NST! THE WHITE ARMY IS HERE! NUTRITIONAL CHALLENGES OF GERIATRIC PATIENTS

Targeting food intake in older adults
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Targeting food intake in older adults

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Plate waste in hospitals

32 studies in hospitals show a median plate waste of 30% by weight (range: 6-65%).

Williams P, Walton, K e-SPEN, 2011
Food intake – Nutrition Day

Food intake is a major independent risk factor for in-hospital mortality.

Only about a third of patients ate all the plated food. More than 40% of those who ate nothing, despite no contraindications to eating, were not provided with any special diets, supplements or artificial nutrition.

Hiesmayer et al, Clinical Nutrition 2006
The food chain

- The patient
- Screening and monitoring
- Appropriate menu
- Preparation
- Distribution
- Serving

Basics in clinical nutrition, ESPEN 2011

Ann Ödlund Olin ESPEN 2014
The Five Aspect Meal Model (FAMM)

The management control system

The atmosphere

Room  Meeting  Product

Gustafsson IB et al J of Food service, 2006
The Five Aspect Meal Model (FAMM)

Several factors influence the meal experience:

- **Room** (light, sounds, colour, design etc)
- **Meeting** (between patient and staff but also between patients and presentation of meals)
- **Product** (menu, food and drinks, portion size)
- **The Atmosphere** (room, meeting and product)
- **The Management control system** (economic and legal aspects, leadership)

Gustafsson IB et al J of Food service, 2006
Hospital nutrition in geriatric long-term care medicine. Effects of a changed meal environment
Elmståhl et al, Compr Gerontol 1987

Measurement of energy and protein intake before, during and after a changed meal environment. The dining-room was redecorated in a way similar to what was common during the 1940s.

16 patients, mean age 80 years.

The same type of meals were served during each period, on trays in a conventional way and on serving dishes where patients could help themselves during the intervention period.

The intake of energy and protein increased by 25%. (p<0.001).

No significant changes in body weight.

Ann Ödlund Olin, ESPEN 2014
Effect of family style meals on energy intake and risk of malnutrition in Dutch nursing home residents: a randomised controlled trial

178 residents, mean age 77 years

Interventions: Table dressing e.g. drinking glass vs plastic cups.

Food services e.g. meal served in dishes on table vs pre plated tray.

Staff e.g. nurses sit down at tables and chat with residents vs staff do not sit down – hand out trays.

Residents e.g. balanced seating of residents vs seats assigned on basis of availability.

Mealtime e.g. no other activities vs diverse activities.
# Results

<table>
<thead>
<tr>
<th></th>
<th>I-group</th>
<th>n=94</th>
<th>C-group</th>
<th>n=84</th>
<th>ΔIn-ΔCo</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy (kcal)</td>
<td>1423 (33)</td>
<td>115 (47)*</td>
<td>1496 (39)</td>
<td>-100 (39)*</td>
<td>235</td>
<td>83-268</td>
</tr>
<tr>
<td>Protein (g)</td>
<td>58 (1.5)</td>
<td>4.0 (1.2)*</td>
<td>59.3 (1.7)</td>
<td>-3.7 (1.3)*</td>
<td>8.6</td>
<td>3.4-13.6</td>
</tr>
<tr>
<td>MNA Score</td>
<td>20.1 (0.4)</td>
<td>2.5 (0.5)*</td>
<td>21.1 (0.3)</td>
<td>-1.5 (0.8)*</td>
<td>3.9</td>
<td>2.3-5.6</td>
</tr>
<tr>
<td>B-weight (kg)</td>
<td>74 (1.7)</td>
<td>0.5 (0.4)</td>
<td>75 (1.8)</td>
<td>-1.1 (0.4)</td>
<td>1.5</td>
<td>0.4-2.7</td>
</tr>
</tbody>
</table>

Nijs K, et al 2006

Ann Ödlund Olin ESPEN 2014
• **Ordinary food** by the oral route should be the first choice to correct or prevent undernutrition in patients.

• Sip feedings should not be used as a substitute for the adequate provision of ordinary food, and should only be used where there are clear clinical indications.

