



**Final report on the Evaluation of the Greater  
Manchester Nutrition and Hydration  
Programme: (04/06/20)**

**By Steven Edwards, University of Manchester Research Assistant for the  
Greater Manchester Nutrition and Hydration Programme**

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## **Introduction and background:**

### **1. Executive Summary:**

The report sets out the findings of the evaluation into the impact of the Greater Manchester Nutrition and Hydration programme in identifying and preventing malnutrition in older adults. The evaluation is based on data collected at week 1 and week 12 of the research study for 67 participants which shows that 81% had a positive response to the intervention in terms of gaining weight or stopping weight loss. Part One of the report analyses how participants responded to the intervention and identifies where the programme was more likely to have had a positive outcome in terms of weight gain or maintenance. The report identifies a series of critical success factors for the intervention, the most important of these is the frailty level of the participants, many of whom are living with a significant health condition such as dementia. The other factors such as the participant's level of social isolation and access to services are shown to have a counterbalancing effect – enabling them to overcome their barriers to nutrition. The report includes a series of case studies which illustrate how these factors manifest themselves in the lives of the older adults and how the intervention has helped them overcome these barriers to nutrition. Part Two of the report focusses on the impact the intervention has made at service level and how it can be rolled out across the whole of Greater Manchester. This is based on a series of focus groups and feedback sessions with frontline staff, service managers and community dietitians. Finally, the report sets out what further research needs to be done into these findings and further develop the database of evidence around the impact of the intervention for the participants and at a service level.

### **Key findings from the evaluation:**

**Key findings 1:** Identifying malnutrition and providing nutritional advice and signposting, helps prevent malnutrition in older adults.

Research suggests that using the PaperWeight Armband<sup>®</sup> with the other materials in the GM Nutrition and Hydration Programme have made a positive difference in terms of weight gain or weight maintenance. Small changes in diet have also been shown to be effective in enabling participants to gain weight.

**Key finding 2:** Clinical frailty has emerged as a significant factor in malnutrition among older adults and is itself a barrier to nutrition and hydration.

The intervention has shown positive outcomes across all frailty levels. In fact from the sample, people with a Rockwood<sup>®</sup> frailty rating of 1-3 (Very Fit, Well or Managing Well) had **100%** positive outcomes.

**Key finding 3:** Social connectivity is a key factor in overcoming frailty and preventing malnutrition in older adults.

Evidence suggests that attending lunch clubs, social activities or having a good network of family and friends has a significant impact on your ability to overcome barriers to nutrition including higher frailty levels.

**Key finding 4:** Living conditions in terms of the type of housing an older adult is living in, has a significant impact on their health and nutrition. In the study, **100%** of the participants in extra care schemes and **92%** of people in sheltered accommodation had positive outcomes.

### **Key points from the evaluation:**

- Recruited 83 participants, 75% of these are women and 30% are aged 85 or over – eldest is 99
- The median weight was 48.3kg (range from 31.8kg-72kg)
- 67 recruits have been followed up for 12-week review of these **80.6%** (n54) have had a positive outcome, recording either weight gain (65.7%) or no weight loss (14.9%) at 12 weeks
- In total 44 have gained weight at 12 weeks and the mean weight gain is 2.1kg
- Frailty scores range from 1 to 8; 34 (41%) had a frailty rating of 6 or above
- Those with frailty levels of 5 or below were more likely to have a positive response to the intervention
- Cost Benefit Analysis for the programme used an assumption that 30% of people engaged would have a positive outcome and this will need to be revised to **80.6%** based on the evaluation's findings

## **2. Background**

Malnutrition amongst the general 65+ population is estimated at around 14% but can rise to as much as 35% prevalence dependent on setting (10-14% of older adults living in sheltered housing, 30% of hospital admissions and 35% in care homes, as estimated by BAPEN/NICE<sup>1</sup>). More than 90% of malnutrition is said to occur amongst people living independently in their own homes and communities which is why a community-level intervention is being recommended, to target the environments where it most commonly occurs. The other main advantage of a community intervention is that it is more likely to pick up and intervene in malnutrition earlier, therefore supporting better health outcomes and quality of life for the individual.

Although there is widespread acknowledgment amongst clinical practitioners about the value of nutritional screening, it routinely goes unrecognised and untreated. There are well-documented barriers to the use of clinical nutritional screening tools in routine day to day interactions with older people. The prevailing view seems to be that whilst GPs and nurses are best placed to screen, there are multiple barriers to doing this systematically including time constraints, lack of knowledge, low prioritization of nutrition, forgetting to screen, lack of suitable equipment and training in the community, and this type of screening not being a mandatory requirement.

Simple-to-apply methods to identify the risk of malnutrition and dehydration at a community-level can therefore usefully supplement existing clinical screening

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<sup>1</sup> British Association For Parenteral And Enteral Nutrition/National Institute for Health and Care Excellence

practices and may be the key to addressing malnutrition risk more systematically and consistently at a population level.

### **The PaperWeight Armband<sup>®</sup>**

The purpose of the Nutrition and Hydration Programme, as stated in the Greater Manchester Health and Social Care Partnership Population Health Plan, is to raise awareness about the risks and signs of malnutrition and dehydration amongst individuals, carers and non-clinically trained practitioners who have routine contact with older people aged 65+. It is a classic population health intervention, in that it is designed to target a specific population cohort, to modify the incidence and mitigate the risks of malnutrition and dehydration, by intervening early and proactively.

The tool upon which the intervention is based is known as the PaperWeight Armband<sup>®</sup>, which was developed in Salford in 2015 and has been used by partners there since then. The armband is a non-clinical and non-intrusive public health tool for identifying and dealing with the signs of malnutrition by measuring the bare non-dominant upper arm (see Appendix 5). It is a non-clinical, alternative measurement to BMI (Body Mass Index). The usual clinical tool is MUST (Malnutrition Universal Screening Tool) which is based on BMI measurement, but MUST does not lend itself to a community wide approach. MUST is the most widely used validated screening tool used in Greater Manchester. It is a 2 step process in the community based on BMI and percentage weight loss. However the practicalities of weighing and measuring height in community and domiciliary settings can prove challenging.

Once secured, if the armband slips easily up and down over the bare non dominant arm it is a strong indicator of possible malnutrition and that the individual may have a BMI <20kg/m<sup>2</sup>. The red line on the PaperWeight Armband<sup>®</sup> reflects a mid-arm circumference of 23.5cm.<sup>2</sup> The practitioner will then be able to open up a conversation about diet, eating habits, help with eating, appetite, unplanned weight loss, and possible food solutions and provide/signpost the individual and their carers to advice and guidance on dietary fortification and nutritional self-care, including more routine issues such as shopping or food delivery/ordering. The QR code and website address, which are printed on the armband, link to a range of nutritional support materials on the AGE UK Salford website and allows carers and individuals the opportunity to self-manage for a 12-week period, if they cannot gain weight they need to visit their GP for further support or to be referred to a community dietitian.

### **Purpose and objectives of the evaluation**

The evaluation comprised of a research study nested within the larger currently ongoing screening (non-research) project to evaluate the following:

- What is the impact of the intervention<sup>3</sup> at an individual level? This is covered in **Part One** of the report.

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<sup>2</sup> BAPEN cite 23.5cm as the alternative measurement cut off point: 'If MUAC is <23.5 cm, BMI is likely to be <20 kg/m<sup>2</sup>.' Available at: [www.bapen.org.uk/pdfs/must/must\\_full.pdf](http://www.bapen.org.uk/pdfs/must/must_full.pdf)

<sup>3</sup> For the purposes of the evaluation, the intervention is defined as the use of the Paperweight Armband<sup>®</sup> as a signposting tool for malnutrition combined with giving information and advice on hydration and nutrition from the programme, along with signposting to community support.

- What is the feasibility of the roll out of the intervention in practice? This is covered in **Part Two** of the report.

An independent, research-led evaluation of the project is important for several reasons:

- following the 2-year pump-priming funding period, and subject to the findings, the evaluation will be used to develop a case for further roll-out of the intervention across Greater Manchester
- it will add to an evolving picture about the success and role of community/asset-based approaches to population health issues generally
- help to determine if some settings and approaches differentially support the impact and effectiveness of this intervention/programme
- to understand the softer issues or perceptions which make it easier or more difficult for older adults to maintain good levels of nutrition in the first instance; and then respond to advice or information intended to address an identified risk of malnutrition/dehydration
- it will add to our understanding of the health and wellbeing challenges faced by older adults, in the context of a rapidly growing older population and the significant health and social care needs of this population group

### **Future research aims:**

This is a pilot research study nested within an ongoing project, designed to explore and evaluate the effectiveness of the Paperweight Armband along with the information and support in the intervention. To fully assess effectiveness prospectively a more formal study (such as an NIHR Health Technology Assessment) will be essential for evidence-based policy making. The outputs from this research study will inform whether a larger trial is worthwhile and help inform its design and delivery.

### **3. Objectives**

#### **Primary outcomes:**

- To assess whether the sign-posting of individuals found to be at risk of malnutrition and the use of the PaperWeight Armband<sup>®</sup> leads to weight gain
- To investigate how advice and support around nutrition and hydration can help older adults reach and maintain a healthy weight

#### **Secondary outcomes:**

- Assess whether the sign posting of individuals at risk of malnutrition and the use of the PaperWeight Armband<sup>®</sup> prevents weight loss
- A descriptive account of the participants' characteristics
- Also, a qualitative study is embedded in this project, concerning experiences of the PaperWeight Armband<sup>®</sup> and signposting, identifying facilitators and barriers

- A set of recommendations on how the intervention can be improved based on the feedback of participants and partners

**Study hypothesis:**

- The screening and signposting of individuals found to be at risk of malnutrition will lead to weight gain as a proxy of improved nutritional status

**Part One:**

**4. Study methodology for Question 1:** What is the impact of the intervention at an individual level?

Study design

Eligible participants who agreed to participate in the study were recruited from the five Greater Manchester boroughs undertaking the screening project funded by the Greater Manchester Health and Social Care Partnership Population Health Plan 2017-2021. These were Bolton, Bury, Rochdale, Oldham, Stockport as well as Salford, the borough which was originally using this approach.

This is a nested research-based evaluation within that larger project.

Those found to be at risk of malnutrition were invited to take part in the evaluation study. The target was to recruit a total of 80 participants as this was deemed by the University of Manchester Research Team to be a sufficient number for identifying definitive trends, in terms of potential benefits or deficiencies in the intervention.

The screening person in the Borough team leading the initial conversation collected some basic information about the individual when they were identified to be at risk for malnutrition. The University of Manchester Research Assistant collected the following within 1 week of the initial conversation:

- Initial weight
- Consent to participate in University of Manchester evaluation
- Other services currently accessing
- Semi-structured interview to understand barriers experienced to maintaining good levels of nutrition and hydration

University of Manchester Research Assistant collected the following after 12 weeks following the initial conversation:

- 12-week weight
- Changes made to diet
- Accessing services from initial signposting/referrals (Y/N)
- Accessing other relevant services (Y/N)
- Used PaperWeight Armband<sup>®</sup>
- Impact on visits to GP
- Impact on appointments with district nurse

- Do you feel you have benefitted from this intervention?
- Repeat semi-structured interview to understand barriers experienced to maintaining good levels of nutrition and hydration and what has changed

The University of Manchester Research Assistant also carried out recorded audio interviews with ten participants about their experiences of the programme and how it has benefitted their health and wellbeing.

### Study location

All research procedures have been undertaken in the community places where participants were recruited, or by contact in their own homes.

## **5. Research study results**

A total of 83 participants were recruited into the research study, with the first participant enrolled at the start of June and the last at the end of October. There were 16 participants who withdrew at or before the 12-week stage of the study due to ill-health or in four cases - bereavement. This is indicative of the frailty of some of the participants and the target user group for the intervention. To classify this frailty and its effect in relation to the intervention, the research assistant used the Rockwood Clinical Frailty Scale<sup>4</sup> as part of the process of identifying the barriers to nutrition.

### Key points:

- Recruited 83 participants, 75% of these are women
- 30% are aged 85 or over – eldest is 99 year-old woman
- Recorded weights as low as 32kg and 16 below 40kg; 50 below 50kg, see **Figure 1**
- 67 participants have been followed up for 12-week review of these **80.6%** have had a positive outcome
- 16 people (19.3%) had to withdraw from the study due to illness or bereavement, change in medical circumstances or in one case to help look after another relative
- Frailty scores range from 1 to 8; 34 had a frailty rating of 6 or above at week 1. Those with frailty levels of 5 or below were more likely to have a positive response to the intervention at the 12 week stage, see **Figure 3**

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<sup>4</sup> See Appendix Two for details on the Rockwood Frailty Scale<sup>©</sup> and how it is used to measure clinical frailty in older adults and those with dementia



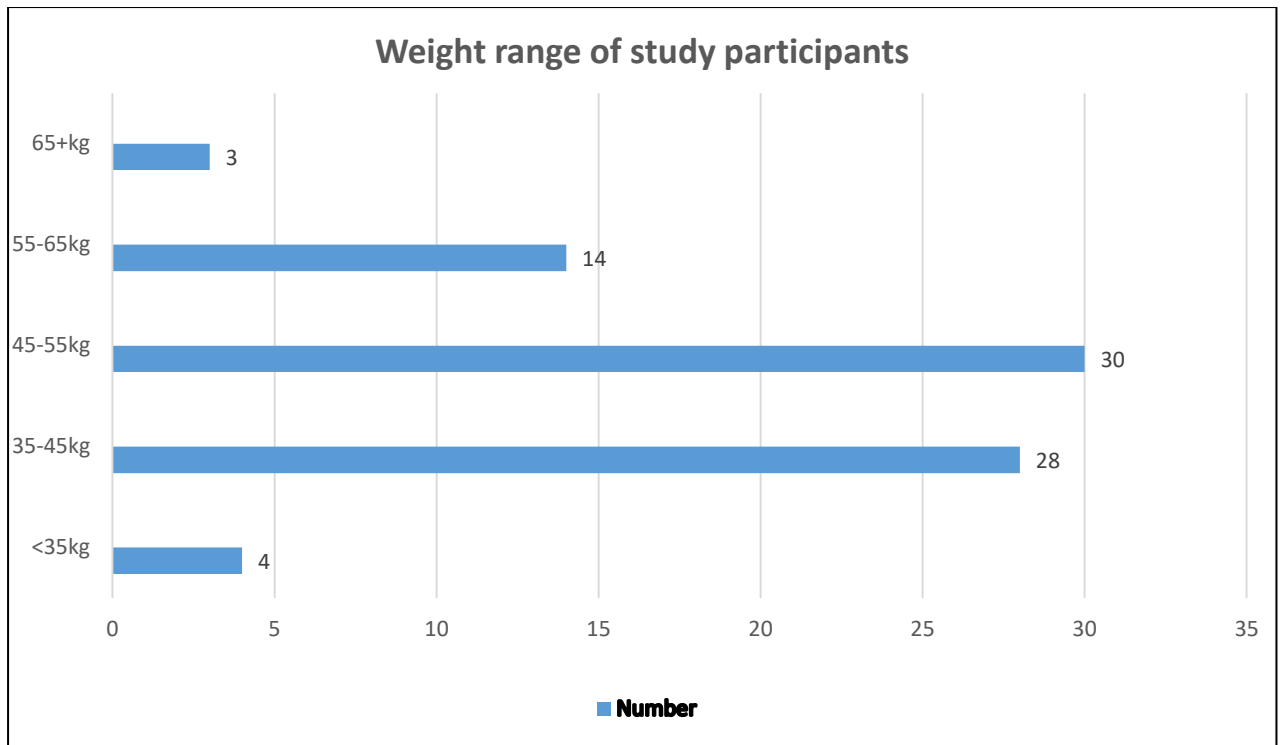


Figure 1

Results at 12 weeks:

