Nutrition in Older People Programme

Evaluation of a research project to investigate the concurrent validity of the modified Patients Association Nutrition Checklist against the 'Malnutrition Universal Screening Tool' ('MUST') to identify risk of malnutrition in older people living in the community

1.0 Executive Summary

A research project (cross-sectional study) was carried out in order to validate the four questions in Section A of the Patients Association Nutrition Checklist against the Malnutrition Universal Screening Tool ('MUST'). A total of 312 older people were screened using 'MUST' and the Nutrition Checklist in a variety of lunch and activity clubs across Hampshire and Dorset.

The data showed that the Nutrition Checklist has acceptable sensitivity and specificity when compared with 'MUST'. The Nutrition Checklist also has potential for early identification of malnutrition risk and signposting to basic dietary advice and appropriate health and social care support. Further work is required to understand how this tool could be effectively used by other stakeholders including volunteers, community workers and home care staff to help reduce the growing health and social care costs, and improve quality of life for older people.

2.0 Project Background & Introduction

2.1 Context

Undernutrition affects around 1 in 10 older people living in the community[1] and has serious consequences if not identified or treated[2]. It is under recognised and under treated across all settings[3]. One reason for this is the lack of screening in the community (traditionally screening is undertaken by healthcare professionals using validated screening tools, e.g. 'MUST'). Introducing simpler ways of identifying and treating undernutrition should help address this problem and improve outcomes for older people. The Patients Association[4] published their original 'Nutrition Checklist' in November 2016, and this Checklist has since been modified by the Wessex AHSN in consultation with the Patients Association for use in projects with domiciliary care and the voluntary sector. The modified Nutrition Checklist comes in two parts:

- Section A - four simple questions to focus discussions around weight and eating, aiming at identifying whether someone is 'at risk' of undernutrition
- Section B - to be completed for people who are identified as 'at risk' from Section A. Section B consists of additional focussed questions on nutrition and eating and provides clear advice and signposting to appropriate support for older people living in the community.

In order to assess the validity of the questions in Part A of the Nutrition Checklist to effectively identify older people at risk of undernutrition (and hence whether the tool could be recommended), the four key questions (from Part A) needed to be validated against another validated tool. 'MUST'[5] is a validated screening tool which is

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[1] BAPEN. (2006). Malnutrition among Older People in the Community: Policy Recommendations. British Journal of Community Nursing. Available from: www.bapen.org.uk/pdfs/malnut_in_the_community.pdf

[2] BAPEN. (2010). Malnutrition Matters - Meeting Quality Standards in Nutritional Care. Available from: www.bapen.org.uk/pdfs/toolkit-for-commissioners.pdf

[3] Wilson L and Health R.P. (2013). A review and summary of the impact of malnutrition in older people and the reported costs and benefits of interventions. 1–30

[4] https://www.patients-association.org.uk

[5] https://www.bapen.org.uk/pdfs/must/must_full.pdf

used widely across the UK by healthcare professionals to screen adults for undernutrition. The 'MUST' tool requires the individual to calculate body mass index and percentage recent unintentional weight loss. 'MUST' also involves the 'acute disease score', where the user considers whether the person has had no nutritional intake (or unlikely to have) for at least five days. The acute disease score tends not to be used in the community, as people who score positively on this are usually acutely unwell and in hospital or on end of life pathways (where screening is not appropriate).

2.2 Aim
- To investigate the concurrent validity of the Nutrition Checklist to identify the risk of undernutrition in older people living in the community against 'MUST'.

2.3 Objectives
- To obtain ethics approval from the University of Southampton and Bournemouth University
- To attend lunch / activity groups across Hampshire and Dorset to screen at least 300 older people for undernutrition using both the Nutrition Checklist and 'MUST'
- To determine the accuracy of the questions in Section A of the Nutrition Checklist

3.0 Methods

3.1 Project development
Ethics approval was obtained from the University of Southampton in January 2018. Organisers of lunch and activity group around Hampshire were contacted from lists provided by Age UK Southampton, Age Concern Hampshire and Age UK New Forest (with whom previous relationships had been established from previous projects).

Ethics was also obtained from Bournemouth University in April 2018. A research assistant was employed to undertake the same work in the Dorset region. Training was provided to the researcher on how to screen using 'MUST' using standard methodology[6]. Organisers of lunch clubs, day centres and events were contacted using existing links within the voluntary sector.

