CleanMed Europe 2016 Pre-conference event “Sustainable and healthy food in healthcare workshop”

Food waste challenges and opportunities: examples of food waste prevention and reduction methodologies in healthcare

October 18, 2016 Joost Snels
Joost Snels

- Background in
  - Logistics
  - Supply Chain Management
  - Business Economics

- Worked for private company (paper trading) and the government (Ministry of Transport, Public Works and Water Management)

- 14 years for Wageningen UR Food & Biobased Research (Fresh Logistics / SCM)
Partners

Wageningen University

9 research institutes of Wageningen UR

- 8,000 BSc/MSc-students > 100 countries
- >1,700 PhD
- 2,475 fte
- Turnover €315 miljoen
Partners

Wageningen University

9 research institutes of Wageningen UR

- 2.825 fte
- Turnover €343 miljoen
Investing instead of saving in food leads to lower cost and better healthcare.
Food waste: world problem in 4 numbers
Food produced but not eaten

654
Millions tons of food production

205
Million tons of food waste

Source: Wageningen UR
Growing demand for food

10 Billion people in 2050

70 % more food is needed

Source: FAO
Food waste in the Dutch healthcare
Annual food spending in Dutch Hospitals

- **University Hospitals**
  - 14 Million net turnover per year
  - 1.7 % of net turnover per year

- **General Hospitals**
  - 7 Million net turnover per year
  - 1.6 % of net turnover per year

Source: CBS Statline
Patient meals per day in Dutch healthcare

350 Thousand patient meals per day

1 Million meals per day in total

Source: CBS
Why measuring food waste?

Understanding the extent of food losses (kg €, %)
inventory of bottlenecks
Finding improvement measures
Understanding effects of adjustments
Food intake goes up
Improving patient satisfaction through the meal
Food waste in Dutch Healthcare

Figures for the Dutch Healthcare in total are not available (yet)
→ Wageningen UR: general and university hospitals

Insiders / experts indicate that the figures lay between 30 and 50%

Figures are related to the prepared hot meals that end up in the bin
Methodology

Examples of performance indicators:

- Total kg a/o € per day
- Total kg a/o € per day:
  - as a % of the amount of food offered
  - per main process (portioning, ...)
  - per department (oncology, maternity ward, ...)
  - looked at differences per day
  - per patient
1. Identification: options
2. Measuring: determining monitoring sites

<table>
<thead>
<tr>
<th>Time</th>
<th>Supplier</th>
<th>Hospital kitchen</th>
<th>Bed/location nearby</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 days before</td>
<td>purchase, production, portioning</td>
<td>purchase, production, portioning</td>
<td>ordering, regenerating or heating up</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ordering between 10:00 and 13:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building trolleys between 13:30 and 15:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regenerating department 90 minutes before</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serving starting at 17:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eating between 17:00 and 18:00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trolleys return to the utility room</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Measuring: standard form

Form 3: weighing plate waste dinner

<table>
<thead>
<tr>
<th>Department</th>
<th>Vegetables (Kg.)</th>
<th>Meat (Kg.)</th>
<th>Potatoes (Kg.)</th>
<th>Gravy (Kg.)</th>
<th>Composite meals (Kg.)</th>
<th>Others (Kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Current date:
Date on which the meal is served:
Name:
3. Analysis: additional information

- Number of patients / ordered meals per day per department
- Cost of meals, including preparation
- Weight of different meals (note: the system most often displays anything other than the quantity that is actually cooked!)
### 3. Analysis: results (example format)

<table>
<thead>
<tr>
<th></th>
<th>Hospital A</th>
<th>Vegetables</th>
<th>Meat</th>
<th>Starch</th>
<th>Gravy</th>
<th>Remainder</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional (before)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meal Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>maaltijdgewicht</td>
<td>145</td>
<td>73</td>
<td>97</td>
<td>68</td>
<td>330</td>
<td></td>
<td>718</td>
</tr>
<tr>
<td>voedselverlies</td>
<td>97</td>
<td>56</td>
<td>68</td>
<td>48</td>
<td>88</td>
<td></td>
<td>356</td>
</tr>
<tr>
<td>portioneren</td>
<td>12</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>23</td>
<td></td>
<td>72</td>
</tr>
<tr>
<td>bordresten</td>
<td>40</td>
<td>21</td>
<td>25</td>
<td>15</td>
<td>20</td>
<td></td>
<td>121</td>
</tr>
<tr>
<td>retourstromen</td>
<td>45</td>
<td>23</td>
<td>30</td>
<td>19</td>
<td>45</td>
<td></td>
<td>162</td>
</tr>
<tr>
<td>gegeten</td>
<td>105</td>
<td>52</td>
<td>72</td>
<td>53</td>
<td>310</td>
<td></td>
<td>592</td>
</tr>
<tr>
<td><strong>New concept (after)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meal Weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>maaltijdgewicht</td>
<td>150</td>
<td>90</td>
<td>150</td>
<td>35</td>
<td>330</td>
<td></td>
<td>755</td>
</tr>
<tr>
<td>voedselverlies</td>
<td>49</td>
<td>28</td>
<td>41</td>
<td>13</td>
<td>11</td>
<td></td>
<td>142</td>
</tr>
<tr>
<td>portioneren</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>bordresten</td>
<td>49</td>
<td>28</td>
<td>41</td>
<td>13</td>
<td>11</td>
<td></td>
<td>142</td>
</tr>
<tr>
<td>retourstromen</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>gegeten</td>
<td>101</td>
<td>62</td>
<td>109</td>
<td>22</td>
<td>319</td>
<td></td>
<td>613</td>
</tr>
</tbody>
</table>
Some examples

