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# Malnutrition and Dehydration amongst Older People in Leeds

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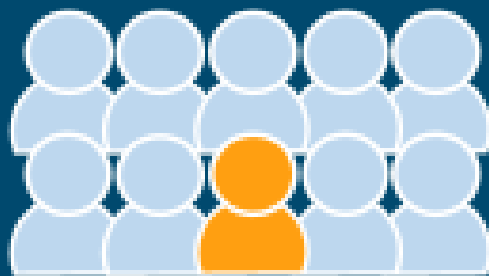
## A Health Needs Assessment

May, 2018

Adults and Health



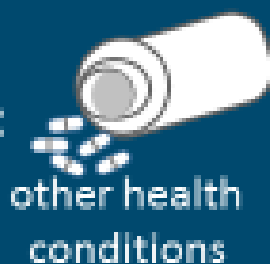
# More than 1 IN 10 people over 65 in the UK are **UNDERNOURISHED**



**13,540** people  
over 65 in Leeds

## RISK

### FACTORS:



other health  
conditions

poverty



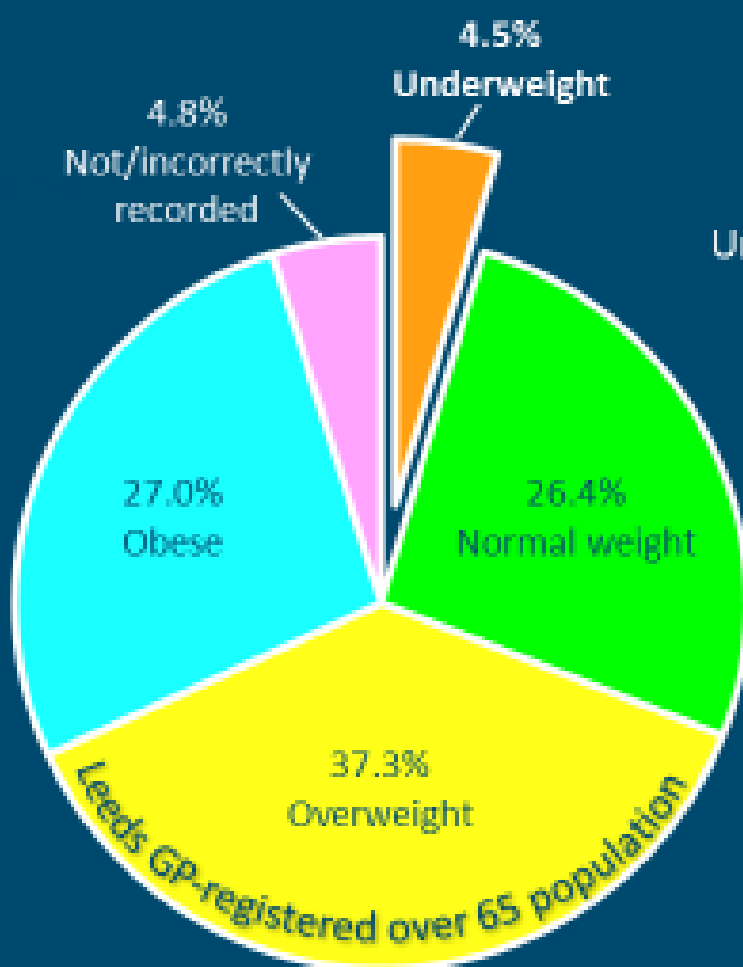
require assistance  
with mobility



social isolation



require assistance  
with eating



Undernourished people require:

**2X** GP appointments



**3X** Hospital admissions



**2X** Bed days in hospital

Overweight



well nourished



**Leeds**  
CITY COUNCIL

## Acknowledgements

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This report was produced with thanks to Richard Porter, (previous) Health Improvement Specialist (Older People) in Leeds City Council, Elizabeth Messenger, Head of Public Health (Older People) in Leeds City Council, and Lucy Jackson, Chief Officer / Consultant in Public Health (Older People, Long Term Conditions and Cancer), for their kind supervision and support.

The contributions to local data acquisition and analysis by Frank Wood, Public Health Information Lead in Leeds City Council, Simon Harris, Business Intelligence Manager at NHS Leeds Clinical Commissioning Groups Partnership, and James Lodge, Public Health Intelligence Analyst in Leeds City Council, are gratefully acknowledged, with thanks also to Adam Taylor, Senior Information Analyst in Leeds City Council, for production of maps from local data.

The invaluable contributions to the '*Locally available services*' section of this report were gratefully received from all contributors, a full list of whom is available in Appendix One.

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## 1. Executive Summary

### 1.1 Background

#### 1.1.1 Rationale for Health Needs Assessment

National guidance about improving nutrition and hydration care in communities and healthcare settings, produced for commissioners by NHS England (2015), outlines 12 key outcomes to be achieved by March 2018. This guidance arose from concerns raised about the appropriate provision of food and drink in hospitals (Care Quality Commission, 2011; Francis, 2013; Burchardt and Vizard, 2015) and the wider problem of malnutrition and dehydration across other settings (European Nutrition for Health Alliance, 2006; Department of Health, 2014; Oliver *et al.*, 2014). This health needs assessment aims to address three of the key outcomes for older people in Leeds by developing an understanding of the scale of malnutrition and dehydration amongst older people in Leeds, and outlining local services that contribute to tackling these problems.

#### 1.1.2 Definitions and screening

Malnutrition is *any imbalance of nutrients that affects a person's physiology*, although guidelines about malnutrition generally focus on undernourishment specifically. Malnutrition can be detected using screening tools, the most commonly used of which is the Malnutrition Universal Screening Tool (MUST), which requires calculation of body mass index (BMI).

Dehydration is *a deficiency of fluid that adversely impacts on an individual*. Screening for dehydration requires measurement of serum osmolality, which involves invasive blood tests. There are currently no validated non-invasive screening tools for dehydration.

#### 1.1.3 Relevance to older people

Older people are at increased risk of undernutrition, due to health reasons and social factors, for example the co-existence of multiple health problems and social isolation (Todorovic, 2001).

Older people are at increased risk of dehydration due to factors such as reduced thirst, medications that increase fluid output and dependency on others to provide drinks (British Nutrition Foundation, 2016).

#### 1.1.4 Health and healthcare consequences

Malnutrition can cause sarcopenia, decreased resistance to infections and leads to a higher mortality rate (Todorovic, 2001). There is also some evidence that people at risk of malnutrition require more healthcare resources than people adequately nourished (Guest *et al.*, 2011). It is estimated that 28-38% of people over 65 admitted to hospital are at risk of malnutrition on admission (Russell and Elia, 2014).

Dehydration can lead to headache, low-blood pressure and fainting, and disorientation, as well as increasing the risk of urinary tract infections and pressure ulcers in the long term. The full impact of dehydration amongst older people on healthcare services is unknown, although it is suspected that it is associated with an increased number of hospital admissions (British Nutrition Foundation, 2016).

## 1.2 Prevalence data

### 1.2.1 National prevalence estimates and local application

National prevalence data estimate that in the UK:

- Over 3 million people are living with malnutrition (BAPEN, 2017)
- 1.3 million (11%) people over 65 are living with malnutrition (BAPEN, 2017)
- 28-38% of people over 65 admitted to hospital are at risk of malnutrition (Russell and Elia, 2014)
- 30-42% of people living in a care home are at risk of malnutrition (Russell and Elia, 2015)

Applying these national estimates to the Leeds population, this would imply that:

- There are 13,540 people over 65 in Leeds living with malnutrition in 2018
- This will increase to 16,530 malnourished people over 65 in Leeds by 2030 if no action is taken

Due to the requirement for invasive blood tests, it is difficult to screen for dehydration in community settings and, therefore, the national prevalence of dehydration amongst older people is unknown.

### 1.2.2 Locally available data

Locally recorded data in Leeds suggest that, out of the Leeds GP registered population of older people (over 65):

- 5,727 (4.5%) are underweight (BMI under 18.5)
- 82,562 (64.3%) are overweight or obese (BMI over 25)
- 34,656 (27%) are obese (BMI over 30)
- 5,454 (4.2%) have not had a BMI recorded

These data provide an incomplete picture of malnutrition amongst older people in Leeds because of the lack of recorded BMI for 4.2% of GP registered older people, the older people who are not registered with a GP, an unknown prevalence of undernourishment amongst older people who are overweight, and an absence of knowledge about older people who have lost a lot of weight but whose BMI has not crossed the threshold to underweight.

Data about from Leeds Teaching Hospitals Trust over a five year period show that, per 100,000 admissions of older people (over 65):

- There were 78 primary diagnoses of volume depletion
- There were 600 primary diagnoses of acute kidney injury
- There were 1,600 primary diagnoses of urinary tract infections

Dehydration is likely to be a contributory factor in admissions for acute kidney injury and urinary tract infections. There are no local prevalence data for the number of older people in Leeds living with mild dehydration, which is partly due to the difficulties in screening for this.

## 1.3 Services in Leeds

### 1.3.1 Formal health services

Primary and secondary care services in Leeds have a considerable role around the detection and treatment of malnutrition and dehydration in older people. Community dietetics, run by Leeds Community Healthcare, and hospital dietetic services also contribute to detecting and treating malnutrition, alongside their broader role of prevention of malnutrition and dehydration.

### 1.3.2 Broader services

Broader services, funded by Leeds City Council, that directly contribute to improving nutrition and hydration amongst older people include lunch clubs, Meals on Wheels and the Home Food Baskets scheme, all of which provide hot or cold meals, including provision of fluids.

Other services help to reduce the wider determinants of malnutrition and dehydration, particularly social isolation, including neighbourhood networks and Time To Shine projects commissioned by Leeds Older People's Forum through Big Lottery Funding.

## 1.4 Scope of health needs assessment

This health needs assessment outlines what is currently known about the scale of malnutrition and dehydration amongst older people in Leeds, and the services available to reduce the risk of these conditions. However, it is clear that identification of older people at risk of malnutrition and dehydration in Leeds is neither systematic nor comprehensive, and it is, therefore, very likely that the full scale of these conditions is considerably greater than can be presented here. Recommendations are made to improve the identification of older people at risk of malnutrition and dehydration, largely through increasing awareness of these problems. Additionally, suggestions have been received from currently available services, and some recommendations are made here in line with their perceived opportunities for improvement.

## 2. Introduction

### 2.1 National context

In 2011, the Care Quality Commission published their findings from unannounced inspections of 100 hospitals assessing their performance around dignity and nutritional care, which were carried out following concerns being raised. This publication highlighted serious problems around a lack of appropriate food for patients with specialist diets, and a lack of time and assistance provided to patients around eating and drinking (Care Quality Commission, 2011). Although the requirement for appropriate provision of food and drink, and assistance with consuming these where appropriate, were clearly outlined in national guidance at this time (NICE, 2012a), similar findings were also reflected in data from the Adult Inpatient Survey 2012 (Burchardt and Vizard, 2015).

Concerns about standards of nutritional care for patients in hospitals were brought to the forefront of public and political attention in 2013 when the final report was published from the public inquiry into Mid Staffordshire NHS Foundation Trust (Francis, 2013). This inquiry, chaired by Robert Francis QC, highlighted a number of aspects of care that were falling considerably short of the expected standard within this Trust. Amongst these, the report raised concerns about the lack of assistance with eating and drinking for patients in the Trust, including examples of where food and drink had been left out of the reach of patients. As part of the recommendations, the Francis report provided a list of possible approaches that could be used to facilitate better care for patients' nutrition and hydration status during their hospital stay. Part of this included a recommendation for a system to **ensure adequate availability of facilities and staff to deliver appropriate nutrition and hydration to patients**, and highlighted the importance of all staff within a hospital setting taking responsibility for raising concerns about patients' nutrition and hydration care. Additionally, Francis highlighted the unreasonableness of any patient being left without the nutrition and hydration they require, or without the assistance they require to take this on board, and outlined a need for some fundamental standards which set the minimum level of care expected.

In response to the Francis report (2013), the Government published their commitment to putting in place systems to ensure that these failings would not recur (Department of Health, 2014). As part of this, they outlined a proposal for the suggested fundamental standards, to be agreed with the Care Quality Commission. One of these standards was flagged to be around nutrition. This was framed by the Care Quality Commission (2017) as **"You must have enough to eat and drink to keep you in good health while you receive care and treatment."**

The Government's policy paper (Department of Health, 2014) also highlighted the broader issue of malnutrition, including within the community, and its implications for health. Malnutrition was particularly raised as a problem amongst vulnerable groups, including older



people, and funding was provided to the Malnutrition Task Force to pilot five initiatives across England to reduce malnutrition amongst older people across different health and care settings.

The need for consideration of nutrition in settings outside hospitals has been recognised in national guidelines. **Care home staff are required to be alert to the signs of malnutrition amongst their residents, and all care homes should provide nutritionally balanced diets for residents to avoid malnutrition and help prevent hospital admissions** (NICE, 2015a). It is also recognised that people coming into hospital may already be at risk of malnutrition, and NHS England has embodied the need for timely identification of these people by stating that **all hospital patients should be screened for risk of malnutrition, and there should be monitoring of actions arising from this screening to ensure that they happen** (NHS England, 2015b). These recent guidelines build on the multiple recommendations from the European Nutrition for Health Alliance (2006) around raising awareness of malnutrition in older people, training healthcare staff, addressing barriers to good nutrition, screening for malnutrition, and treating malnutrition appropriately where it is identified.

In addition to these guidelines for hospital and community health and social care workers, there is a recognition of the importance of wider determinants and the role of commissioners in tackling the problem of malnutrition amongst older people. A report from the King's Fund emphasises the importance of taking an holistic approach to providing healthcare for older people in an ageing population (Oliver *et al.*, 2014). This includes recommendations for appropriate consideration of nutrition and hydration, and their contribution to enabling older people to live healthier, independent lives for longer.

As part of the response to the Francis report (2013) that committed to improving care, NHS England produced new commissioning guidance designed to support the provision of appropriate nutrition and hydration care in local communities and healthcare settings (NHS England, 2015). This guidance outlined 12 key outcomes for commissioners to achieve by March 2018. It is intended that this health needs assessment will contribute to the second, the third and the ninth key outcomes (highlighted) for the Leeds health and care system.

1. Identify a local senior/executive champion who can drive the work forward and influence key stakeholders to make improvements.
- 2. Understand the local burden of malnutrition and hydration and commission services as identified by this evaluation.**
- 3. Review existing service provision and agree improvement trajectories.**
4. Commission services that:
  - a) Identify 'at risk' populations that include the needs of a diverse community and reducing health inequalities.

- b) Implement appropriate interventions and evaluate their effectiveness.
  - c) Develop and implement strategies to prevent malnutrition and dehydration.
  - d) Connect hospital and community services to deliver an integrated nutritional and hydration pathway of care across the health economy.
  - e) Strengthen families' and patients' resilience by learning about prevention, maintenance and management of nutrition and hydration.
  - f) For children and young people, incorporate the psychological, emotional and interactional aspects of feeding relationship to ensure adequate intake.
5. Commission a workforce that has the necessary skills to undertake identification, prevention and intervention to reduce burden of malnutrition and dehydration.
  6. Increase public awareness of the importance of good nutrition and hydration and of the local services available to provide support if needed.
  7. Maximise opportunities for working across health and social care using the Care Act (2014).
  8. Define clear outcomes for 'at risk' populations to ensure any commissioned interventions are sustained.
  - 9. Consider how data systems can be optimised to permit monitoring and evaluation.**
  10. Ensure patient/service user involvement in service development and quality assurance of commissioned services. Taking into account the needs of diverse communities.
  11. To ensure paediatric services are delivering high quality and safe nutritional care for children and young people in a child friendly setting with appropriately trained staff.
  12. To ensure that children and young people grow and develop normally and monitored according to growth centiles.

