Healthy weight needs assessment

November 2017

Version: 2.0

Authors: Jannette Smith, Suzie Igoe, Linda Howarth

Wellbeing and Public Health, Cornwall Council
### Current Document Status

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#### Responsible officer

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Introduction

Cornwall's population estimate was 549,400 in 2015 and it is projected to rise to 571,000 by 2020. 68.4% of adults were overweight or obese in 2015, which is higher than England. Over one quarter of children in reception year and slightly less than one third of the children measured in year 6 were either overweight or obese in 2016/17. National predications indicate a further decline in healthy weight, with an accompanying increase in obesity and severe obesity.

Accumulation of excess body fat occurs when there is an imbalance between energy intake and energy expenditure over a prolonged period, however there are over 100 variables that directly or indirectly influence obesity. Human biology is being overwhelmed by the effects of today’s ‘obesogenic’ environment. Although there are people in all population groups who are overweight and obese, income, social deprivation and ethnicity have an impact on the likelihood of becoming obese.

There is now a broad consensus of the need for a whole systems approach to tackle obesity, reflecting that obesity is a complex and multifaceted problem. A whole systems approach requires multiple coordinated actions to change the food, physical activity and social environments.

There is a range of weight management interventions at each tier in Cornwall and the Isles of Scilly (CIOS) from whole population prevention activity to specialist services for those that need to lose or maintain their weight, however there are challenges and gaps in the service provision. If we are going to prevent obesity and support individuals who are overweight or obese to achieve a healthy weight we need to address the problem at scale. Evidence-based, effective and sustainable weight management interventions accessible to all individuals and families across the life course are needed.

Key recommendations

Healthy weight environment

- Define and coordinate a whole systems approach to tackle the ‘obesity promoting’ environments in Cornwall and Isles of Scilly (CIOS)
- Use planning and regulatory measures to create healthier environments and address the proliferation of fast food outlets in Cornwall, particularly around education settings, leisure centres and other places frequented by children
- Implement Sugar Smart Cornwall to promote a healthy weight across the life course in a range of settings
- Develop and promote a healthy catering award/commitment to encourage all food establishments to provide and promote healthy food and drink
- Map the food and physical activity interventions at tier 1 delivered by the community and voluntary sector to identify additional services and promotional opportunities to support people to maintain a healthy weight
- Design a communication plan to reduce the stigma of overweight and obesity
Support adults, children and families to achieve and maintain a healthy weight

- Develop and promote a clear, integrated weight management pathway that includes prevention, self-management and treatment for adults
- Complete a full evidence and service review, including community and health professional consultation, of the tier 2 and 3 weight management interventions for adults, children and families
- Improve the data collection, utilisation and evaluation of the Cornwall Healthy Weight tier 1 and 2 weight management programmes for adults and children
- Develop a greater insight into the behaviour determinants for people in CIOS to devise the most effective treatment strategies
- Investigate how to ensure weight management programmes are desirable for young people, adults under the age of 44 years, and men
- Consider how to best tackle the generational issue of healthy weight in families
- Develop a workforce that is competent, confident and effective in talking about and promoting healthy weight

Policy Context

National

Healthy Lives, Healthy People: A Call to Action on Obesity in England (2011) outlined a new direction for combined efforts to combat obesity in adults and children by 2020. Recommendations included empowering people and communities to take action, building local capability and national and local government working together to achieve change. The role of the government in promoting healthy choices across the life course and changing the environment to support healthier lives was also outlined.

National policy on obesity and healthy eating from 2010 to 2015 has been summarised by the Department of Health. Policy included encouraging people to eat and drink more healthily and be more physically active through public health campaigns such as the Change for Life programme, consistent front of pack labelling and encouraging responsible business through the Public Health Responsibility Deal.

NHS England Five Year Forward Plan (2014) set out a clear direction for the NHS, showing why change is needed and what it would look like. Prevention and public health was put high on the agenda with support for comprehensive, broad based national action to include clear labelling information, targeted personal support and wider changes to distribution, marketing, pricing and product formulation.

Sugar reduction from evidence to action (2015) recommended a range of actions to reduce population sugar consumption, emphasising that a structured and universal programme of reformulation to reduce levels of sugar in food and drink would significantly lower sugar intakes, particularly if accompanied by reductions in portion sizes.

