Focus on Undernutrition in Care Homes
A service evaluation

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In the UK, undernutrition affects three million adults, 1.3 million older people and 35% of residents in care homes. Annual costs associated with undernutrition in England are £19.6 billion, with the cost of caring for an undernourished individual being 2-4 times that of a well-nourished individual due to the strain on health and social care resources.

Undernutrition is largely preventable and treatable through pro-active screening and early intervention, which can reduce complications by 70% and mortality by 40%. Key to achieving this is integrating screening and treatment into routine practices.

Over recent years numerous standards, guidelines, toolkits and campaigns on undernutrition have raised awareness. Yet, despite countless guidance there is still a discrepancy between policy and practice, with undernutrition being under-detected and under-treated. In 2000, prior to these national initiatives, a pilot called ‘Focus on Food’ (later renamed Focus on Undernutrition [FoU]) was implemented into care homes in North East England to determine the most effective way to facilitate the implementation of undernutrition screening and guidelines.

The pilot was one of the first in England to implement practices in care homes which have now become accepted practice across the UK, including the implementation of:

- The ‘Malnutrition Universal Screening Tool’ (‘MUST’) to identify residents at risk of undernutrition. FoU simplified and adapted the ‘MUST’ layout, which is endorsed by BAPEN, incorporating a results table, core care plan, weight and ulna height conversion charts and a dietary assessment.
- Standardised care pathways for the treatment of undernutrition, which promoted food and drink-based interventions (FB) as treatment rather than oral nutritional supplements (ONS).
- Standardised care pathways for appropriate ONS prescribing, prior to a dietetic referral.
- The dietitian’s role as an educator facilitator, delivering proactive training to empower care home staff to identify and treat undernutrition.

In 2003, following the pilot, FoU was established as a permanent part of the dietetic service in County Durham and Darlington. FoU provides free training to care homes on the identification and treatment of undernutrition for healthcare staff, facilitated by a dietetic assistant (DA) through a combination of workshop and e-learning or workbook. Catering staff attend a six-week catering course on menu planning and special diets facilitated by a dietitian. Following training, homes implement FoU’s adapted ‘MUST’ identified by independent research to be more effective than original ‘MUST’ and care pathways which fulfil national guidance, promoting FB interventions alongside the appropriate prescribing of ONS. Further information on FoU can be found online. Annually all care homes are re-accredited by a DA through an audit against 18 quality standards linked to undernutrition, which are incorporated into the Local Authority commission incentives linked to funding.

Despite FoU being nationally acknowledged as an exemplary service model, no formal evidence existed of FoU’s impact on undernutrition in care homes regardless of collecting evaluation data. A retrospective study was completed to evaluate the FoU service to determine the impact on undernutrition outcome measures in care homes.

The objectives were to determine if FoU influences the:

- Weight of residents at risk of undernutrition
- Prevalence of undernutrition
- Prevalence of pressure ulcers (PU).

Methodology
A retrospective pragmatic service evaluation was undertaken using pseudonymised data collected by a DA over 13 years on weight, undernutrition risk and PU from long-stay residents’ notes before and six months after FoU training. Ethical approval was not required; written consent was obtained from the home manager. Data was inputted into Access, then analysed using the Statistical Package for the Social Sciences (SPSS). Statistical advice was sought from Newcastle University.
Weight was calculated as rate of weight change, represented as kilogram per month, due to the confounding impact of duration. The majority of data were analysed as independent samples, because paired data was only available for 49% of residents.

**Results**

Retrospective data was analysed on 104 homes, 4315 residents (71.3% female; mean stay 10.8 (1-278) months), 55.3% residential, 25.0% nursing, 19.7% EMI care.

**Weight change**

Following FoU a significant improvement in weight change was shown for ‘at risk’ residents (Figure 1). A significant difference was identified between undernutrition risk at baseline (p<0.001), evaluation (p=0.009) and overall (p<0.001). The greatest weight change was reflected in high risk residents (absolute change: 0.29 kg/month).

Further analysis of ‘at risk’ residents according to treatment identified all treatment options reversed from weight loss to weight gain after FoU, with the greatest improvements seen in residents prescribed ONS, but no significant difference (p=0.399) was found between treatments (Figure 2).

Only 28.3% (208/735) and 31.1% (127/409) of ‘at risk’ residents were prescribed ONS at baseline and evaluation respectively, with 32.2% (101/314) prescribed ONS both at baseline and evaluation.

**Undernutrition prevalence**

Overall there was a significant reduction (11.0%) in the undernutrition prevalence following FoU (Figure 3).

Further analysis of ‘at risk’ residents according to treatment identified the greatest improvements in the ‘food based’ group (45.7%). Overall 42.4% (134/316) of ‘at risk’ residents experienced an improvement, 43.4% (137/316) no change and 14.2% (45/316) a decline in undernutrition risk (Figure 4).

A significant improvement (p<0.001) in undertaking nutritional screening was identified following FoU, increasing from 76.3% to 98.7%.