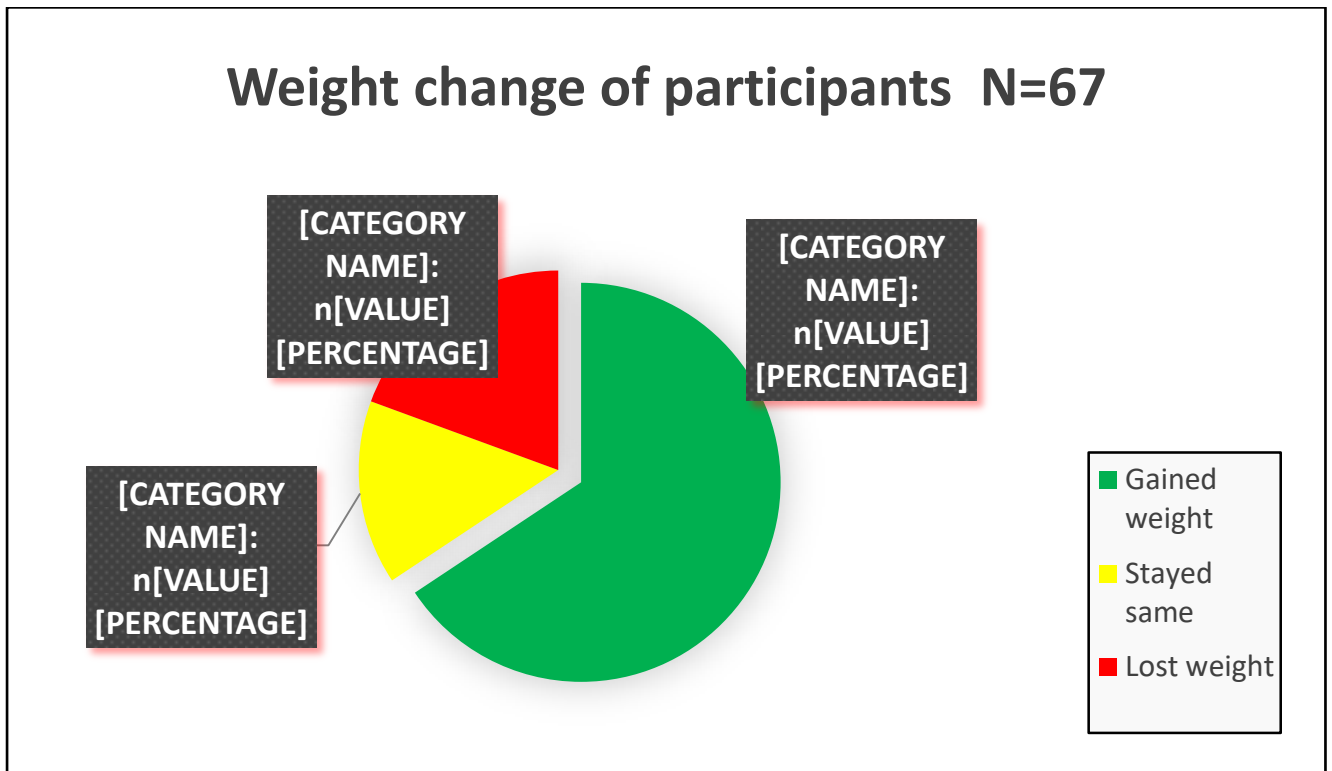


Figure 2

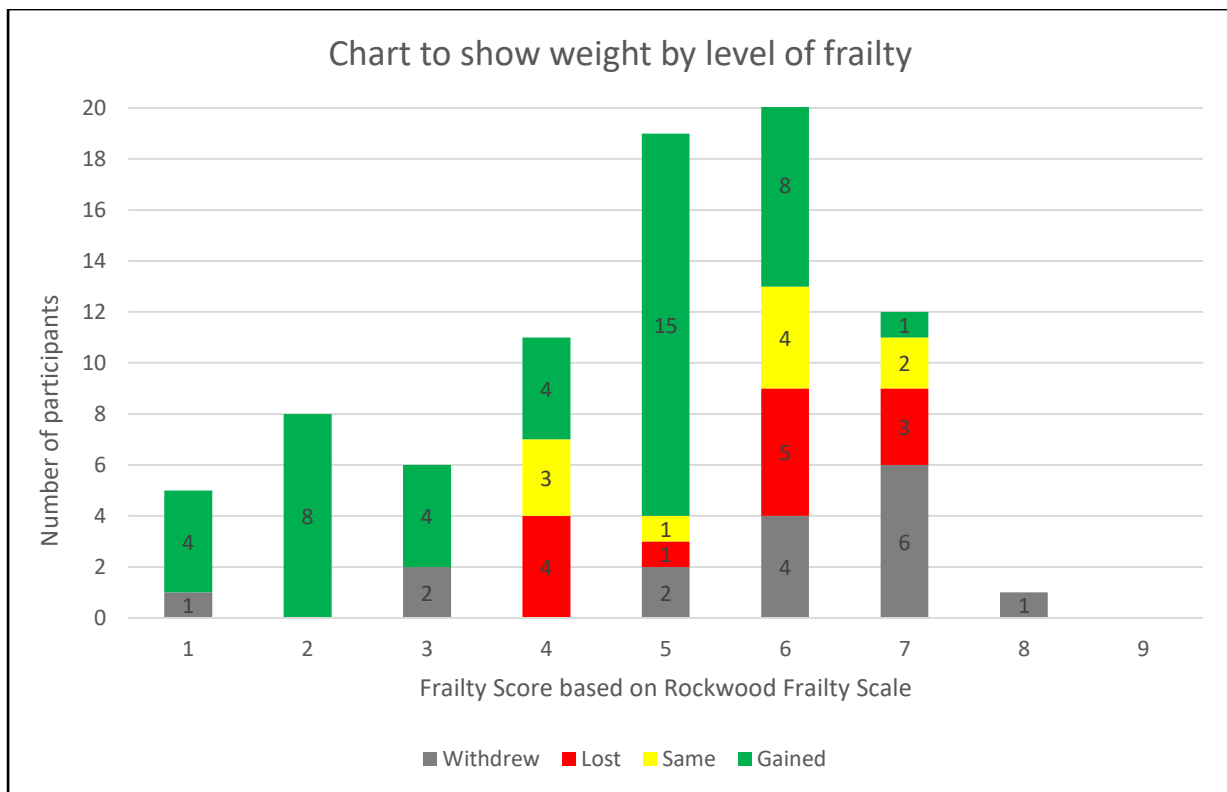


Figure 3

### Positive Outcomes:

- Cost Benefit Analysis for the programme used an assumption that 30% of people engaged would have a positive outcome.
- In fact, the preliminary findings from the evaluation show that **80.6%** have responded positively to the intervention – recording either weight gain or no weight loss at 12 weeks
- So, we can start to say with some confidence that these simple conversations to raise awareness of this with older people can make a very big difference to their lives
- **Figure 3** illustrates the link between the participant's frailty level and how well they have responded to the intervention. Those people with frailty rating 1-3 had a 100% positive outcome
- Participants living in sheltered housing and extra care schemes responded well to the intervention. 100% of people in extra care and 92% in sheltered accommodation had a positive outcome (see Figure 7)

### Other findings:

- The mean weight gain was 2.1kg
- Overall 13 people lost weight after 12 weeks on the study. This was broken down as follows:
  - Oldham 5
  - Bolton 2
  - Bury 2
  - Salford 2
  - Rochdale 1
  - Stockport 1

See Appendix 1 for more details and analysis of those participants who lost weight.

### **6. Participant case studies**

The case studies were chosen to demonstrate the range of experiences and barriers to nutrition faced by the participants. The material was collected in a series of interviews carried out by the Research Assistant at week 1 and week 12 of the intervention. It also includes a case study for one of the participants who withdrew from the study (see Appendix 1).

The key themes to emerge from the case studies and the interviews with the participants were:

- Weight loss for nearly half of the participants (49.4%) is associated with a traumatic event such as a fall followed by hospitalisation, an accident, bereavement or change of home
- Frailty levels of the participants are a significant factor in how they respond to the intervention
- Socialised eating and communal activities play an important role in preventing malnutrition. For many lunch and social clubs provide the most nutritious and enjoyable meal participants experience
- 15.6% of participants reported having a problem swallowing and digesting some types of food
- Heart attack or cardiovascular conditions result in dietary advice leading to severe reductions in fats and sugars even when weight falls below healthy levels and a BMI below 20kg/m<sup>2</sup>
- Many of these participants are already connected with health, social care or voluntary sector staff, showing that even if they are connected to

services, they may still be at risk of malnutrition and this may not always have been identified

Case study 1: This is a 66-year-old woman who has multiple medical conditions and was knocked down by a car while crossing a road near her home in Middleton last Christmas. She suffers from a variety of vascular and gastrointestinal conditions as well as osteoporosis, which makes physical activity very challenging. She has to use a wheelchair and stick to help with her mobility but wants to be active and get to a gym to build up her muscle strength. She lives in her own home on her own but her son stays over a couple of nights a week, when she cooks a meal for him. Following the road accident, she was hospitalised and lost more than a stone in weight. The accident left her with multiple fractures in her leg and combined with her other medical conditions she struggled to regain the weight she lost in hospital. She struggles swallowing food and soon feels full when eating. Her weight at week one of the intervention was 45.8kg and using the Rockwood Clinical Frailty Scale she had a rating of 5 – mildly frail.

Following the intervention, she switched to adding powdered milk to her food and using full fat milk. She also started ordering ready meals from Wiltshire Farm foods. At 12 weeks she had gained 1.4kg and overall reported an improvement in her health and general wellbeing. She was well enough to go on two holidays to the Mediterranean, where the climate and meals out with friends helped her gain weight. Her motivation is to get fitter and start going to a local gym where she can build up the strength in her legs.

**Key theme:** Road accident triggered a series of events which lead to weight loss and growing frailty linked to cycle of health problems and loss of mobility.

Case Study 2: This is an 89-year-old woman from Rochdale. She lives in a sheltered housing scheme and her daughter who is a cook, helps with her meals and shopping. She suffers from COPD, asthma and acid reflux. Last year she fell and broke her hip. She has never drunk milk and always has water on her cereal. She likes butter and eggs as well as meat, fish and peanut butter. Her weight at week one was 44.5kg and her level of frailty was around 4 – vulnerable. At 12 weeks she had gained 2.2kg and she reported that this was linked to eating peanut butter by the spoonful and more nuts.

**Key theme:** Fall lead to broken hip and hospitalisation which resulted in loss of weight and increasing frailty. Nutritional advice combined with support from family and warden in sheltered housing complex have helped promote weight gain.

Case Study 3: Is an 85-year-old woman from Stockport who has lost weight since her husband died about a year ago. She has been diagnosed with type two diabetes and is currently on a statin to manage her cholesterol levels. She attends a local knitting group which she enjoys and provides her with support and afternoon tea. The organiser of the knitting group had shared some concerns about her weight and general wellbeing, when the research assistant attended the group at week one. The

armband was loose around her arm and when talking about her diet, she expressed much concern about her intake of sugar and fats. This was related to the nutritional advice she received on first being diagnosed with diabetes a few years earlier. When asked about what she was eating, she revealed that she ate a diet very low in sugar and fats. She did eat breakfast, often cereal with semi-skimmed milk, but little else for the rest of the day. Her weight at week one was 46.3kg and at week 12 she had gained 1.7kg. She reported back that she had been using milk powder to fortify her porridge and that she was also eating peanut butter as well more nuts, potatoes and other complex carbohydrates. Overall, she said that she was feeling healthier and better in herself which was confirmed in a conversation with the knitting group organiser. Her frailty rating moved from 4 at week one to 3 at week 12.

**Key theme:** Bereavement is a significant factor here in the participant losing an interest in eating and not feeling hungry. There is also a subsequent loss of role as the participant was used to preparing meals for husband and family. Anxiety around her own health has been translated into the way she has responded to the dietary advice from the diabetes clinic which may no longer be appropriate for her situation.

Case Study 4: This is the case study for the participant who gained the most weight on the programme that was due to the intervention. One other participant did gain more but this was because of a medical condition leading to fluid retention.

This is an 83 year-old man from Oldham suffering from memory loss and possible signs of dementia who has been referred to the memory clinic. He had a bad fall nearly a year ago following a TIA, this led to him moving into extra care accommodation. Trauma of fall and moving into extra care accommodation has led to loss of weight - possibly as much as a stone and a half in the last two years. He has been diagnosed with diabetes and his care-coordinator at the extra care facility had recommended a low carb diet. He has his main meal in the on-site restaurant where staff had originally been restricting his carbohydrate intake. His daughter has also been buying in ready meals for him from Wiltshire Farm Foods. His daughter plays an active part in his care and has been working with staff at the extra care facility to make the appropriate changes to his diet and meals. She works as a Quality Assurance officer and her expertise in this area enabled her to translate many of the programme's details into a comprehensive action plan for her father.