## 2.2 Local context

Leeds has recognised the importance of good nutrition and hydration for older people, and taken action to improve these, over a number of years. The Older People Food Matters Group (OPFMG) was established in 2010 to promote messages to older people around healthy eating and facilitate action where required. This group brings together people from different agencies to focus on older people's nutrition and hydration and, collaboratively, they developed the Leeds Food Consensus, which promotes messages around good hydration and eating appropriately to be a healthy weight. They also developed the Nutritional Champions training and continue to offer this for anyone working in a health and social care setting.

A Food Audit undertaken by Feed Leeds, commissioned by LCC, in 2016 found that, although there already existed a number of community projects and initiatives around food in Leeds, poor diet and food poverty continued to contribute to poor health and health inequalities (Woodcock *et al.*, 2016). One of the recommendations from the audit was to develop a food partnership. Following this, the Leeds Food Partnership was set up with a number of objectives, including addressing malnutrition and obesity within Leeds and reducing food poverty. This organisation is made up of representatives from many agencies, who are working together to create the Leeds Food Charter, which will provide strategic direction for nutrition in Leeds.

The Public Health team within Leeds City Council (LCC) have also been successful in securing £51,000 funding from the Improved Better Care Fund (iBCF) to finance three projects over one year within the **Prevent Malnutrition Programme**:

**1. Malnutrition Helpline (£25,000)**

Leeds Community Healthcare will receive the funding to provide a malnutrition helpline for one year. The aim of the helpline is to reduce health and social care pressures, and hospital admissions. The helpline will be active from **14<sup>th</sup> June 2018**, which coincides with *Thirsty Thursday* in the *Leeds Nutrition and Hydration Week*.

A dietitian support worker will be available via the helpline between 9-5 Monday to Friday, with an answerphone service outside these hours. The helpline is designed to answer queries from health and social care professionals, and carers of older people, and the dietitian support worker will promote a Food First approach. Clinical support will be available from a dietitian during all hours that the helpline is manned, should this be required. The types of inquiries received will be logged to aid analysis at the end of the year.

**2. Campaign to raise public awareness (£8,000)**

This project will be led by the OPFMG, and will run from April 2018. The objectives of this project are for healthcare workers to raise public awareness about malnutrition amongst older people, including conveying the message that **weight loss is *not* a normal part of ageing**. This may run alongside more focussed campaigns, for example using posters or billboards.

**3. Nutrition training for LCC staff (£18,000)**

This project will be led by operational development partners within LCC, who will undertake to deliver *Improving Nutritional Care* training to health and social care professionals within LCC, for example care workers and day centre professionals. This training may also be offered to providers commissioned by LCC to provide health and social care services, and third sector professionals working in this area.

### 2.3 Scope of HNA

This health needs assessment will provide a background about what constitutes malnutrition and dehydration, their causes and consequences, and estimated national prevalence rates in older people, where older people are defined as those aged 65 years or over. The expected local prevalence rates, extrapolated from national rates, will then be compared against local data to provide a picture of the scope of malnutrition and dehydration amongst older people in Leeds. The services available in Leeds that contribute to reducing malnutrition and dehydration amongst older people will then be outlined, along with any available information about their cost and effectiveness. Finally, conclusions will be drawn about local need and recommendations made as to how best to target this need in Leeds.

## 3. Background

### 3.1. Malnutrition

#### 3.1.1. Definition

The British Association for Parenteral and Enteral Nutrition (BAPEN) define malnutrition as:

*“a state of nutrition in which a deficiency or excess (or imbalance) of energy, protein and other nutrients causes measurable adverse effects on tissue / body form (body shape, size and composition) and function and clinical outcome” – (BAPEN, 2017).*

Whilst excess is incorporated into this definition, malnutrition guidelines and interventions generally focus on undernourishment, rather than over-nourishment such as occurs with obesity (BAPEN, 2017; NICE, 2012b). It is important to note, however, that obesity can be associated with a deficiency in specific, important nutrients (Porter Starr *et al.*, 2016), for example vitamin D deficiency (Volpe *et al.*, 2016). Traditional tools designed to detect malnutrition using measures of underweight may, therefore, not detect nutritional deficiency in these groups of people.

The European Society for Clinical Nutrition and Metabolism (ESPEN) produced guidelines about the terminology of clinical nutrition (Cederholm *et al.*, 2017). These guidelines differentiate malnutrition from conditions commonly associated with malnutrition, such as sarcopenia and frailty. They also consider over-nutrition as a separate concept, with obesity and sarcopenic obesity contained therein. Within the overarching concept of malnutrition, ESPEN delineated disease-related malnutrition from malnutrition without disease.

#### 3.1.2 Population at risk

It is known that the caloric intake of people generally decreases as they get older. The National Diet and Nutrition Survey data, aggregated over the years 2012-13 and 2013-14, demonstrate a reduced calorific intake amongst people aged over 65 years compared to those aged 19-64 years, particularly in men. For men aged 19-64 years, the average total daily calorific intake was 2,107 kcal, compared to 1,835 kcal for men over 65 years. For women aged 19-64 years, the average total daily intake was 1,595 kcal, compared to 1,488 kcal for women over 65 years (Bates *et al.*, 2016).

To a degree, the reduced intake in older people follows a reduced requirement due to less energy expenditure through movement. However, other factors, including changing taste and smell, can mean that the reduction in energy intake outweighs the reduction in energy requirement, resulting in a higher risk of older people becoming malnourished compared to their younger counterparts (Ahmed and Haboubi, 2010). There are wider determinants that are also associated with an increased risk of malnutrition in older people, for example food

poverty, social isolation, especially following a bereavement, and the presence of multiple comorbidities, particularly where this results in a dependency on other people for self-care (Todorovic, 2001). This can be seen in data from the four survey weeks conducted by BAPEN, which showed that 23-31% of people admitted to hospital from their own home were at risk of malnutrition, compared to 41-59% of those admitted from a care home (Russell and Elia, 2014).

There are a number of other health conditions that are associated with malnutrition. These include (Todorovic, 2001):

- Being about to undergo, or just having undergone, surgery
- Conditions that cause a cachectic state, for example:
  - Cancer
  - Chronic Obstructive Pulmonary Disease (COPD)
- Conditions that affect mobility, for example:
  - Parkinson's disease
  - Motor neurone disease
- Conditions that impact on cognitive function, for example:
  - Alzheimer's disease
  - Other dementia
- Conditions that interfere with the normal digestive process, for example:
  - Inflammatory bowel disease
  - Stomas

The increasing prevalence of conditions associated with malnutrition, including cerebrovascular disease, COPD and dementia, is likely to contribute to an increase of malnutrition amongst older people (Elia and Russell, 2009).

As well as physical health conditions, problems with mental health and wellbeing can be contributory factors in malnutrition. In particular, low mood and depression can lead to reduced nutritional intake. Due to the likelihood of depression amongst older people presenting with physical symptoms, it is important to remember that:

***“Malnutrition may be a presenting symptom of depression in the elderly.”*** – (Evans, 2005).

### 3.1.3 Screening

The Malnutrition Universal Screening Tool (MUST) is commonly used to screen for risk of malnutrition. Other validated tools mentioned within the ESPEN guidelines for screening for malnutrition include the Nutrition Risk Screening-2002 tool (NRS-2002) for use within hospitals, the Malnutrition Screening Tool (MST) and the Short Nutritional Assessment Questionnaire (SNAQ). However, the ESPEN guidelines recommend using the Mini Nutritional

Assessment (MNA) or the short form version (MNA-SF) for screening for malnutrition in older people because they have better validation in this population (Cederholm *et al.*, 2017).

Both MUST and the NRS-2002 require measurement of body mass index (BMI). In the MNA, the measurement of BMI may be substituted with a measurement of calf circumference if BMI is unobtainable. Cook *et al.* (2005) discuss a number of problems with using BMI to screen for malnutrition in older people:

1. Calculation of BMI requires accurate measurement of a person's weight and height, which may be difficult in people with limited mobility, for example due to frailty or pain, which is more commonly seen amongst older people.
2. BMI ranges were intended for use with populations and must be viewed in the context in which they were created, requiring caution when applied to an individual.
3. The BMI population ranges were originally created based on younger adults, leading to uncertainty about the reference ranges for an older population who may have different body shapes, for example as occurs with height loss in older people.
4. Using BMI to screen for malnutrition in older people may fail to detect small but clinically significant losses of weight, and is unable to discern between lean and fat body mass.

They recommend, therefore, that instead of using BMI to screen for malnutrition in older people, weight and weight change, along with a history of physical change, could be used instead (Cook *et al.*, 2005).

Whilst using weight and weight change to screen for malnutrition in older people has some advantages over using BMI, it is a more subjective measure and relies on professionals doing the screening having sufficient training to be able to interpret individual results. Conversely, using BMI allows a cut-off, below which a person may be considered at risk of undernourishment. Using a formalised, structured tool allows screening to be conducted by a wider group of professionals who have not received formalised weight assessment training, and also allows for better consistency in weight intervention research. It may, therefore, be most appropriate to screen for risk of malnutrition using a structured tool, such as MUST, with further assessment for at-risk individuals involving more detail about their weight and recent weight change.

### 3.1.4 Health consequences

Malnutrition can lead to decreased muscle mass and, subsequently, a reduction in mobility (Todorovic, 2001). There is good evidence of an association between malnutrition and frailty in older people, and preventing malnutrition may reduce the development of frailty (Artaza-Artabe *et al.*, 2016), which is likely related to the reduction in muscle bulk. Reduced muscle mass can result in malnutrition-related sarcopenia. Whilst there is no universally accepted

definition of sarcopenia, the European Working Group on Sarcopenia in Older People (EWGSOP) considers sarcopenia to be:

*“a syndrome characterised by progressive and generalised loss of skeletal muscle mass and strength with a risk of adverse outcomes such as physical disability, poor quality of life and death.” – (Cruz-Jentoft et al., 2010).*

The EWGSOP laid out their diagnostic criteria for sarcopenia, being that a person must have low muscle mass, combined with either low muscle strength or low physical performance (Cruz-Jentoft *et al.*, 2010). Just as older people with obesity may simultaneously be malnourished, it is important not to overlook the problem of sarcopenic obesity in older people, where muscle mass is lost while fat mass is gained (Volpe *et al.*, 2016).

Malnutrition can adversely affect an older person’s immune system, leading to delayed wound healing, increased risk of pressure sores, and increased risk of infections and post-surgical complications (Todorovic, 2001). A survey of people visiting their GP in Southampton demonstrated that people identified at risk of malnutrition had more infections and wounds than those not at risk (McGurk *et al.*, 2012). As a consequence of the reduced muscle mass and mobility (Todorovic, 2001), malnutrition can increase the risk of falls, which can result in an increased risk of neck of femur fractures. Ultimately, malnutrition is associated with an increased mortality rate (Todorovic, 2001).

As a result of the potential health consequences of malnutrition in older people, it is important to consider the impact of undernourishment on quality of life. Sarcopenia, pressure sores and infections can all reduce a person’s mobility and their ability to partake in their usual activities. This limitation on a person’s function can contribute to a reduced quality of life, and even lead to low mood and depression.

### 3.1.5 Healthcare consequences

There is some evidence that people at high risk of malnutrition require more GP visits than those at low risk (McGurk *et al.*, 2012). In one case-control study, people of all ages with malnutrition required twice the number of GP consultations and had three times as many hospital admissions during the six months following their diagnosis, than people without a diagnosis of malnutrition (Guest *et al.*, 2011). They also required over twice as many laboratory tests, over two-and-a-half times the number of diagnostic procedures and over three times as many medical devices. Over the six months of the study, the average cost of use of NHS resources for a person with malnutrition was estimated as over double that required for a person without malnutrition (Guest *et al.*, 2011). These estimates are across all age groups with no breakdown for older people.

Using the assimilated data from the four survey weeks conducted by BAPEN, Russell and Elia (2014) estimated that 25-34% of people of all ages admitted to hospital are at risk of malnutrition, with 28-38% of people aged over 65 years at risk on admission. Once people with malnutrition had been admitted to hospital, Guest *et al.* (2011) found that their length



of stay was almost twice as long, on average, than for people without malnutrition (6.2 days compared with 3.3 days). It has been shown that prolonged bed rest (of 10 days) can reduce muscle strength in the legs in healthy adults aged between 60 and 85 years (Kortebein *et al.*, 2008). It is likely that this effect would be enhanced in undernourished older people, meaning that a long hospital stay for these people could considerably reduce their muscle strength further, contributing to development of sarcopenia.

### 3.1.6 National recommendations

NICE guidelines (2006a) state that people should be screened for malnutrition on admission to hospital and weekly thereafter. People attending outpatient appointments should be screened at their first appointment and whenever there is clinical concern afterwards. Similarly, people should be screened upon registering with a GP, or upon entry into a care home, and then whenever there is clinical concern thereafter. Whilst no specific screening tool is recommended, certain criteria for screening for malnutrition are outlined, including a requirement for BMI calculation, and MUST is presented as an example of a tool that may be used to meet these criteria. These guidelines also include recommendations for recognising malnutrition, and appropriate treatment considerations (NICE, 2006a). They make no reference to specific at-risk groups of people, including older people or people with associated health conditions.

There are specific recommendations about nutritional assessment and support contained in NICE guidelines for the management of COPD (NICE, 2010a), heart failure (NICE, 2010b), motor neurone disease (NICE, 2016), and stroke (NICE, 2008). Although the NICE guidelines for management of Parkinson's disease do not directly reference malnutrition screening, they do include a specific recommendation for the consideration of referral to a dietician for specialist dietary advice (NICE, 2017). The NICE guidelines about different cancers do not include specific reference to nutritional support but there are links to the general guidance about nutrition support in adults (NICE, 2006a) and patient experience in adult NHS services (NICE, 2012a).

ESPEN recommend screening for malnutrition in people with dementia, both at the time of diagnosis and regularly afterwards, for example every three to six months, with regular monitoring of weight to ensure alertness to early signs of weight loss and malnutrition (Volkert *et al.*, 2015). They also make recommendations for improving nutritional status in people with dementia through improving the environment and general social experience of eating, with an allowance for enteral or parenteral nutritional support in situations where nutritional status is threatened by an acute and reversible condition (Volkert *et al.*, 2015). However, these recommendations are not reflected in great detail by NICE guidelines, which note only that problems with nutrition should be identified by health and social care staff, and recorded and addressed in a care plan, as part of the specific needs of people with dementia (NICE, 2006b). Anticipated dementia care guidelines currently in development

(NICE, exp. June 2018) may redress this discrepancy and include more recommendations about nutrition support.

### 3.1.7 National prevalence and cost estimates

Estimates place the total number of people in the UK living with malnutrition at over 3 million, with 1.3 million of those aged 65 years or over (BAPEN, 2017). Since there are 65.6 million people in the UK, of whom 18% are aged 65 years and over, there are approximately 11.8 million older people in the UK. Taking BAPEN's estimate of 1.3 million older people being malnourished, that equates to approximately 11% of the UK population aged over 65 years living with malnutrition.

