Improving nutritional density - Compensating for loss of appetite in the ageing

Alison Smith RD
Nutrition Advisory Group for Older People (NAGE) committee member
& Prescribing Support Dietitian, Chiltern Clinical Commissioning Group
• Loss of appetite
• Prevalence - malnutrition, sarcopenia, frailty
• Health impacts
• Compensating for loss of appetite
  ▫ Evidence
  ▫ Considerations
  ▫ Nutrient density
Loss of appetite

- Food intake is known to fall by 25% between the ages of 40 and 70 (Sayer et al 2013)
- Between 20 and 80 years of age, reduction in energy intake can be 600 - 1300 kcal/day (Nieuwenhuizen et al 2010)
Loss of appetite

- Older adults seem to be more sensitive to the satiety-associated hormone cholecystokinin (CCK) than younger people.
- CCK levels are higher and satiety lasts longer in older adults.
- This may partially explain rapid satiation and reduced food intake in older adults (Nieuwenhuizen et al 2010).
Loss of appetite

• Decreased appetite and reduction in food intake combine to cause ‘anorexia of aging’ - one of the key causative factors of malnutrition, sarcopenia and frailty (Rom et al 2012; Malafarina et al 2013; Deutz et al 2014)
Prevalence

- **Malnutrition affects:**
  - 10% of those aged 65 or more (European Nutrition and Health Alliance 2006)
  - 10 - 14% of residents in sheltered housing
  - 16 - 20% of outpatients
  - 25 - 34% of patients admitted to hospital
Prevalence

• **Sarcopenia affects:**
  - 13 - 24% of 50 - 70 year olds  (Gray & Da Boit 2013)
  - 11 - 50% of those aged 80 or more  (von Haehling et al 2010)

• **Frailty affects approximately:**
  - 3% of 65-70 year olds
  - 10% of 75-79 year olds
  - 26% of 85-89 year olds  (Clegg 2011)
Health impacts of malnutrition, sarcopenia and frailty

- Apathy/depression
- Weakness/frailty
- Immobility
- Impaired muscle strength
- Increased risk of falls
- Reduced ability to cough
- Increased risk of pressure sores
- Impaired wound healing
- Reduced resistance to infection
- Impaired immune response
- Delayed recovery
- Disability
- Loss of independence
- Reduced quality of life
- Increased mortality
Compensating for loss of appetite

- Compared with younger adults, older adults tend to:
  - eat more slowly
  - be less hungry and thirsty
  - consume smaller meals
  - snack less between meals
  - have lower energy intakes (Nieuwenhuizen et al 2010)
  - eat less protein than younger adults, but have higher protein requirements (Deutz et al 2014)
  - be less able to recover after a period of undernutrition (Nieuwenhuizen et al 2010)
Compensating for loss of appetite

- Choosing palatable food can lead to a more rapid return of appetite and can increase nutritional and energy intake.
- Up to 44% higher nutritional intake has been reported when palatable foods are provided in comparison to less palatable foods (Nieuwenhuizen et al. 2010).
Compensating for loss of appetite

• Having small energy dense snacks between meals is likely to help improve overall intake
• Consuming these from small packaging or from a plate or glass that looks small may help to increase intake  (Nieuwenhuizen et al 2010)
Compensating for loss of appetite

- There is considerable evidence for the benefit of oral nutritional supplements (ONS) in treating malnutrition.
- However, NHS expenditure on oral nutritional supplements is rising yearly, and this annual increase is unlikely to be sustainable:
  - 2010/11 £105 million
  - 2009/10 £98 million
  - 2008/9 £87 million (NICE 2012)
Compensating for loss of appetite - Evidence

- Cochrane review ‘Dietary advice with or without oral nutritional supplements for disease-related malnutrition in adults’ (2011) suggested “if a similar increase in nutrient intake can be achieved by dietary means rather than using supplements, similar clinical benefits would be expected to occur”
Compensating for loss of appetite - Evidence

- NICE Quality Standard for nutrition support in adults (2012) states “nutrition support [should] go beyond just providing sufficient calories and look to provide all the relevant nutrients that should be contained in a nutritionally complete diet”
Compensating for loss of appetite - Evidence

- Protein intake and exercise for optimal muscle function with aging: Recommendations from the ESPEN Expert Group (2014) states:
  - If protein catabolism is not offset by increasing protein intake...older adults are at higher risk for sarcopenia, frailty and disability
  - Most older adults will benefit from increased protein intake
  - For healthy older adults - at least 1.0 - 1.2 g protein/kg body weight/day
  - For older adults who have acute or chronic illnesses - 1.2 - 1.5 g protein/kg body weight/day may be indicated, with even higher intake for individuals with severe illness or injury
Compensating for loss of appetite - Considerations

- Access to food
- Mobility
- How will help to both access food and to eat be provided
- Adequate time for eating and drinking
- Adequacy of care package
- Whether person can eat with others
- Impact of poor health
- Whether food is appetising and environment is conducive to eating
Compensating for loss of appetite - Nutrient density

- Small portions
- Small between meal snacks
- Choose food preferences
- Fortify food with high kcal and protein ingredients
- High calorie drinks in preference to water
- Avoid low fat, low sugar and diet foods and drinks
Compensating for loss of appetite - Nutrient density

**Patient/carer Information: Food First - How to Increase Food Intake by 500 Calories per day**

People who are at risk of malnutrition generally need to eat at least another 500 calories per day (in addition to their current intake) to stop losing weight and/or to help them regain weight.