He was identified through a Promoting Independent People Service worker from Age UK Oldham who thought it would be a good intervention to highlight the importance of good nutrition and hydration in people who live alone and also have underlying long term health conditions such as diabetes.

The Age UK Programme Manager spoke with catering staff at the complex and left them more nutrition booklets. The daughter also spoke to the catering staff and the cook has been incorporating the small dietary changes into her meal planning for all the residents. The participant followed the nutritional advice very closely and after twelve weeks gained 5.9kg and weighed 65.3kg – the most any participant gained due to the intervention. The participant has nearly all his main meals in the site

restaurant which he enjoys. There are always two course meals, based on high carb and dairy content such as fruit with cream and fish and chips.

His daughter has also been ordering Wiltshire Farm Foods to supplement his meals for when the site restaurant is closed as well as buying him full fat milk, full fat yoghurt, peanut butter, Chorley cakes, rice pudding, butter and crumpets.

He enjoys eating in the restaurant with the other residents, and says he always clears his plate and has also been trying some new foods like spaghetti. The participant told the research assistant: "I notice I don't leave as much when I'm eating with company."

During the 12 weeks he has continued to monitor his blood sugar level and this has remained stable with his diabetes well controlled. His daughter has also contacted the diabetic nurse who has confirmed that the nutritional advice is fine for her father to follow. The daughter reports that the weight gain has helped improve her father's health and as a result a scab on his head has completely healed which had been there for many months following a fall.

**Key themes:** The involvement of the participant's daughter was crucial in applying the nutritional advice and working with the staff in the extra care facility. The daughter's expertise in Quality Assurance, has played a key role in ensuring the staff understand her father's dietary needs and that there was a high level of adherence to the nutritional advice in the programme. She has also been working closely with Wiltshire Farm Foods and her father to ensure he has a clear plan around his diet and meal times with a well-stocked kitchen. The way the extra care staff and in particular the cook have responded to the nutritional advice has resulted in the participant recording the highest weight gain in the study that is due to the intervention. The opportunity for plenty of socialised eating combined with the quality of the nutrition has in this way delivered an outstanding outcome.

More case studies are included in **Appendix 1** of the report which highlight the range of conditions and barriers to nutrition faced by many older adults who are at risk of becoming malnourished. It also includes an analysis of the 13 participants who lost weight on the study.

## **7. Audio Interviews with participants**

To further understand the barriers to nutrition and the challenges to staying healthy ten audio interviews were carried out with the participants. The interviews were in a semi-structured one-to-one format and took place in the participant's home or a venue of their choice. A series of statements (see Appendix 4) were used to help structure the interviews and to explore their attitudes towards food, diet and nutrition as well as how there are linked to their living conditions, access to services and connection to the wider community. The interviews were recorded and transcribed by the research assistant from the University of Manchester.

The main points to emerge from the audio transcripts were:

- Living independently and maintaining that independence was a significant motivator in how participants responded to the intervention
- The intervention has helped participants refocus their attention on diet and the importance of eating well for health
- Pleasure in food and eating was often linked with a social experience – eating in company was where most enjoyed having a meal
- Underlying comorbidities and pre-existing conditions along with pain are big factors in restricting what and how often they eat
- Stress and trauma, often related to a significant incident such as a fall, play a big part in weight loss and setting off a spiral of ill-health and frailty
- Frailty and loneliness are the most prevalent factors in those who did not have a positive response to the intervention
- Remaining well connected to services and amenities is vital for the health and independence of older adults – especially those still able to drive

### **What they said:**

**Loneliness and social isolation:** *“The weekend I don’t usually see anyone from Friday afternoon to Monday morning. I am happy with that because I have got my telly and I like that.”*

*“It’s quite lonely being in the house all the time.”*

*“To be honest every friend I have - they all died. Left behind I am.”*

*“Family keep an eye on me and ask me what I will have for my tea.”*

**Socialised eating:** *“I enjoy food more when I eat with company.”*

*“I think when you eat out it tastes different.”*

*“I often eat on my own.....it takes me a lot longer to eat when I eat in company. You have to make conversation and it interrupts what I’m doing.”*

*“My friend goes to one (lunch club) but I said to her I will go when I can eat a bit more food than I’m eating.”*

*“I enjoy going to the Age UK Lunch Club. That’s where I eat the most because there is company.”*

*“I go to the lunch club in Littleborough.....I really look forward to that because we get entertainment as well.”*

*“She seems to eat more at bed time when her other daughter comes. She has like a little picnic. Little butties and everything with her daughter at night.”*

**Eating for pleasure or health:** *“Obviously I eat for health but I enjoy food.....it’s not a task.”*

*“I choose what to eat so I enjoy it but I don’t look forward to anything really.”*

*"I think speaking with you now has been interesting because I am aware that I have not focussed on food as a pleasurable thing. I have focussed it as a need to get this done every week and I have just done it. And that's not fair. It should be a pleasurable thing."*

**Independent living:** *"Very happy where I am living. The thought of having to clear all this out. I could not cope with that."*

*"I think if you ask for help all the time you lose your own independence."*

*"My problem will be when I have to stop driving and it's a bit of a case which lasts longer – the car or me."*

**Exercise and being active:** *"Walking the dog is important – gets her out and gets me out."*

*"Half an hour exercise at the Civic (Centre). I think that will make a difference."*

**Trauma and weight loss:** *"I ate small amounts in hospital but not really the meals.....it was always sandwiches and I don't eat bread because of my condition swallowing."*

*"My daughter had a bad operation last year. She was really, really poorly. Stress (around this) might have contributed to weight loss because we were toing and froing from the hospital every day."*

*"You had a like a twisted bowel and you went into hospital very suddenly and you lost a lot of weight, it was like an emergency situation."*

**Intervention benefits:** *"Quite a few people said you are looking well."*

*"I think it (eating more) did help with the walking."*

*"There is no doubt the belt here is fitting more tightly. I think on a couple of occasions I went out without a belt and came back in the evening and realised I had not had a belt on."*

*"It did help, it helped massively to alleviate fears. I think the info that was given was really great and I felt comfortable that I could just ring people if I needed."*

**Changes to diet:** *"I do more snacking. I tell myself you got to do it."*

*"I think really I got to eat because I don't want to go back to how I was. I don't think I could cope going back to what I was. In my mind I must try to eat even if it's only bits."*

*"I tried the powdered milk and I still have got some. What I do in the morning is I put a bit in my coffee and some on my cereal."*

*"There are some things that I never thought had protein in them. I never looked at cheese and eggs as protein and full fat (milk)."*



**Pain and appetite:** *“When the pain is bad it affects my appetite. I have to lie down that’s the only way I can cope with it. I have no interest in the food because of the pain.”*

*“For years I have suffered with acid reflux.....it’s burnt my throat. I eat very slowly. My family laugh at me when we go out, they say you order first because it takes you so long.”*

*“So that’s another thing which puts me off eating a lot because by the time I get to the end, it has gone cold.”*

## **Part Two:**

### **8. Study Methodology for Question Two:** What is the feasibility of the roll out of the intervention in practice?

#### Study Design

To answer the question around the feasibility of expanding the scale of the intervention, a series of focus groups were held with the professional partners and stakeholders for the GM Nutrition and Hydration programme. These were facilitated by the University of Manchester Research Assistant with the purpose of having at least one focus group in each of the participating localities. These were attended by managers from Age UK Salford and senior staff from the local authority care and housing teams.<sup>5</sup> There were also feedback forums set up with community dietitians and staff from NHS primary care services as well as survey of the professional partners and service managers involved with the programme.

#### The main themes to emerge were:

- Intervention has been welcomed by staff and managers and there is growing sense of the value it is bringing to services and clients – particularly how it promotes independent living
- Some staff said that they felt it made them better practitioners
- Frontline staff find the tools useful in opening up a potentially ‘sensitive’ conversation about healthy weight and malnutrition
- The role of the Age UK Programme Manager is fundamental to the successful introduction and development of the intervention
- Opportunity to develop peer to peer training and local champions to support the growth and integration of the programme

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<sup>5</sup> A full list of the participants from the focus groups and feedback forums including their roles, localities and the organisations they represent can be found in Appendix 6

- The intervention is a more natural fit for staff in sheltered housing schemes than Careline staff, as they already have a remit about knowing the person and the state of their property
- Still much work to be done with community dietitians and primary care so they can fully engage with the intervention
- Dietitians recognise value of the Paperweight Armband<sup>®</sup> and see role for it alongside MUST in identifying and preventing malnutrition
- Universally positive feedback around the PaperWeight Armband<sup>®</sup>, many said it felt very different to the MUST test. It also gave staff a simple tool which gave them a framework and confidence to talk about weight and malnutrition
- This also provides safety netting and an ability to escalate safeguarding issues in each locality associated with malnutrition, dehydration, dysphagia and mouthcare
- Stakeholders want to see the programme continuing and they value having access to quality information, expertise and support
- Best way to demonstrate the value of the programme is to provide cases studies and create a database of evidence showing how the intervention has improved people's nutrition and health in Greater Manchester

#### **9. Feedback from Locality Steering Groups, Community Dietitians and Professional Partners:**

A series of focus groups were held with members of the locality steering groups, community dietitians and other professional partners of the programme. They explored the following questions:

- Where has the programme added most value for your services and clients?
- What has been the biggest barrier in implementing and making use of the programme?
- How effective has the PaperWeight Armband<sup>®</sup> and key questions been as an intervention for highlighting the risks of malnutrition?
- What would you like to see in developing the next stage of the programme?
- Do you think it is feasible to roll out this intervention at scale in your Borough?

#### **What they said:**

*“The intervention has helped uncover lots of undiagnosed and undetected risk in malnutrition.”*

*“It is really making a difference.”*

*“It (the armband) feels completely different to MUST. It can be more relaxed, informal, and easy to do. Giving people confidence that their concerns are valid.”*

*“The armband is a big draw, it is a fantastic guide. If it is not loose, it really lifts their mood. We still go on to talk about their diet but it helps to reassure them.”*

*“When people used the Armband, if it moved up and down they were gobsmacked – it was a wake-up call. This was important for staff as well.”*

*“It was enlightening for the carers. They started noticing if drinks hadn’t been drunk and kept a note of where it was before they left.”*

*“Some staff have found it uncomfortable, especially if someone has just come out of hospital and there is a lot of other things to discuss. It can feel a bit intrusive.”*

*“Sometimes there is a need to raise greater awareness, particularly thinking about people who are on end of life care.”*

*“It may be that we should do a combined approach – Paperweight Armband alongside dietetics to combine this together.”*

*“There is a gap within nursing homes.”*

*“It would still have a positive impact but not the same level of impact without the Programme Manager.”*

*“It is a fantastic programme, has done everything we hoped for but needs to continue.”*

*“Case studies bring the data to life. Evidence base to show there is an issue and the approach we are taking is helping people live independently and promotes independent living.”*

*“People eat better when they are not lonely. You eat better with friends, companionship and support, creates a positive circle. The programme could increase the profile of social eating opportunities for people at risk.”*

*“Pleasantly surprised with how the home care provider forum took it on.”*

*“It has been surprising which teams have picked it up well, such as exercise referral services.”*

***“It’s an important message to get across that **losing weight is not a natural part of ageing.**”***

Feedback from the community dietitians was particularly illuminating. The key points from this were:

- Dietitians report positively that the Paperweight Armband<sup>®</sup> and the intervention has raised the profile of malnutrition in the community
- They confirm that the Paperweight Armband<sup>®</sup> and intervention has valuable role in identifying and preventing malnutrition
- It can work well alongside MUST and fills a gap in the clinical pathway specifically for medium risk patients, supporting earlier intervention
- More work needs to be done on improving where and how it is used in the pathway and with MUST
- Need to improve the links with other clinical services and how they use the Armband - for example physio/OT services and intermediate care as a first step prior to completing a MUST score
- Greater clarity required over what to do if detect person is at risk of malnutrition

Among the things they said were:

*“It has raised the profile in the community. It has now been on their radar. In the past, when I went to meetings nutrition was never on their agenda. Now there is a lot of work going on in the community.”*

*“It fills a gap where there was a gap but there is still more work to be done to join up between what is happening in the community and how this relates into dietetic services.”*

*“It is addressing a gap. MUST is still calculated wrongly. We do training and they are still doing it wrong. Care homes in particular, district nurses don’t all have scales. This is a big problem.”*

*“Big thing to improve is to set the pathway from Paperweight to MUST.....Need to have a clear pathway and then will know more about where to target and what to say.”*

## Feedback from professional partners on the feasibility of upscaling the GM Nutrition and Hydration Programme:

As part of the evaluation around the feasibility of expanding the Nutrition and Hydration Programme, the Age UK Programme Managers conducted a survey of the professional partners in their areas. They asked them to what extent they agree with the following statements.

1. The Nutrition and Hydration Programme has been useful in raising awareness and promoting conversations around malnutrition in older adults.
2. I would like to see the Nutrition and Hydration programme scaled up in the existing boroughs and rolled out across the rest of Greater Manchester.
3. I can see major barriers to rolling out the Nutrition and Hydration Programme across the rest of Greater Manchester and scaling up how it is used in the existing boroughs.

Main findings were:

- 36 responded to the survey
- 35 of these either agreed or strongly agreed with **Statement 1**
- 35 also agreed or strongly agreed with **Statement 2**
- Only 3 agreed or strongly agreed with **Statement 3**

Details of the survey results can be seen on Figures 4, 5 and 6. This includes responses from the service managers and professional partners from Bolton, Bury, Rochdale, and Oldham. At the time of writing the preliminary report, data was not available from Stockport but will be included in the final version.