It is estimated that 93% of people with malnutrition across all age groups live in the community (BAPEN, 2017). In a survey of people visiting their GP in Southampton, approximately 11% of people were identified as being at medium or high risk of malnutrition, using MUST (McGurk *et al.*, 2012). For people aged 65 years and over, a secondary analysis of National Diet and Nutrition Survey data that found 14% of this age group living in the community were at risk of malnutrition (Margetts *et al.*, 2003). A study of older people living independently in the community, assessed using MNA, found that 10% were malnourished with a further 15% at risk of malnutrition (Riches and Jeanes, 2014). Although the exact figures are unknown, it is clear that a substantial proportion of older people living in the community are at risk of malnutrition.

Analysis of the data from the four survey weeks conducted by BAPEN estimate that 30-42% of people living in a care home are at risk of malnutrition, with 35-46% of people in nursing homes and 22-41% of people in residential homes being at risk (Russell and Elia, 2015). These estimates are supported by findings from a study conducted in Newcastle that estimated that 37% of older people living in care homes were at medium or high risk of malnutrition, as assessed using MUST (Mountford *et al.*, 2016). By contrast, Margetts *et al.* (2003) found that only 21% of people aged over 65 living in either residential or nursing homes were at risk of malnutrition. However, the criteria for being at risk of malnutrition in this study included an absolute weight loss value, rather than a percentage of body weight lost that is included in MUST, which may explain their slightly lower findings. The proportion of people at risk of malnutrition in elderly mental health care homes in the four week survey by BAPEN showed considerable variation, ranging from 13% to 59% amongst the different surveyed weeks (Russell and Elia, 2015). Again, although the exact figures are unclear, there is evidence that a considerable proportion of people living in care homes are at risk of malnutrition, and that this proportion is greater than amongst people living in the community.

Estimates of risk of malnutrition amongst people living in sheltered accommodation show considerable variation. BAPEN (2017) used MUST and found that 10-14% of people in sheltered housing are at risk of malnutrition. Riches and Jeanes (2014) used MNA and found

that 30% of people in warden-assisted living were malnourished, with a further 45% at risk. Some of this variation may be explained by the different screening tools and different types of sheltered accommodation included, but further work is required to determine the proportion of people living in sheltered accommodation who are at risk of malnutrition.

Whilst only 1.3 million out of the 3 million malnourished people in the UK are aged 65 years or over, over half the total cost of £7.3 billion per year spent on disease related malnutrition is spent in that age group (European Nutrition for Health Alliance, 2006). Other estimates place the total cost of malnutrition in the UK at £13 million per year, with unknown division amongst age groups (Elia and Russell, 2009). There are considerable estimated potential savings to be derived from implementation of NICE guidelines to tackle malnutrition, on both local and national levels (NICE, 2006c).

### 3.1.8 Local prevalence extrapolation and future predictions

According to the 2011 census, there were 751,485 people living in Leeds, of whom 109,598 (14.6%) were aged over 65 years (ONS, 2013). Using projections from the 2011 census, LCC estimated the population of Leeds in 2018 as 791,500 people (Leeds Observatory, 2015). The Institute of Public Care estimate the population of Leeds aged over 65 years in 2018 as 123,100, which equates to 15.6% of the Leeds population. Assuming local applicability of the national estimate that 11% of people aged over 65 years are affected by malnutrition, this equates to approximately **13,540 older people in Leeds living with malnutrition in 2018**.

With a growing population, and a growing proportion of the population aged over 65 years, the number of older people living with malnutrition in Leeds is likely to increase if no action is taken. It is predicted that there will be 150,300 people aged over 65 years in Leeds in 2030 (Institute of Public Care). If 11% of older people remain malnourished, there will be approximately **16,530 older people living with malnutrition in Leeds in 2030**.

## 3.2 Dehydration

### 3.2.1 Definition

Dehydration may be defined as:

*“a state in which a relative deficiency of fluid causes adverse effects on function and clinical outcome.”* – (NHS England, 2015).

There are three recognised types of dehydration, delineated by their precipitating causes. Hypertonic dehydration occurs when fluid loss exceeds electrolyte loss, isotonic dehydration occurs when both are lost equally, and hypotonic dehydration occurs when electrolyte loss exceeds fluid loss (Faes *et al.*, 2007). Fluid loss through multiple factors means that hypertonic dehydration is the predominant hydration concern in older people (NHS England, 2015).

### 3.2.2 Population at risk

It is recognised that poor fluid intake amongst older people leads to a higher risk of hypertonic dehydration in that population (NHS England, 2015). The sensation of thirst reduces with increasing age, and may be further reduced in people who have dementia or those who have had a stroke (British Nutrition Foundation, 2016). This may be compounded by an inability to acquire or drink fluid unaided, intentional fluid restriction due to fear about urinary incontinence, or decreased understanding of the need to drink, for example due to cognitive impairment (British Nutrition Foundation, 2016).

Hypertonic dehydration in older people can also result from increased fluid loss compared to intake. This may occur due to diabetes, excess alcohol intake, or acute illness involving diarrhoea and vomiting or a high temperature (NHS choices, 2015). Additionally, medications that increase fluid output, for example diuretics and laxatives, can also increase the risk of dehydration (British Nutrition Foundation, 2016).

### 3.2.3 Screening

Hypertonic dehydration may be diagnosed using serum osmolality or serum sodium levels. Isotonic and hypotonic dehydration are more difficult to diagnose unequivocally (Faes *et al.*, 2007). Whilst serum osmolality is the reference standard method for detecting hypertonic dehydration, it is limited by its invasive nature and need for phlebotomy-trained professionals (Wilson, 2014), which means that other detection methods are sometimes used. Urine specific gravity, urine colour and urine osmolality are all commonly advocated alternatives for detecting dehydration in older people due to their less invasive nature, but there is evidence that these are not sufficiently consistently accurate in their diagnostic capabilities (Hooper *et al.*, 2016a). Until a non-invasive, accurate diagnostic measure of dehydration in older people is determined, serum osmolality remains the standard method, meaning that detection of dehydration in this population remains challenging in a community setting.

### 3.2.4 Health consequences

In the short-term, dehydration has many familiar health consequences, including thirst, passing reduced amounts of dark-coloured urine and headache (NHS choices, 2015). However, not all early symptoms are identified, particularly in older people (Wilson, 2014). More serious levels of dehydration can cause dryness of mouth, nose and eyes, light-headedness due to low blood pressure, which can become life-threatening if the dehydration is severe, and alteration of mental state leading to confusion (Wilson, 2014). A combination of these symptoms can increase the risk of falls in older people who are dehydrated (British Nutrition Foundation, 2016), putting them at risk of injury.

Long-term dehydration can have other health consequences, including muscle damage and constipation, as well as kidney stones or kidney damage (NHS choices, 2015). Sustained poor

fluid intake can also increase the risk of urinary tract infections and pressure ulcers (British Nutrition Foundation, 2016).

As with the health consequences of malnutrition, the impacts of dehydration can extend beyond physical symptoms. Recurrent urinary tract infections, pressure ulcers and falls can all contribute to a reduced quality of life for an older person due to restrictions on their ability to participate in activities they enjoy and, as such, may lead to low mood and depression.

### 3.2.5 Healthcare consequences

Older people who are dehydrated require more hospital admissions (British Nutrition Foundation, 2016). One study found that older people who were dehydrated on admission to hospital had a six-fold risk of in-hospital mortality compared with people who had a normal fluid status on admission (El-Sharkawy *et al.*, 2015). However, it cannot be determined whether the dehydration increased the risk of mortality, or the medical conditions with a higher mortality rate increased the likelihood of being admitted with dehydration. However, it is clear that older people who are dehydrated on admission to hospital may have greater healthcare needs than those who are well hydrated on admission.

Older people who are dehydrated require rehydration, which may necessitate admission to hospital. However, for some older people who become mildly dehydrated through reduced fluid intake rather than through acute illness, intravenous rehydration in a hospital setting may not be required. If oral rehydration is not possible, community-based subcutaneous rehydration may be feasible in some settings, for example in care homes (Gabriel, 2014). Whilst this reduces hospital admissions for rehydration, this option requires staff and equipment resources to be available in the community setting.

It is clear that the full impact of dehydration in older people on healthcare services is unknown. Largely, this is due to the co-existence of dehydration with other health conditions, as well as the challenges associated with screening for dehydration, particularly in a community setting. However, improving older people's hydration and, therefore, their overall health, will lead to benefits for healthcare services.

### 3.2.6 National recommendations

Whilst no general NICE guidelines exist around hydration screening and maintenance in adults, hydration considerations are briefly included in the NICE guidelines about nutrition support in adults (NICE, 2006a).

Hydration assessments are explicitly recommended in the NICE guidelines for stroke (NICE, 2008) and motor neurone disease (NICE, 2016). Although good hydration can reduce falls and acute illness in older people, the NICE guidelines for preventing falls in older people (NICE,

2013) and excess winter deaths and illness (NICE, 2015b) do not include hydration assessments in their recommendations.

NICE guidelines about the management of dementia specify that people should be encouraged to drink for as long as possible before alternative hydration options are considered, but there are no specific recommendations about screening for, or prevention of, dehydration (NICE, 2006b). Forthcoming dementia NICE guidelines, expected in 2018, may include more detailed recommendations about assessment of dehydration and prevention or treatment options.

The Parliamentary Hydration Forum recommended that all care institutions, i.e. hospitals and care homes, should have a hydration policy with regular monitoring to ensure adherence (Wilson, 2014).

### 3.2.7 National prevalence and cost estimates

There are no definitive data about the national prevalence of dehydration amongst older people, in part due to challenges with screening for dehydration, particularly in a community setting. Studies from America have demonstrated very variable findings about the prevalence of dehydration in people aged over 70 years living in the community, using serum osmolality as the measure of dehydration. Whilst one study found no evidence of dehydration amongst this age group (Morgan *et al.*, 2003), another identified approximately 21% of their cohort as being definitively dehydrated, with approximately 37% being classed as borderline dehydrated (Stookey *et al.*, 2005).

In the UK, the Dehydration Recognition In our Elders (DRIE) study found that 20% of long-term care home residents aged over 65 years in their study were dehydrated, with a further 28% at risk of dehydration, as assessed using serum osmolality (Hooper *et al.*, 2016b). In another UK study, 37% of people aged over 65 years were found to be dehydrated on admission to hospital, according to their serum osmolality measurement (El-Sharkawy *et al.*, 2015).

The total national cost of dehydration amongst older people in the UK is unknown, partly because the extent of the problem is difficult to assess, and partly because the healthcare implications of dehydration have not been fully determined.

### 3.2.8 Local prevalence extrapolation and future predictions

Since there are no systematic national data about the prevalence of dehydration amongst older people, it is not possible to estimate the scale of the problem locally. It is likely that local data will underestimate the prevalence of dehydration in older people, due to the challenges of determining hydration status, particularly in the community.

## 4. Contributory demographics of Leeds

### 4.1 Demographics

#### 4.1.1 Age distribution

It is estimated that the population of Leeds in 2018 is 791,500 (Leeds Observatory, 2015), with 123,100 (15.6%) aged over 65 years (Institute of Public Care). Currently, of all the older people in Leeds, 54% are aged 65-74 years, 33% are aged 75-84 years, and 13% are aged over 85 years.

Current predictions suggest that the total population of Leeds will increase to 824,100 in 2025 and 848,800 in 2030 (Leeds Observatory, 2015). The proportion of the population aged over 65 years is also predicted to increase to 16.5% in 2025 and 17.7% in 2030 (Institute of Public Care). The population growth amongst older people is not predicted to occur evenly over all age bands above 65 years, with the largest growth predicted amongst people aged 75-84 years, as can be seen in graph 1. It is predicted that, by 2030, the age distribution of older people in Leeds will reflect an increase in the oldest age group, with 50% aged 65-74, 35% aged 75-84 and 15% aged over 85 years (Institute of Public Care).

#### 4.1.2 Gender

Data from 2018 suggest that approximately 68,000 (55.2%) of people aged over 65 years are female, and 55,100 (44.8%) are male. However, the proportion of the population that are female increases with increasing age, from 52.4% in people aged 65-74 years, to 64% in people aged over 85 years, as can be seen in graph 2.

#### 4.1.3 Ethnicity

As can be seen from table 1, the majority (97.6%) of people in Leeds aged over 65 years identified as White under the ethnic group category in the 2011 census. It is not possible to project these figures forward to obtain estimates for 2018, as they would not be reliable. The proportion of people identifying as White increases slightly over the age of 85 years, and there is a respective converse decrease in all other ethnic groups at this age.

Age group	White	Asian / Asian British	Black / African / Caribbean / Black British	Mixed / multiple ethnic group	Other ethnic group	Total
65-74	53,883 (95.4%)	1,530 (2.7%)	703 (1.2%)	171 (0.3%)	168 (0.3%)	56,455
75-84	36,772 (95.4%)	971 (2.5%)	593 (1.5%)	121 (0.3%)	104 (0.3%)	38,561
85+	14,239 (97.6%)	138 (1.3%)	103 (0.7%)	29 (0.2%)	28 (0.2%)	14,582
Total	104,894 (95.7%)	2,684 (2.4%)	1,399 (1.3%)	321 (0.3%)	300 (0.3%)	109,598

Table 1: Ethnicity breakdown of Leeds population by age group at the time of the 2011 census

## 4.2 Wider determinants

### 4.2.1 Deprivation

It is known that deprivation, particularly food poverty, increases the risk of malnutrition (Todorovic, 2001). In 2014, the percentage of people of all ages living in the 20% most deprived areas in England in Leeds was 30.4%, compared with 20.2% in England overall (PHE: Liver Disease Profiles). It is known that 20% of the Leeds population live in areas that are classified as the most deprived 10% nationally (Leeds City Council, 2015).

Income deprivation affected 16.0% of people of all ages in Leeds in 2014, compared with 14.7% in England overall. A similar picture is reflected amongst older people in Leeds as 18.0% experienced income deprivation in 2014, compared with 16.2% in England overall, as assessed using the Income Deprivation Affecting Older People Index (IDAOPI) (PHE: Health assets profile).

Map 1 shows the distribution of people aged over 60 years in Leeds in 2017, whilst map 2 shows the distribution of the same age-group by deprivation index. From these maps, it can be seen that although the majority of older people live further out from Leeds, the majority of older people affected by income deprivation live towards the centre of Leeds.

The higher proportion of people in Leeds living in the most deprived areas compared with England overall is reflected in the proportion of healthcare service use by the most deprived sections of the population. For example, during 2016, 36.9% of patient stays and 32.1% of deaths in Leeds Teaching Hospitals Trust (LTHT) occurred amongst the most deprived quintile, compared with only 24% of patient stays and 20.7% of deaths in hospitals across England (NHS Digital, 2017a).



It is also known that there are higher prevalence rates of frailty and end of life within Leeds Integrated Neighbourhood Teams that have higher deprivation than in areas with lower deprivation, as can be seen in graph 3. Given the strong association between frailty and malnutrition in older people (Artaza-Artabe *et al.*, 2016), the higher prevalence of frailty and end of life in more deprived areas increases the likelihood of higher numbers of people over 65 living with malnutrition in those more deprived areas.

#### 4.2.2 Fuel poverty

Since a reduced ability to afford food increases the risk of malnutrition (Todorovic, 2001), fuel poverty may be used as an indication of people in Leeds that are at increased risk due to financial limitations.

In 2014, 11.9% of households in Leeds experienced fuel poverty, compared to 10.6% of households across England (PHE: Older People's Health and Wellbeing). In 2011-12, only 93.9% of people aged over 65 years received winter fuel payments, compared to 96.7% of older people in England (PHE: Older People's Health and Wellbeing).

