Preventing Malnutrition in Australian Residential Aged-Care

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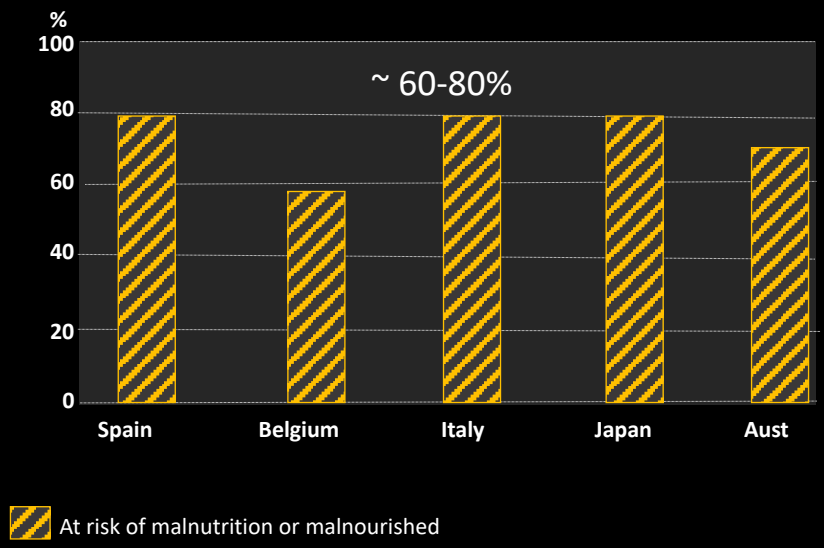
Disclosure

Presentation supported by

Abbott

Malnutrition Prevalence in Nursing Homes



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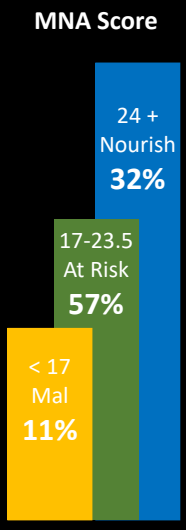
Nutr Hosp 2014 Vaca Bermejo et al; Clin Nutr 2013 Verbrugghe et al; Res Gerontol Nurs 2013 Papparotto et al; JNHA 2014 Izawa et al; Brit J Nutr 2017 Iuliano et al

Nutritional Status of Aged-Care Residents



DIRECT COST OF MALNUTRITION

Dutch Nursing Homes

- At risk of Malnutrition = $12,000 / resident
- Malnourished = $18,000 / resident
- Screening / Monitoring / Treatment

ESTIMATED ANNUAL COST PER FACILITY

100 Bed facility

- At risk of Malnutrition = $684,000
- Malnourished = $198,000

= $882,000

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Iuliano et al, Brit J Nutr 2017; Meijers et al, Clin Nutr 2012

Effects of Malnutrition on Health

- **Skin integrity**
  - Slow or non-healing wounds
  - Increased risk of pressure ulcers

Pressure ulcer treatment
Up to $25/day

- **Increased frailty**
  - Reduced mobility
  - Increased disability

Low- to High-level
$15,000 to $45,000

- **Impaired immune function**
  - Delayed recovery
  - Recurrent infections

Hospital admission
+ $1,800

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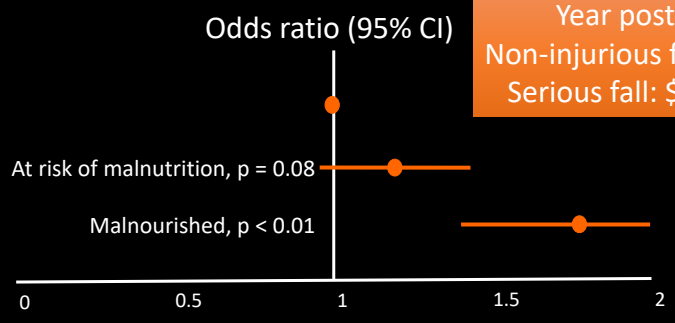
Rowell et al, Euro J Health Econ, 2011

Demarre et al, Int J Nurs Stud 2015

Malnutrition & Falls in Aged-Care



Year post fall
Non-injurious falls $300
Serious fall: $16,000

- 6000 Dutch aged-care residents
- At Risk; BMI & intake
- Malnourished; BMI, Intake & unintentional weight loss