**Pressure ulcers**

Following FoU pressure ulcers (PU) overall significantly reduced 51% (p<0.001). At baseline there was a significant difference in PU prevalence which increased with severity of undernutrition (p<0.001) but following FoU no difference was found between risk groups (p=0.233) (Figure 5).

Undernutrition risk appears to have an impact on PU; the odds overall of developing a PU following FoU was 53% less, with the true population effect between 64% to 38%. The greatest reduction (78%) was in moderate risk residents. The odds identified a significant reduction in PU in all risk groups (Table 1). Further analysis on PU prevalence in ‘at risk’ residents according to treatment identified those receiving dietetic care had the greatest reduction, but sample size was limited and no significance was found between treatments (p=0.105, p=0.580) (Figure 6).
Discussion

This service evaluation has shown FoU delivered by dietetic assistants (DA) positively impacts undernutrition outcome measures in care homes, through achieving significant improvements in weight, undernutrition and PU outcome measures that are comparable to published research. FoU was one of the first dietetic services to promote food-based interventions.27 No systematic review 33-36 has made specific conclusions regarding nutritional interventions for undernutrition in care homes,23 due to inconsistent and limited strong quality evidence for the impact of FB on outcomes.37 However, analysis of the three ‘at risk’ treatments clearly indicates FoU alone (‘food-based’) had a positive impact on all outcomes, although no significant difference was identified between treatments for any objective (Figures 2, 4, 6).

Weight change

The rate of weight changes significantly improved in ‘at risk’ residents following FoU. This is in keeping with findings from the nutritional screening week (NSW) survey,2 where undernutrition risk was significantly related to weight change, accounting for 9.3% variability in weight.

Undernutrition prevalence

Prevalence of undernutrition significantly reduced by 11% to 29.1% (Figure 2); 60% of ‘at risk’ were high risk, reducing to 54.7% of ‘at risk’ residents following FoU. This is in keeping with findings from the nutritional screening week (NSW) survey,2 where undernutrition risk was significantly related to weight change, accounting for 9.3% variability in weight.

Comparing FoU’s impact on undernutrition is limited because other UK studies using ‘MUST’ did not report on prevalence change; and foreign studies used alternative outcomes or non-comparable nutritional screening tools. Similar studies implementing education and care pathways identified both a reduction and no impact in prevalence.

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FoU uses ‘MUST’, recommended by other UK organisations as simple, acceptable and quick to use; used by 96% care homes.2 FoU was the first UK service to systematically implement ‘MUST’ into care homes, through adapting the layout for simplicity, which independent research has identified to be simpler, quicker, more accurate and preferred to original ‘MUST’.28

Table 1: Odds Ratio for Pressure Damage According to Nutritional Risk

<table>
<thead>
<tr>
<th>Risk of undernutrition*</th>
<th>Odds Ratio</th>
<th>Reduction in pressure ulcers after training</th>
<th>95% CI OR</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>95% CI OR</td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>Low</td>
<td>0.45</td>
<td>55%</td>
<td>0.29</td>
<td>0.71</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.22</td>
<td>78%</td>
<td>0.06</td>
<td>0.73</td>
</tr>
<tr>
<td>High</td>
<td>0.35</td>
<td>65%</td>
<td>0.17</td>
<td>0.69</td>
</tr>
<tr>
<td>Overall</td>
<td>0.47</td>
<td>53%</td>
<td>0.36</td>
<td>0.62</td>
</tr>
</tbody>
</table>

* Risk of undernutrition based on ‘MUST’. CI: Confidence Interval. OR: Odds Ratio

Figure 4: Changes in Undernutrition Risk in ‘at risk’ Residents According to Treatment

Chi-Square: (B) p=0.001  (E) p=0.049  (O) p=0.105

Figure 5: Prevalence of Pressure Ulcers According to Undernutrition Risk

Baseline: 5% 6.9% 10.5% 6.3%
Evaluation: 2.3% 1.6% 3.9% 3.1%

Chi-Square: (B) p=0.049  (E) p=0.049  (O) p=0.105

Figure 6: Prevalence of Pressure Ulcers in ‘at risk’ Residents According to Treatment

Baseline: 9.1% 8.2% 15.7%
Evaluation: 3.1% 0.0% 1.8%

Chi-Square: (B) p=0.105  (E) p=0.580

* Risk of undernutrition based on ‘MUST’. CI: Confidence Interval. OR: Odds Ratio
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**Conclusion**

Ella advocated ‘it is imperative national policy ensures undernutrition detection and treatment are embedded in routine care’, through training, integrated accurate systems of recording and auditing undernutrition management. Although numerous studies have shown improvements in undernutrition following training, no single multifaceted approach is identified to be more effective than a single approach, such as training or FB.

This service evaluation demonstrates FOU delivered by dietetic assistants is an effectively effective approach for dietetic services to improve the management of undernutrition in care homes.

The full article is available: Masters, R (2019) Focus on Undernutrition in Care Homes: A Retrospective Service Evaluation.