#### 4.2.3 Social isolation

Social isolation is an important factor that increases the risk of malnutrition (Todorovic, 2001). It is estimated that there are 45,002 people aged over 65 years living alone in Leeds in 2018 (Institute of Public Care), which equates to 36.6% of that age group.

Whilst there are no data about the degree of perceived social isolation amongst older people in Leeds, whether living alone or not, other data from across all age groups can give an indication. In 2015-16, the percentage of adult social care users in Leeds who had as much social contact as they would like was 45.2%, compared with 45.4% in England overall. Similarly, in 2014-15, the percentage of adult carers who had as much social contact as they would like was 38.7% in Leeds, and 38.5% in England (PHE: Health assets profile).

#### 4.2.4 Dependency and limiting long term illness

Some long-term illnesses increase the risk of malnutrition (Todorovic, 2001) and dehydration (British Nutrition Foundation, 2016), whether through direct physiological effects, consequences of medication, or physical functional restriction. In 2018, it is estimated that there are 32,305 (26.2%) people aged over 65 years in Leeds whose day-to-day activities are limited a little by a limiting long term illness. Additionally, it is estimated that a further 30,692 (24.9%) people aged over 65 years in Leeds have a limiting long term illness that limits their day-to-day activities a lot (Institute of Public Care).

Dependency on another person is an important risk factor for both malnutrition (Todorovic, 2001) and dehydration (British Nutrition Foundation, 2016), due to a reduced ability to

acquire or consume food and drink unaided. It is estimated that 41,159 (33.4%) people over 65 years in Leeds are unable to complete at least one self-care activity unaided, in 2018, which includes being able to feed themselves. Similarly, in 2018, it is estimated that 50,282 (40.8%) people over 65 years in Leeds are unable to manage at least one domestic task on their own, including household shopping (Institute of Public Care). These figures give an idea of the proportion of older people in Leeds that require assistance with eating and shopping for food.

In 2018, it is estimated that 3,236 (2.6%) people over 65 years in Leeds are living in a care home with or without nursing provision (Institute of Public Care).

### 4.3 Health conditions

As discussed in the background information, the presence of certain health conditions can increase the risk of malnutrition and dehydration. The prevalence of some of these health conditions amongst people over 65 in Leeds is discussed here, to provide an idea of the number of people over 65 who may be at risk of malnutrition and dehydration in Leeds.

#### 4.3.1 Dementia

The cognitive impairment that results from dementia is a risk factor for both malnutrition (Todorovic, 2001) and dehydration (British Nutrition Foundation, 2016), due to a reduced awareness of the need to eat and drink. Additionally, the sensation of thirst reduces in people with dementia (British Nutrition Foundation, 2016).

In January 2018, there were 6,149 (4.8%) people over 65 recorded as having a dementia diagnosis, amongst the population registered with a Leeds GP practice. Whilst there is likely to be an element of under-recording for this diagnosis, it was estimated that, in 2017, Leeds had a 73.8% dementia diagnosis rate amongst people over 65, compared to 67.9% in England overall (PHE: Dementia Profile). This would imply that a further 2,183 people over 65 in Leeds are living with undiagnosed dementia, giving an estimated total of 8,332 (6.5%) people over 65 in Leeds living with dementia.

#### 4.3.2 Cancer

People living with cancer are at increased risk of malnutrition due to the cachexia that can result (Todorovic, 2001). In January 2018, 18,080 (14.1%) of people over 65 in Leeds were living with cancer, amongst the Leeds GP registered population

#### 4.3.3 Chronic Obstructive Pulmonary Disease (COPD)

COPD can cause a cachectic state, which increases the risk of malnutrition (Todorovic, 2001). In January 2018, 11,821 (9.2%) people over 65 in Leeds were living with diagnosed COPD. It is, however, likely that this condition is under-reported, so the total number of people over 65 in Leeds with COPD is likely to be higher than this.

#### 4.3.4 Heart failure

Medical conditions that cause a cachectic state increase the risk of malnutrition (Todorovic, 2001). Since heart failure can result in cachexia, people living with heart failure are, therefore, at an increased risk of developing malnutrition. Additionally, people with heart failure are likely to be taking diuretic medications, which can increase the risk of dehydration (British Nutrition Foundation, 2016).

In January 2018, 5,152 (4.0%) of people aged 65 and over were recorded as living with heart failure, amongst the Leeds GP-registered population.

## 5. Prevalence in Leeds

### 5.1. Malnutrition

#### 5.1.1 Hospital episode statistics

During the five years from April 2012 to March 2017, there were 1,103,136 admissions to LTHT for Leeds CCG registered patients. Of these, 396,554 (35.9%) were for people recorded as being aged 65 years and over. During the same time period, 64 adult admissions had a malnutrition-related primary diagnosis, with 17 of those being for people aged 65 years and over. This equates to approximately **4 primary diagnoses of malnutrition per 100,000 admissions amongst people aged 65 years and over**. Of the 17 admissions with a malnutrition-related primary diagnosis, 6 (35.3%) were for women and 11 (64.7%) were for men. However, given the small numbers involved, it is not possible to draw any conclusions from this.

Although only a small number of admissions amongst people over 65 were directly attributed to malnutrition, it is likely that a much higher proportion of these 396,554 admissions had some contribution from poor nutritional intake, in combination with other factors. For example, poor nutritional intake can increase the risk of reduced muscle mass and mobility (Todorovic, 2001), leading to an increased risk of falls and associated injuries, admissions for which are discussed below. However, it is not possible to ascertain the actual number of hospital admissions amongst people over 65 that were partly due to insufficient nutritional intake.

#### 5.1.2 Primary care data

Local data indicates that there are 878,650 people registered with a GP in the Leeds area in 2018, of whom 128,474 (14.6%) are aged 65 years and over. Of this GP registered population of older people:

- 5,454 (4.2%) did not have a BMI recorded
- **5,727 (4.5%) were recorded as having an underweight BMI:**
  - **4,218 (6.0%) women**
  - **1,509 (2.6%) men**

Graph 4 displays the percentage of people over 65 who are recording as having an underweight BMI (<18.5), broken down by sex and deprivation decile. It appears that a slightly higher percentage of people over 65 in deprivation decile 1 (most deprived) have an underweight BMI recorded than in other deciles, and this is more apparent in men than women, although more women than men have an underweight BMI overall.

The geographical distribution of people over 65, registered with a Leeds GP and recorded as having an underweight BMI (<18.5) during 2015-16 is shown in map 3. From this map, it can

be seen that there are more people over 65 recorded as being underweight in areas of Leeds that have higher income deprivation affecting older people (as seen in map 2), rather than in areas where the highest number of people over 60 live (from map 1). This supports the finding from graph 4 that more people over 65 living in the most deprived decile are recorded as being underweight compared to other deciles.

### 5.1.3 Mortality data

There are no locally available data indicating mortality rate amongst older people from malnutrition.

## 5.2. Dehydration

### 5.2.1 Hospital episode statistics

From April 2012 to March 2017, there were 397 adult admissions that had volume depletion coded as the primary diagnosis. Of these, 308 (77.6%) were amongst people aged 65 years and over. This equates to approximately **78 primary diagnoses of volume depletion per 100,000 admissions amongst people aged 65 years and over**. Of the 308 admissions for volume depletion amongst older people:

- **198 (64.3%) were for women**
- **110 (35.7%) were for men**

Although the proportion of admissions of people over 65 directly attributed to volume depletion is not that high, it is very likely that a proportion of admissions for other reasons are partly caused by dehydration, for example people admitted with falls and urinary tract infections (British Nutrition Foundation, 2016), the admission rates for which are discussed below. It is, however, not possible to ascertain the proportion of these admissions that were partly caused by dehydration.

### 5.2.2 Primary care data

There are no locally available primary care data recording the number of people aged over 65 years who are dehydrated.

### 5.2.3 Mortality data

In 2016, LTHT observed 15 deaths due to fluid and electrolyte disorders across all ages, compared with 26 expected deaths in this time (NHS Digital, 2017a). Deaths attributed solely to dehydration would fall under this category, however deaths due to a broader range of disorders will also be included. Additionally, whilst dehydration may be a contributory factor, the cause of death will usually be the underlying diagnosis, for example dementia. This value, therefore, does not give a very accurate estimation of the number of deaths due to dehydration in Leeds. There are no other locally available data that give an indication of the mortality rate of dehydration amongst older people.

### 5.3. Related conditions

As discussed earlier, some health conditions are more likely to occur in people who are undernourished or dehydrated. Some of these health conditions, and their prevalence in Leeds amongst people over 65 are discussed below. The presence of malnutrition or dehydration is likely not recognised in all of the people with these conditions, but the prevalence of these conditions can give some idea of the scale of under-recognised malnutrition and dehydration amongst people over 65 in Leeds.

#### 5.3.1 Obesity

People who are overweight are not necessarily over nourished. The imbalance of nutrition can mean that they are simultaneously overweight but undernourished (Porter-Starr *et al.*, 2016). In 2016-17, 64.2% of adults in Leeds were classified as overweight or obese, compared with 61.3% in England overall (PHE: Health Profiles).

In 2018, from the Leeds GP registered population of 128,474 people aged 65 years and over:

- **82,562 (64.3%) had a BMI that was overweight or obese (BMI 25+)**
- **34,656 (27.0%) had a BMI that was obese (BMI 30+)**

Intake of various dietary components contribute to weight and nutritional status. In 2016-17, 52.0% of the adult population in Leeds met the “five-a-day” fruit and vegetable intake recommendations on an average day, compared to 57.4% of adults in England overall. In the same year, adults in Leeds consumed 2.48 portions of fruit and 2.54 portions of vegetables per day, on average, compared with 2.65 portions of fruit and 2.70 portions of vegetables per day for adults in England (PHE: Public Health Outcomes Framework).

#### 5.3.2 Falls and injuries

It is known that dehydration increases the risk of falls amongst older people (British Nutritional Foundation, 2016), making it more likely that they will be admitted for injury due to a fall. Additionally, poor nutritional intake increases the risk of reduced muscle mass and mobility (Todorovic, 2001), which can further increase the risk of falls and subsequent injury.

In 2016-17, **the age-standardised rate of emergency hospital admissions for injuries due to falls in people aged over 65 years was 2,558 per 100,000 population in Leeds**, compared to 2,114 per 100,000 population in England overall (PHE: Public Health Outcomes Framework).

Additionally, in 2016-17, **the age-standardised rate of emergency admissions for fractured neck of femur in people aged over 65 years was 641 per 100,000 population in Leeds**, which is considerably higher than 575 per 100,000 population in England (PHE: Older People’s Health and Wellbeing).

### 5.3.3 Excess winter deaths

It is estimated that in 2015-16, there were **350 excess winter deaths** in Leeds. Given that malnutrition can increase the risk of infections, and reduce a person's ability to recover from infections (Todorovic, 2001), it is likely that undernourishment may account for some of these excess winter deaths, and reducing malnutrition in Leeds could contribute to reducing the number of excess winter deaths.

### 5.3.4 Healthcare associated infections

In 2016-17, there were **23 reported cases of Methicillin-resistant Staphylococcus aureus (MRSA) bacteraemia** (PHE, 2017a), and **259 reported cases of Clostridium difficile infection** (PHE, 2017b) across Leeds. Since malnutrition increases the risk of infection (Todorovic, 2001), an undernourished person admitted to hospital is likely to be at higher risk of acquiring a healthcare associated infection, than an adequately nourished person. Improving the nutritional state of people in Leeds could, therefore, help to reduce the number of healthcare associated infections.

### 5.3.5 Acute kidney injury

Acute kidney injury (previously known as acute renal failure) can be caused by dehydration (NHS Choices, 2015). In the five years between April 2012 and March 2017, there were:

- 2,716 admissions to LTHT with a primary diagnosis of acute renal failure
- **2,187 (80.5%) of these admissions were amongst people aged 65 years and over**
  - **1,045 (47.8%) admissions amongst over 65 were women**
  - **1,142 (52.2%) admissions amongst over 65 were men**

This means that approximately 0.6% of admissions amongst older people in this time period had acute renal failure as the primary coded diagnosis.

### 5.3.4 Urinary tract infection

Dehydration can increase the risk of developing a urinary tract infection (British Nutrition Foundation, 2016). Between April 2012 and March 2017, there were:

- 8,988 adult admissions to LTHT that had a urinary tract infection coded as the primary diagnosis (unrelated to indwelling catheters or pregnancy)
- **6,393 (71.1%) were amongst people aged 65 years and over**
  - **3,431 (53.7%) admissions amongst older people were women**
  - **2,962 (46.3%) admissions amongst older people were men**

This means that approximately 1.6% of admissions amongst older people in this time period had urinary tract infection as the primary coded diagnosis.

## 6. Locally available services

### 6.1. Supportive community services

#### 6.1.1 Neighbourhood networks

There are 35 neighbourhood networks in Leeds, covering 37 areas, providing services for older people. They are run by a combination of paid staff and volunteers, usually older people themselves, and are funded by LCC. As of June 2017, neighbourhood networks were in contact with over **20,000 older people in Leeds**.

Whilst nutrition and hydration are not specifically mentioned in the current service specification, the networks do run a number of services that may promote these concepts, including cooking courses for the recently bereaved, breakfast or lunch clubs, and promotion of public health messages around nutrition and hydration. Additionally, the service specification includes goals to reduce social isolation of older people, enhance their wellbeing and encourage them to make healthier life choices. These goals contribute to the promotion of good nutrition and hydration.

#### 6.1.2 Lunch clubs

There are 87 lunch clubs in Leeds that currently receive funding from LCC. There are additional clubs, not included in this number, that do not currently receive funding. Some clubs receive funding every year, others use the money to start up and as occasional boosts every few years, whilst remaining self-sufficient in the interim. The current overall budget for the programme is £166,500, and the clubs reached, on average, **2,500 older people per week**, in 2016-17. The locations of lunch clubs within Leeds is shown in map 4 and, on average, line up with the geographical distribution of people over 65 recorded as having an underweight BMI (seen in map 3).

The clubs are required to provide a hot, nutritious meal at least once a week, for a minimum of 40 weeks, to at least 20 individuals, in order to receive the funding. The clubs are managed by someone with food hygiene training, and the cooking and delivery of service is usually provided by volunteers.

Just over half the clubs bring in a caterer, whilst the others cook the food themselves or have a chef, so the quality and standard of the food varies amongst the clubs. The clubs have to be registered as a food business with the Local Authority, and comply with food hygiene regulations. There are no restrictions about the type of food provided, in terms of nutritional content. The volunteers in the clubs are very familiar with their local vulnerable people who attend the clubs, however they are unlikely to know where to refer if they suspect weight loss. They are likely simply to recommend going to see a GP.



### 6.1.3 Meals on Wheels

Meals on Wheels is provided by Presto and funded by LCC. The service provides a hot meal, chosen from a menu, and a safe-and-well check by the DBS-checked person delivering the meal. A sandwich or soup can also be added for delivery. The service runs 365 days a year and there is an attempt to maintain consistency of drivers delivering to specific areas.

Anyone living in the Leeds area is eligible for this service, and can self-refer to receive a meal within 24 hours. Usually, a request for a meal before 9:30am will allow delivery of that meal around lunch time that day. Other services, such as Adult Social Care, can refer people to receive this service, although numbers of these referrals has been decreasing recently at a greater rate than the increase in number of self-referrals. Local competition in certain areas, for example in Yeadon, means that the uptake of this service in those areas is lower than desired. The average number of **Meals on Wheels delivered per month in 2017-18 was 9,909**, which was a decrease from 10,833 per month in 2016-17. The seasonal fluctuation can be seen in graph 5, along with the overall lower uptake of Meals on Wheels in 2017-18 compared to 2016-17.