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size. It also suggested reviewing and strengthening the Food Standards Agency and Ofcom nutrient profile model to ensure it reflects the latest government dietary guidelines to ensure greater regulation of food and drink advertising, especially to children⁴.

Childhood obesity: a plan for action (2016) outlined the government’s plans to reduce England’s rate of childhood obesity within the next 10 years by implementing some of the recommendations of the sugar reduction evidence package and strategies for primary school children to eat more healthily and stay active. The sugar reduction programme aims to reduce overall sugar across a range of products that are frequent in children’s diets by 2020. A soft drinks levy will take effect from April 2018 to encourage producers to reduce the amount of sugar in their products and move consumers towards healthier alternatives. The revenue will be reinvested in interventions to encourage children to be active every day in schools⁵.

Public Health England (PHE) is working towards setting targets to reduce total calories in a wider range of product categories and across all sectors, and work on saturated fat will be reviewed in light of Scientific Advisory Committee for Nutrition (SACN) recommendations due in 2017.

Public Health England (PHE) Health Matters: Obesity and the food environment (2017) calls for strategic partnerships across relevant local council departments (for example, planning, economic development and public health), and the local council working with partners such as schools, workplaces, the community and the supply chain as part of a whole systems approach to tackle obesity⁶.

The Public Health Outcomes Framework sets out a vision for public health, the desired outcomes and a broad range of indicators to measure, to improve and protect health across the life course. There are a number of key health improvement outcomes relevant to healthy weight, including breast feeding initiation, excess weight in 4-5 and 10-11 year olds and adults and the percentage of physically active adults⁷.

Local
Healthy Weight, Healthy Futures (2017) highlights local government action to tackle childhood obesity. The report details case studies from local authorities showing how child obesity can be tackled at a local level. Cornwall Council contributed towards the report with their Nippers Nutrition Programme⁸.

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⁵ Department of Health (2016) Childhood obesity: a plan for action


⁸ Local Government Association (2017) Healthy Weight Healthy Futures. Local government action to tackle childhood obesity
The Local Government Association have allied themselves to Clinical Commissioning Groups, Public Health England and the Town and Country Planning Association calling for a health in every policy approach\(^9\), tackling obesity through planning and development and a whole systems approach to obesity\(^10\). The key role local authority planners have in creating places that enable people to achieve and maintain a healthy weight has also been highlighted\(^11\).

The multiagency Core Healthy Weight Group has been working with key partners to ensure the objectives of the healthy weight strategy (2009-13) for Cornwall were delivered. The priority outcomes included:

- Health and growth, and healthy weight of children
- Promoting healthier food choices
- Building more physical activity into our lives
- Creating incentives for better health
- Personalised advice and support
- Strengthening quality and delivery

Healthy weight is a priority in the Sustainability & Transformation Plan (STP) and Health and Wellbeing Strategy for Cornwall and Isles of Scilly. The leadership of the STP, Shaping Our Future, are developing a whole system approach to tackle trends in obesity. Devolution presents an opportunity to focus, extend and test new approaches to creating healthier food environments.

One Vision Partnership Plan (2017-2020) represents the children and young people’s element of the STP. It intends to shape the future integration of education, health and social care services for children, young people and their families. One of the priorities is to promote and protect children’s physical, emotional and mental health, which encompasses needs driven support to adopt healthy lifestyles and become more resilient.

**Definition of Condition/ Issue**

**Adults**

In adults the degree of overweight and obesity are commonly classified according to Body Mass Index (BMI). Factors such as muscle mass and ethnic origin can alter the relationship between BMI and body fatness so these factors need to be considered. The use of lower thresholds (23kg/m\(^2\)-27.5kg/m\(^2\)) is recommended for Black African, African Caribbean and Asian groups to indicate an increased risk of diabetes, other health conditions or mortality at a lower BMI than the white European population.