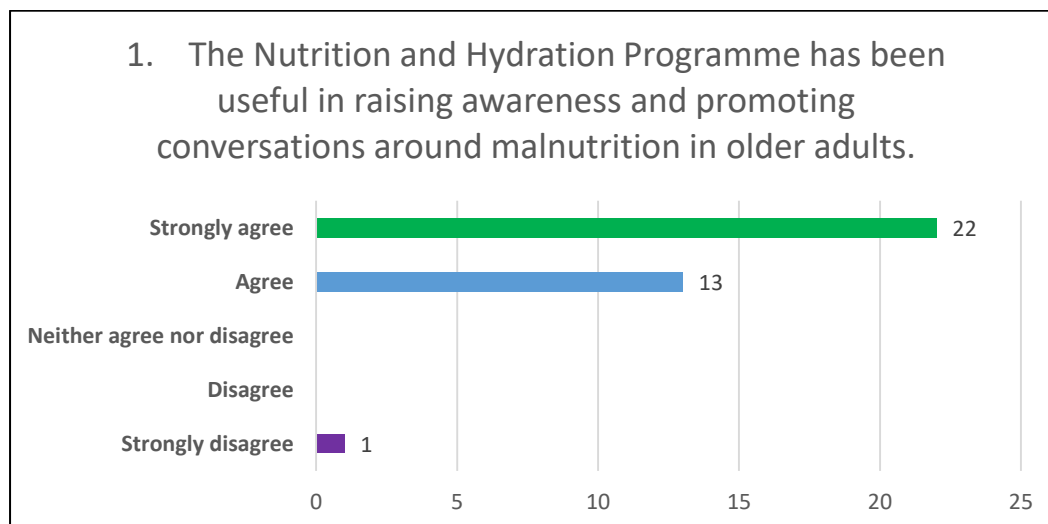


Figure 4

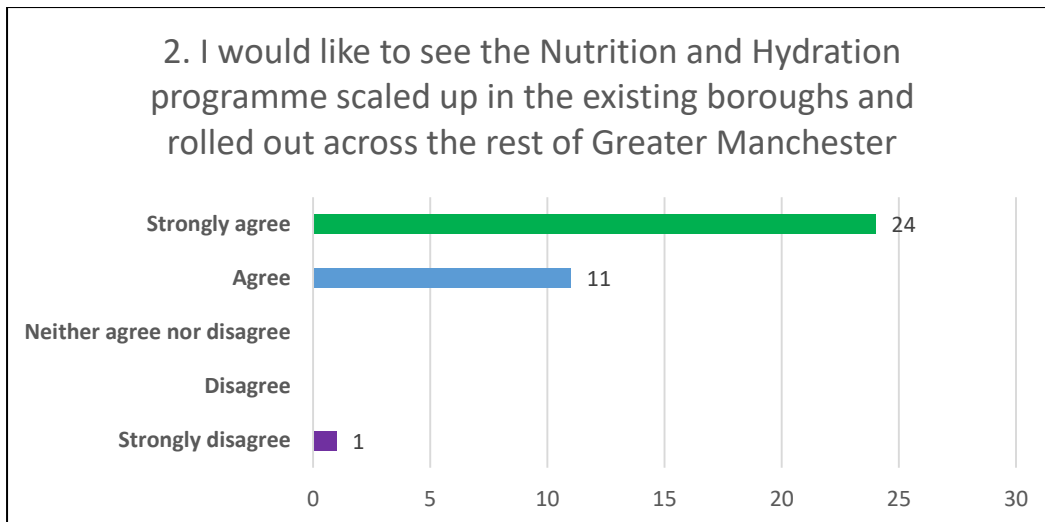


Figure 5

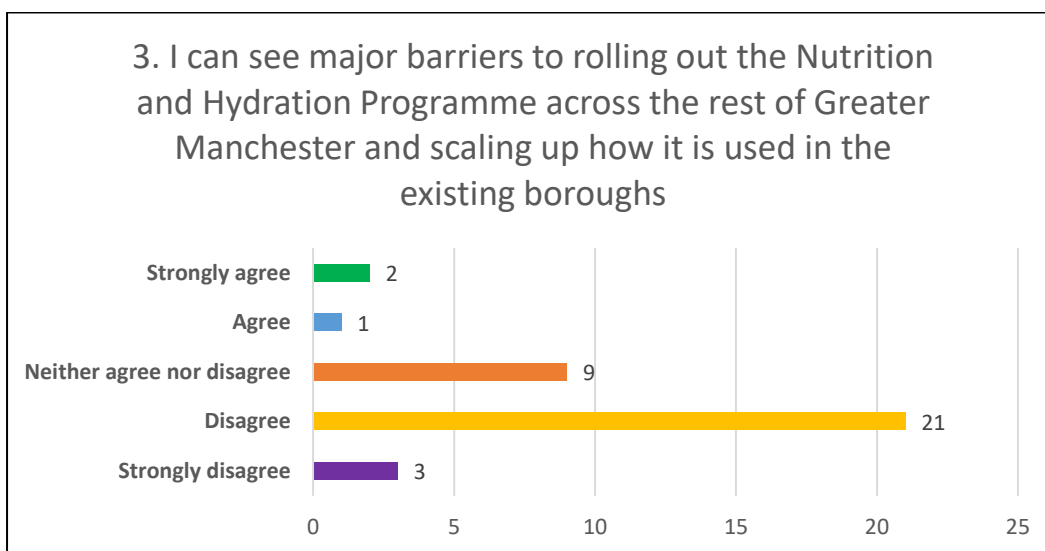


Figure 6

## 10. Partner engagement case studies and key themes

**Partner Engagement Case Studies:** These case studies reflect the level of engagement each Age UK Programme Manager achieved with the programme’s partners during the two years they were working in their respective localities. In each of these the main strategic partners were:

- The Local Authority and particularly the Public Health team
- The local Age UK organisation
- NHS managers and GPs

In all these the main signs of success was the quantity and quality of data reported back from the partners, the signposting to opportunities for promoting the programme, the re-ordering of programme materials and recruitment for the evaluation study.

What also has emerged from the interviews with the Programme Managers and the programme's partners is the importance of a multi-agency approach to tackling the problem of malnutrition in the different communities. The evidence in the evaluation demonstrates that for an effective intervention you need good practice in housing, care, voluntary sector organisations, social groups, hospitals and primary care.

Furthermore to achieve this level of co-ordination and mobilisation it is critical that the Programme Manager secures the support of at least one strategic 'advocate' who seeks opportunities to connect with other local priorities and influence front-line working practices.

**Bolton:** The Programme Manager (PM) was co-hosted by Age UK Bolton whose chief executive acted as a sponsor and champion for the programme. She helped recruit members for the steering group before the PM was in place. The chief executive also promoted the programme and generated momentum prior to the official launch. The PM had a good engagement with NHS services such as the Integrated Neighbourhood Teams and the GP Federation. Local authority services such as Adult Social Care, Bolton Cares and the Staying Well Service have been big supporters and active participants in the programme.

**Bury:** The level of engagement with the Local Authority managers and particularly the Public Health team was excellent. She was partnered with a very active and well-connected with the public health manager who whom she worked very closely – mapping services and planning the programme. They also had support from the Director of Public Health who personally took an interest in the programme as part of the authority's Healthy Living strategy. This was reflected in support from the authority's Staying Well team and Support at Home service. They have embraced the programme and provide a regular flow of data and information about how it is being used.

In contrast engagement with NHS services was mixed and in the first year it was almost non-existent partly due to the reorganisation in local services. The PM reported that at first there was no interest from CCGs or commissioners but that has started to change.

In terms of recruitment to the study, Bury had the highest levels of participants (20) and also notable was the rate at which these were recruited compared to the other localities – twelve in the first six weeks.

**Oldham:** In Oldham the level of engagement with the strategic partners followed a different pattern as the programme struggled to take off. Oldham Age UK had an extensive network of lunch clubs which proved a good source of recruitment for the study. The PM has also been receiving data directly from the manager of the Age UK PIP service.

Engagement with the Local Authority and Public Health has been excellent, with the PM being co-located alongside a manager from the public health team. The manager has 'opened many doors' for the programme, including invitations to present to infection control nurses, HCAs and GPs. She has also helped with the recruitment to the steering committee and pointing out opportunities for promoting the programme.

Engagement with the NHS and GPs has also been good with an invitation to the borough's flu clinics proving very successful both for raising awareness about the programme and recruiting for the study. The PM has also managed to link up with a ward at the Royal Oldham hospital and community dietetics.

Data reporting has been slow but in the last few months there has been a significant upturn in the data, indicating the programme is finally gaining traction despite a slow start.

**Rochdale:** With no Age UK presence in Rochdale the PM had to rely on Local Authority partners and particularly the Public Health lead to fill the vacuum. Rochdale Borough Housing also played a significant role in promoting the programme. One issue was the absence of any single person or organisation for older adult services, there were also few links between NHS and Local Authority services.

The PM engaged with the Assistant Director for the STAR service and the manager for the Falls Team. Through persistence and carefully listening to the partners he found a way to develop an effective form of data reporting which tapped into information that they were already collecting. He has also evolved the way he does training so it is more engaging for the partners' staff and volunteers.

NHS managers and GPs proved difficult at first to engage with and he is now focussing more on NHS services. PM has also identified a strategic gap and that the programme needs to engage with care regulators from the CQC.

As a sign of success, the PM is now seen as a first point of contact for older adult services in Rochdale and that there is a growing awareness among partners about the value of the programme. He is also now having repeated requests for more materials and has a growing list of opportunities to promote the programme.

## **11. Reflective interviews with the Age UK Programme Managers**

A series of reflective interviews were held with the Age UK Programme Managers from all of the localities. The interviews were audio recorded and followed a semi-structured format covering the following areas:

- The role of the Programme Manager and how this has changed over the course of the programme
- The challenges they faced in launching the programme and sources of support
- How well the Steering Group worked and changed in its function
- The engagement with Local Authority and NHS services as well as homecare providers
- Data reporting and the collection of other key metrics
- Strategic priorities for the future development of their role and the programme

The main points to emerge from the audio transcripts were:



- Each Programme Manager developed their own model of working to overcome the peculiar set of circumstances which existed in each locality, with significant variation in levels of preparedness and receptivity
- Most of the Programme Managers had to adopt a 'bottom-up' approach and gradually move to a more targeted and strategic focus
- Each programme manager needed to find a strategic sponsor either from Age UK, Public Health or the Local Authority to help facilitate the launch of the programme
- Significant work still needs to be done to embed the programme and ensure there is a collective sense of local ownership and integration with local health and social care
- The Programme Managers have uncovered significant gaps in the detection and prevention of malnutrition in older adults and have built a network of partners who are beginning to address this

### **What they said:**

**Role of the Steering Group:** *"I think the steering group has been useful in terms of taking problems to."*

*"There has been engagement in terms of setting priorities with some of those organisations and doing some mapping in terms of where MUST is used and where we appropriate to use the Armband. The one thing I have seen less of is local ownership from those stakeholders."*

**"Local ownership** – *taking on the whole programme as a core group of stakeholders and thinking about the sustainability and how that is embedded. And thinking more about local pathways and building on that really in terms of where the Nutrition and Hydration programme sits."*

*"It's on their agenda but it's not a priority."*

**Support and engagement with local Age UK:** *"There is no Age UK presence in Rochdale and no central person for older adult services. If anything I became that person. Didn't feel there were links between these groups and the NHS public sector organisations. In that void other people stepped in – good people."*

*"Importance of having a very active Age UK chief executive – slightly different to other sites in that I am being hosted as well by Age UK Bolton. Importance of the Age UK Bolton chief executive and her support for the programme in both preparing the ground and being there throughout the implementation."*

**Engagement with the NHS and Primary Care services:** *"The only ones we did invite were the infection control nurses who were the NHS side of thing. Those relationships came much later on. Bury was also at that time going through a structure change which put quite a lot of stress on the programme, because a lot of people wanted to put things back."*

*“Capacity is such an issue. We have had support from Nutrition and Dietetics. They are supportive but it is capacity resource. We need to visualise how the armband fits into this Bolton Pathway.”*

*“In terms of Primary Care not really had that input. Had great support from GP Fed (Federation). Problem at practice level – not had opportunity to explore it. Not had someone on steering group.”*

*“District nurses – an area not explored. Told district nurses use MUST but told they are finding the Armband useful.”*

*“He (GP on Steering Group) is really good, obviously giving us the flu clinics. Saying why don't you come to the flu clinics. District nurses so I trained them over a year ago. I got back in touch with them to see if I could go to the team meeting and from that they said we will give you some figures.”*

*“Public Health has been brilliant. It's so useful sitting here because I sit next to the infection control nurses and I have learned a lot from them around hydration and infection.”*

**How much work involved in launching the programme:** *“Not as much as you would think from what I have just said. Because the steering group was already there, I did not have to introduce myself. The key people already knew who I was. They were happy to do what they could.”*

*“I inherited a blank sheet of paper and the public health lead on this programme for Bury. We started doing mapping exercises. We set up a steering group almost immediately.”*

*“The Staying Well Team was successful because of their manager and their team lead who took this on board. So they incorporated the questions immediately and from the first month gave me data and they have been doing that for the last two years.”*

*“I wouldn't have had that opportunity if I hadn't have been sitting in public health. I think it's really important. They will put me in contact with other people. The network they know is really useful.”*

**How can make role of PM and way they work more strategic:** *“The focus has changed slightly away from the original priorities. I am focussing much more on the NHS services.”*

*“If we were starting again and the knowledge we have now and the confidence to do it. I would have spent some time not training at the beginning. I would have spent time almost researching and the steering group could have played a role in that.”*

*“There needs to be something else which is about the buy-in from the senior management. Have had occasions when senior managers have got involved and doors have been opened.”*

*“Something not engaged with is the CQC. If doing it again that would be my first call.”*

*“Could we have a CQuIN or could it be written into commissioning contracts? That’s where we need to be. If we want to support some of these new areas, it’s about doing some of this **strategic stuff** earlier on.”*

*“Going to have be very different approach. More facilitating and enabling role. Woven in at the right level strategically. Slimming down processes on reporting, more like train the trainer.”*

*“Focus on the strategic level and the decision-makers. It’s got to be top-down, it’s been a battle bottom up. The job would be so much easier if senior managers said you have got to do this.”*

**How has the training changed:** *“I am not sure that all five of us train in the same way. It has evolved from a training course to a conversation with actions. The purpose of the training is to get them to do something. I don’t call it training, I call it induction or briefing.”*

*“Language around the programme has been overhauled. The training has changed as well. The way I present I don’t ask you to go through all your assessment forms and make extra things. All I am asking you to do is things that you already do but slightly more enhanced.”*

*“The way I train is totally different now because I can put it into real life events. You didn’t have that in the beginning.”*

*“Now instead of saying this is what we want you to do. Now I begin the training by asking what do you already do and how you can fit this in with it? And you get a much better response that way.”*