Based on an assumed prevalence of undernutrition of 15% among the general population, power calculations suggested that 250-300 people needed to be recruited. This sample was based on the approximate prevalence of malnutrition being 15% in the community. Kappa = 0.9, CI = 0.95, CI width = 0.1.

3.2 Data collection
Lunch / activity clubs were attended between January and May 2018. If the group organisers agreed, a dietitian from Wessex AHSN or the research assistant arranged a date and time to attend the group to recruit participants. A project information sheet and consent form was developed and given to all participants. All participants were given the chance to read the information sheet, and were asked to complete a consent form. The participants were then asked the questions from Part A of the Nutrition Checklist and were screened using 'MUST' (which included measuring weight (using calibrated SECA class III scales) and height (using a stadiometer) to determine body mass index (BMI). Where weight and height was unable to be measured, mid upper-arm circumference (MUAC) was measured (using a tape measure) to determine the BMI score. Where height could not be measured, ulna length was measured using a tape measure. Standard operating procedures from the University of Southampton were used to measure height, weight, MUAC and ulna length. Any people found to be at medium or high risk of malnutrition were provided with the OPEN undernutrition leaflet[7] and advised to visit their GP or Practice Nurse to discuss their screening result further. The data collection forms used can be seen in the appendix.

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[6] Elia M (2003) The 'MUST' report. Redditch, UK. BAPEN http://www.bapen.org.uk
[7] http://wessexahsn.org.uk/open-leaflet.pdf

3.3 Evaluation methods

Agreement and chance-corrected agreement (κ) between 'MUST' and the Nutrition Checklist were assessed.[8] The data was reviewed for those people who were identified as 'at risk' using 'MUST' but not with the Nutrition Checklist and vice versa.

4.0 Results

4.1 Lunch and activity club attendance

A total of 312 older people were recruited across the 21 groups were attended. 14 groups were attended in Hampshire and seven in Dorset.

4.2 Prevalence of undernutrition

Based on 'MUST' the overall prevalence of malnutrition was 9.9% (n= 31) comprising 6.7% at medium risk and 3.2% at high risk. Table 1 below shows the number of participants who scored 1, 2, 3 and 4 on 'MUST', and table 2 shows the parts of 'MUST' where participants score. The majority of participants at risk according to 'MUST' scored due to recent unintentional weight loss.

Table 1: *Showing the number of participants with each 'MUST' score, and the number (and percentage) at medium and high risk of malnutrition according to 'MUST'*

'MUST' score	No. of participants	No. at medium vs high risk
1	21	21 (6.7%)
2	8	
3	1	10 (3.2%)
4	1	
Total at risk	31 (9.9%)	

Table 2: *Where participants scored on 'MUST'*

	No. of participants
BMI score - step 1	13
Unintentional weight loss (>5%) – step 2	29
Acute disease score – step 3	0
Low BMI and unintentional weight loss	3
Total at risk	31 (9.9%)

The Nutrition Checklist identified that 21.8% of participants (n=68) were likely to be at risk of undernutrition. Table 3 shows the number of these participants who answered 'yes' or 'don't know' to each question and table 4 shows the number of questions participants answered 'yes' or 'don't know' to.

Table 3: *Where participants scored on the Nutrition Checklist*

	No. of participants who answered 'yes'
Q1 ('do you think you are underweight?')	23
Q2 ('have you lost a lot of weight unintentionally in the last 3-6 months?')	30
Q3 ('do you clothes / rings feel loose?')	37
Q4 (change in appetite / interest in eating)	38
Total 'at risk' using the Nutrition Checklist	68 (21.8%)

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[8] Landis JR & Koch GG (1977) Biometrics 33, 159–174.

Table 4: The number of questions participants answered 'yes' or 'don't know' to

Number of questions answered 'yes' or 'don't know' to	No. of participants who answered 'yes'
1 question	35
2 questions	14
3 questions	12
4 questions	7
Total 'at risk' using the Nutrition Checklist	68

4.3 Agreement between 'MUST' and the Nutrition Checklist

Using Kappa statistics which corrects for chance agreements, 31 participants were identified being at risk of undernutrition using 'MUST'. Out of those 31 participants, the Nutrition Checklist agreed with 27 of them being at risk of undernutrition, giving the Nutrition Checklist a **Sensitivity level** of **85.4%** for correctly identifying those at risk of undernutrition, which is **excellent criterion validity.** Of the 4 people identified as 'at risk' using 'MUST' (all with a 'MUST' score of 1, *medium risk*) but not with the Nutrition Checklist, all said that they had always been slim and therefore did not consider themselves underweight on Q1 of the Nutrition Checklist (their BMIs were 18.7, 18.8, 19.2 ad 19.9; hence scoring on step 1 of 'MUST'). None had experienced recent unintentional weight loss.