All meals are nutritionally weighed up and can be selected off a menu. The service caters for many requirements, including allergies or intolerances, as well as religious or lifestyle specifications around food. If the person delivering the meal has concerns about a person on their route, they ring the main office who alert that person's next of kin. If there are no next of kin, or the office cannot reach anyone, they will call that person's GP to ensure the safety and wellbeing of that person.

The income to the service comes from sales of meals, which are £6 per hot meal and £1 to add a soup. The running costs of the service include drivers, vehicles, meals and meal assistance. The balance between income and costs is met by a subsidy from LCC Adult Social Care. The long-term goal is for this service to be completely self-sustaining; higher uptake of the service is required to achieve this. Adult Social Care referrals into the service used to be subsidised such that the person would only pay £5.05 for a hot meal. However, this subsidy was stopped for new referrals from October 2016.

### *Recommendations*

- **Better promotion of the service**

Particularly within third sector organisations and in LHT among people receiving interim care packages, to help increase uptake of the service and help it become self-sustainable

#### 6.1.4 Home Food Baskets scheme

The Home Food Baskets scheme is accessed through Meals on Wheels in LCC, and consists of community baskets and hospital discharge parcels. The community baskets contain around 25 food items to last for three days for people in emergency need, whilst the smaller hospital discharge parcels contain very basic items for people being discharged from hospital with no food at home. Both are available to people over 65 years, and also contain an information pack about malnutrition and how to prevent this for the person and their carers. In 2017-18, there were 54 Home Food Baskets distributed in Leeds, and 20 hospital discharge parcels. As can be seen in graph 6, these numbers have decreased over recent years.

Staff members of any service that come into contact with people aged over 65 years, and notice insufficient food in their home, are able to complete a referral form for the community baskets. There are 12 community basket distribution sites around Leeds. The hospital discharge parcels are supported by the Red Cross and the Age UK Hospital to Home service, with a three year contract with Fareshare to provide the parcels.

There is around £8,000 per year available for this scheme, with a cost of £25 per community basket and £1.92 for a hospital discharge parcel. These costs leave few resources for promotional activities, which are largely performed by the distribution centres. However, the contract with Fareshare costs £750 per year, and will result in all food for the hospital discharge parcels being provided for three years, which may free up some resources for promotional activities.

#### *Recommendations*

- **Engage partners, such as LTHT, in the provision of hospital discharge parcels**  
These parcels are designed to facilitate earlier discharge and reduce readmissions for social reasons, and there are clear benefits from this for LTHT. Engagement of the Trust would facilitate redirection of the remaining funds towards providing more community baskets, as a preventative measure, as well as conducting more promotional activities to widen the access to these services.

#### 6.1.5 Leeds Older People's Forum

Leeds Older People's Forum (LOPF) work in partnership with a number of third sector organisations, some of whom run activities that contribute to improving the nutrition and hydration of older people in Leeds. Amongst these partners are the ten Dementia Cafés around Leeds.

One important, overarching project is the Time To Shine (TTS) project. TTS aims to reduce social isolation and loneliness amongst older people in Leeds, factors that can contribute to malnutrition through reduced enjoyment of eating with socialisation. Some specific food

projects are funded under TTS, for example ‘More than a Mealtime’ where volunteers visit older people to make and share a meal with them in their homes. Another project is a cooking class for Chinese older people, which works with a lot of older men who used to work in catering. The hours involved in working in catering meant that they became isolated from family and friends, and the cooking course provides them with social cooking and eating experiences.

The funding for TTS comes from the National Lottery. Since TTS is a national, strategic programme, there is a nationally mandated evaluation questionnaire for all projects funded under TTS. The questionnaire should be administered for each service user at the start of each project, and at three months into the project or at the end of the project. The data from this evaluation tool can be compared with national TTS programme data. Of the 703 people that had completed the questionnaire in Leeds by October 2017, **376 (53.5%) reported that they lived alone**, which is higher than the Leeds overall estimated proportion of older people living alone (36.6%). Around **40% of respondents reported improvement in social isolation and loneliness** between baseline and follow-up questionnaires, on both scales used to measure this outcome.

#### 6.1.6 Age UK Leeds

Age UK in Leeds run a variety of services in which nutrition and hydration considerations may feature, and all staff are encouraged to train to be *nutrition champions*. Most of the services provided by Age UK in Leeds work with older people for up to 12 weeks. If, in that time, staff noticed concerns about that person’s weight, they would discuss the reasons for weight loss with the person (for example any recent bereavements), advise them to speak to their GP if there is no known cause of the weight loss (or speak to the GP directly themselves if appropriate), and direct the person to internal and external services, for example Meals on Wheels. Age UK in Leeds do not really have any direct links with dieticians and, anecdotally, the concept of “Food First” is not widely utilised locally any more.

#### *Arch café*

The Arch café run by Age UK staff is used frequently by older people, and the staff in the café are able to signpost customers to other internal services. Age UK also work very closely with *Neighbourhood Networks* and refer people to them, for example to attend a local luncheon club.

#### *Hospital to Home service*

The Hospital to Home service is based in St James’ Hospital A&E department in LHTT, and aims to support the admission avoidance of older people with no medical reason for hospital admission. This service has strong links with the *Home Food Baskets scheme* providing hospital discharge packs of food for older people. Staff within this service can also refer to other services both within and outside Age UK, for example the Independence at Home

service and Meals on Wheels. The Hospital to Home service often has contact with the most isolated people who are not engaged with other services.

### *Independence at Home service*

For the Independence at Home service, staff perform holistic assessments of people's needs in their home. This involves completion of a questionnaire that contains questions about food sourcing and intake. Usually, people are referred for this assessment by their GP or another health professional, and staff performing the assessments are able to refer into other services provided by Age UK in Leeds. Funding for this service is provided by the Time To Shine programme overseen by Leeds Older People's Forum, and the evaluation form from that programme is used.

### *Recommendations*

- **Additional training for staff to reinforce knowledge around food and healthy eating**

## **6.2. Primary care and formal community services**

### **6.2.1 Primary care**

There is an opportunity to raise the awareness of malnutrition and dehydration in older people amongst primary care practitioners. Currently, an older person presenting with weight loss is likely to be directed down medical pathways to exclude cancer, with less focus on nutrition care. NHS Health Checks focus on identifying people who are overweight rather than underweight, and weight loss may not be flagged in other chronic conditions templates. On the new frailty template, one of the aspects includes consideration of MUST screening.

If a GP has concerns about an older person's nutritional status, they will refer them to community dietetics. Additionally, hospital discharge letters, care homes or community nurses may request that the GP makes a referral to community dietetic services. There is a potential delay in the person's nutritional care pathway from requesting referrals to be made through the GP.

### *Recommendations*

- **Increased availability of information about 'Food First' and nutritional supplements**  
For primary care use whilst waiting for a person to see community dietetics
- **Incorporate a nutrition pathway into long term conditions reviews and the frailty pathway**
- **Increased availability of nutrition training for primary care professionals**

### 6.2.2 Leeds Community Healthcare (LCH) Community Nutrition and Dietetics Service

In 2015-16, LCH Community Nutrition and Dietetics Service received **1,656 referrals for people aged 65 years and over in Leeds for undernutrition services**. These referrals were very variable amongst GP practices in Leeds. Graph 7 shows the number of referrals for malnutrition services for older people received from each GP practice against the number of older people in that practice identified as having an underweight BMI. Map 5 shows the geographical distribution of residence of people over 65 who were referred for underweight services in 2015-16. It can be seen that, on average, this distribution lines up well with the distribution of people over 65 who are recorded as having an underweight BMI (as seen in map 3). Funding is provided in bulk for all core business and, therefore, it is not possible to break down the funding allocation for older people's undernutrition services.

#### *Referral pathway*

Referrals to Leeds Community Healthcare (LCH) dietetics may be made by GPs or other health professionals. However, it is always requested that the person's GP is aware of the referral in case the dietician later requires the GP to prescribe something. This means that most referrals come from the person's GP.

If a referral comes in for a resident of a care home, the dieticians will assess that person's need before arranging an appointment. This is due to the expectation that the care home will have instigated food and weight charts, and will be practicing '*Food First*' with that person. If this is not the case, advice is generally offered regarding these initial measures before a formal dietetic assessment is undertaken.

If a person who is under the LCH dietetics services is admitted to hospital, they will receive a letter inviting them to refer themselves back into the service when they are discharged. This is to relieve the strain on GPs for people with short hospital admissions. However, if a person has a longer hospital stay, a new GP referral is required because their medical history is likely to have changed.

When a person is discharged from LTHT and requires community dietician follow-up, there is currently no pathway for LTHT dietetics to refer directly into LCH dietetics, and a request is made on the discharge letter that the person's GP will make the referral. A direct pathway was trialled previously but the number of referrals for people with self-limiting problems was too great and the LCH dietetics service was overwhelmed. Currently, discussions are undergoing about the creation of a new pathway to facilitate direct referral, and LCH dietetics are very keen for this to be introduced, with a focus on people requiring long term dietetic care.

### *Assessment and care services*

When someone is referred, they are allocated to the appropriate clinic or for a home visit. Home visits are generally undertaken within a few weeks, priority cases are seen within six weeks and specific clinic waits can be around 10-12 weeks. This is not an urgent service.

The care package for each person is based on their needs. A typical package of care consists of approximately six sessions, with considerable variability amongst people. After the initial assessment, an action plan is agreed containing the person's own goals for what they want to achieve. *'Food First'* is the initial course of action and, if a person becomes nutritionally stable on this, they may be discharged without any need for supplements. Nutrition supplements may be used in the short or long term, as appropriate for the individual.

For people who are on long-term supplements, once stable, they may be discharged onto the *'ONS Passport'*, which means that a rapid access review may be requested should any changes occur. It can be taken into hospital, if the person is admitted, to alert healthcare staff that they are on supplements. For people who have a progressive condition where further dietetic intervention is no longer of benefit to them, long-term supplements may be continued for quality of life reasons.

During the sessions, behaviour change methodology and education are used to identify reasons behind undernutrition and improve nutritional intake. Where there are other reasons behind the undernutrition, they will refer on to other services, as appropriate, including:

- speech and language therapy (SALT)
- wounds team
- falls team
- Meals on Wheels
- luncheon clubs
- food banks

Areas not covered by this service include eating disorders, when the person would be referred back to their GP, and services to promote weight loss, when the person would be given information about how to self-refer to One You Leeds. Additionally, people who are under outpatient care of LTHT, for a relevant condition, should receive specialist outpatient dietetic services provided by LTHT dietetics.

### *Advice and training*

Whilst people are waiting for their appointment, GPs can prescribe supplements using a traffic light guide available on Leeds Health Pathways, where green-light supplements are safe for first line use by GPs. However, this guidance does not include any pathways or suggestions about *'Food First'*.

LCH dietetics produced a *'Food First'* leaflet, which can be distributed to GP practices following a telephone request. LTHT also has copies of this leaflet for appropriate distribution. The leaflet is designed to support healthcare professional advice, and should only really be used in the short term. For example, if a person has temporary problems around nutrition following a bereavement, their GP could advise them along *'Food First'* principles and support that advice with this leaflet. Alternatively, if a person has been referred to LCH dietetics, this leaflet could help support their nutritional state while they are waiting to be seen. The leaflet should be used for a maximum of about four weeks before the dieticians would want to see that person.

LCH dietetics also conduct training around nutrition. The *'Eating and Drinking with Care'* programme, run by dieticians and SALT, is designed to improve management of undernutrition and is made available for all care home managers. LCH dieticians also present at the *'Improving Nutritional Care'* training run by LCC for Adult Social Care workers.

### *Recommendations*

- **Support development of the referral pathway from LTHT to LCH dietetics**
- **Create a pathway for referral from GPs to LCH dietetics**

This could be attached to the dietician referral form on a GP information system and could help simplify dietetic advice for primary care professionals, including:

- Screening for malnutrition
- *'Food First'* guidance (with links to the leaflet)
- Nutritional supplement guidance (with links to the traffic light system)

### *6.2.3 Care homes*

LCC has contracts with approximately 95 privately owned care homes for older people in Leeds, for which the quality standards and service specifications are being reviewed. The current quality standards specify details about the use of an appropriate screening tool and ensuring access to dietician services where required, alongside individual care planning that incorporates aspects of weight and nutritional intake. There are specific details around food provision, including the need for provision of a nutritious diet that allows for resident choice, assistance with eating where required, and ensuring an appealing environment for eating. These standards are assessed on unannounced checks to the care homes. Further consideration of nutrition and hydration have been added to the new quality standards.

LCC do not collect any data around nutrition or hydration from the care homes about their residents. If staff in a care home have concerns about a resident's weight or nutritional intake, and that resident does not already receive input from a dietician, the route of referral is through that resident's GP.

#### 6.2.4 Home care

Home care in Leeds is provided on the basis of the results of an individual personal support needs and risk assessment, which includes elements around nutrition and hydration. This support needs and risk assessment is specified in the quality standard within the contract held by LCC with the home care providers.

If the person is identified as requiring support with nutrition or hydration, the individual's care plan will specify how that person is to be supported. This may include what constitutes a good diet for that person, how the food is prepared and who sources the food. If appropriate, charts will be completed monitoring nutrition and hydration intake for that person. **Approximately 75% of people over 65 in Leeds that have home care receive some assistance with their meals.**

LCC do not request any data around nutrition and hydration from home care providers. If a home care worker had concerns about a person's nutrition or hydration status, these would be flagged up for a review of that person's care plan. The provider would also contact a dietician if they were already involved in that person's care, or their social worker, family member or GP otherwise.

### 6.3. Secondary care services

#### 6.3.1 Leeds Teaching Hospitals Trust (LTHT) Care of the Elderly Medicine

The nursing specialist assessment performed for every person on admission to LTHT contains questions about nutrition, including whether the person or their carers have concerns about recent weight change. The answers to this may trigger a referral to LTHT inpatient dietetics. For people who are not referred at this point, other trigger points exist throughout the inpatient stay. For example, everyone who has a protracted hospital admission should have weekly weights, and any weight loss should trigger a dietician referral. However, these weekly weights are not always completed 100%, due to difficulties such as getting people onto scales. Other activities that may trigger referral include if a person is kept nil by mouth for days, or if they are being fed via a nasogastric tube.

Aside from these trigger referrals, nutrition is considered at the elderly medicine multidisciplinary team (MDT) meetings, and if there is a general consideration that a person is losing weight with no medical reason, a referral will be made to LTHT inpatient dietetics. All referrals to LTHT inpatient dietetics are made by nursing staff.

In outpatient practice, a person with weight loss will usually undergo investigations to exclude medical causes. After this, a referral will generally be made to LTHT outpatient dietetics,



although in some cases the person's GP may be asked to refer them to LCH community dietetics if that is more appropriate.

### 6.3.2 Leeds Teaching Hospitals Trust (LTHT) dietetics

Referrals into LTHT inpatient dietetics service are made following screening questions that use the MUST tool in the nursing specialist assessment, for all people admitted to hospital for over 48 hours. If a person is identified as being at medium risk of malnutrition, a nursing team care plan will be instigated at the ward level, where they can mobilise red trays and extra snacks, and prescribe sip feeds. If a person is identified as being at high risk of malnutrition, this triggers a referral to LTHT inpatient dietetics. However, LTHT dieticians are aware that there is unmet need here, because the service is in great demand and they are currently unable to see every referral.