*“It’s been embedded fairly well. Feedback generally very positive. That’s the difficulty don’t always know how much has stuck. Good to follow up a couple of weeks after training to see how much has stuck.”*

**How important is the Paperweight Armband<sup>®</sup> and the booklet:** *“I think it’s something to talk about. I don’t think it’s always being used. The important part is the conversation. If the (Paperweight) Armband supports that conversation or helps that conversation keep going then that’s brilliant. **The booklet is far more important.** I think the booklet is great. People really find it useful.”*

*“The (Paperweight) Armband does attract a lot attention.”*

*“More clinical people do use it which is almost the opposite of what we were trying to get to. It still scares the community people a little bit.”*

**How did you collect data on the programme:** *“Just got to pester people. People like the Falls Team who I tried to get numbers off them. Until they contacted me and asked me for more booklets. So I said I will give you the booklets but I want something in return. What I am now interested in, is how many times is that conversation leading on to using our materials? You just give me your client figures for the month and how many booklets have you handed out. **The learning is what are we actually counting?**”*

*“Now instead of saying this is what we want you to do. Now I begin the training by asking what do you already do and how you can fit this in with it? And you get a much better response that way.”*

*“We always knew it was going to be a challenge and I think at the start the systems we were using were too sophisticated and were putting people off. As soon as we started having conversations around what data you collect and how you do it and what the best way for you to share it and just keeping it very simple.”*

**Signs of success and making a difference:** *“Living Well – they have done it and they have changed. What I would like to see is a more direct referral to them. Although when finally got figures from, it was surprising how many plans involved nutrition. And number of plans involving hydration have gone up 70 per cent.”*

*“The time they changed when I had a conversation with the AD (Assistant Director) responsible for the STAR service.”*

*“One of the things taking up more time now is people saying I have run out of booklets. Can I have some more. That for me is wonderful. I say yeah I will come around and see you. That for me is about embedding.”*

*“So I think the first time I really saw a change was when I went to a homecare agency and I met a brilliant manager who said I am going to put this on the job description of the people I am taking on from now on and that’s what she did. And I consistently see data from them every month.”*

*“People are now starting to take notice. There is an example where we asked the DPH to send a letter to one of the organisations, senior managers and that seemed to work.”*

**Feasibility of roll-out using existing resources:** *“Without a programme manager the key is going to be where this is embedded strategically. Is it referenced Bolton Healthy Weights Strategy? It’s how we really embed it.”*

*“If you left it (the locality with a PM) altogether then I don’t think it would work because you are asking them to do something voluntary. If that was in the contract, I would feel completely differently. If I knew the homecare agencies had it written into their contracts, I would be happy with that.”*

*“Rochdale Borough Housing – hesitate to say have integrated the material. Still confusion over role and responsibilities. For long time still getting calls to see residents.”*

*“If tomorrow I was told to work in Wigan as long as I had two people who knew Wigan on board, I think we could set up a steering group with the knowledge we have and other places*

## 12. Conclusions and key success factors:

The participant case studies and the feedback from the intervention's partners has indicated that there are a common set of factors needed for the intervention to be successful, as measured by weight gain or weight maintenance. These are:

- The frailty level of the person
- The individual's level of social isolation
- The living conditions – in terms of independent, sheltered or supported accommodation
- Access to support services, such as NHS and local authority provision
- The engagement of the locality steering group and those responsible for healthcare services in each area

### The Frailty Factor:

Based on the data collected at 12 weeks a clear correlation is starting to emerge between clinical frailty and the participants' response to the programme. Of those who took part in the programme with a frailty rating of 1 to 5 on the Rockwood Frailty Index<sup>®</sup>, all but four of them benefitted from the intervention in terms of weight gain or maintaining weight. Of those who lost weight or who withdrew from the study the majority had frailty ratings 6 or above, see **Figure 3**.

Also apparent from the data is that it is possible to have a successful outcome from the intervention with a comparatively high frailty rating (6 or above) and these ratings can move even during the 12-week period from first interview.

For example, in Case Study 3 the woman's frailty rating moved from 4 to 3 as her nutrition levels started to improve. In another case in Bolton an 84 year-old woman who lives in extra care housing with multiple health conditions, including cervical cancer, a heart problem and dementia had a frailty level of 6. Her weight had dropped to 41.3kg but when enrolled onto the programme she had regained some of this weight and was 49.9kg. After 12 weeks she had gained another 3.6kg. Her daughter reported that the key to her mother gaining weight was eating with company. When the family stayed with her to eat or took her out to eat, she always ate more and finished what was on her plate. The woman's two daughters and other close family now make sure they attend the home every day either to take her meals, take her out to eat or to attend a church lunch club. One of her daughters often takes sandwiches and cakes in the early evening and leaves her a jam sandwich and a drink for her bedside – they call this her picnic.

What is clear is that the higher the frailty factor, the greater the chance of little or no benefit from the intervention, unless other supporting factors are present to counteract the effects of the person's frailty level. The people who had a frailty rating of 3 or below were able to make the necessary changes simply by having the right

information and sufficient motivation. The required intervention for this group is relatively simple and there is great potential to prevent deterioration, ill health and loss of independence.

Those with higher frailty ratings who had a positive outcome generally had additional support, either from family, local charities, carers, housing staff or health professionals. Activating this support is essential for people with higher frailty ratings to enable them to overcome barriers to their nutrition and hydration.

#### Social isolation:

High levels of social connectedness do not in themselves prevent individuals from becoming malnourished but they are a common factor in helping identify and reverse the trend of weight loss. Interviews with participants and the case studies reveal how attendance at social groups and particularly those linked to communal eating have helped participants maintain weight and spot unintentional weight loss. Failure of participants to attend these groups is itself a trigger for concern among organisers who play a key, yet informal, role in helping monitor the attendees' health and wellbeing. In some cases, the organisers have themselves been surprised at the level of malnutrition present in the group, which has been signposted by the PaperWeight Armband<sup>®</sup>.

In Case Study 3 the social group organiser played a significant role in signposting the individual to help for weight loss and identifying the anxiety around eating food with high fat and sugar content. In Case Study 5 it is the Stop Smoking Group, which connects the participant who lives alone, to the nutrition programme. This alerts him to the fact that his weight is low and he may not be eating enough.

In Case Study 5 it is the mutual support the sisters can provide for each other, combined with the Age UK Lunch Club which helps keep their weight at healthier levels. In all around 30 of the research participants were recruited through lunch clubs or social groups. Only two of these lost weight and three withdrew because of ill health or family-related issues, the rest have either gained weight or maintained weight levels so far in the study. The evidence base suggests activities which promote social connection are fundamental to helping tackle the barriers to nutrition.

#### Living Conditions:

Independent living was often the preferred choice of many of the participants and many of these used different forms of support services such as a domiciliary carer to remain living in their own home. Overall the evidence base from the study shows that those living independently without the need for additional support, have lower levels of frailty and are generally better able to overcome barriers to good nutrition. However, Case Study 8 in the appendices highlights how this can quickly change if a person is living alone and becomes unwell, then you can become vulnerable to malnutrition and growing frailty. This was also the case in Case Study 1 and Case Study 6 where the individuals found a deterioration in their health had put them on a

pathway to weight loss, frailty and growing isolation. All this made independent living a challenge and even a substantial barrier to good nutrition and their health in general.

18.1% of the participants (n15) lived in sheltered housing, with access to help via a care line or on-site warden and of these 92% (n12) had a positive outcome to the intervention. In two cases the on-site warden signposted potential people at risk of malnutrition and had noted changes in behaviour, such as withdrawal from social activities. Both these participants had frailty ratings between 5 and 6 and both responded well to the intervention, gaining over 2kg. Some of the sheltered schemes and extra care facilities also had on-site cafés and lunch clubs which promoted social eating.

11% of the participants (n9) lived in extra care housing and of these 100% (n9) had a positive outcome. These participants had some of the highest frailty ratings and it was where some of the lowest weights were recorded. In one case a 75-year-old man who weighed less than 40kg and an 89-year-old woman who weighed 36kg. In some of these facilities staff did keep a check on the weight of the residents but in others they had no facilities to do this. In many of these cases the involvement of family members was fundamental to the success of the intervention, as they provided an extra level of support to overcome the barriers to nutrition.

The chart below shows the number of participants living in the different housing settings and how they responded to the intervention. The setting 'independent with support' reflects the situation where a participant is living in their own home but is heavily reliant on a family member or friend for their daily needs. Also this category includes where participants are living in a shared home with other members of their family who care for them. Appendix 7 shows a version of this chart for each of the localities. These charts show that the participants living in these circumstances have much lower success rates in terms of their response to the intervention. Overall only 12 out of 19 participants who completed at 12 weeks, had a positive response – a success rate of 63.2%. This is 17.4% below the overall positive response rate of 80.6%. Another notable statistic is the high withdrawal rate for these group of participants, with 50% (n8) of the total number of withdrawals for the study, living in these circumstances. This is not surprising when seen alongside the high levels of frailty for this group of participants, with 17 out of the 27 having a rating of 6 or above on the Rockwood<sup>®</sup> scale.

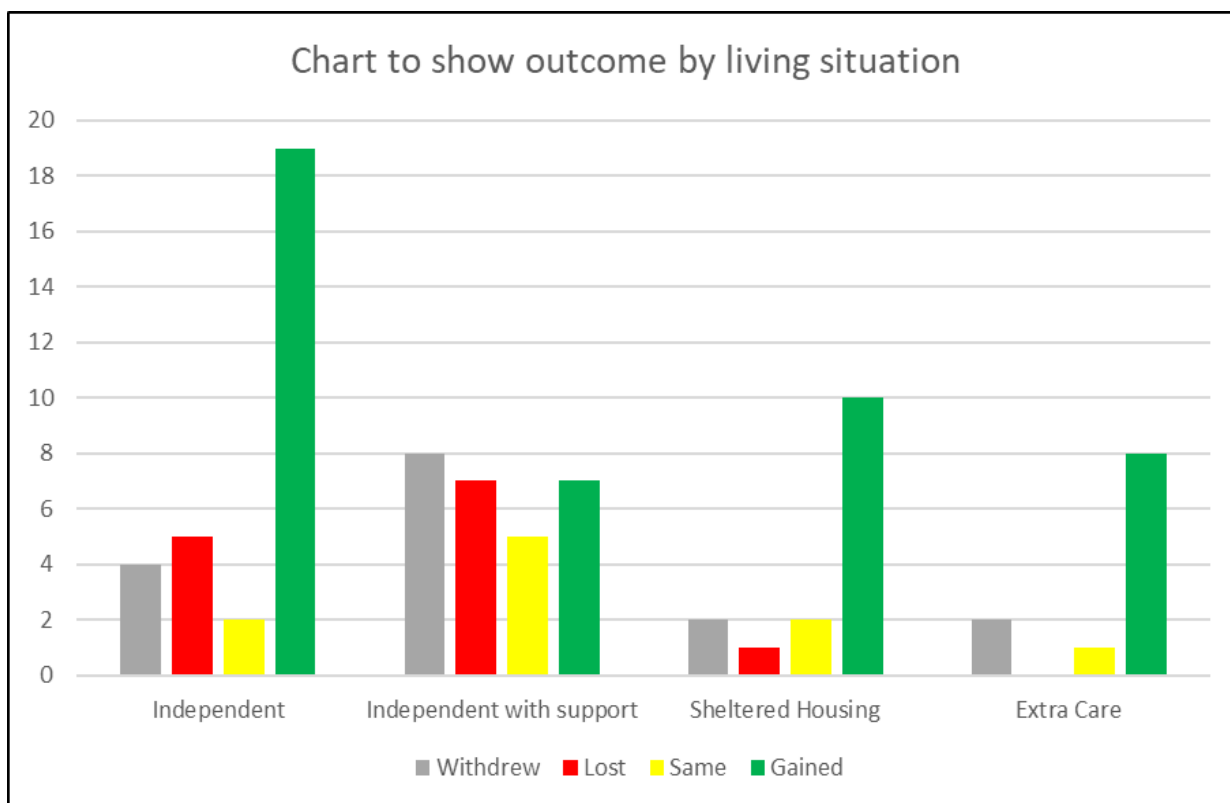


Figure 7: Response to Intervention by Living Situation

Access to services:

Access to support services from either the local authority, NHS or third sector is a key factor in the signposting of malnutrition and the promotion of the Nutrition and Hydration Programme. Many of the participants were signposted through the Living Well and Staying Healthy services run by the local authorities. One of the themes which came up in the focus groups with the partners was the need for access to high quality information about diet and nutrition, this is critical both at the individual and strategic level. From the evaluation it is clear many people are accessing their information about diet and nutrition from these support services. For example, the BEATS service in Bury which is an exercise referral initiative, has embraced the Nutrition Programme and made it a core part of its offering. One of the areas for development in the programme will be to build on these partnerships with local authority and NHS services.

For the participants involved in the evaluation being well connected to these services is a significant factor in overcoming barriers to nutrition. For example, in Case Study 1 it was the local authority’s Living Well service which originally used the PaperWeight Armband<sup>®</sup> to highlight the risk of malnutrition and is continuing to support the individual on the path to recovery. What is striking about these services is their focus on the whole person, making them an ideal partner for this programme. This was also highlighted in one of the focus groups where the manager from the local authority Staying Well service said their ‘holistic approach’ makes it easier for them to take on the programme.



The results in the areas where these services are accessible suggest they are having an effect in tackling malnutrition and preventing people from becoming more seriously ill as a result of frailty and weight loss. For the 44 participants who gained weight at 12 weeks in the study, 32 of them (75%) have regular contact with at least one of these local authority or third sector services. This also includes Day Care Centres, Community Cafés and Exercise/Relaxation Classes.

#### Service Leadership Engagement:

Feedback from the focus group sessions with professional partners and the other feedback forums, including the locality steering group, indicated a clear link between the levels of engagement in the programme and how it has changed the practice of frontline staff. This was demonstrated in how well frontline staff have used and integrated the intervention into their daily routines and have begun to see their role in tackling malnutrition among their client base. This was particularly the case in Bolton and Bury where teams who originally did not see it as ‘their role’ to look for signs of malnutrition, gradually embraced the intervention and now see it as an important part of their work. Crucially this has been supported by their managers who are becoming more aware of the connections across services such as health, housing and recreation.