• Artificial nutritional support should only be started when use of ordinary food fails or is inappropriate.
Interventions

- Hospital food, energy and protein fortified meals
- In between snacks, energy and protein rich
- Oral nutritional supplements
- Enteral nutrition
- Parenteral nutrition
- Interventions to facilitate eating
Energy-enriched hospital food to improve energy intake in elderly patients
Olin Ödlund A et al J of parenteral and enteral nutrition, 1996

Investigate the effect of 50% increase of energy density in ordinary hospital food on: energy intake, volume of food consumed, body weight and functional ability.

36 patients in two comparable geriatric wards.
Mean age 82 years.
**Methods**

Cross-over design

<table>
<thead>
<tr>
<th>Ward A</th>
<th>Ordinary food</th>
<th>Energy-dense food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ward B</td>
<td>Energy-dense food</td>
<td>Ordinary food</td>
</tr>
</tbody>
</table>

**OF** = Ordinary food → 1670 kcal/day

**EF** = Energy-dense food → 2520 kcal/day

Olin Ödlund A et al 1996

Ann Ödlund Olin ESPEN 2014
## Fortification

<table>
<thead>
<tr>
<th></th>
<th>OF</th>
<th>E%</th>
<th>EDF</th>
<th>E%</th>
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</thead>
<tbody>
<tr>
<td>Protein</td>
<td>80</td>
<td>15</td>
<td>101</td>
<td>15</td>
</tr>
<tr>
<td>Fat</td>
<td>60</td>
<td>30</td>
<td>125</td>
<td>4</td>
</tr>
<tr>
<td>Carbo-hydrates</td>
<td>220</td>
<td>55</td>
<td>277</td>
<td>43</td>
</tr>
</tbody>
</table>

Olin Ödlund A et al 1996

Ann Ödlund Olin ESPEN 2014
Energy intake

- Body weight increased by 3.4 % (p< 0.001).
- Improvement in physical activity (p<0.05).
- Energy dense food did not cause a decrease in the volume of the food consumed.
- The cost for the fortification was <4% of the overall cost for ordinary hospital food.

Olin Ödlund A et al 1996

Ann Ödlund Olin ESPEN 2014
Energy-dense meals improve energy intake in elderly residents in a nursing home
Ödlund Olin A et al Clinical Nutrition 2003

• Evaluation of long-term (15 weeks) effects of energy-dense food on energy intake, body weight, functional ability and infection rates.

• Lunch and dinner were fortified
Ordinary food → 1600 kcal/day C-group n=18
Energy-dense food → 2100 kcal/day, I-group n=17

Median age 83 years
Energy intake

Kcal/kg (bw)

Control

Intervention

Mean±SD

***p<0.001

Ödlund Olin A et al 2003
Ann Ödlund Olin ESPEN 2014
Energy-dense meals improve energy intake in elderly residents in a nursing home
Ödlund Olin A et al Clinical Nutrition 2003

- Energy-dense food was associated with maintained ADL-function in contrast to ordinary food.
- The number of infections tended to be lower in the Intervention group.
Effect of providing fortified meals and between-meal snacks on energy and protein intake of hospital patients
Gall et al, Clinical Nutrition, 1998

- Meal fortification and snacks, 966 kcal extra per day and an extra 22.2 g protein/day.
- Medical, elderly care and orthopaedic wards (I-group n=62, C-group n=81)
- Fortification significantly increased:
  - energy intake by 17.5% (p=0.007), having greatest effect on patients with the lowest energy intake
  - protein intake by 8.2% (p=ns)
A recipe for improving food intakes in elderly hospitalized patients  Barton et al Clinical Nutrition 2000

• Elderly rehabilitation ward, patients randomised to fortified menu (n=14) or normal menu (n=13).
• Reduced portion size (approx 20%), 200 kcal extra per day.
• Mean energy intake at lunch and supper was 25% (p<0.001) higher on the fortified menu.
Smaller but energy and protein enriched meals improve energy and nutrient intakes in elderly patients Lorefält et al Nutrition Health Aging 2005

- Geriatric rehabilitation ward (n=10).
- 2150 kcal/day planned - enriched meals had half portion size to the standard menu (1 week each type of meals)
- Energy intake increased by 37% (p>0.01) during energy enriched meals.
Effects of food fortification on nutritional and functional status in frail elderly nursing home residents at risk of malnutrition Smolier et al, Clinical Nutrition 2008