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\(^9\) Local Government Association (2016) *Health in all policies a manual for local government* [accessed on 17/11/2017]


Waist circumference used in conjunction with BMI is recommended in people with a BMI less than 35kg/m². Generally, men with a waist circumference of 94cm or more and women with a waist circumference of 80cm or more are more likely to develop obesity-related health problems. BMI is calculated by dividing body weight (kilograms) by height (metres) squared:

<table>
<thead>
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<th>Waist circumference</th>
<th>BMI classification for adults</th>
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<tr>
<td>&lt;94 cm or &lt;80 cm</td>
<td>Healthy Weight</td>
</tr>
<tr>
<td>≥94 cm or ≥80 cm</td>
<td>Overweight</td>
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BMI classification for adults

<table>
<thead>
<tr>
<th>Classification</th>
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<td>Underweight</td>
<td>&lt;18.5 kg/m²</td>
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<td>Healthy Weight</td>
<td>18.5 - 24.9 kg/m²</td>
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<tr>
<td>Overweight</td>
<td>25 – 29.9 kg/m²</td>
</tr>
<tr>
<td>Obesity I</td>
<td>30 – 34.9 kg/m²</td>
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<tr>
<td>Obesity II</td>
<td>35 – 39.9 kg/m²</td>
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<tr>
<td>Obesity III</td>
<td>≥40 kg/m²</td>
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Children
Assessing the BMI of children is more complicated than for adults because a child’s BMI changes as they mature. Growth patterns differ between boys and girls, so both the age and sex of a child needs to be taken into account when estimating whether BMI is too high or too low.

In the UK the Royal College of Paediatrics Child Health (RCPCH) growth reference charts are used to define weight status according to age and sex. When measuring a population of children (for example reporting National Child Measurement Programme findings) weight status is defined using population cut off points. These cut off points are slightly lower than the clinical cut off points to capture those children with a weight problem and those at risk of developing a weight problem (i.e. those children who maybe on the border line of the clinical definition). This helps ensure that adequate services are planned and delivered for the whole population. The RCPCH clinical and population cut off points are as follows:

<table>
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<th>Population BMI range</th>
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<td>≤2nd centile</td>
</tr>
<tr>
<td>Healthy weight</td>
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<td>&gt;2nd - &lt;85th centile</td>
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<tr>
<td>Overweight</td>
<td>≥ 91st centile</td>
<td>≥ 85th centile</td>
</tr>
<tr>
<td>Very overweight</td>
<td>≥98th centile</td>
<td>≥95th centile</td>
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Lifestyle and Social Determinants

The causes of obesity are extremely complex, encompassing biology and behaviour, but set within a cultural, environmental and social framework. Accumulation of excess body fat occurs when there is an imbalance between energy intake and energy expenditure over a prolonged period. This arises when more energy is consumed through food and drink than is used up through metabolism and physical activity.

However, there are over 100 variables that directly or indirectly influence obesity. The Foresight Report (2007) stated that while personal responsibility and decisions around diet and activity do play a crucial role in achieving energy balance; our environment, with its abundance of energy dense food, motorised transport and sedentary lifestyles, now makes it much harder for individuals to maintain healthier lifestyles. Human biology is being overwhelmed by the effects of today’s ‘obesogenic’ environment. The systems map below shows how these factors affect energy balance and the relationships between them.

Figure 1. The Foresight Systems Map


Obesity-related genes can affect how food is metabolised and how fat is stored and they could also affect an individual’s behaviour, influencing lifestyle choices. People with obesity-related genes are not destined to be obese but they will have a higher risk of obesity and may have to work harder than others to maintain a healthy weight.

The quality, quantity and frequency of food and drink consumption are closely linked to the food environment. In the UK we are consuming more meals out of the home than ever before; more than one quarter (27.1%) of adults and one fifth of children eat food from out-of-home food outlets at least once a week. These meals are often cheap and readily available at all times of the day and tend to be associated with higher energy intakes, higher levels of fat, saturated fats, sugar, and salt, and lower levels of micronutrients.

Evidence shows an association between exposure to fast food outlets and fast food consumption, BMI and obesity. In 2014, PHE estimated that there were over 50,000 fast food and takeaway outlets, fast food delivery services and fish and chip shops in England, with a clear link shown between deprivation and the density of fast food outlets in an area. In Cornwall there are between 69-83 fast food outlets per 100,000 population compared to an England average of 86 per 100,000 population. Data that also includes bakeries in the fast food outlet category shows there are 612 fast food outlets in Cornwall. The availability of hot food takeaways in close proximity to schools and workplaces has also been identified as an important factor contributing to rising levels of obesity.