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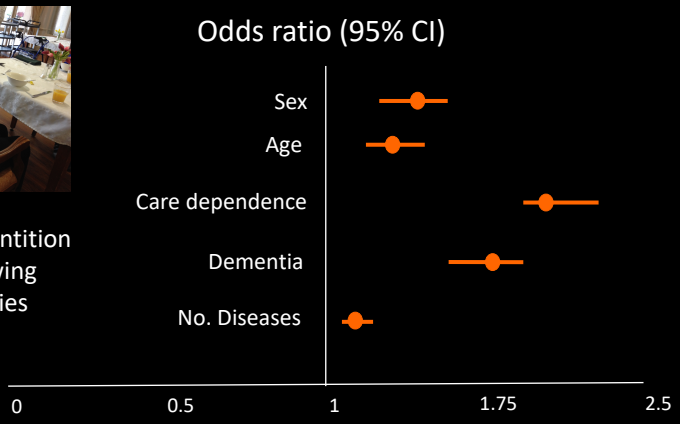
Neyens et al, Arch Geront Geriatc, 2013, Sterke et al, J Clin Nurs, 2018

Malnutrition Risk in Aged-Care Residents

- Poor dentition
- Swallowing difficulties



- N = 19,876 residents
- N = 214 Nursing homes
- Austria, Germany, The Netherlands

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Tamura et al, JAMDA, 2013 Van Vie-Visser et al, BJN, 2014

Protein Intake & Older Adults

- < 0.8 g kg BW: Lean mass loss during WL in PM women
- 1.0 – 1.2 g /kg BW for older adults
  Anabolic resistance
  60 kg = 60 – 72 g/d

Current intake: 0.8 ± 0.3g / kg BW

- 25 – 30 g high quality protein per meal
  60 kg = 75 – 90 g/d

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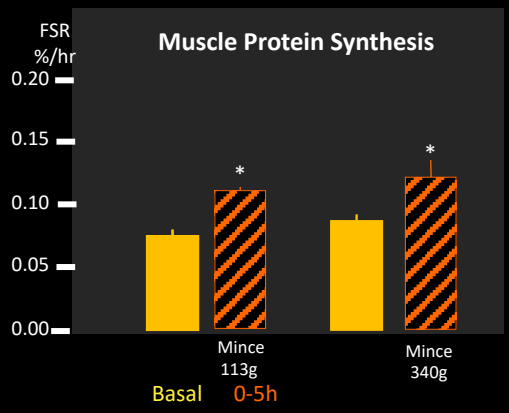
Bopp et al, JADA, 2008, Rizzoli J Clin Densiotom 2015, Paddon-Jones et al, Clin Nutr Metab Care, 2009, Iuliano et al, Br J Nutr, 2017

Protein and Muscle Protein Synthesis



~68 yo

n = 10; 113g group (30g protein, 10g EAA) (~2 servings)
n = 7; 340g group (90g protein, 30g EAA) (~6 servings)

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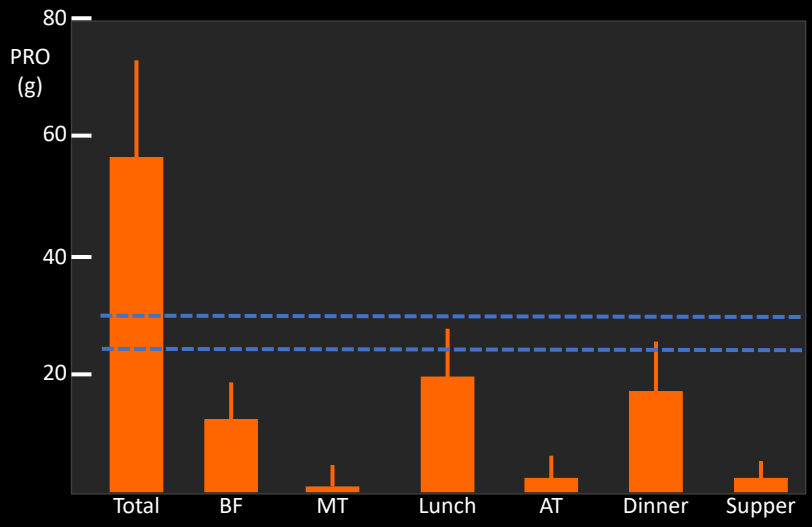
Symons et al. JAMDA, 2009

