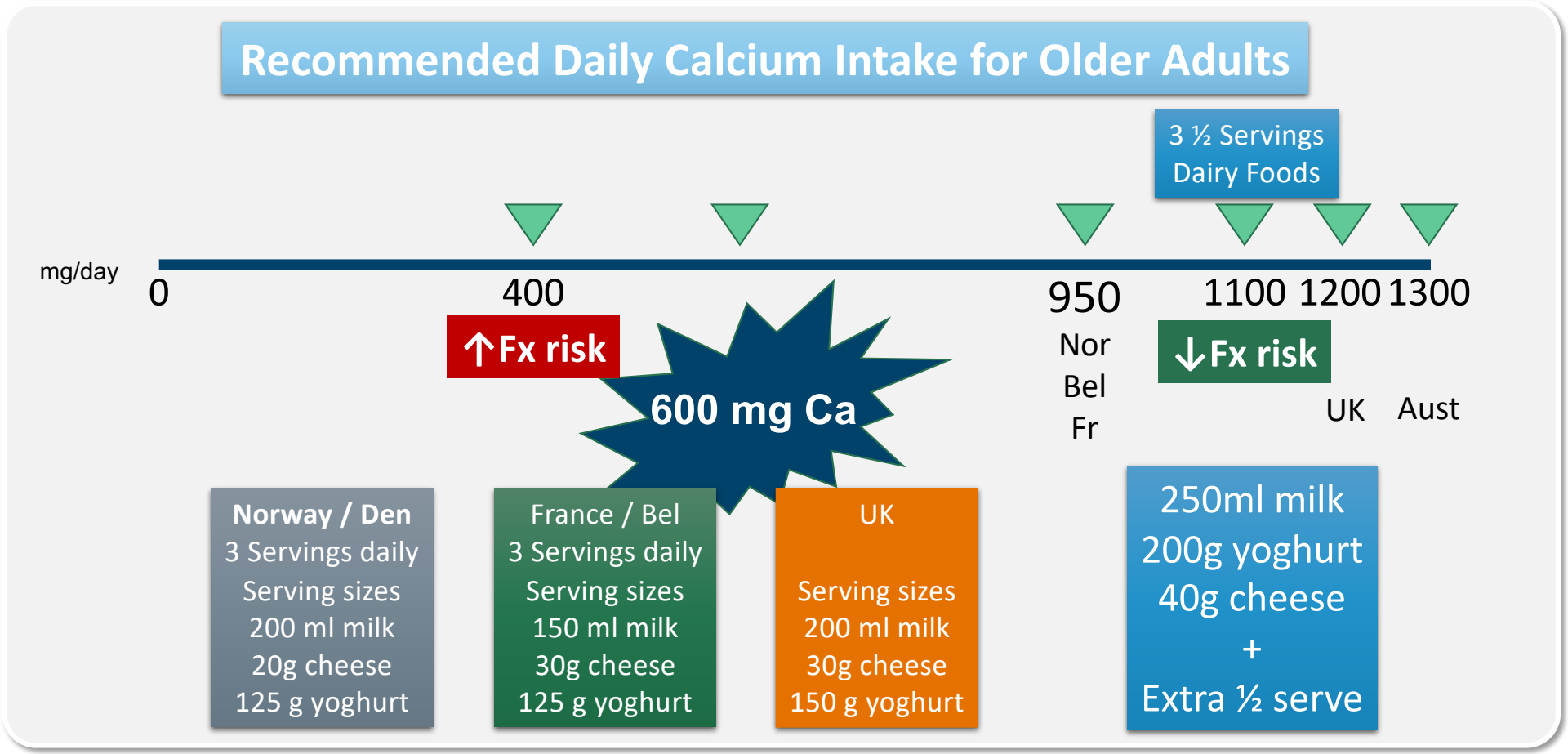


	% women Ca < 600 mg/d	Daily cost of dairy foods	Potential annual Cost savings
France	40%	€ 0.64	€ 129 mil
Sweden	31%	€ 0.68	€ 34 mil
Netherlands	8%	€ 0.44	€ 6 mil

Intervention < € 0.5

Lotters et al., Osteo Int, 2013

Translating Evidence to Policy: Calcium & Dairy Intake



The Importance of Implementation

Our Aims

- ✓ Put research into practice
- ✓ Resource & upskill staff
- ✓ Support best practice

To optimise health in older adults in our care

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