A healthy food environment goes beyond takeaway food availability and includes food security. Food security includes where our food comes from and how it is produced, how it is traded and marketed and the preparedness within our food system to address long term issues arising from climate change and projected global population growth. It also includes food consumption, affordability and access to food and food waste.

Food insecurity or insufficient access to food can compromise health for a number of reasons. Households experiencing food poverty often rely on cheap foods that are filling and will not go to waste. These foods are often nutrient poor but calorie-rich potentially putting individuals at risk of weight gain and obesity. Food insecurity is associated with an inadequate intake of certain nutrients and fruits and vegetables, and individuals with chronic diseases that require dietary management, such as diabetes, may experience additional complications.

People in the UK are around 20% less active now than in the 1960s and, if current trends continue, we will be 35% less active by 2030. Environmental and societal changes have designed physical activity out of our lives. There are fewer jobs requiring physical work, an increase in labour-saving technology, changes in working & shopping

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patterns, patchy provision for pedestrians and cyclists, increased use of personal cars and decline in quality urban public spaces.

The Health Survey for England showed that in 2015, 67% of men and 55% of women aged 16 and over did at least 150 minutes of moderate physical activity per week. Only 22% of children aged between 5 and 15 met the Chief Medical Officers (CMO) physical activity guidelines of being at least moderately active for at least 60 minutes every day (23% of boys, 20% of girls)\(^{21}\).

In CIOS only 54.7% of adults were classed as active (meeting the CMO guidelines for activity) in 2015\(^{22}\). 37% of adults aged 40-60 years in the South West region walked less than ten minutes continuously each month at a brisk pace, and women walked less (33%) than men (41%)\(^{23}\). Utilisation of outdoor space for exercise/health reasons is low (12.3% of people) in Cornwall compared to England (17.9%)\(^{24}\).

Eating, drinking and exercise habits are greatly influenced by social and psychological factors\(^{25}\). Over-consumption of sweet foods and drinks can be a reaction to more negative feelings including low self-esteem or depression. Understanding behaviour determinants in greater depth is crucial to engage with individuals and to devise effective treatment strategies\(^{26}\).

**Demographic Profile**

Although there are people in all population groups that are overweight and obese, income, social deprivation and ethnicity have an impact on the likelihood of becoming obese. The Marmot review highlighted that obesity is related to social disadvantage\(^{27}\). People who live in deprived areas are:

- More likely to live near fast-food outlets, which may contribute towards the disparity in levels of obesity across the population\(^{28}\)
- Ten times less likely to live in the greenest areas compared with people in the least deprived areas\(^{29}\)
- More likely to feel unsafe in their neighbourhood, with consequent negative effects on their health, including a reluctance to take exercise

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\(^{29}\) UCL Institute of Health Equity (2014) Natural Solutions to Tackling Health Inequalities
The Health Survey for England found that women living in more deprived areas are more likely to be obese, regardless of the measure used. In men there is a small decrease in obesity prevalence as income increases, although the relationship between obesity and socioeconomic status varied when different socioeconomic indicators, such as educational attainment, area deprivation and social class, were used\(^{30}\).

For both men and women obesity prevalence decreases with increasing levels of education. Around 30% of men and 33% of women with no qualifications are obese compared to 21% of men and 17% of women with a degree or equivalent. Obese adults are less likely to be in employment, are more likely to face discrimination and suffer from health conditions such as sleep apnoea, type 2 diabetes, heart disease and some cancers\(^{31}\).

People from Black African, African Caribbean and Asian groups have a greater predisposition for obesity and have a higher susceptibility to diseases linked to excess weight, such as type 2 diabetes. Obesity rates are higher in some ethnic minority groups of children, particularly Black African and Bangladeshi ethnicities\(^{32}\).

There is strong evidence of a significant relationship between maternal obesity and the birth of babies above a normal weight range, and the subsequent development of childhood and adult obesity, independent of genetic and environmental factors. Children who live in a family where at least one parent or carer is obese have a greater risk of becoming overweight or obese adults, increasing the risk of morbidity, disability and premature mortality in adulthood\(^{33,34}\).