Protein Distribution in Aged-Care Residents



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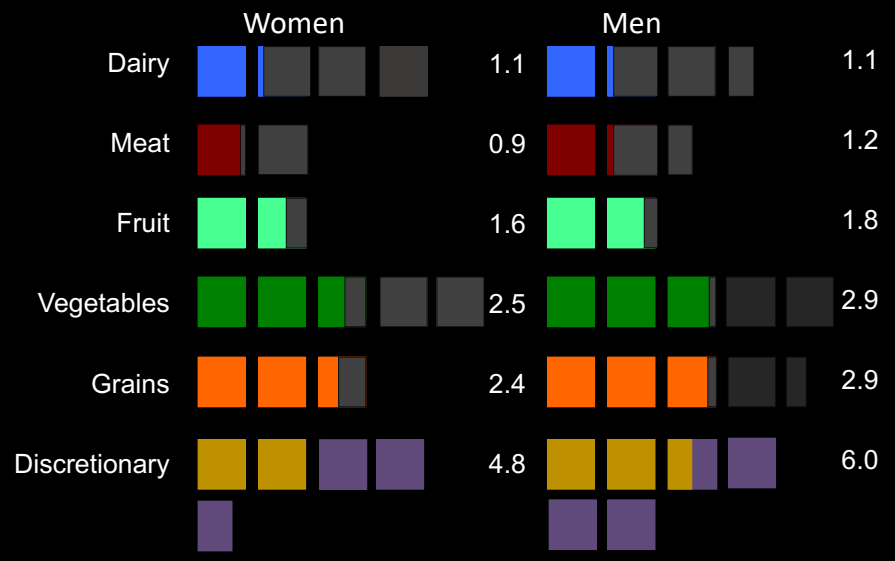
N = 481 Aged-Care Residents , 52 Facilities Mean ± SD

Tieland et al, JAMDA, 2017

Current Food Intake in Aged-Care Residents



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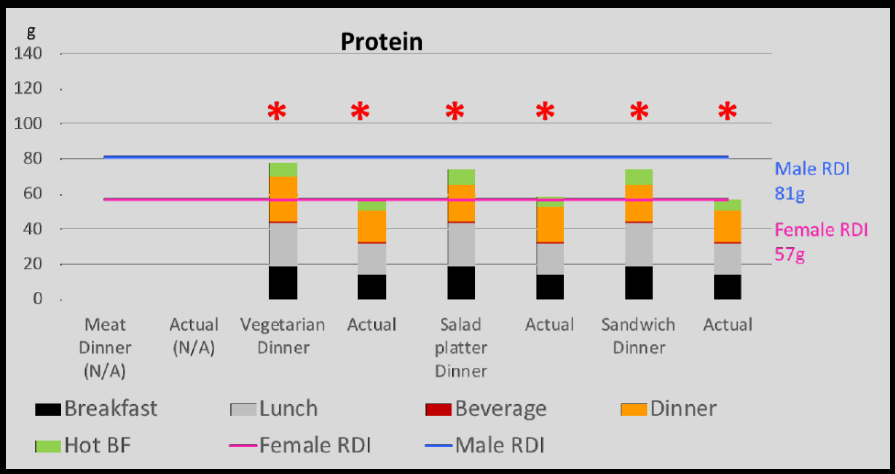
Australian Guide to Healthy Eating

Iuliano et al, Br J Nutr, 2017

The Vegetarian Resident



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Nutritional Standards for Menu Items; Dept Human Services (Victoria)

Strategies to Improve Nutrient / Protein Intake

1. **Oral Protein Supplements**
2. **Food Fortification**
3. **Food-first Approach**
4. **Protein distribution**
5. **Feeding assistance**

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Oral Nutrition Supplements

Aged-Care

- ~2.5% (95%CI: 1.7 – 2.7%) wt gain
- Limited change to lean mass and function
- Often not administered as per treatment plan
- Considerable waste
  - < 1/3 provided correct type & dose
  - Mean intake ~ 55%