281 participants were identified as being NOT at risk of undernutrition using 'MUST'. Out of those 281 participants, the Nutrition Checklist correctly agreed with 241 of them NOT being at risk of undernutrition, giving the Nutrition Checklist a **Specificity level** of **87.1%** for correctly identifying those who were NOT as risk of undernutrition, which is **excellent criterion validity.** Of the 40 people identified as 'at risk' using the Nutrition Checklist but not with 'MUST' the reasons were diverse. Table 5 shows the number of these participants who answered 'yes' or 'don't know' to each question and table 6 shows the number of participants who answered 'yes' or 'don't know' to multiple questions.

Table 5: Where participants answered 'yes' or 'don't know' on the Nutrition Checklist

	No. of participants who answered 'yes'
Q1 ('do you think you are underweight?')	10
Q2 ('have you lost a lot of weight unintentionally in the last 3-6 months?')	7
Q3 ('do you clothes / rings feel loose?')	17
Q4 (change in appetite / interest in eating)	24
Total 'at risk' with Nutrition Checklist but 'low risk' with 'MUST'	40

Table 6: The number of questions participants answered 'yes' or 'don't know' to

Number of questions answered 'yes' or 'don't know' to	No. of participants who answered 'yes'
1 question	28 (70%)
2 questions	6 (15%)
3 questions	6 (15%)
4 questions	0
Total 'at risk' with Nutrition Checklist but 'low risk' with 'MUST'	40

Cohen's kappa (k) was run to determine if there was agreement between the Nutrition Checklist and 'MUST' in identifying risk of undernutrition. There was a **moderate level of agreement** the two tools, *k = 0.*47 (SE=0.064), 95% CI [0.349, 0.599], *p* < 0.001.

4.4 Social and demographic factors

The majority of participants (63%, *n* = 197) were living alone. The majority (75%, *n = 233*) were female. Table 7 shows the average (and range) for age, weight, BMI and perceived wellbeing of the participants.

Table 7: Age, weight, BMI and perceived wellbeing of the participants

	Average (mean)	Range
Age	79.6 years	63 – 98 years
Weight	74.5 kg	35.7 – 133 kg
BMI	27.8 kg/m^2	15.1 – 53.4 kg/m^2
Perceived wellbeing	7.64 (out of 10)	1 – 10 (out of 10)

Participants recruited were asked to provide the first part of their postcode. The postcodes are shown on figure 1 below.

Figure 1: Location of participants (dark blue circles show the locations of these postcodes)
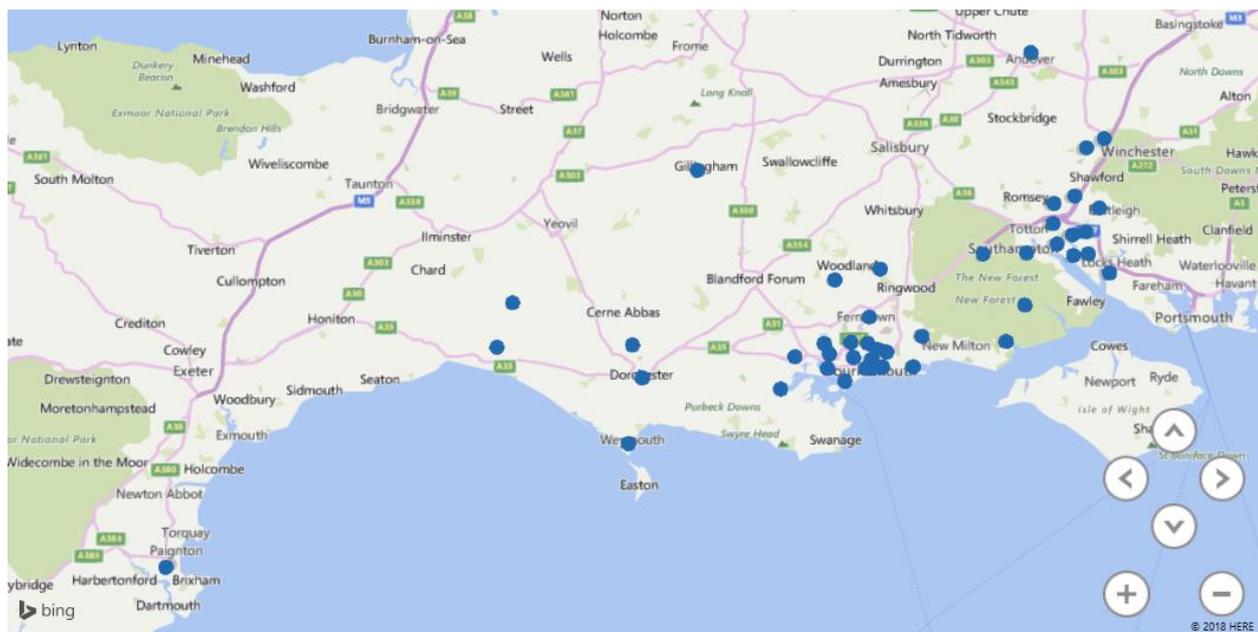
5.0 Discussion and recommendations