National Childhood Measurement Programme (NCMP) data shows that obesity prevalence among children in both reception and year 6 increases with increased socioeconomic deprivation. Child obesity rates are highest in the most deprived 10% of the population; approximately twice that of the least deprived 10%\(^{35}\) and increase with age. This suggests that efforts to tackle obesity, particularly amongst disadvantaged children, should start early in life\(^{36}\). This pattern is also observed in Cornwall.

Children who have a physical disability are more likely to be obese or overweight, particularly if they also have a learning disability. 40% of children aged under the age of

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\(^{30}\) Public Health England (2016) *Adult obesity slide set*  


\(^{32}\) Public Health England (2015) *Childhood obesity: applying All Our Health*

[https://www.ncbi.nlm.nih.gov/pubmed/10641588] [accessed on 17/11/2017]

\(^{34}\) *http://webarchive.nationalarchives.gov.uk/20170110171057/https://www.noo.org.uk/NOO_about_obesity/obesity_and_health/health_risk_child* [accessed on 17/11/2017]

\(^{35}\) Health & Social Care Information Centre (2016) *Statistics on Obesity, Physical Activity and Diet*  

\(^{36}\) Kelly, Goisis, Sacker (2015) *Why are poorer children at higher risk of obesity and overweight? A UK cohort study*.  
[https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4735508/] [accessed on 17/11/2017]
8 with a limiting illness and learning disability are obese or overweight compared to 22.4% of children who have neither condition\textsuperscript{37}.

**Epidemiology / Prevalence**

**Adults**

In 2015 over a quarter of adults in England were obese (27%) and a further 41% of men and 31% of women were overweight. Overall this equates to 68% of men and 58% of women that were above a normal weight for their height\textsuperscript{38}. In CIOS in 2015 adult excess weight (overweight and obesity) for men and women combined was 68.4%, higher compared to the South West (64.8%) and England (64.7%)\textsuperscript{39}.

**Figure 2. Prevalence of overweight and obesity among adults 2013-2015\textsuperscript{40}**

The prevalence of adult excess weight (obese and overweight combined) in Cornwall in 2015 was estimated to be between 287,905 and 297,160 people (aged 16+). This was further broken down to estimate need at each tier of weight management service in Cornwall (see figure 8 for the tiered system definition):

- 170,000-174,000 for tier 1-2 (overweight)
- 105,000-110,000 for tier 2 (obese)
- 12,500-13,000 for tier 3 (severe obesity)
- 130-160 for tier 4 (severe obesity requiring bariatric surgery)

Figure 3 below shows the estimated prevalence of adult obesity (16+ years) in CIOS. Whilst differences in the levels of obesity can been seen across the population, there are areas with higher levels of obesity, suggesting the need for both a universal and a targeted approach. The community network health profiles show further detail on the


\textsuperscript{38} NHS (2015) Health Survey for England


\textsuperscript{40} https://www.slideshare.net/PublicHealthEngland/patterns-and-trends-in-adult-obesity/2 [accessed on 17/11/2017]
prevalence of obesity in adults, and excess weight in children by each area in Cornwall\textsuperscript{41}.

**Figure 3. Prevalence of Adult Obesity in CIOS by MSOA**

Around 15-20\% of pregnant women nationally are overweight or obese\textsuperscript{42}. In Cornwall 20.8\% of pregnant women in Cornwall were classified as obese in 2016, with a very small proportion (0.2\%) above 50 kg/m\(^2\) in 2016\textsuperscript{43}.

There were 525,000 admissions in NHS hospitals where obesity was a factor in England in 2015/16 and 12,317 (8,296 for females and 4,201 for males) in CIOS in the same period. The prevalence of obesity in England rose from 15\% in 1993 to 27\% in 2015. The trend is still rising, although this has slowed since 2001\textsuperscript{44}.

Predictive modelling undertaken by Foresight estimated that 60\% of men and 50\% of women could be obese by 2050\textsuperscript{45}. The UK Health Forum suggested that obesity in males and females is projected to increase to around 36\% by 2034, with the highest projected increase in 70-79 year old females, reaching 61\% by 2034\textsuperscript{46}.