42%
Maxima Medisch Centrum

30%
Rijnland Ziekenhuis

33%
Ziekenhuis Gelderse Vallei

40%
Utrechts Medisch Centrum
Some examples (before and after)

Maxima Medisch Centrum
- 42%
- Before

Rijnland Ziekenhuis
- 30%
- Before

Ziekenhuis Gelderse Vallei
- 33%
- Before

Utrechts Medisch Centrum
- 40%
- Before

Maxima Medisch Centrum
- 2%
- After

Rijnland Ziekenhuis
- 19%
- After

Ziekenhuis Gelderse Vallei
- 20%
- After

Utrechts Medisch Centrum
- ?%
- After
Numbers: hot meals for patients

- Weight hot meal for patients per day
- Grams food waste hot meal for patients per day
- Grams consumption hot meal by patients per day
- % Food waste of hot meal for patients

Graphs showing the comparison between traditional and modern methods.
Numbers: hot meals for patients

Average:

Traditional
242 grams
42%

Modern
134 grams
24%
Care: results

Seminar: Slimmer eten en drinken in de zorg 28 januari 2015, Radboud UMC, Nijmegen

Before

23%
Regina Pacis Haus für Senioren

21%
Insula Dei Huize Kohlmann

After

13%
Regina Pacis Haus für Senioren

11%
Insula Dei Huize Kohlmann
Some causes, in general

- Predicting number of meals is difficult, especially for 'short stay'
- Chefs cooking different amounts then system indicates. There are usually made far too many meals (Because there is too much? ‘Blanco meals’ ordered?)
- Translating ingredients to kg. finished product is difficult
- Portioning is done by people and hardly ever the same weight (preferring to serve something more than too little)
- Portioning is often not tailored to the needs of patient / client
- Order unit of a product is some times to large and best-before-date therefore sometimes is a problem
Benefits of this standardized approach

- **Easy to implement**: all steps have been fully described
- **Flexibility**: choices regarding the level of detail, number of departments, type of meals, type of ‘consumers’, ...
- **Benchmark**: Results are comparable to other institutions
- **Trend analysis**: when the measurements are repeated the results are also comparable within the same institution
- **Accountability**: transparency and insight into how the measurement is handled and how the results have been achieved
Less food waste = cost reduction?

Reinvestment in the meal or the food concept

Bron: NHS patient under the pseudonym of Traction Man (2009)
No, its is an investment opportunity

- Lowering food waste leads to cost reduction
- With constant budget this creates investment opportunities
- Investment opportunity to improve the meals for patients
- Investment opportunities for further and constant improvement
Reinvest and reduce cost

Via prevention of malnutrition?
Malnutrition: connecting care and cure

28% prolonged hospitalization

17% malnutrition in care and nursing homes

Source: SEO rapport “Ondervoeding onderschat”
Investment opportunities for further and constant improvement

Changing meals or food concept

More and better food, better absorption of nutrients (in particular, proteins)

Reducing malnutrition

Reducing hospitalization (cure)
Investing in prevention of malnutrition

1 Euro (€) invested

1 – 4 Euro (€) return on investment

Source: SEO rapport “Ondervoeding onderschat”
Don’t see reducing food waste just as a way to reduce cost, but as an option to better serve the patient (satisfaction, food intake, ...)

Data get more value if they are placed in perspective of numbers of patients and production volume

Create realistic objectives in line with the capacity (people, budget, ...)

Involve not just the food (facility) department but also the people responsible for care in the measurements, sharing the results, and looking for possibilities to reinvest
Investing instead of saving in food leads to lower cost and better health care.
Thanks

Questions?

joost.snels@wur.nl

Download reports (in Dutch):

http://www.wur.nl/nl/Onderzoek-Resultaten/Themas/Voeding-Gezondheid/Voedselinnovatie/Voedselverspilling-in-de-zorg.htm