Currently, ongoing care after discharge relies on GP referral to LCH dietetics following receipt of a letter from LTHT requesting this. A pathway for referral to LCH dietetics directly from LTHT dietetics is currently being developed, which would involve a triage system via telephone. After discharge, the person would receive a phone call from a dietetic assistant within LTHT to enquire about their nutritional status. If they need no further help, no action would be taken. If they require specialist input, they would be referred to specialist LTHT outpatient dietician teams. If they require a community dietetics review, they would be referred to LCH dietetics. The intention of this system is that it would limit the number of people referred to LCH dietetics following self-limiting issues around nutrition during their hospital stay. A 12 month pilot of this pathway will be starting soon, being rolled out in stages, due to uncertainty about the number of referrals that this will generate.

There is an LTHT outpatient dietetics service embedded in specialist teams for people who remain under the outpatient care of LTHT for a relevant condition. Whilst all people referred by their GP to specialties in LTHT should be screened for malnutrition as part of the outpatient process, this is not currently completed 100%. This is because the LTHT dietetics service focusses more on inpatient services, as these people may not have been reviewed by other healthcare practitioners recently for their nutritional status monitoring.

LTHT dietetics have produced oral supplement guidelines, which are available on Leeds Health Pathways. The LTHT intranet also contains links to pathways and policies for frontline staff. Nutrition training, led by a dietician, is included in priority training for all new nursing and support workers, and should be repeated every three years. This is not currently completed 100% and other delivery methods are being explored to improve this, for example e-learning. LTHT dietetics service were also involved in the set-up and ongoing review of the hospital discharge packs, as part of the Home Food Baskets scheme.

Referrals to LTHT dietetics are made by faxing a paper referral, which means that it is not possible to carry out any data analysis by age. The budget for LTHT dietetics includes all services, so it is not possible to break down funding provision by under-nutrition or older people services.

The biggest gap identified by LTHT dietetics is that people who have a short hospital admission may be screened using MUST, referred to their services, but then discharged from hospital before they receive an in-hospital dietician review. If the requirement for a dietician review is not included in the discharge summary, these people may then not receive a review or support for their nutritional status. There is a belief that this is compounded by a lack of knowledge within LTHT about where to signpost people for community nutritional support. A suggestion to improve this is to create an electronic list of available community services, and the pressures on those services, which would be accessible to nurses on admissions wards in LTHT to enable them to direct people to those services on discharge.

### *Recommendations*

- **Support development of the referral pathway from LTHT to LCH dietetics**
- **Create an electronic list of available community services**

This could be made accessible to nurses on admissions wards in LTHT to enable them to direct people to those services on discharge

## 7. Conclusions

### 7.1 Leeds data

#### 7.1.1 Malnutrition

Amongst the GP registered population, aged 65 years and over, **5,727 (4.5%) were recorded as having an underweight BMI**. There appears to be a sex division, with 4,218 (6.0%) of women in this age group being underweight, compared to 1,509 (2.6%) of men. There may be some underweight older people in Leeds who were not detected from these GP data, either because they are not registered with a GP, or because they were one of the 5,454 (4.2%) that did not have a BMI recorded.

However, it is important to remember that malnutrition encompasses more than being underweight. National estimates indicate that **11% of people over 65 are living with malnutrition, which would equate to approximately 13,540 people over 65 in Leeds**. It is likely that some of the 82,562 (64.3%) of the GP registered older people in Leeds who are overweight or obese have some degree of undernourishment, as unintentional weight loss can be masked by an initial high BMI, or they may be overweight but undernourished. **Malnutrition cannot always be detected by measuring BMI.**

Therefore, although the proportion of older people in Leeds recorded as being underweight is now known, this is only part of the problem of malnutrition. Currently, it is not possible to determine the total number of older people living with malnutrition in Leeds. This is supported by the feedback from primary care services that older people presenting with weight loss will be investigated for medical causes of this weight loss, but may not be recognised as being at risk of malnutrition.

It is not surprising that, over a five year period, LTH saw only four primary diagnoses of malnutrition per 100,000 admissions of older people. This is because malnutrition is often a chronic condition that does not warrant an acute hospital admission. However, it is very likely that people over 65 with other medical conditions have underlying malnutrition that may not be recognised, for example:

- 6,149 (4.8%) people living with dementia
- 18,080 (14.1%) people living with cancer
- 11,821 (9.2%) people living with COPD
- 5,152 (4.0%) people living with heart failure

#### 7.1.2 Dehydration

Conversely, dehydration is more likely to be acute, and therefore warrant hospital admission, if severe. Although there were only 78 primary diagnoses of volume depletion per 100,000

admissions of older people to LTHT over five years, dehydration is likely to contribute to hospital admissions for other causes. For example, in the same time period, 2,187 (0.6%) of admissions of older people were for acute kidney injury, a considerable proportion of which were likely to have dehydration as a contributing factor. Additionally, dehydration may contribute to urinary tract infections, which were responsible for 6,393 (1.6%) of the primary diagnoses in older people's admissions over the five year period.

Although severe dehydration is likely to occur acutely, it is possible for people to live with mild dehydration over a longer time period. However, there are no local primary care data that can reveal the number of older people in Leeds living with mild dehydration. In part, this may be due to the acknowledged difficulty in assessing dehydration accurately without invasive blood tests.

The lack of complete information about the numbers of older people in Leeds living with malnutrition and dehydration is concerning, given that a considerable proportion of older people in Leeds are at risk of both of these conditions, including:

- The 18% of older people who experienced income deprivation
- The 36.6% of older people living alone
- The 33.4% of older people who are unable to feed themselves unaided

It is, therefore, vital to raise awareness about the risk of malnutrition and dehydration amongst older people and develop methods to record the numbers at risk more accurately.

## 7.2 Services in Leeds

### 7.2.1 Formal dietetic services

LCH dietetics received **1,656 referrals for undernutrition** in people over 65 in 2015-16. It can be seen that referral to LCH dietetics is very variable amongst GP practices in Leeds, which may be improved by a clearer pathway from primary care to LCH dietetics.

The LTHT dietetics service expressed concern that people who were discharged from hospital before they were seen by dietetics, may not receive follow-up about their nutritional state. They are currently working with LCH dietetics to create a pathway for easier referral from LTHT dietetics to community dietetics.

### 7.2.2 Other community services

Lunch clubs in Leeds reach approximately **2,500 people over 65 per week**, and there are approximately **9,909 Meals on Wheels delivered each week** to people over 65 in Leeds. Additionally, there were **54 Home Food Baskets** and **20 hospital discharge parcels** dispensed in 2017-18 to people over 65. The benefit to older people's nutritional well-being that these services provide is invaluable. The Meals on Wheels service identified the issue that uptake

of this service is poor in some areas, which could potentially be improved with further promotion.

Other services in Leeds tackle the wider determinants of malnutrition and dehydration, particularly social isolation. These services include the neighbourhood networks, who have contact with approximately **20,000 people over 65**, and the Time To Shine projects run by Leeds Older People's Forum, from which 40% of respondents who gave feedback reported improved social isolation and loneliness.

### 7.3 Meeting key outcomes

Considering the 12 key outcomes from NHS England's guidance for commissioners (2015), Leeds is taking action to address most of them.

Key outcome	LCC action
1. Identify a local senior/executive champion who can drive the work forward and influence key stakeholders to make improvements.	Councillor Charlwood is the executive champion in LCC.
2. Understand the local burden of malnutrition and hydration and commission services as identified by this evaluation.	It is hoped that this HNA will contribute to this key outcome.
3. Review existing service provision and agree improvement trajectories.	It is hoped that this HNA will contribute to this key outcome.
4. Commission services that: <ul style="list-style-type: none"> <li>a) Identify 'at risk' populations that include the needs of a diverse community and reducing health inequalities.</li> <li>b) Implement appropriate interventions and evaluate their effectiveness.</li> <li>c) Develop and implement strategies to prevent malnutrition and dehydration.</li> <li>d) Connect hospital and community services to deliver an integrated nutritional and hydration pathway of care across the health economy.</li> <li>e) Strengthen families' and patients' resilience by learning about prevention, maintenance and management of nutrition and hydration.</li> <li>f) For children and young people, incorporate the psychological, emotional and interactional aspects of feeding relationship to ensure adequate intake.</li> </ul>	<p>A number of commissioned services in Leeds already deliver against this outcome, for example:</p> <p>Lunch clubs aim to reach the most deprived older people in Leeds, thereby reducing health inequalities.</p> <p>The Leeds Food Charter will provide an overarching strategy around food in Leeds, including malnutrition.</p> <p>The pathway between LTHT dietetics and LCH dietetics will enhance integration of hospital and community services.</p> <p>The OPFMG campaign, funded by iBCF will raise public</p>

	awareness about nutrition in older people.
5. Commission a workforce that has the necessary skills to undertake identification, prevention and intervention to reduce burden of malnutrition and dehydration.	The <i>Improving Nutritional Care</i> training for all LCC health and social care workers, funded by money from iBCF.
6. Increase public awareness of the importance of good nutrition and hydration and of the local services available to provide support if needed.	The OPFMG campaign, funded by iBCF will raise public awareness about nutrition in older people.
7. Maximise opportunities for working across health and social care using the Care Act (2014).	Public Health in LCC sits within the Adults and Health directorate, which facilitates integrated working across health and social care.
8. Define clear outcomes for 'at risk' populations to ensure any commissioned interventions are sustained.	It is hoped that this HNA will help to identify the 'at risk' populations, so that clear outcomes may be defined.
9. Consider how data systems can be optimised to permit monitoring and evaluation.	It is hoped that this HNA will contribute to this key outcome.
10. Ensure patient/service user involvement in service development and quality assurance of commissioned services. Taking into account the needs of diverse communities.	It is recommended that this key outcome is considered in all service development around nutrition in Leeds.
11. To ensure paediatric services are delivering high quality and safe nutritional care for children and young people in a child friendly setting with appropriately trained staff.	This outcome is outside the scope of this HNA.
12. To ensure that children and young people grow and develop normally and monitored according to growth centiles.	This outcome is outside the scope of this HNA.

Table 2: Leeds City Council actions to address the 12 key outcomes from NHS England's guidance for commissioners (2015).

## 8. Recommendations

From the conclusions reached in this report, the following recommendations are made.

### 8.1 Raise awareness in the community

Firstly, to improve the identification of older people with malnutrition and dehydration, through increasing awareness of these problems. This will largely be accomplished through the **public awareness campaign** led by the OPFMG in Leeds that will run from April 2018, using £8,000 funding from the iBCF fund.

### 8.2 Increase training amongst the health and social care workforce

Secondly, it is recommended to:

- **Increase training for health and social care staff to reinforce knowledge around food and healthy eating**

This will largely be accomplished through the ***Improving Nutritional Care* training** led by operational development partners within LCC, using £18,000 funding from the iBCF fund. It is hoped that health and social care professionals will be better equipped to recognise, and screen for, malnutrition and dehydration. In time, this could lead to more accurate estimates of the proportion of older people in Leeds living with these conditions.

### 8.3 Support Malnutrition Helpline

Thirdly, it is recommended to support the **malnutrition helpline** that will be provided by LCH from **14th June 2018**, using £25,000 funding from the iBCF fund. The helpline is designed to provide advice to health and social care professionals, and carers of older people, who have concerns about that person's nutritional state.

### 8.4 Support creation of referral pathways to LCH dietetics

Fourthly, it is recommended to:

- **Support development of the referral pathway from LTHT to LCH dietetics**
- **Support incorporation of an LCH dietetics referral pathway into long term conditions reviews and the frailty pathway**

Since LCH have expressed an interest in the creation of a clearer pathway from primary care, and the feedback from GPs is that they would appreciate more information about what to do before referring people to community dietetics, there is evidently an appetite for improvement in this area. Supporting the creation of such a pathway, with appropriate links to Food First advice leaflets and supplement prescribing guidance, could facilitate easier and more appropriate referrals to community dietetics, as well as providing nutritional support

guidance for people while they wait for an appointment. This would support delivery of the recommendation to:

- **Increase availability of information about ‘Food First’ and nutritional supplements**

#### 8.5 Support aggregation of list of services

Fifthly, it is recommended to:

- **Support creation of an electronic list of available community services**

This freely available list would enable nursing staff on admissions wards in LTHT to direct older people to locally available services, where nutrition or hydration concerns have been raised, but no dietetic review has occurred prior to discharge. In order to achieve this, factors such as where responsibility would lie for maintaining the list would have to be settled. However, there is considerable overlap here with the Leeds Directory website. It may, therefore, be possible to create a link on this website under which all local services that support nutrition and hydration could be collected. This link could then be distributed within LTHT so that staff can signpost older people to these services.

#### 8.6 Continue to support Leeds services

Finally, it is highly recommended that services that contribute to the maintenance and improvement of good nutrition and hydration of older people in Leeds continue to receive strong support. These preventative services are vital for a considerable proportion of the Leeds older population, and help to reduce requirement for other healthcare services. Continuing to support these services will, therefore, continue to benefit individuals, healthcare services, and the wider Leeds community.

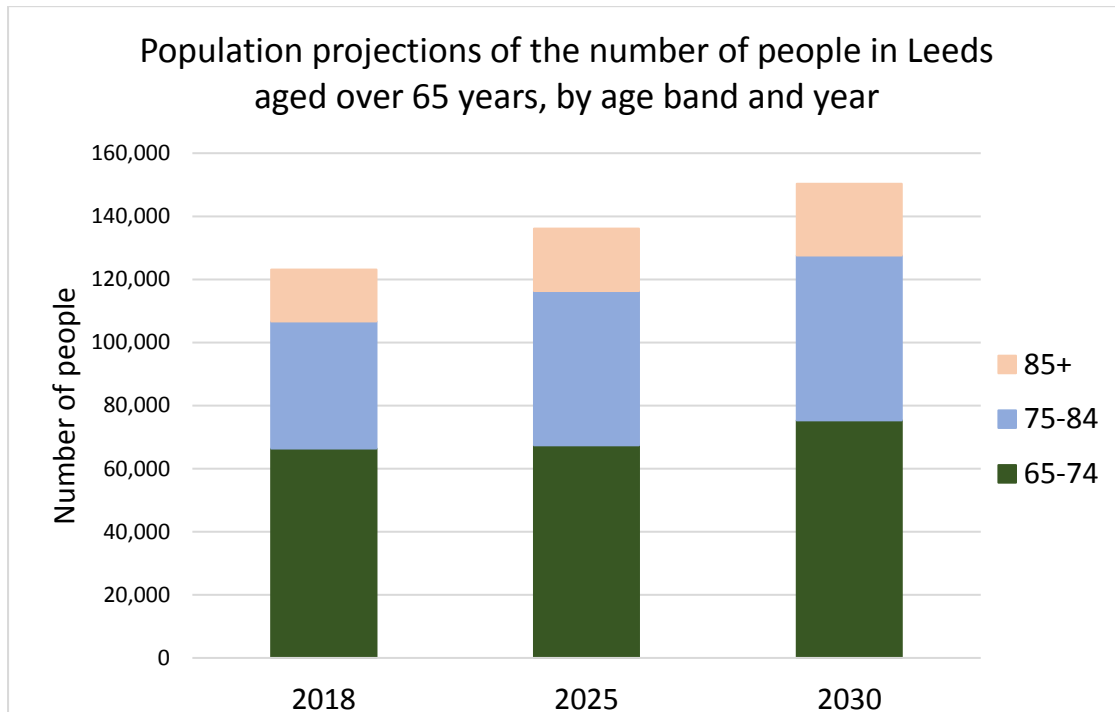
As part of this continued support, the following recommendations are highlighted.