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Simmons et al, JAGS, 2006; Gosney et al, J Av Nursing 2003; Lauque et al, JAGS, 2004; Kayser-Jones et al, JAGS, 1998

Longer Term Protein Supplementation Trials

Study	Group	Mths	Intervention	Measure	Outcome	Comment
Dillon et al. JCEM 2009	Women ~68yo N = 7 / grp	3	15g EAA @ 2 x 7.5g/meal	DXA MPS	1.7kg inc FFM	2 x 20 capsules / d
Nortn et al. J Nutr, 2016	Adults ~60yo N = 31 PRO N = 29 PLA	6	0.3g PRO/ kg BW 2 x satchels	DXA	Diff BM, LTM, ALTM	> 50% drop out Pro 9 vs Pla 5 men ~1.2g/kg BW
Leenders et al. J Nutr, 2011	Men T2D ~71yo N = 29 LUE N = 28 PLA	6	7.5g leucine @ 3 x 2.5g/meal	DXA	No change lean mass or BW	3 x 5 capsules / d No compliance data ~1g/kg BW
Tieland et al. JAMDA, 2012	Frail elderly ~80yo N = 65	6	250ml (15g pro) x 2	DXA Biopsy	No change BW, ALM, muscle fibre	92% compliance Habitual energy intake declined
Bjorkman et al. Eurp Ger Med, 2012	NH residents ~ 83yo N = 46 whey N = 51 PLA	6	20g whey @ 3 x 150ml OJ @ each meal	Bio-impedance	No Diff FFM and skeletal muscle index	Compliance ~ 84%
Zhu et al. J Nutr, 2015	Women ~ 74yo N = 93 PRO N = 88 PLA	24	250 ml whey drink (30g pro)	DXA	No diff LM of arms or legs	Compliance ~ 85% ~1.1g/kg BW Total LM not reported

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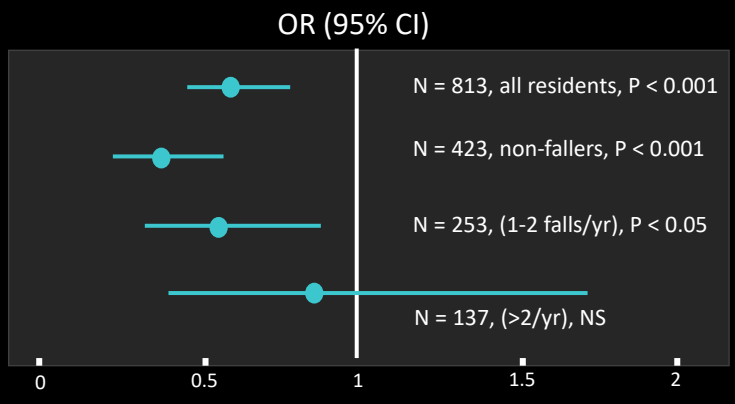
Food-Based Fortification in Aged-Care

- Falls prevention: protein / calcium / vitamin D
  Added to various foods
  2 year study: 20 aged-care facilities



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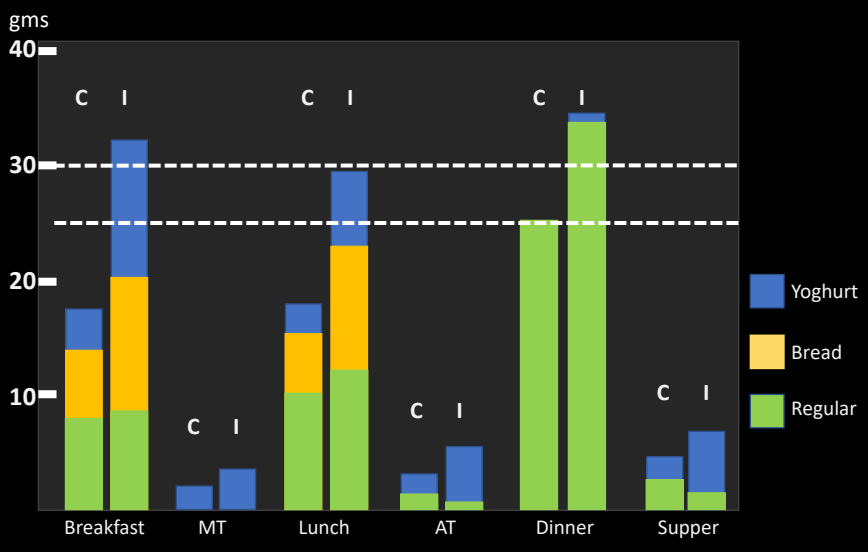
Iuliano et al, JARCP, 2012