The role of the locality steering group has proven equally important in embedding the intervention and spotting areas for development. The cross-functional nature of the group including third sector, housing, health and care service managers has ensured many barriers to implementation have been overcome and they have also provided a multi-disciplinary perspective on the progress of the programme. In terms of the future roll out of the programme the need for a local steering group has shown to be vital for a successful launch and throughout the early and middle stages of the programme. Questions still remain around the future role of the steering groups once the programmes have become established and these should be part of any future evaluation.

Feedback from community dietitians suggests there is a potential place for the intervention alongside MUST and it could support better practice in this area. This will need further investigation to clarify whether there is a role for this in the clinical pathway and how this would work – particularly in the prevention of malnutrition. The evaluation also revealed how managers responsible for dietetic services have played an important role in shaping the development of the intervention. Their professional expertise and insight needs to be further embedded and their role clarified in any future expansion of the programme – to maximise its value across the different healthcare and local authority services.

#### Primary outcomes

It is clear from the evidence collected at 12 weeks that the intervention and the use of the PaperWeight Armband<sup>®</sup> is identifying malnourished frail individuals and is measurably making a positive difference to the health of older adults. While this data

would need to be reviewed over a longer period of time and the sample size is relatively small, the efficacy of the intervention is so strong it is evident that this adds value as a population health approach in each locality pathway in the prevention and treatment of malnutrition. This public health tool is a conduit between preventable and disease related malnutrition pathways. In total 80.6% of participants have had a positive outcome from the intervention - either registering weight gain or no loss.

Interviews with participants at 1 and 12 weeks also revealed how the intervention is making a difference to the way they think about nutrition and manage their diet – with a focus on maximising their intake of the most nutritious foods. The audio interviews highlighted this in more detail and illustrated how the intervention has helped participants reach and maintain a healthy weight, with a BMI above 20kg/m<sup>2</sup>.

### Secondary outcomes

It is also clear from the evidence base in the study that the signposting of individuals at risk of malnutrition and the use of the PaperWeight Armband<sup>®</sup> is helping to prevent weight loss.

### Recommendations for further development

Based on the findings from the evaluation the following areas should be targeted as potentially the most rewarding for refining and embedding the intervention across Greater Manchester:

- How the benefit to the participants can be sustained
  - what level of resources are needed to support participants beyond the 12 weeks of the study
  - what are the signs of relapse in terms of participants reverting to previous behaviours linked to poor nutrition and hydration
  - does the intervention need to be reapplied and what form should this take
- How partners can integrate and embed the intervention into their own services
  - how can the training be adapted to support the evolving nature of the intervention in the partners' services
  - developing a programme of peer-to-peer support for sharing good practice and highlighting how the intervention is benefitting services
  - adapting the data reporting to introduce more transparency around the benefits to the health and care of older adults
- How dependent are the partners on the Age UK Programme Manager for the intervention's success
  - refine the operational model for the programme clarifying the roles and responsibilities of partners in embedding and taking ownership for the intervention

- targeting strategic partners to agree priorities around how the intervention will be integrated into performance objectives such as service level agreements and quality standards
- targeting those areas of care and service which have the biggest impact on the locality's health and social care, such as hospital rehab and housing for older adults
- How can the PaperWeight Armband<sup>®</sup> be developed as a tool for signposting issues around weight and malnutrition
  - develop different pathways for the intervention based on the living situations and frailty levels of the participants
  - work with carers and family members of those older adults with dementia and other cognitive disorders, to refine the support and materials for the intervention
  - identify how the PaperWeight Armband<sup>®</sup> can be incorporated into the clinical pathway for malnutrition prevention

In terms of the feasibility of the roll-out, the evidence suggests that the intervention is valued by partners and clinical professionals. The only significant barrier for implementation and roll-out at scale that has been identified relates to the need for further investment in staff and resources to support the implementation. The evidence shows that the programme fits in well with services for older people and can be easily adopted within existing provision at local level.

## Appendices: Appendix 1

### Report case studies

Case study 5 (Rochdale): Are two sisters who live in a sheltered housing complex in Littleborough. One is 90 and the other 86, both have lost their partners but have daughters and other family who live nearby. The younger sister lost around a stone in the last year and has lost her sense of smell and appetite in this period. She has a heart problem and suffers from COPD. She attends her local Age UK Lunch Club with her sister, which is where she found out about the Nutrition and Hydration programme. Following the intervention, she gained 1.6kg which she linked to eating buttered malt loaf with honey or jam. Overall, she said that she was still feeling tired and her energy levels were low. She also said that she had dizzy spells and had fallen over but had not needed to go to hospital. Her older sister is less frail than her and is still driving, mainly on Sundays when she takes her sister to a park in a nearby town. She weighed 59.9kg at the start of the intervention and was 60kg at 12 weeks. She lives very independently and does all her own shopping. She has been adding powdered milk to her food and has been eating nuts. She suffers from reflux and has problems swallowing her food. She also has problems with her colon and often feels full quickly. Overall her health and strength has been good, with a frailty rating of 3 (managing well) compared to 4 (vulnerable) for her sister.

**Key theme:** Importance of socialisation and mutual support in combatting malnutrition. Attendance at Age UK Lunch Club and the way these women support each other is a model of how to maintain independent living and tackle frailty.

Case study 6 (Salford): Is a 72-year-old retired social worker from Eccles. He lives alone and smokes 5 or 6 rollup cigarettes per day. He has been trying to stop smoking and saw the advert for the Nutrition Programme at his local Age UK office. He is generally in good health and feels he has not lost weight. Has had problems walking but still able to walk his dog several times a day and has a low frailty rating of 2. He attends a local Breakfast Club where he usually has a light breakfast of cereal and toast. This had become the main meal of his day and he described the rest of his diet as 'scatter-shot'. At week one he weighed 59.4kg and the armband was loose. He fully engaged with the nutritional advice, ensuring he was eating more regularly and larger portions. He has also been making sure that he has been drinking plenty of fluids. The result is that at 12 weeks he has gained 3.2kg and found his energy levels have increased. However, he is still smoking and reports his appetite is still the same.

**Key theme:** Smoking and living alone are key factors here in the man losing weight and not eating properly. His motivation to be able to walk his dog should not be underestimated and has led him to take action about his smoking and weight loss.

Case study 7 (Bury): This is a 70-year-old woman from Radcliffe who has COPD, osteoarthritis and is a heavy smoker. She smokes between 20 and 40 cigarettes per

day and has a very poor appetite. She is cared for by her daughter and a neighbour who is also a key holder. She is on Complian™ food supplements and struggles to eat any food without feeling sick. At week one she weighed 36.5kg and the armband was loose. Her flat was poorly ventilated as she had a phobia about insects and the premises smelt heavily of cigarette smoke. When we visited at week one there was a full ashtray beside her chair which she spends most of the day sitting in. For the 12-week follow-up, the research assistant arranged with the daughter to meet him at the participant's home. The daughter did not attend however the neighbour was able to talk to the participant and let him into the premises. The woman was sitting in the same armchair with a full ashtray beside her and there was a strong smell of cigarette smoke throughout the premises. She did have a glass of squash beside her as she is aware that she needs to keep up her fluid levels. She reported that she still struggles to eat any food without feeling sick and is still on Complian™ for her weight. However, her weight at 12 weeks had gone down to 35.4kg and her frailty rating was in danger of moving from 6 (moderately frail) to 7 (severely frail). It was clear the nutritional advice was not being retained by the participant and those caring for her were struggling to reinforce the messages around her nutrition. The Staying Well Co-ordinator who had the initial conversation with the person was informed of this, to initiate a referral to the GP.

**Key themes:** Mental health issues and heavy smoking have created barriers to nutrition and frailty levels beyond the capacity of this programme alone to resolve. Social isolation has further compounded the problem, as the participant would need a far higher degree of support and care, combined with other interventions to benefit from the programme.

Case Study 8 (Stockport): Is a retired teacher from Cheadle Hulme aged 74. She lives alone in her own home and can drive herself to do her shopping and meet with friends. She suffers from IBS and has noticed a modest decline in her weight and appetite. Often, she feels disinterested in food and does not want to prepare a meal just for herself. At week one she weighed 50kg and at week 12 she had gained 1kg after changing her eating habits and following the dietary advice in the Nutrition Programme booklet. She said that she liked eating finger foods and had been eating more nuts, cheese and dairy. Her rating is around 1 to 2 on the Rockwood Frailty Index®.

**Key theme:** Priority for participant is to maintain her independence and loss of interest in food could have led to a downward spiral in her health.

Case study 9 (Oldham): This is an 85-year-old man from Lydgate who was widowed a few years ago. In 2015 he had a heart attack and attends a healthy heart clinic. He has been diagnosed as pre-diabetic and given dietary advice to avoid high fat foods and high sugar. He does have mobility issues following a back operation which affected his spine. He lives alone, is able to drive in a converted car and does his

own shopping and cooking. He has a high quality of living including walking holidays in the Lake District and being an active member of a local art group. He tries to eat a healthy diet but is aware that he has been losing weight and that the dietary advice from the healthy heart clinic is not suited to his health needs. He weighs 66.7kg and the armband goes around his upper arm. Besides the healthy heart clinic, he also attends the pre-diabetic clinic in his village. His rating on the Rockwood Frailty Index<sup>®</sup> is 1 to 2. At the time of writing this report the 12-week data point had not been reached.

**Key theme:** Importance of independent living, access to good quality local services as well as high social connectivity have all helped participant overcome significant health problems.

Case study 10 (Bury): Is an 82-year-old man who lives alone in semi-rural Ramsbottom and has withdrawn from the study. He has a heart condition and a chest infection and has become frail with a rating of 6 to 7, while living in his own home which is in a poor state of repair. When the research assistant visited the participant on a hot day in the middle of summer, the gas fire was on in the front room, indicating he may be struggling to stay warm. The participant is estranged from his family and relies on professional carers for most of his shopping and cooking. The house had very limited cooking facilities but the care agency had arranged for him to have a microwave oven. At week one he weighed 42kg and the armband was very loose. At 12 weeks it was difficult to contact him as he was not answering his phone. On contacting the care agency, they reported similar difficulties in contacting the client. A few days later the agency said they had managed to speak to him and he no longer wanted to be part of the study. They did agree to try to weigh him to see if he had gained weight, but so far there has been no further contact.

**Key theme:** Social isolation and poorly adapted living conditions have compounded the medical problems faced by this man who is increasingly trapped in cycle of frailty and malnutrition. Difficult to see how intervention alone could reverse this.

Case study 11 (Bury): This is a 73 year-old man from Bury who has had a lot of falls and is concerned about putting on weight for his legs to support. Has recently moved into a sheltered housing complex and there has been several break-ins at the complex which have left him feeling unsettled and anxious and this has affected his appetite.

He works as a volunteer at a local primary school five days a week during term time. As part of this he has a cooked lunch which is usually his main meal of the day. He doesn't like to eat much before this as it would spoil his appetite.

He likes eating egg and chips, as well as snacking in front of the TV in the evening. He prefers to eat in the evening. He does not have any close relatives to help care

for him but does have a couple of friends nearby who helped move him into the new home. He does not receive support from services but is known to the Staying Well team.

There is also an on-site warden and he subscribes to the Careline service. Overall mobility is good, he does his own shopping and often walks into Prestwich village for a meal. He has a diagnosis of a muscle wasting condition in his legs which makes him unsteady on his feet and he also has been treated for leukaemia.

After 12 weeks on the programme his weight had increased from 49.9 to 51kg. He has also been well enough to walk 20 minutes every day to a local school where he volunteers. He reported back that he found the nutritional advice helpful and it has helped him gain some weight and works well with the way he organises his meals.

**Key themes:** The participant's anxiety around moving into the sheltered housing scheme along with the issues of security in the new accommodation had affected his appetite. The fact that he has had falls and been unsteady on his feet had made him reluctant to gain weight. All this contributed to him becoming underweight. The nutritional advice worked well and fitted into his lifestyle. He also reported benefits to his health, such as feeling strong enough to walk 20 minutes to the school where he volunteers which is a big part of his life.

### **Analysis of the 13 participants who lost weight**

**Oldham Participants (n5):** In Oldham it was noticeable that both the South Asian participants lost weight and their characteristics were very similar in terms of age and how they were being cared for – living in their daughter or son's home. They were reliant on care from a person who also had to look after several children. Their frailty ratings were also high – 6 and 7. This reflected their many co-morbidities which could have prevented responding positively to the intervention.

One of the other Oldham participants who lost weight was also living with her daughter, who was looking after her school age children. This woman had a high frailty rating (6) after suffering a stroke and losing weight in hospital last year.

There was also one other person living independently with support who had lost weight after breaking her hip. She had a frailty rating of 6 and was living in a house totally unsuited to her needs and very isolated from services and opportunities to socialise beyond her immediate family who were caring for her.

The fifth person had a low frailty rating (4) and lived in her own home. However she contracted C Diff while in hospital 18 months ago and has been referred to Gastroenterology in Manchester for a suspected IBS condition. She also is the main carer for her husband who is registered blind.

**Bury (n2):** Both participants living in their own homes and reliant on friends and family for support and care. One has a high frailty rating of 6 with possible mental

health issues and is a heavy smoker with COPD. The other has had problems eating because of a dental issue and pain with her dentures when chewing food.

**Bolton (n2):** Both people were living in their own homes. One had a frailty rating of 7 and was heavily reliant on a friend for virtually all his care and nutrition. The other had relatively low frailty (4) but had few friends and no family for support. Both men had suffered falls recently.

**Salford (n2):** High frailty levels and mental health issues (anxiety and memory loss) were key factors in weight loss for both participants.










**Rochdale (n1):** Frailty and IBS were the main issues relating to the negative outcomes. The weight loss was 1kg and the person lived in sheltered accommodation and was 98 years old.

**Stockport (n1):** The participant lives in own home and has a relatively low frailty level (4). However a pre-existing condition flared up when she caught a virus shortly after being enrolled onto the study. She spent most of the 12 weeks in bed, struggling to recover from the effects of the virus.



**Appendix 2:** The Rockwood Clinical Frailty Scale<sup>®</sup> was chosen as an internationally recognised measure to identify the frailty level of participants. This is in line with the recommendations of the GM Frailty strategy, **Resilience and Independent Living in GM** and the adoption of GM Frailty Standards to prevent malnutrition in older adults. The table below, sets out how the Rockwood Scale<sup>™</sup> is calibrated and used in practice.