Increasing your intake by 500 calories per day can seem quite daunting, but it is surprising how easy it can be. The following are simple suggestions which may help you to increase your intake by 500 calories per day.

In addition to your usual intake, try the following:

<table>
<thead>
<tr>
<th>Meal Type</th>
<th>Suggestions</th>
<th>Total Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>Drink 1 extra glass (200ml) of full fat milk</td>
<td>140 calories</td>
</tr>
<tr>
<td></td>
<td>Use fortified milk* on cereal &amp; in all cups of tea &amp; coffee</td>
<td>110 calories</td>
</tr>
<tr>
<td></td>
<td>Eat 2 small snacks in between meals e.g. 1 tub of rice pudding &amp; 1 thick</td>
<td>332 calories</td>
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<tr>
<td></td>
<td>and creamy yogurt</td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td>Drink 1 extra glass (200ml) of fruit smoothie</td>
<td>100 calories</td>
</tr>
<tr>
<td></td>
<td>Have 1 extra teaspoon of jam on bread or toast</td>
<td>50 calories</td>
</tr>
<tr>
<td></td>
<td>Eat 2 small snacks in between meals e.g. 1 cereal bar &amp; 1 dessert spoon</td>
<td>274 calories</td>
</tr>
<tr>
<td></td>
<td>peanuts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>At your main meal, fortify vegetables and potatoes with 2 teaspoons</td>
<td>75 calories</td>
</tr>
<tr>
<td></td>
<td>margarine</td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td>Drink 1 extra glass (200ml) of fruit juice</td>
<td>80 calories</td>
</tr>
<tr>
<td></td>
<td>Eat 2 small snacks in between meals e.g. 1 chocolate mini roll &amp; 2 cream</td>
<td>223 calories</td>
</tr>
<tr>
<td></td>
<td>biscuits</td>
<td></td>
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<tr>
<td></td>
<td>Have an extra small pudding after lunch or tea e.g. 1 individual serve</td>
<td>188 calories</td>
</tr>
<tr>
<td></td>
<td>Add 1 extra teaspoon of sugar to your cereal or hot drinks</td>
<td>25 calories</td>
</tr>
<tr>
<td>Snack</td>
<td>If you prefer savoury flavours - every day:</td>
<td>251 calories</td>
</tr>
<tr>
<td></td>
<td>Have 2 small snacks in between your meals e.g. 1 mini pork pie and 1 packet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>of crisps</td>
<td>40 calories</td>
</tr>
<tr>
<td></td>
<td>At your main meal, fortify vegetables and potatoes with 1 tablespoon of</td>
<td>280 calories</td>
</tr>
<tr>
<td></td>
<td>grated cheese</td>
<td></td>
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<tr>
<td></td>
<td>Drink 1 extra mug (200ml) of instant soup made with hot, fortified milk*</td>
<td></td>
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<tr>
<td></td>
<td>instead of water</td>
<td></td>
</tr>
<tr>
<td>Snack</td>
<td>If you have a very small appetite - every day:</td>
<td>390 calories</td>
</tr>
<tr>
<td></td>
<td>Drink 1 extra cup (150ml) of hot chocolate (made with fortified milk*)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have 3 very small snacks in between your meals e.g. 2 cocktail sausages,</td>
<td>191 calories</td>
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<tr>
<td></td>
<td>2 squares of milk chocolate &amp; 1/2 a tub of custard</td>
<td></td>
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<tr>
<td></td>
<td>Fortify custard with 1 teaspoon honey</td>
<td>50 calories</td>
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<tr>
<td></td>
<td>Fortify your main meal with 2 teaspoons butter or margarine</td>
<td>75 calories</td>
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</tbody>
</table>

*Make fortified milk by adding 3 – 4 tablespoons dried, skimmed milk powder to each pint of full fat milk
**Compensating for loss of appetite - Nutrient density**

### Fortified Milkshake
**Makes 1 portion**

#### Ingredients
- 180ml full fat milk
- 30g skimmed milk powder
- 20g vitamin fortified milkshake powder (e.g. Nesquik or Tesco Milkshake Mix)

#### Directions
Mix milk powder and milkshake powder together in a glass. Gradually mix in milk and stir well. Serve 2 portions per day.