Protein Enrichment During Rehabilitation



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Van Til et al, J Nutr Health Aging, 2015

Food-First: Meeting Protein Needs

> 70 years	EAR (g/kg BW)	RDI (g/kg BW)
Men	0.86	1.07
Women	0.75	0.94

70 kg male	=	60 g/day	75 g/day
60 kg female	=	45 g/day	65 g/day

Australian Guide to Healthy Eating

Dairy 4

Meat 2

45 g

30 g

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nrv.gov.au

Feasibility of Food-Based Approach to Manage Malnutrition
Current Status in Aged-Care

Dairy = 250 ml milk
= 12 g cheese
= 13 g protein
= 1.1 g leucine

Meat = 65 g cooked meat
= 1/3 egg
= 21 g protein
= 1.9 g leucine

Daily
34 g high quality protein
3 g leucine

N = 215 residents; 21 facilities

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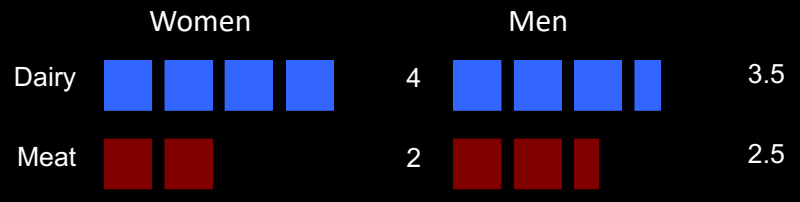
Australian Guide to Healthy Eating

Feasibility of Food-Based Approach to Manage Malnutrition



Dairy = 250 ml milk
= 40 g cheese
= 200 g yoghurt
= 40 g milk powder

Meat = 65 g cooked meat
= 2 eggs

81g high quality protein
7.7 g leucine

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Feasibility of Food-Based Approach to Manage Sarcopenia In Aged-Care

Today's Menu

Breakfast	Lunch	Dinner
Cereal + SMP fortified milk	Meat Yoghurt dessert	Cheese Omelette
Protein 24 g Leucine 2.4 g	Protein 31 g Leucine 3.2 g	Protein 26 g Leucine 2.4 g

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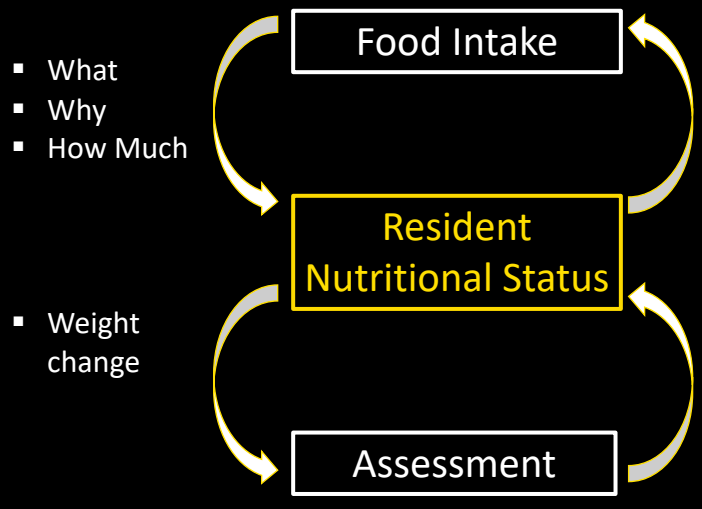
Monitoring Nutritional Status of Residents



- What
- Why
- How Much

- Document
- Ask
- Plate waste

- Weight change

- Body composition
- MNA

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Food-First Approach: Is it Feasible?