### Clinical Frailty Scale\*

<p> <b>1 Very Fit</b> – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.</p> <hr/> <p> <b>2 Well</b> – People who have <b>no active disease symptoms</b> but are less fit than category 1. Often, they exercise or are very <b>active occasionally</b>, e.g. seasonally.</p> <hr/> <p> <b>3 Managing Well</b> – People whose <b>medical problems are well controlled</b>, but are <b>not regularly active</b> beyond routine walking.</p> <hr/> <p> <b>4 Vulnerable</b> – While <b>not dependent</b> on others for daily help, often <b>symptoms limit activities</b>. A common complaint is being “slowed up”, and/or being tired during the day.</p> <hr/> <p> <b>5 Mildly Frail</b> – These people often have <b>more evident slowing</b>, and need help in <b>high order IADLs</b> (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.</p> <hr/> <p> <b>6 Moderately Frail</b> – People need help with <b>all outside activities</b> and with <b>keeping house</b>. Inside, they often have problems with stairs and need <b>help with bathing</b> and might need minimal assistance (cuing, standby) with dressing.</p>	<p> <b>7 Severely Frail</b> – <b>Completely dependent for personal care</b>, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).</p> <hr/> <p> <b>8 Very Severely Frail</b> – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.</p> <hr/> <p> <b>9. Terminally Ill</b> - Approaching the end of life. This category applies to people with a <b>life expectancy &lt;6 months</b>, who are <b>not otherwise evidently frail</b>.</p>
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**Scoring frailty in people with dementia**


The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

\* 1. Canadian Study on Health & Aging, Revised 2008.  
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

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For the study the University of Manchester Research Assistant used observations and feedback from the interviews at Week 1 to assign each participant with a frailty rating and this was reassessed at the Week 12 interview.

### **Appendix 3: Literature review and citations**

The research literature around malnutrition and the studies into its prevention reflect the scale and complexity of the problem. A primary issue is the detection and the recording of malnutrition in older adults as well as a set of guidelines on how best to tackle the problem. The BAPEN reports on Quality Standards in Nutritional Care (Elia et al, 2005; Brotherton et al, 2010) and the evaluation of a Malnutrition Prevention Pilot Programme (Elahi et al, 2015) set out the scale of the problem at a clinical level and recommends a set of guidelines on how best to detect and prevent its prevalence in hospital and community settings. These recommended the use of the 'Malnutrition Universal Screening Tool - MUST' score in identifying malnutrition. In another study (JL Murphy et al, 2019) 'MUST' was used alongside the Patients Association Nutrition Checklist to evaluate how effective these tools were in the identification and treatment of malnutrition in older adults.

The studies from the Soil Association Food for Life (Innovation Unit, 2016) and the Eat Well, Age Well Food Train Partnership (Reid, Lido and Huie, 2019) reflect the multi-dimensional aspect of malnutrition in older adults and that this is both a social and economic problem which manifests itself in a clinical illness. Issues around food poverty and insecurity along with social isolation are explored through an ethnographic approach which reveals deeply embedded attitudes and behaviours towards food and eating. These are shown to be significant contributors to the problem and significant barriers to nutrition which need to be addressed by any programmes designed to reduce malnutrition.

The Age UK reports (Susan Davidson and Phil Rossall, 2014 and All the Lonely People, 2018) on loneliness add further depth and insight into the challenges faced by older adults struggling to cope in communities where they are increasingly marginalised. Loneliness and a lack of social connection are shown to have a direct impact on a person's physical and mental health – equivalent to the effects of a serious illness or heavy smoking. Loneliness is identified as one of the top three concerns for older people and when this is put alongside the evidence for the benefits of socialised eating (Saeed et al, 2019), it becomes clear this is a powerful factor driving the prevalence of malnutrition in older adults.

Reports from public services and local authorities (Resilience and Independent Living and Stockport Annual Health Report) to tackle the problem of malnutrition in older adults reflect the growing awareness for a multi-disciplinary approach. This embraces both clinical interventions along with social and economic programmes to address the widening gaps in health inequalities which exist across communities. Further details on these reports and a full literature review of these and related studies can be found in this appendix.

**Age UK, (2018).** All the Lonely People: Loneliness in Later Life.

This report presents new evidence about what Age UK knows about loneliness amongst people aged 50 and over, what increases the chances of people experiencing loneliness and how best to help those older people who are persistently

lonely. The focus throughout is on the need for approaches to reducing loneliness to be tailored to the circumstances of the individual. The report focused on further understanding loneliness among people aged 50 and over and found that, if we don't tackle loneliness, by 2026 there will be 2 million people over 50 in England who will often feel lonely. The findings also show that the risk of being lonely is dramatically higher among those people who are widowed or who do not have someone to open up to.

**BAPEN, (2003).** 'Malnutrition Universal Screening Tool'. Available at: [https://www.bapen.org.uk/pdfs/must/must\\_full.pdf](https://www.bapen.org.uk/pdfs/must/must_full.pdf)

**Ailsa Brotherton, Nicola Simmonds and Mike Stroudnon behalf of the BAPEN Quality Group. (BAPEN, 2010).** Malnutrition Matters Meeting Quality Standards in Nutritional Care. Meeting Quality Standards in Nutritional Care.

The BAPEN Toolkit contains guidance for commissioners and providers on defining the relevant, measurable outcomes related to nutritional care within services in order to gain value for money, a summary of national nutritional care standards and recommendations and a set of tools to tackle malnutrition.

**Susan Davidson and Phil Rossall, (2014).** Age UK Loneliness Evidence Review: Loneliness in Later Life.

This review is a summary of available evidence from research on loneliness in later life and it is intended to serve as an evidence base and promote discussion on the topic. The review focuses on loneliness in the community. Loneliness and isolation, or social isolation, are often discussed together and even used interchangeably. While they are related, they are distinct concepts.

Loneliness can be understood as an individual's personal, subjective sense of lacking desired affection, closeness, and social interaction with others. Although loneliness has a social aspect, it is also defined by an individual's subjective emotional state. Loneliness is more dependent on the quality than the number of relationships. Social isolation refers to a lack of contact with family or friends, community involvement, or access to services.

It is possible to be lonely but not to be socially isolated - research shows that older people in large households and care homes are more likely to report loneliness. It is also quite possible to be socially isolated but not lonely. Some people who live on their own or in remote places may not feel or report loneliness.

The evidence review discusses the profound impact persistent loneliness can have on a person's physical and mental health, and quality of life. For example, loneliness can be as harmful for health as smoking 15 cigarettes a day, and people with a high degree of loneliness are twice as likely to develop Alzheimer's as people with a low degree of loneliness.

In recent studies it was found that the three top concerns of older people were; bodily pain, loneliness and memory loss.

**Marinos Elia on behalf of the Malnutrition Action Group of BAPEN and the National Institute for Health Research Southampton Biomedical Research Centre, (2010).** The cost of malnutrition in England and potential cost savings from nutritional interventions.

This is a short version of a detailed economic report on the cost of malnutrition in England and a budget impact analysis on the effects of treating malnutrition according to the NICE clinical guidelines/quality standard. The document begins by outlining the burden of malnutrition and the need for concerted action to combat it. The report goes on to examine the economic burden of malnutrition in England and the potential cost savings associated with fuller implementation of the NICE clinical guidelines/quality standard on nutritional support in adults in hospital and community settings.

**Ellahi, Thorp with Kingston, University of Chester, (2015).** Evaluation of a Malnutrition Prevention Pilot Programme: Malnutrition Task Force and Age UK, Faculty of Health a Social Care

The evaluation aimed to examine the process of change in relation to adopting the guidelines and working together as pilot sites. Salford was one of the 5 national pilot sites in this study. The evaluation focused on identifying the causal mechanisms by which the pilots were successful and whether this was different for different people in different implementation contexts. The research team concluded that the programme with appropriate third sector collaboration and project management support, has the potential to prevent malnutrition at community level.

**Julianne Holt-Lunstad, Timothy B. Smith, J. Bradley Layton, (2010).** Social Relationships and Mortality Risk: A Meta-analytic Review.

This meta-analytic review was conducted to determine the extent to which social relationships influence risk for mortality, which aspects of social relationships are most highly predictive, and which factors may moderate the risk. Data was extracted on several participant characteristics, including cause of mortality, initial health status, and pre-existing health conditions, as well as on study characteristics, including length of follow-up and type of assessment of social relationships. The review concluded that the influence of social relationships on risk for mortality is comparable with well-established risk factors for mortality.

**Innovation Unit for Soil Association Food for Life, (2016)** How can we ensure that older people have better access to nutritious food and company? Insights report.

An in-depth ethnographic study with people aged over 75 in Leicestershire exploring the food 'landscape' for older adults and their access to high quality, sustainable, nutrition. The research carried out interviews and focus groups with 11 older adults looking at the participants' attitudes to food and eating, as well as how their different circumstances and care settings affected their behaviours and mindsets. The study identified 4 key themes around maintaining a sense of self; having a purpose and enjoying life; feeling connected and supported; being in control.

## **Malnutrition – analysis of patients with a BMI of $\leq 20\text{kg/m}^2$ in Salford using Farsite**

Farsite is a database which is linked to all Salford GP practices and captures patient information. This analysis uses the data in Farsite around underweight BMI measurements for Salford patients aged 65 years and over. The analysis shows how the numbers of older adults being recorded as underweight between 2014 and 2016 has changed since the launch of the paperweight armband in 2015.

**J. L. Murphy, A. Aburrow, A. Guestini, R. Brown, E. Parsons & K. Wallis. Journal of Human Nutrition and Dietetics, (2019).** Identifying older people at risk of malnutrition and treatment in the community: prevalence and concurrent validation of the Patients Association Nutrition Checklist with 'MUST'.  
<https://doi.org/10.1111/jhn.12710>

The study aimed to evaluate the concurrent validity of the Patients Association Nutrition Checklist against the 'Malnutrition Universal Screening Tool' ('MUST'). This cross-sectional study involved 312 older adults recruited from 21 lunch and social groups. All participants were screened as per standard methodology for 'MUST'. For the Patients Association Nutrition Checklist, they provided information about signs of unintentional weight loss in the past 3–6 months, experiencing loss of appetite or interest in eating. The Patients Association Nutrition Checklist has potential for early identification of malnutrition risk, attributed to unintentional weight loss and appetite changes with signposting to basic dietary advice and appropriate support. Further work is required to understand how this tool could be effectively used by stakeholders including volunteers, community workers and home care staff.

**Reid, Lido and Huie, (2019). Eat Well Age Well, Food Train partnership with University of Glasgow, School of Education.** Assessing older adults' nutritional and wellbeing outcomes associated with ageing in place with supported food accessibility: A mixed-methods, biopsychosocial analysis.

This research study offers a mixed method, cross-sectional design utilising both secondary and primary research data, where the receipt of food train services, primarily food delivery and meal making service, facilitated through a large volunteer network, is the primary comparator. The study compares older adults receiving the food train service (specifically food delivery and meal making service) with matched samples of older people who are not currently in receipt of Food Train delivery services.

The report identifies the links between food insecurity and social connectivity and the importance of socialised eating in tackling malnutrition. The research has revealed that barriers such as loneliness and the changing nature of the high street is restricting older people's access to nutritious food which is having a detrimental impact on physical health.

The research has called for a re-think of how we understand food insecurity, particularly in relation to older adults, as access to food is not simply down to financial means. Cooking at home was found to be a particular issue with many older

adults reporting that they are more likely to opt for ready meals, snacks or cold convenience food such as sandwiches.

**Resilience & Independent Living in Greater Manchester, (2019).** Best practice advice and standards for supporting people living with clinical frailty to live well and age well in an environment that meets their needs.

The Greater Manchester framework document focusses on the clinical frailty piece of the 'GM Living Well Jigsaw' and provides an important clinical contribution to the holistic strategic approach. The collaborative that developed it recognises that there are a wide range of determinants that affect a person's outcomes and experience. In particular, for example, links into ageing, psychological support and social care. Through this framework the collaborative seeks to support GM stakeholders in addressing the condition as part of achieving GM strategic social policy goals and as a key contribution to improving the lives of the people living with the condition.

**Saeed, Fisher, Mitchell-Smith and Brown. The University of Manchester and Manchester Metropolitan University. The Gerontologist, (2019).** "You've Got to Be Old to Go There": Psychosocial Barriers and Facilitators to Social Eating in Older Adults

Forty-two older people aged between 59 and 89 years living in Manchester, participated in semi-structured interviews or focus groups about their experiences and perceptions of social eating opportunities. Four themes were identified that related to the importance of (a) offering more than food; (b) participants' social identity; (c) taking the first step; and (d) embarrassment and self-consciousness about physical health. Gender differences related to perceptions of the relevance and attractiveness of social eating, and the role of social support. This study improves our understanding of older adults' social eating experiences and highlights how social eating opportunities could be made more attractive and accessible to older adults.