NICE clinical guideline 32[9] states that 'screening' should be carried out for all people in care settings (e.g. hospitals and care homes). Moreover, in the community, 'screening' should be carried out on initial registration to GP practice, at other clinic opportunities and wherever there is a clinical concern (e.g. unintentional weight loss, loose fitting clothes, poor appetite). Screening tools should assess body mass index (BMI) and percentage unintentional weight loss and should consider the time over which the nutrient intake has been unintentionally reduced and/or the likelihood of future impaired nutrient intake. 'MUST' is an example of a validated tool that can do this and is widely used in the UK.

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[9] NICE. Nutrition Support for adults : oral nutrition support, enteral tube feeding and parenteral nutrition. 2006;

The questions in Section A of the Nutrition Checklist have acceptable sensitivity and specificity when compared with 'MUST'. Moreover, the Nutrition Checklist has the potential for early identification of undernutrition risk (as it identified people in the earlier stages of unintentional weight loss (0-5% weight loss), and people whose appetite had been recently compromised) – by highlighting 'clinical concern' which could then act as a prompt to screening using 'MUST' (as per NICE guidelines).

The Nutrition Checklist also has the benefit of including signposting to basic dietary advice and appropriate health and social care support (in Section B). Further work is required to understand how this tool could be effectively used by other people with care responsibilities including volunteers, community workers and home care staff to help reduce the growing health and social care costs and improve quality of life for older people.

6.0 Appendix

Data collection sheet

June 2018

Data Collection Form: PAC vs MUST

Participant ID:

Club/Group:

Postcode? First half only e.g. SO16

Gender: Male   Female

Age (years):

Living Status:

Alone?   Y   N

With a partner?   Y   N

With family?   Y   N

Other:

Wellbeing: "Please rate your health today on a scale of 1-10, with 1 being your worst imaginable health and 10 being the best imaginable health" (score 1-10, please circle):

1   2   3   4   5   6   7   8   9   10

1. **Are you or your family concerned that you may be underweight or need nutritional advice**? *(note: you may already have this information from the referral)*

   ☐ Yes

   ☐ No

   ☐ Don't know

2. **Have you lost a lot of weight unintentionally in the past 3-6 months?** *(note: you may already know this information from the referral)*

   ☐ Yes – do you know why? ....
   ....

   ☐ No

   ☐ Don't know

3. **Have you noticed that clothes or rings have become loose recently?** *(note: you may notice visual signs of weight loss during your assessment)*

   ☐ Yes

   ☐ No

   ☐ Don't know

4. **Have you recently lost your appetite and/or interest in eating?**

   ☐ Yes

   ☐ No

   ☐ Don't know

   ┌───┐
   │ **Is the client at increased risk of undernutrition?** │
   │ *(tick 'YES' if the client answered 'yes' or 'don't know' to one or more questions)* │
   │ ☐ **YES**   ☐ **NO** │
   └───┘

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'MUST' Record Form

Current weight	Height	BMI	BMI score (0, 1 or 2)	Amount of unplanned weight loss in last 6 m*	% weight loss	Weight loss score (0, 1 or 2)	'MUST' Score (BMI score + weight loss score)

ONLY COMPLETE THIS BOX IF 'MUST' SCORE IS 1+

What are the reasons for being underweight / losing weight? Brief summary of intake and advice given.	Leaflet(s) provided**	Signposted to / information given on... (please list all)