#### Portion Costs
- 1 portion: 30% carbohydrates
- 17% protein
- 44g carbohydrate
- 7.5g fat

#### Cost
- 1 portion: £0.33
- 1 portion per day: Will keep (covered) in fridge for 3 days.

### Fortified Lemon Cream
**Makes 1 portion**

#### Ingredients
- 300ml double cream
- 70g caster sugar
- Juice of 1-1½ lemons
- 30g skimmed milk powder

#### Directions
Put cream and milk powder in a small saucelpan. Gently heat until milk powder has dissolved. Add sugar. Bring to the boil and boil for 3 minutes. Thoroughly mix in lemon juice to taste. Pour into 3 small dessert bowls and chill.

#### Portion Costs
- 1 portion: 618kcal
- 59g protein
- 31.5g carbohydrate
- 35g fat

### Fortified Chocolate Caramel Cream
**Makes 3 portions**

#### Ingredients
- 150ml double cream
- 30g skimmed milk powder
- 30ml full fat milk
- 2 x 55g Mars Bars or similar nougat-caramel chocolate bars

#### Directions
Put cream, milk and milk powder in a small saucelpan. Gently heat until milk powder has dissolved. Add finely chopped Mars Bars. Heat gently, stirring all the time, until Mars Bars have completely melted. Pour into 3 small dessert bowls and chill.

#### Portion Costs
- 1 portion: 590kcal
- 6.5g protein
- 43.5g carbohydrate
- 35.5g fat

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*Note: Portion sizes are approximate and may vary depending on individual needs.*
## Compensating for loss of appetite - Nutrient density

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>1.5kcal/ml prescribed sip feed</th>
<th>Homemade fortified milkshake</th>
<th>Nutrients</th>
<th>1.5kcal/ml prescribed sip feed</th>
<th>Homemade fortified milkshake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume (ml)</td>
<td>220</td>
<td>230</td>
<td>Pantothenic acid (mg)</td>
<td>2.4</td>
<td>2.1</td>
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<tr>
<td>Energy (kcal)</td>
<td>330</td>
<td>305</td>
<td>Biotin (mcg)</td>
<td>13</td>
<td>10.5</td>
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<tr>
<td>Protein (g)</td>
<td>13.8</td>
<td>17</td>
<td>Calcium (mg)</td>
<td>264</td>
<td>603</td>
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<tr>
<td>Vit A (mcg)</td>
<td>321</td>
<td>417</td>
<td>Phosphorus (mg)</td>
<td>220</td>
<td>474</td>
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<tr>
<td>Vit C (mg)</td>
<td>26</td>
<td>24</td>
<td>Iron (mg)</td>
<td>4.6</td>
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<tr>
<td>Vit D (mcg)</td>
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<td>1.9</td>
<td>Magnesium (mg)</td>
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<td>65</td>
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<td>Vit E (mcg)</td>
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<td>0.2</td>
<td>Zinc (mg)</td>
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<td>2</td>
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<tr>
<td>Thiamin (mg)</td>
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<td>0.5</td>
<td>Iodine (mcg)</td>
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<td>107</td>
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<tr>
<td>Riboflavin (mg)</td>
<td>0.6</td>
<td>1.3</td>
<td>Selenium (mcg)</td>
<td>18</td>
<td>5</td>
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<tr>
<td>Niacin (mg)</td>
<td>5.7</td>
<td>5.5</td>
<td>Copper (mg)</td>
<td>0.4</td>
<td>0.02</td>
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<tr>
<td>Vit B6 (mg)</td>
<td>0.6</td>
<td>0.8</td>
<td>Manganese (mg)</td>
<td>1.2</td>
<td>0.04</td>
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<tr>
<td>Vit B12 (mcg)</td>
<td>1.2</td>
<td>2.5</td>
<td>Folic acid (mcg)</td>
<td>88</td>
<td>83</td>
</tr>
</tbody>
</table>
Conclusions

• Loss of appetite is common in older people and can have a significant impact on health and wellbeing
• Consuming frequent, small portions of palatable, nutrient dense foods can help to reduce this impact
References

- Baldwin, Weekes (2011) Dietary advice with or without oral nutritional supplements for disease-related malnutrition in adults. Cochrane Collaboration
- ENHA (2006) Malnutrition Among Older People in the Community
- NICE (2012) Quality standard for nutrition support in adults
- NICE (2012) Prescribing of adult Oral Nutritional Supplements (ONS): Guiding principles for improving the systems and processes for ONS use
References

Thank you

Alison Smith RD

• Prescribing Support Dietitian
  Chiltern Clinical Commissioning Group
  alison.smith47@nhs.net

• Committee member, Nutrition Advisory Group for Older People (NAGE), British Dietetic Association Specialist Group of the Year 2014