**The Annual Public Health Report for Stockport, (2018).** Chapter 3, Healthy Ageing

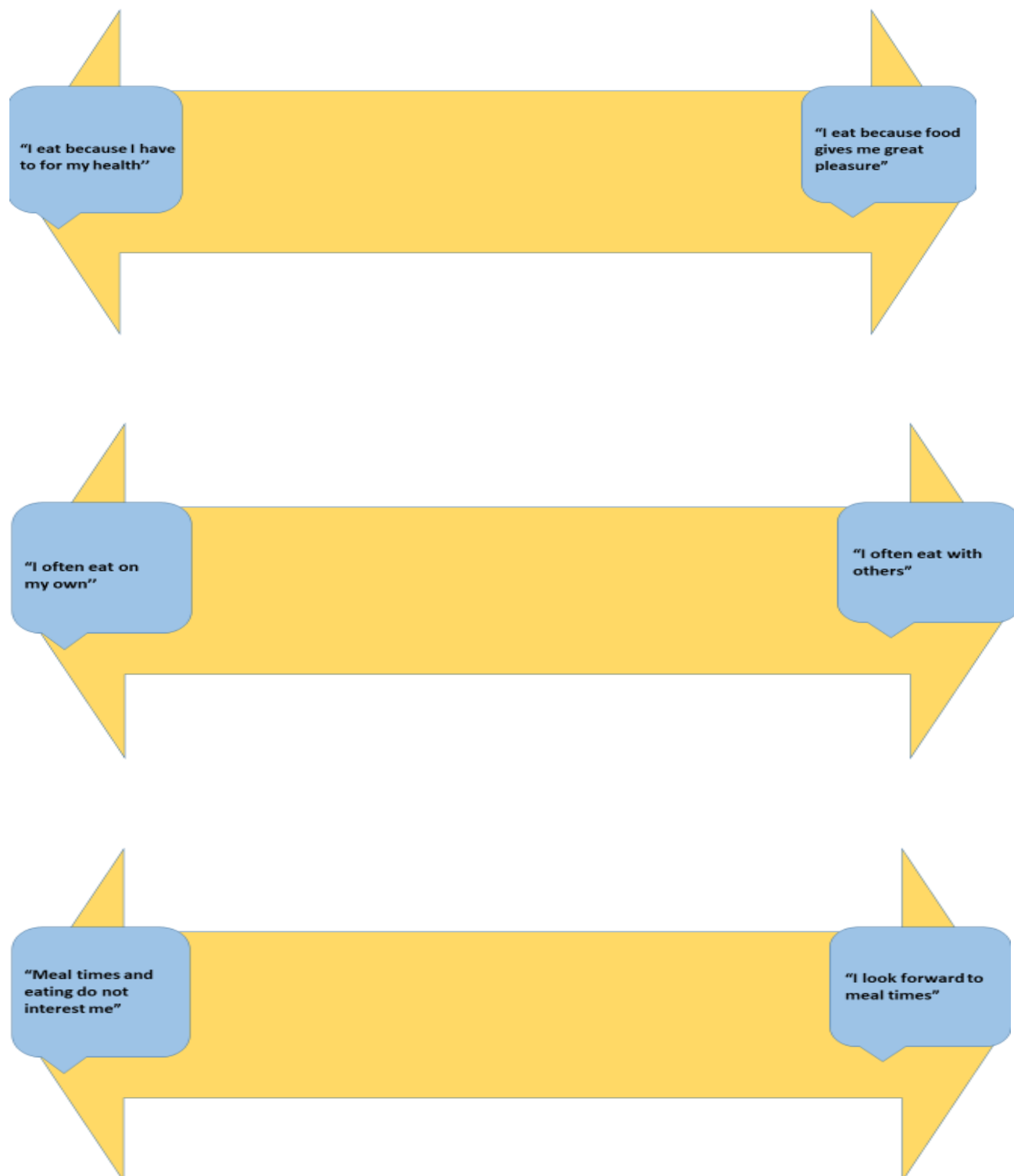
Some new information about life expectancy and healthy life expectancy in Stockport showing that life expectancy has been rising but there continues to be a bigger gap between life expectancy and healthy life expectancy in deprived areas. Information about the WHO Age Friendly Cities and Communities Framework which emphasises outdoor spaces and buildings, transport, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, community support and health services. The vision of the Centre for Ageing Better, which focuses on people feeling prepared for later life through planning and feeling confident in dealing with change; and staying active and connected. Stockport's commitment to joining the WHO international network of Age Friendly Places. The concept of an age-friendly culture which promotes positive images and high expectations for old age and also recognises the importance of the arts for healthy ageing. The Steady in Stockport pathway which focuses on preventing falls and improving bone health. The role of strength and balance training in preventing falls.

The importance of physical activity in old age. Physical activity reduces frailty so reducing physical activity as a response to frailty is fundamentally incorrect. A response to malnutrition, using the PaperWeight Armband<sup>®</sup> programme (designed and tested in Salford) as a starting point to engage partners in community awareness raising of the issue.

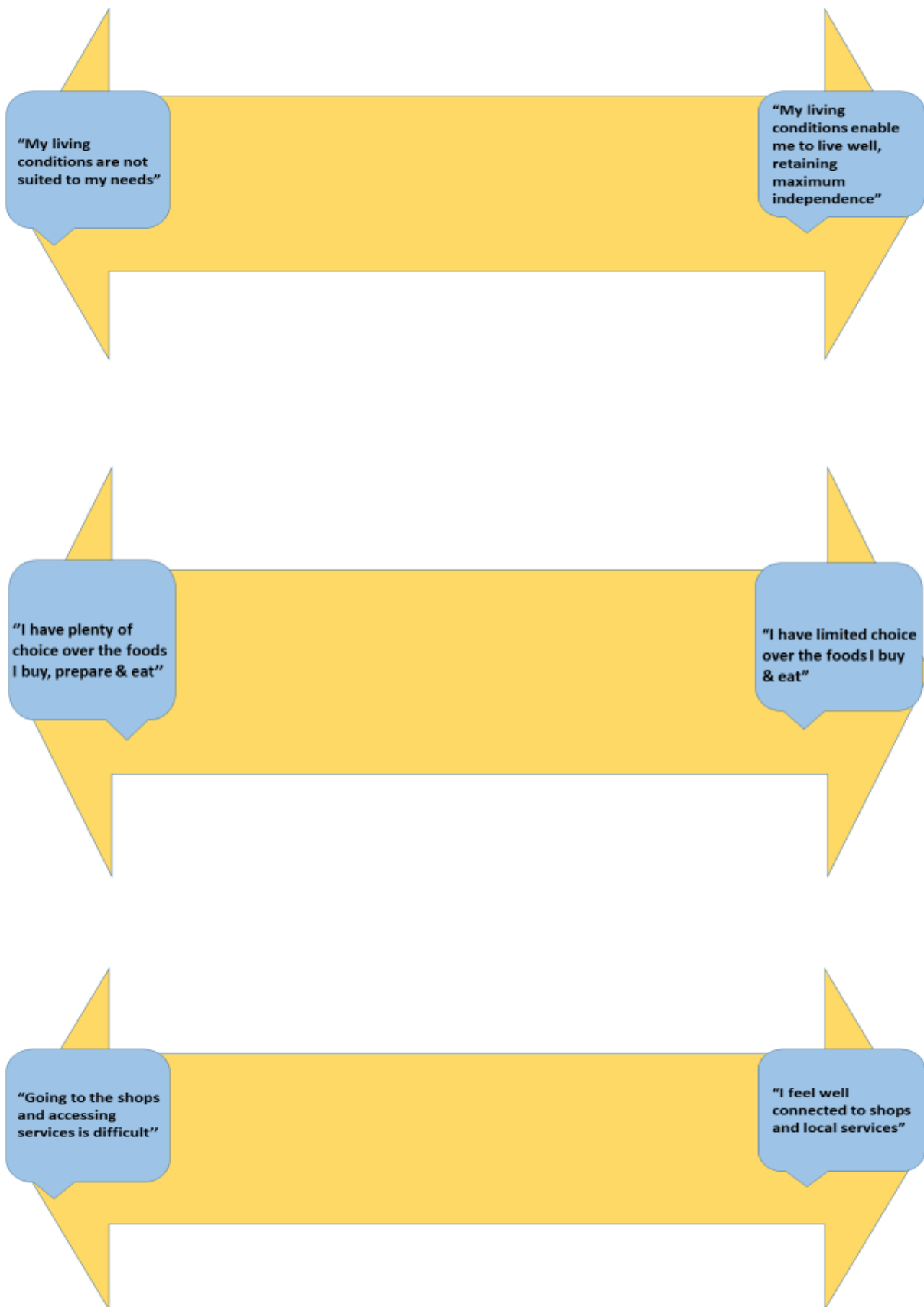
**The PLoS Medicine Editors, (2010).** Social Relationships Are Key to Health, and to Health Policy. <https://doi.org/10.1371/journal.pmed.1000334>

The systematic review, published in PLoS Medicine in July 2010, retrieved data from a large body of literature—148 studies involving 308,849 participants. The researchers examined studies carried out in both community populations and patient samples, and examined only the “hardest” endpoint—mortality (excluding studies in which only suicide or injury-related mortality was reported). The researchers reported that stronger social relationships were associated with a 50% increased chance of survival over the course of the studies, on average. The effect was similar for both “functional” (e.g., the receipt or perception of receipt of support within a social relationship) and “structural” measures of relationships (e.g., being married, living alone, size of social networks). Quite remarkably, the degree of mortality risk associated with lack of social relationships is similar to that which exists for more widely publicised risk factors, such as smoking.

#### Appendix 4: Diet and nutrition insight statements used to structure audio interviews with participants







**Appendix 5: Paperweight Armband Visual and Malnutrition Trigger Questions**

Figure 8: The Paperweight Armband<sup>©</sup>

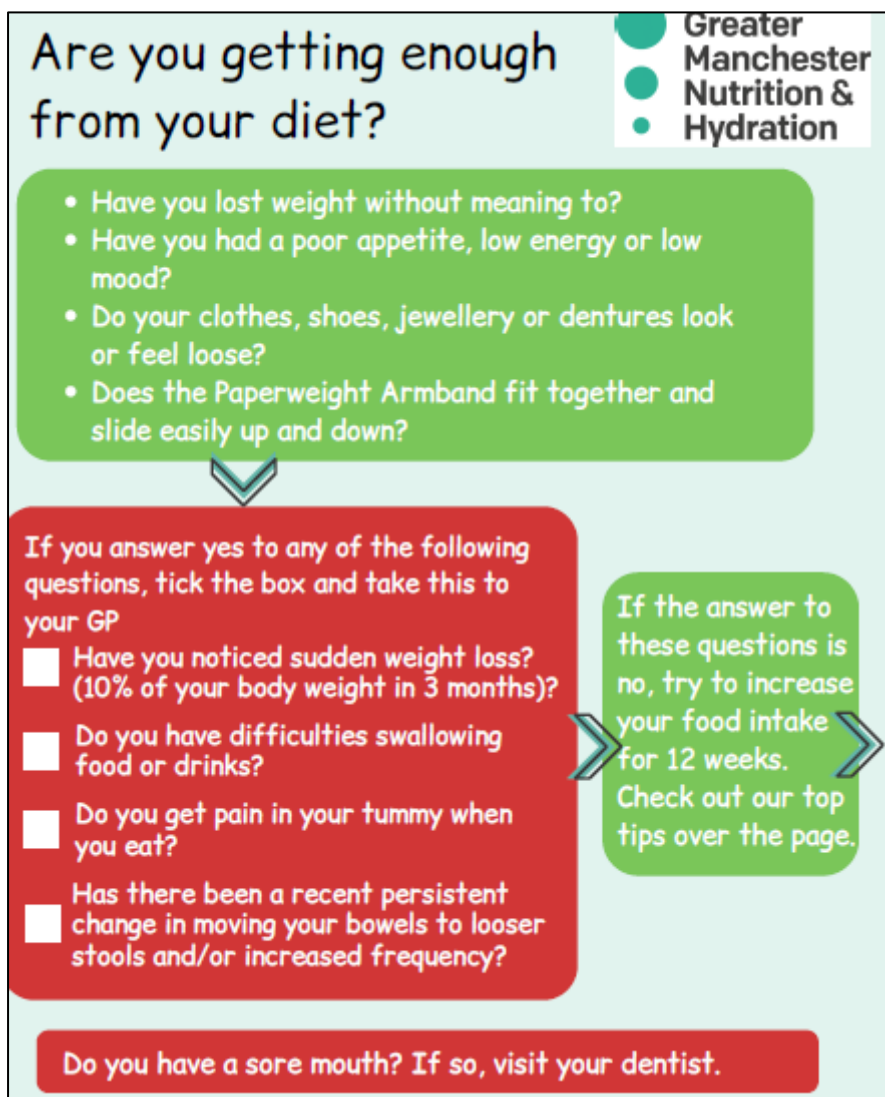


Figure 9: Trigger questions from the programme's Flow Chart Leaflet

## Appendix 6: List of the partners at the focus groups and feedback forums

Here is a list of the partners who attended the focus groups and feedback forums as part of the evaluation:

**Bolton:** Julie Riley, Customer Support Manager, Bolton at Home. Suzanne Hilton, Chief Executive Bolton Age UK. Jayne Filio, Care Navigator, Bolton GP Federation. Hazel Haworth, Home from Hospital Service, Bolton Age UK. Nichola Morris, Principal Quality Assurance & Improvement Officer, Bolton Council. Karen Hill, Principal Service Lead Adult Dietetics and Nutrition Services, Bolton NHS Foundation Trust.

**Bury:** Francesca Vale, Public Health Nutritionist Bury Council. Sam Carraher, Staying Well Team Bury Council. Jackie Veale, Head of Wellness Operations Bury Council

**Oldham:** Teresa Griffiths, Health and Wellbeing Activity Co-ordinator, Age UK Oldham. Daryl Weston, Community Dietitian, Oldham Community Dietetics Service. Tracy-lee Gilbride, Service Lead Therapies & Urgent Care, Oldham Care Organisation. Jane McGregor, Adults Speech and Therapy Team Leader, Oldham Care Organisation. Leanne Wilson, Senior Dental Nurse, Pennine Care NHS Foundation Trust. Jackie Handley, Health and Wellbeing Manager, Oldham Community Leisure. Gabriel Agboado, Consultant in Public Health Medicine, Oldham Council. Izzy Howard, Partnership Manager Housing 21.

**Rochdale:** Ruth Bardsley, Public Health Rochdale Council. Dorothy Latham, Adult Social Care, Rochdale Council. Jane Ashworth, Springfield Hospice. Patricia Garvey, Quality Improvement Nurse, Rochdale CCG; Andrew Forrest, Living Well Rochdale.

**Stockport:** Gill Hooper, Nutritionist and Care home manager. Hayley Taylor-Cox, Public Health Lead for Cancer and LTC Prevention, Paper Weight Armband and HLP, Stockport Council. Hazel Batty, Operations Manager for the Community, Age UK Stockport. Janet Challinor, The Meadows Care Home, Stockport. Bridie Meehan – Registered Manager/Company Director, Quality Care of Cheadle. Natalie Peters – Inter-office Coordinator, Quality Care of Cheadle. Louise Lowe, Integrated Nutrition and Dietetics Service Lead, Stockport NHS Foundation Trust

**Community Dietitians:** Debbie Curry, Team Lead Bury Community Dietetics. Louise Lowe, Nutrition and Dietetics Team Lead, Stockport NHS Foundation Trust. Kirstine Farrer, Consultant Dietitian – Intestinal Failure, Salford Royal NHS Foundation Trust. Karen Williams, Senior Community Dietitian, Oldham Community Dietetics Service. Karen Hill, Principal Service Lead Nutrition and Dietetics, Bolton NHS Foundation Trust.

## Appendix 7: Charts to show outcome by living situation per locality