- **Better promotion of the Meals on Wheels service**  
Particularly within third sector organisations and in LTHT amongst people receiving interim care packages, to help increase uptake of the service and help it become self-sustainable
- **Engage partners, such as LTHT, in the provision of hospital discharge parcels**  
These parcels are designed to facilitate earlier discharge and reduce readmissions for social reasons, and there are clear benefits from this for LTHT. Engagement of the Trust would facilitate redirection of the remaining funds towards providing more community baskets, as a preventative measure, as well as conducting more promotional activities to widen the access to these services.

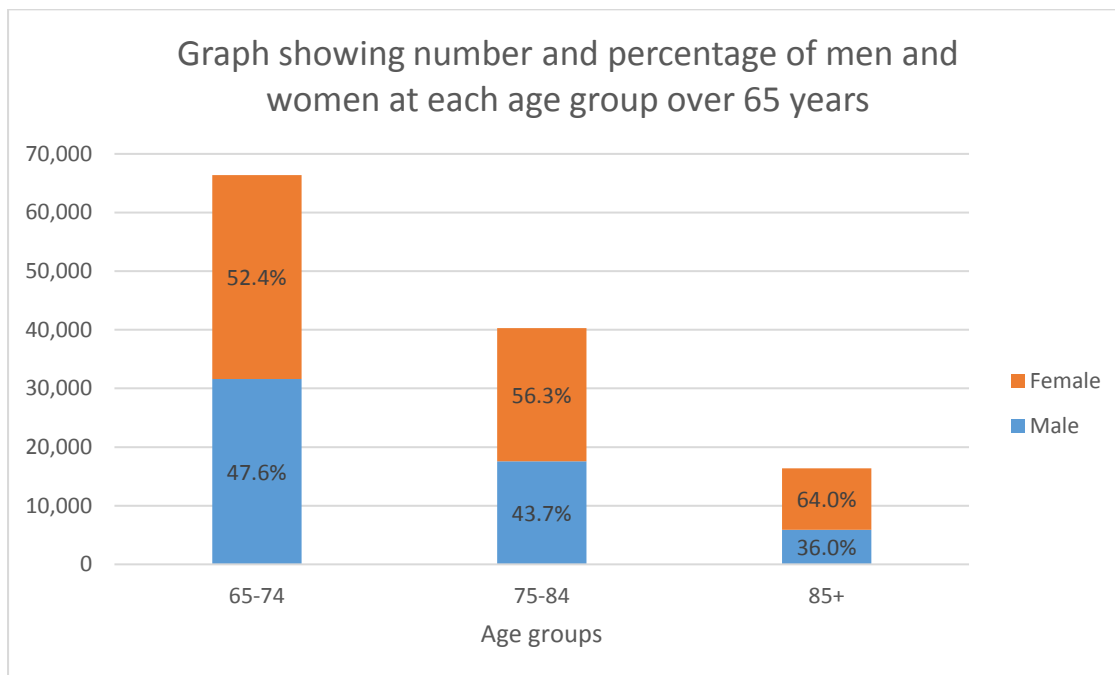


## 9. Figures

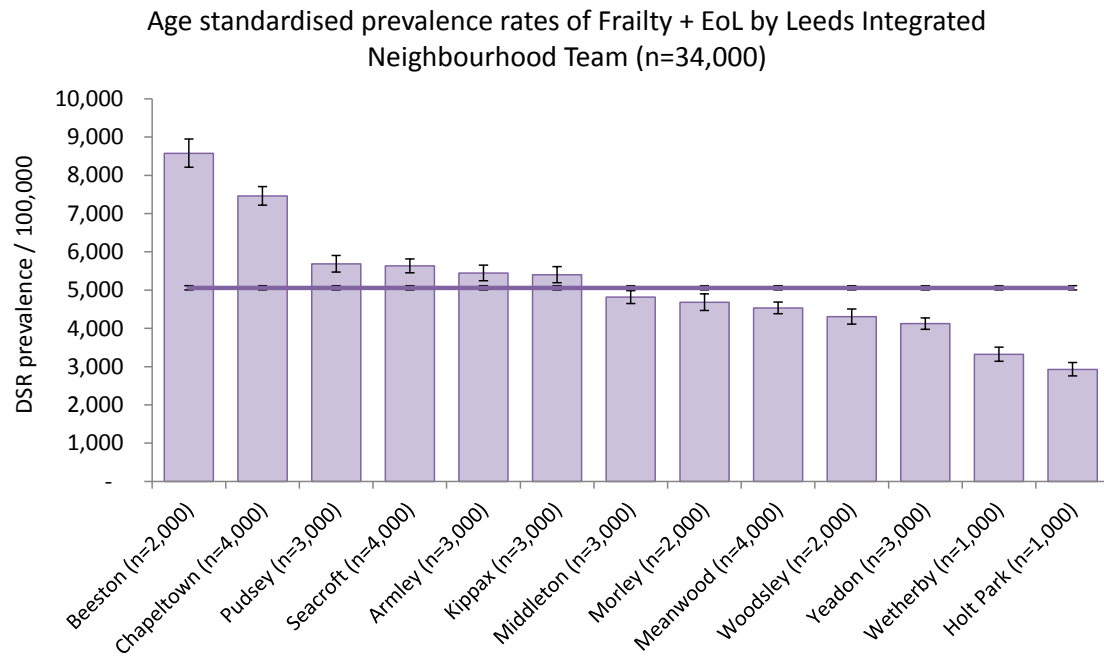
### 9.1 Graphs



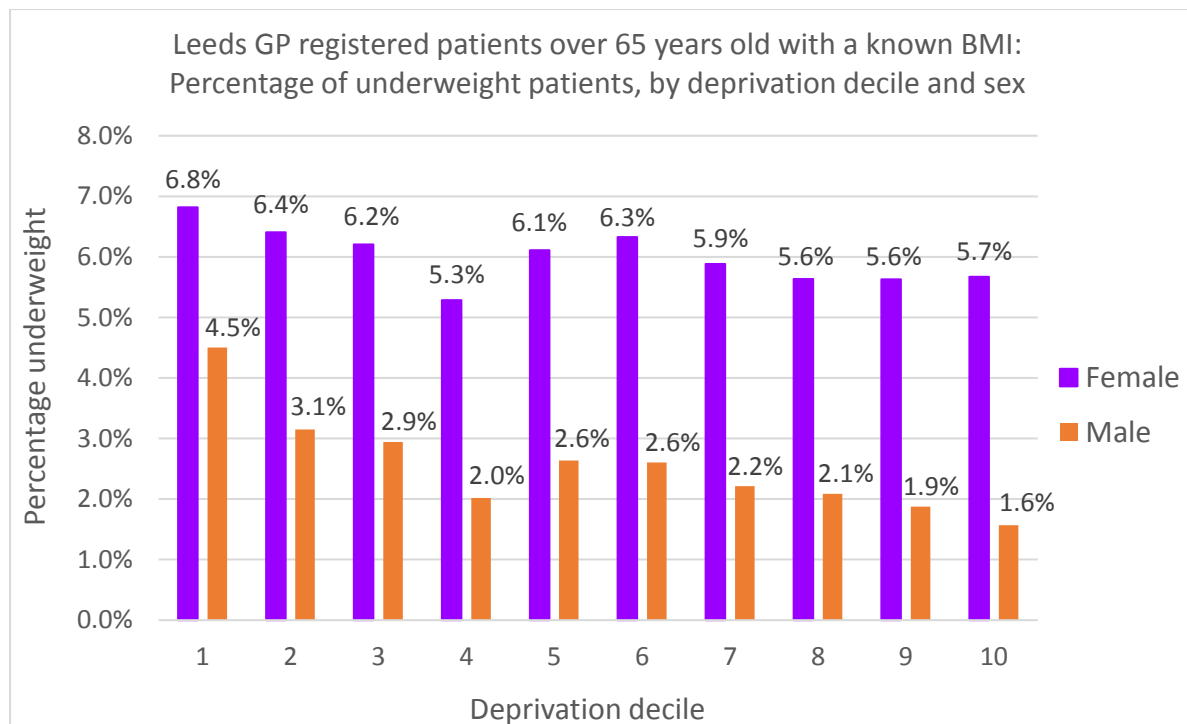
Graph 1: Projected increases in the number of people over 65 in Leeds, by age-band



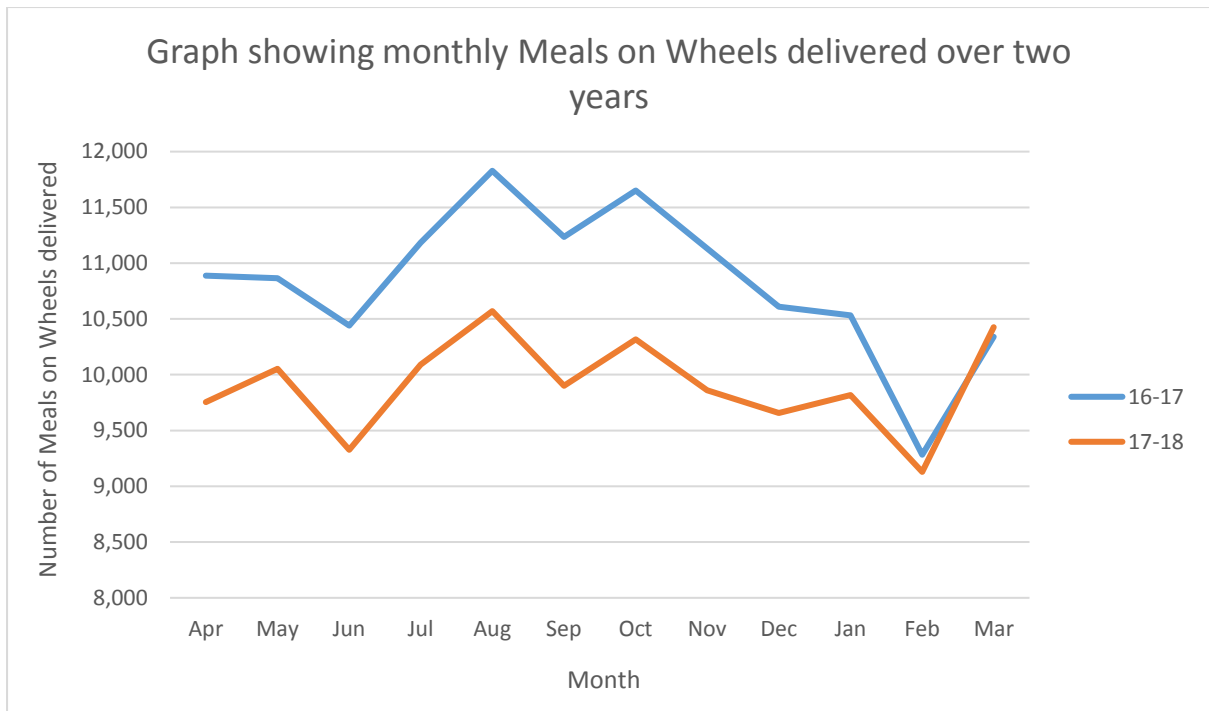
Graph 2: Proportion of men and women at each age group amongst people over 65



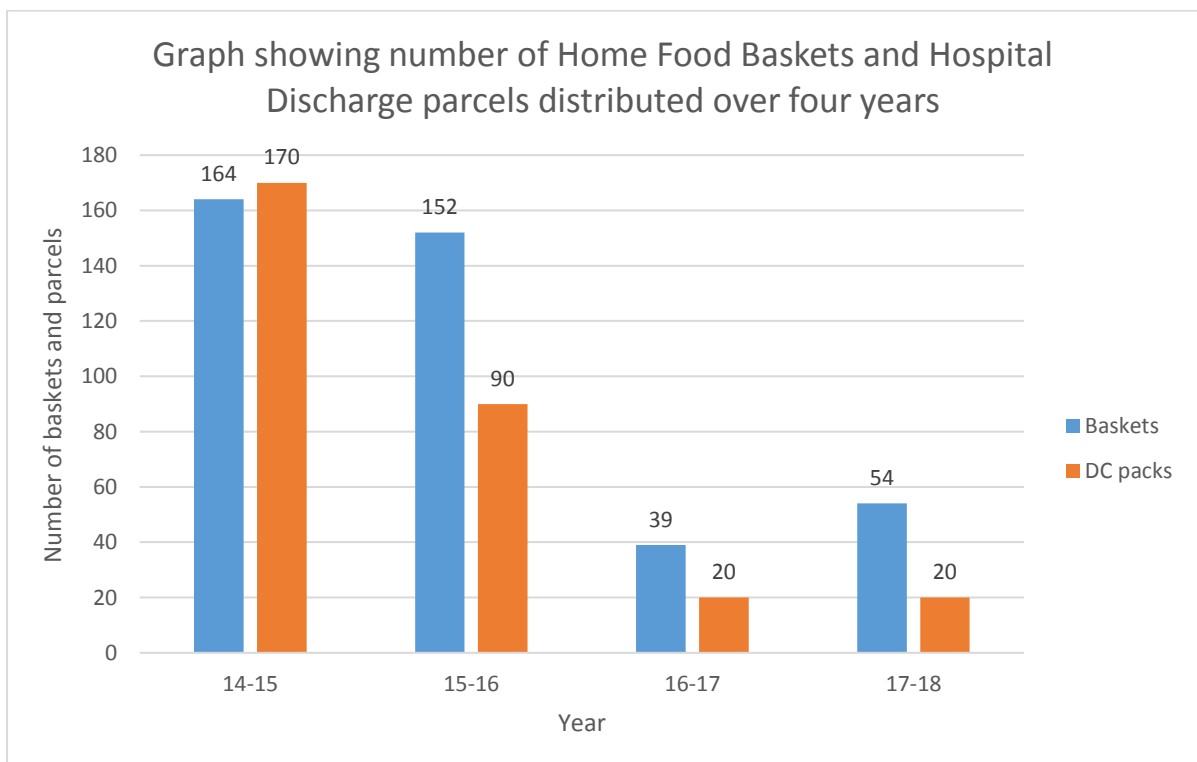
Graph 3: Age-standardised prevalence of frailty and end of life by Leeds Integrated neighbourhood Team