- Nursing home residents (randomization according to wards) fortified menu (n=22) or normal menu (n=30).
- Protein and energy enriched soups and sauces and two energy dense snacks (12 weeks).
- Protein intake increased significantly (p=0.01) in fortified group, no improvement in energy intake.
- Nutritional parameters improved in both groups.
- Functional status remained unaffected.
Enchancement of select foods at breakfast and lunch increases energy intakes of nursing home residents with low meal intake
Castellanos et al J of American Dietetic Association 2009

• Nursing home residents (n=33, mean age 87 years).
• Randomised cross-over design. No meals enhanced, only lunch enhanced and both breakfast and lunch enhanced.
• Two breakfast foods (juice and hot cereal) and two lunch foods (soup and potato side dish) were fortified.
• Energy intake increased significantly among “smaller eaters” compared to “bigger eaters”. The effect was higher if more than one meal was enhanced to “smaller eaters”.

Ann Ödlund Olin ESPEN 2014
Positive effect of protein-supplemented hospital food on protein intake in patients at nutritional risk: a randomised controlled trial  Munk et al, J of Human Nutrition and Dietetics, 2014

- Patients at nutritional risk (oncology, orthopaedics, urology)
  Protein supplemented food service concept with natural energy-dense ingredients and high quality protein powder.
  Protein menu ( n=41) or standard hospital menu (n=40).

- Intervention Group (IG): 23 protein enriched small dishes served à la carte with room service + standard food service =Buffet serving: 3 main meals and 2-3 in between snacks.

- Control Group (CG): Buffet serving: 3 main meals and 2-3 in between snacks.
Positive effect of protein-supplemented hospital food on protein intake in patients at nutritional risk: a randomised controlled trial  Munk et al, J of Human Nutrition and Dietetics, 2014

- 66% of the patients in IG vs 30% in CG reached > 75% of protein requirements (p=0.001).
- Protein intake increased IG: 0.9 protein /kg vs CG 0.7 kg/ (p=0.003).
- Weight-adjusted energy intake increased in the IG.
- Body weight, handgrip strength and length of hospital stay did not differ between groups.
Energy and protein dense meals in Sweden

Energy dense meals is today used to patients who are at risk for malnutrition or who are malnourished.

Half portion size gives approximately the same energy and other nutrients as a full portion size.
Breakfast and snacks are important

Lunch and dinner give approximately 50% of the patients requirements.

Breakfast and snacks are therefore of the same importance as lunch and dinner.
Energy-dense snacks

Sweet snacks

Salt snacks
Interventions to facilitate eating
some examples

• Assistance with meal and eating, opening packages/cutting up food/meals can be reached/enough time to eat.

• Modified eating equipment, e.g.: plate guard, easy grip cup.

• Correct eating/sitting position.

• Meal environment - eating with others or eating alone.

• Protected mealtimes – no meal interruptions.

• Pain/nausea treatment before mealtimes.

• Involve and motivate the patient - inform about the importance of good nutrition for successful treatment.

• Oral care.

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Nutritional screening

Patient at nutritional risk
- Assessment of nutritional status
- Dietary record
- Energy/fluid requirements
- Intake vs requirement

Not at nutritional risk

Ordinary food or special diet, eg gluten free diet

Monitoring and evaluation

Transfer of information to the next care provider

- Care plan
- Nutritional support eg fortified food, oral supplements
- Interventions to facilitate eating

Nutritional support eg fortified food, oral supplements
Summary: strategies to improve food intake

Provision of meals is regarded as an essential part of nursing and medical treatment of patients and not as a hotel service. Meal serving should be undertaken by nursing staff.

Positive attitude when serving meals and presentation of the meals.

“Person-centered care” - individualized and flexible provision of meals.

**Food and menu:** Energy and protein enriched meals and snacks. Flexibility of portion size – bulk food system. Food quality e.g. improved taste, appearance, temperature. Choice between menus and assistance with menu choice. Sufficient information about ordering system.

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Summary: strategies to increase food intake
Oral nutritional supplements as a complement.

Interventions to facilitate eating
Assistance with meals, eating position, assistance with opening packages etc
Combine nutritional support with physical activity.

Environment: Protected mealtimes, no meal interruptions.
Calm environment, no smells, not noisy.
Sufficient time to eat and not too long night time fast.
Dining room.

Collaboration between the patient and different staff groups.

Education of staff.

Ann Ödlund Olin ESPEN 2014
Thank you for your attention!
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