- Provide sufficient energy & improve nutritional quality

4 week intervention
4 aged-care facilities (2 int, 2 con)
N = 130 residents (68 int, 78% women, mean age 86.5 yrs)
Increased dairy consumption by 2 serves

	Before	After	Difference
Energy (kj/d)	6014 ± 1414	6915 ± 1434*	901 ± 1252
% EER	84 ± 20	102 ± 20*	18 ± 21
Protein (g/d)	49 ± 11	74 ± 16*	25 ± 12
% RDI	88 ± 19	137 ± 39*	49 ± 32

* p < 0.001

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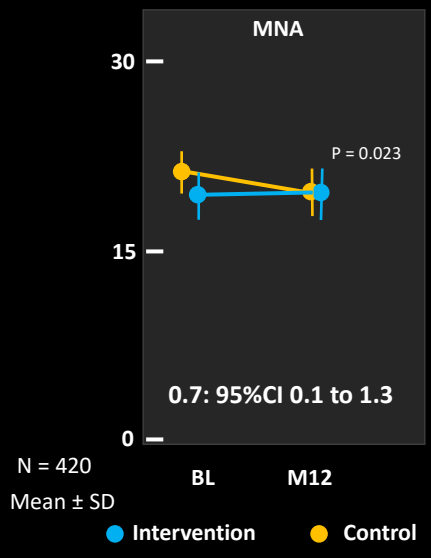
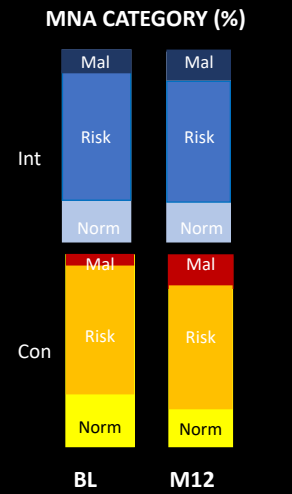
Iuliano et al, J Nutr H Aging, 2013

Food-First Approach to Reduce Malnutrition Risk





Decline in Nutritional Status
Int 22% v Con 32%, p = 0.019

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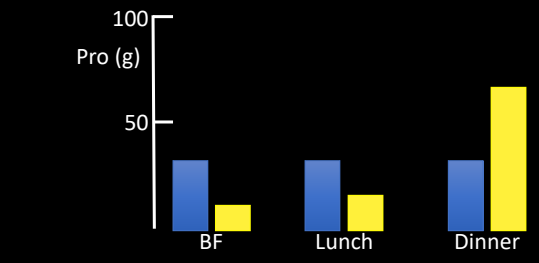
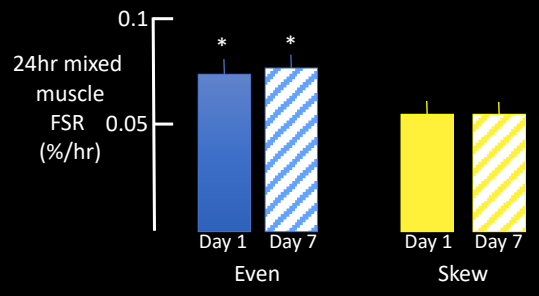
Protein Distribution



- n = 8 adults 37yo
- 1.2g/kgBW
- Diet for 7 days



*Even > Skew
P < 0.05

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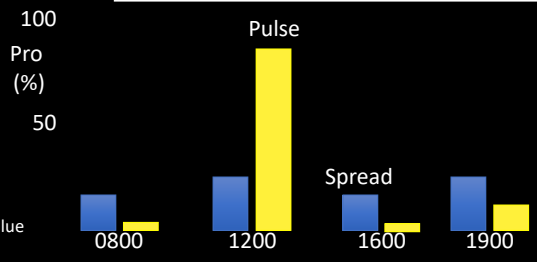
Mamerow et al. J Nutr, 2014

Protein Distribution

- Rehab patients (malnut) ~85 yo
- Randomised 6 wk diet Milk powder
- ~ 1.3 g / kg BW

Change	Pulse n = 29	Spread n = 34	P
Lean Mass (kg)	0.91 (0-1.48)	-0.41 (-1.53-0.49)	<0.05
Lean Mass index kg.m2	0.38 (0-0.60)	-0.21 (-0.61-0.20)	<0.01
Appen SMM index Kg.m2	0.21 (0-0.34)	-0.11 (-0.20-0.09)	<0.05