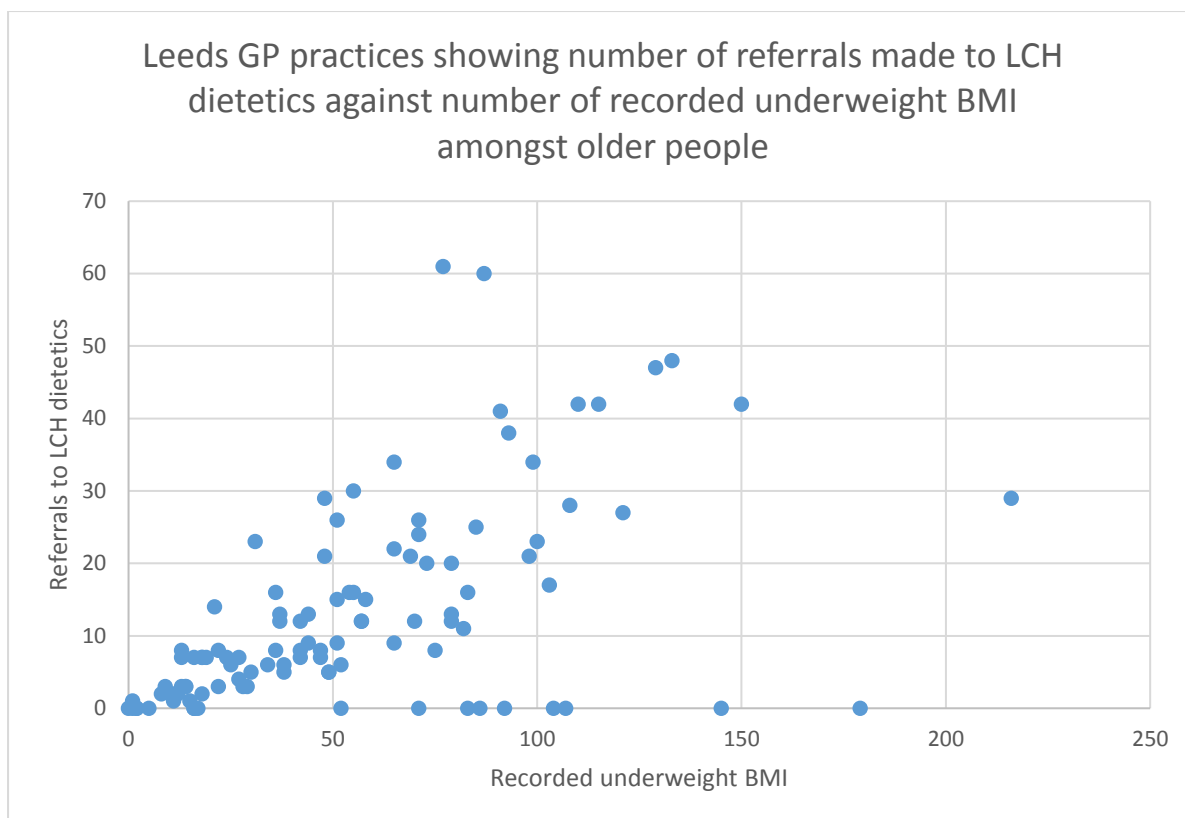
Graph 4: Percentage of people over 65 with recorded underweight BMI (<18.5), by sex and deprivation decile, where 1 = most deprived and 10 = least deprived



Graph 5: Number of Meals on Wheels delivered per month over two years



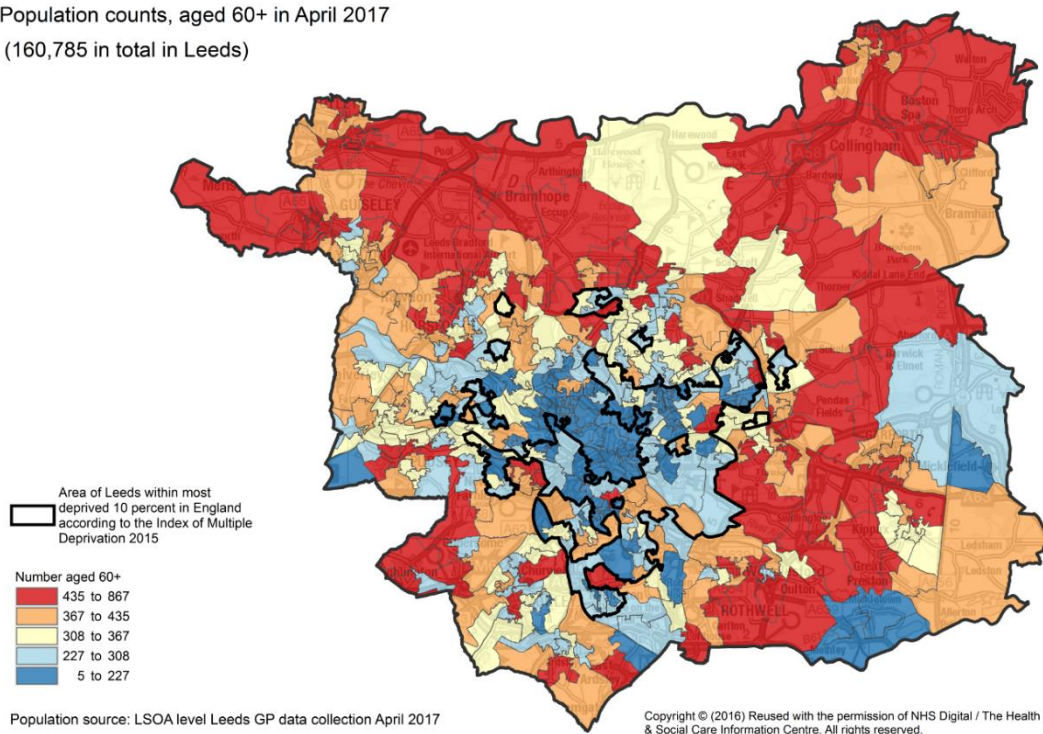
Graph 6: Number of Home Food Baskets and Hospital Discharge parcels distributed over four years



Graph 7: Number of referrals made to LCH dietetics for underweight services for people over 65, against number of people over 65 recorded as having an underweight BMI

## 9.2 Maps

Population counts, aged 60+ in April 2017  
(160,785 in total in Leeds)



Map 1: The geographical distribution of people aged 60 years and over within Leeds, as of April 2017

Income Deprivation Affecting Older People (IDAOP, IMD2015)

1 LSOA is ranked 84th in England (out of 32,844)  
7 others are inside the top 500.

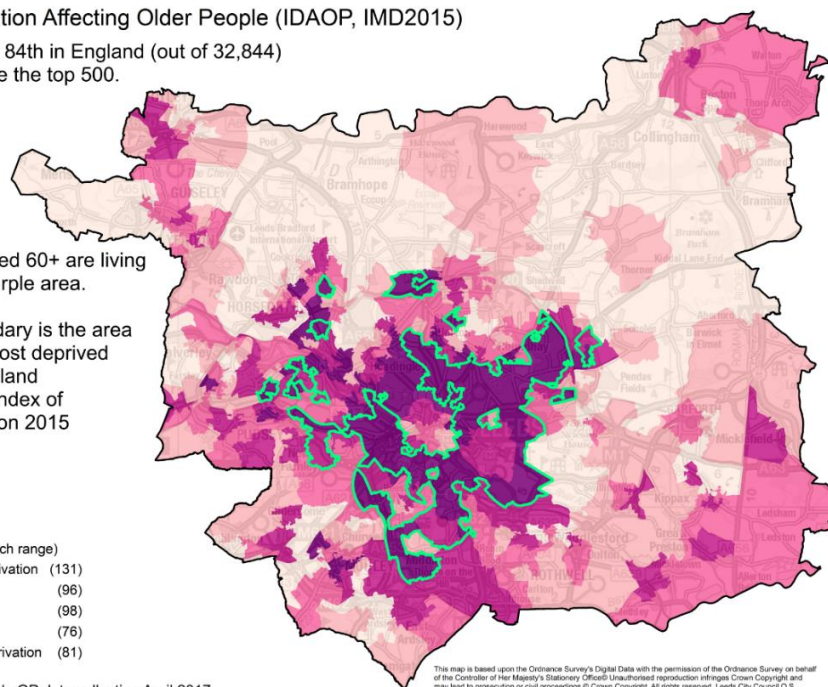
31,830 people aged 60+ are living inside the dark purple area.

Light green boundary is the area of Leeds within most deprived 10 percent in England according to the Index of Multiple Deprivation 2015

IDAOP English quintiles  
(Number of LSOAs in each range)

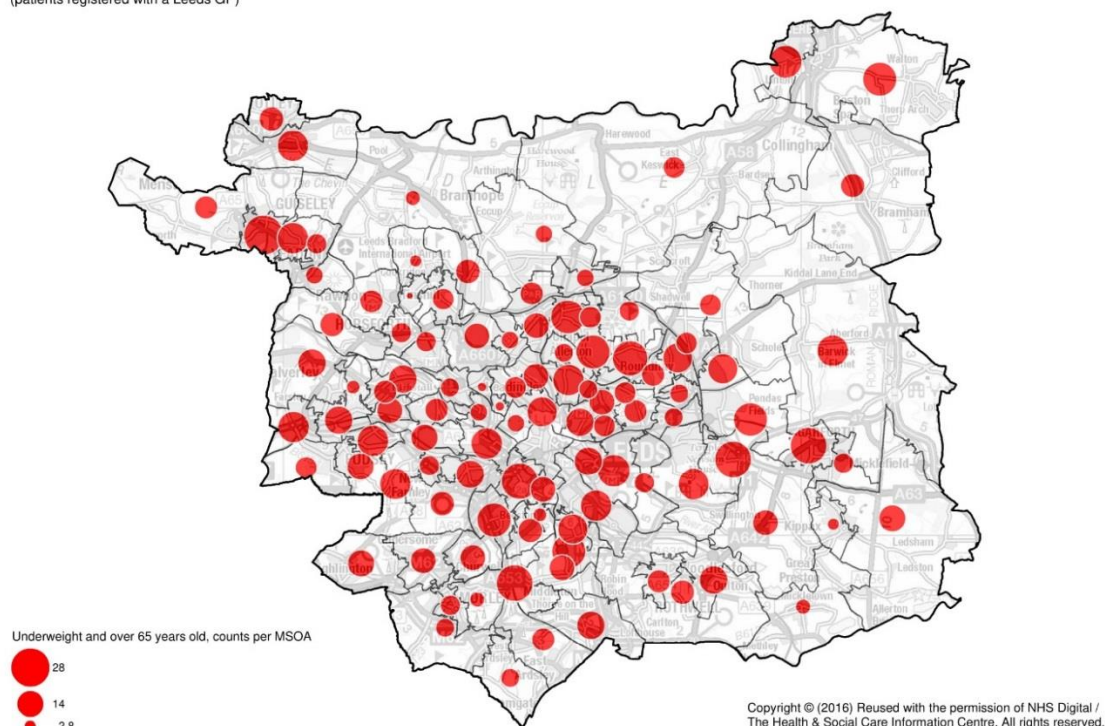
Most income deprivation	(131)
2	(96)
3	(98)
4	(76)
Least income deprivation	(81)

Population source: Leeds GP data collection April 2017



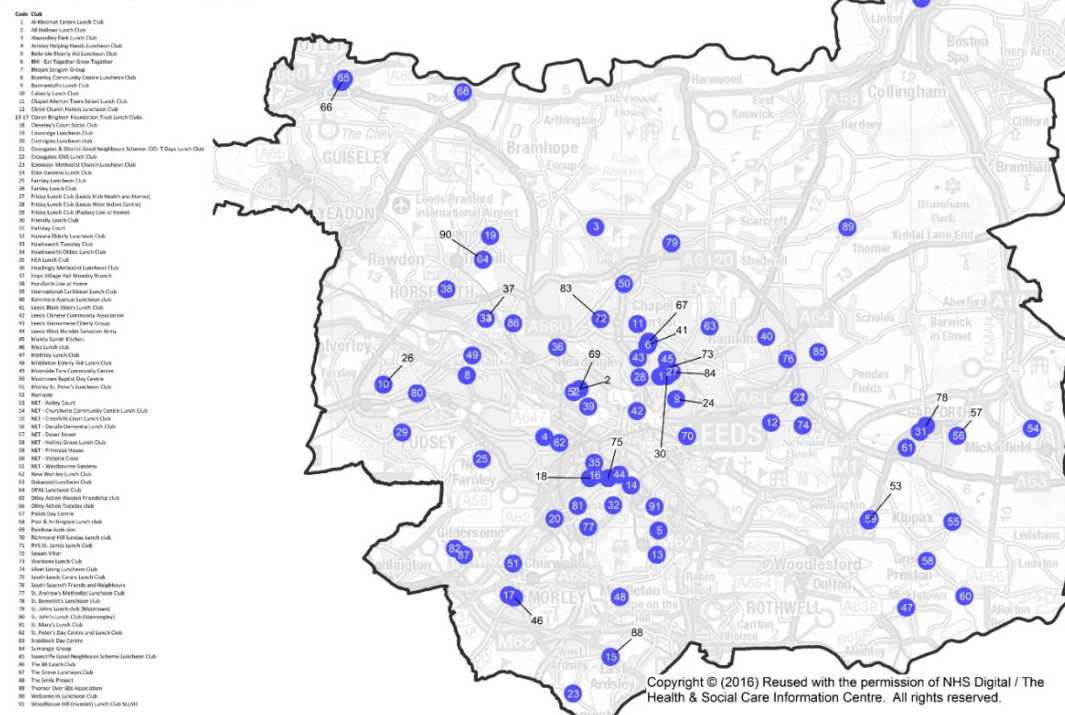
Map 2: The geographical distribution of people aged 60 years and over affected by income deprivation within Leeds, as of April 2017

Patients recorded with BMI <18.5 (underweight) and aged 65 or above between March 2015 and April 2016  
(patients registered with a Leeds GP)



Map 3: Residence of people over 65 recorded as having an underweight BMI (<18.5), in 2015-16

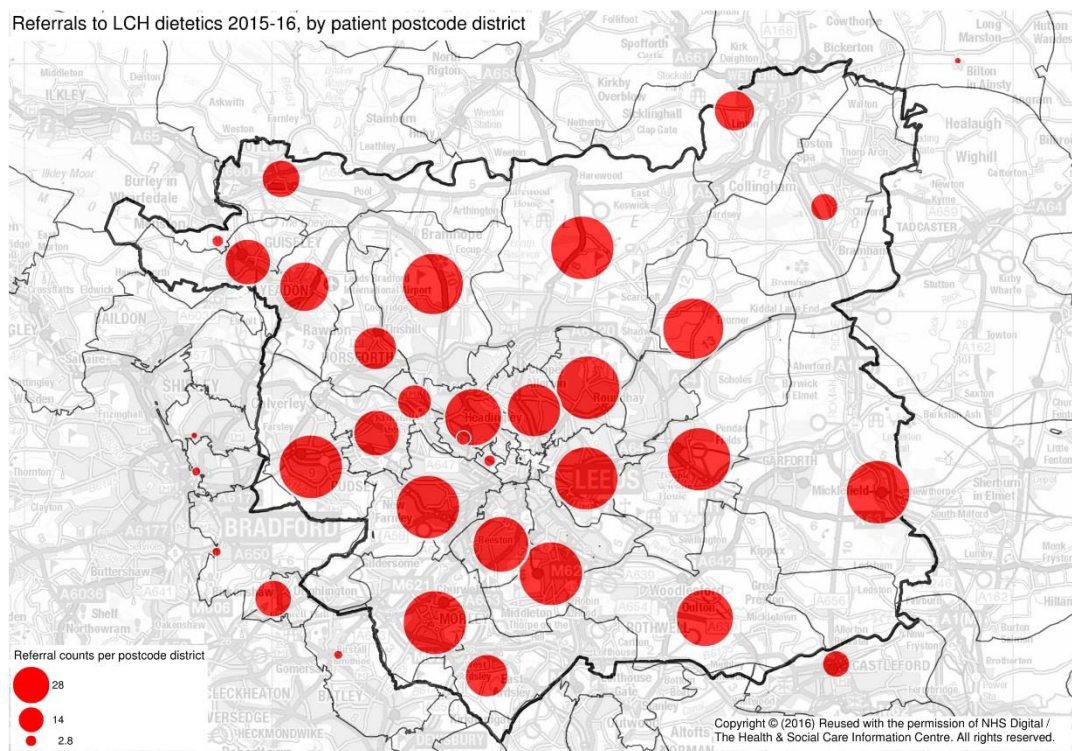
#### Luncheon Clubs DRAFT1



Map 4: Locations of lunch clubs in Leeds



Referrals to LCH dietetics 2015-16, by patient postcode district



Map 5: Residence of people over 65 referred to LCH dietetics for underweight services in 2015-16

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## 11. Appendix One - Contributors

The invaluable contributions of all of the following people were gratefully received to complete the '*Locally available services*' section.

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