Mean (95%CI),
p adjusted for baseline value

Pulse
Higher Alb
Lower LMI, ASMMI
Diff CHO, fat

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Bouillanne et al. Clin Nutr, 2013

Feeding Assistance

Aged-Care

- ~ 6 min per resident
- 30+ min required to ensure adequate intake

24 week cross over study
Residents at risk of malnutrition
Assisted with eating meals & snacks
Energy increased ~ 300kcal/day
Weight maintained or increased during intervention
Weight lost during control period
Assistance: 42 min v 5 min (meals)
13 min v 1 min (snacks)

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Simmons et al, JAGS, 2008; Abbott et al, Ageing Res Rev, 2013

Aged-Care Single Framework Quality Standards

Australian Government

What does it mean for food service, food delivery, food choice, and nutritional care in residential aged-care?

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Aged-Care Single Framework Quality Standards

Standard 1: Consumer dignity & choice

Standard 2: Ongoing assessment & planning with consumer

Standard 3: Personal care & clinical care

Standard 4: Services & support for daily living

Standard 5: Organisation's service environment

Standard 6: Feedback & complaints

Standard 7: Human resources

Standard 8: Organisational governance

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Aged-Care Single Framework Quality Standards

Standard 1: Consumer dignity & choice

"I am treated with dignity and respect"

"Make informed choices about my care…"

When residents eats: Access to nutritious snacks outside of set meals
Pre-made foods to be heated / prepared

Supplementation: ONS versus food
Consider alternatives based on person's preferences

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Aged-Care Single Framework Quality Standards

Standard 2: Ongoing assessment & planning with consumer

"I am a partner in ongoing assessment and planning"

"Includes other organisations .....involved in care…"

Menu planning: Team approach;
Food service staff, residents / families, dietitians

Food preferences: Likes / dislike
Changes in preferences

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Aged-Care Single Framework Quality Standards

Standard 3: Personal care & clinical care

"Deterioration…. of person's physical function….

is recognized and responded to in a timely manner "

Dysphasia: Continued monitoring
Transition to texture modified foods

Feeding assistance: Time required: staff available and trained
Food appearance / self feeding

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Source: Puree Food Molds website www.pureefoodmolds.com Images used with permission.

Aged-Care Single Framework Quality Standards

Standard 4: Services & support for daily living

"Promote each person's emotional,

spiritual and psychological well-being"

Food provision:
- Beyond meeting just medical needs
- Desires / memories

Eating experience:
- Eating environment
- Timing of meals / eating in context
- Food based activities

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Aged-Care Single Framework Quality Standards

Standard 5: Organisation's service environment

"I feel I belong and am safe and comfortable

In the organization's service environment"

Food provision:
- Safe to ask for food outside meal times
- Ok to change their mind
- Alternatives are available
- Eating meals outside of set times

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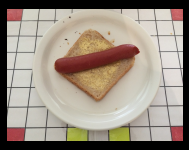
Aged-Care Single Framework Quality Standards

Standard 6: Feedback & complaints

"I feel safe and am encouraged……..to provide feedback & make complaints"

"Feedback & complaints are reviewed & used to improve quality…"

Food complaints:
- Facilitate food forums
- Action complaints / surveys



Considerations:
- Food production
- Food choices
- Food preparation

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Aged-Care Single Framework Quality Standards

Standard 7: Human resources

"I am a partner in ongoing assessment and planning"

"Includes other organisations …..involved in care…"

Staff competency:
- Understand importance / meaning of food for person
- "Plonkers" versus "Engagers"
- Improving nutritional knowledge
- Think creatively

Job descriptions:
- Food-related tasks outside normal job description
- Team approach to improve nutritional care

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Aged-Care Single Framework Quality Standards

Standard 8: Organisational governance

"The organisation's governing body is accountable for the delivery of safe and quality care & services"

Nutritional quality: of foods	Basic nutritional needs are met Quality foods are provided
Organisational changes:	Engagement with residents Eat with residents Value staff & residents

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Preventing Malnutrition in Aged-Care

- Improving nutrient content of foods provided.
  - Majority of dishes are nutritious
- Protein considered at all eating opportunities.
  - Main meals
  - Snacks
- Explore operational changes.
  - Staff: time / training
  - Food delivery / provision

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Thank you

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