\textsuperscript{46}UK Health Forum (2014) Risk factor based modelling for Public Health England
Children

The National Child Measurement Programme (NCMP) is a nationally mandated public health programme that records the height and weight of children in reception year and Year 6. The data is used to determine the weight category for each child and serves to provide robust public health surveillance data for the child excess weight indicators in the Public Health Outcomes Framework. It is a key element of the Government’s approach to tackling child obesity.

In England the NCMP data shows that the prevalence of obesity in reception year has risen for the second consecutive year – from 9.3% in 2015/16 to 9.6% in 2016/17. It remained stable at 20% for year 6 children. Nearly a quarter (22.6%) of reception children and over a third of children in year 6 (34.2%) was overweight or obese in 2016/17. Obesity prevalence was higher for boys than girls in both age groups.

Figure 4. Prevalence of excess weight among children 2015-2016

In CIOS 10,323 valid measurements were received for children attending state-maintained schools in 2016/17. This was 93% of those eligible in reception year and 85% of those eligible in year 6. The prevalence of obesity was 9.9% for reception year children and 15.1% for year 6 children.

For reception year children the prevalence of overweight and obesity combined was 26.6% - this was higher than in the South West (23.1%) and England (22.6%). The prevalence of overweight and obesity increases in year 6 children to 29.9%, which was slightly lower than the South West (30.1%) but lower than England (34.2%). Figures 5 and 6 below show the prevalence of overweight and obesity in reception and year 6 children in Cornwall from 2006/7-2016/17.

Figure 5. Prevalence of overweight and obese children in reception - Cornwall

![Graph showing prevalence of overweight and obese children in reception in Cornwall from 2006/07 to 2016/17.](image)

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</tr>
<tr>
<td>2008/09</td>
<td>24.1*</td>
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</tr>
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<td>2009/10</td>
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<td>23.2</td>
</tr>
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<td>2010/11</td>
<td>24.9*</td>
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<td>23.5*</td>
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<td>2016/17</td>
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Figure 6. Prevalence of overweight and obese children in year 6 - Cornwall

![Graph showing prevalence of overweight and obese children in year 6 in Cornwall from 2006/07 to 2016/17.](image)

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<thead>
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<th>Period</th>
<th>Cornwall</th>
<th>South West England</th>
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Note: Only initial validation has been carried out on the 2016/17 NCMP data so this dataset should be treated as provisional.

The prevalence of child excess weight in Cornwall in 2015 was estimated to be between 25,500 and 27,100 children (0-15 years). This was further broken down to estimate need at each tier of weight management service in Cornwall (see figure 8 for the tiered system definition):

- 11,000-11,500 for tier 1/2 (overweight)
- 13,500-14,000 for tier 2 (obese)
- 1,000-1,600 for tier 3 (severe obesity)
Mortality and Morbidity

It is estimated that obesity is responsible for more than 30,000 deaths in England each year. On average, obesity reduces life expectancy by between 3 and 13 years with the excess mortality being greater the more severe the obesity and the earlier it develops\(^{48}\). Evidence demonstrates that obesity measured either by BMI or waist circumference is a good predictor of an individual’s risk of death. As can be seen in the figure below, the higher risks of death fall into the lower and upper BMI categories rather than in the middle categories\(^{49}\).

**Figure 7: Association between mortality and BMI for adults BMI**

![Graph showing association between mortality and BMI](image)

Source: [www.noo.org.uk/NOO_about_obesity/mortality](http://www.noo.org.uk/NOO_about_obesity/mortality)

The greatest burden arises from obesity related morbidity. Being overweight or obese increases the risk of developing a number of serious diseases, including diabetes, cardiovascular disease and many cancers. Women who are obese when they become pregnant face an increased risk of complications during pregnancy and childbirth. After birth wound healing can be slower in obese women and they often require extra support to establish breast feeding. The table below\(^{50}\) details the health problems associated with obesity in adults.

<table>
<thead>
<tr>
<th>Relative risk of health problems associated with obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greatly increased risk</strong> (Relative Risk much greater than 3)</td>
</tr>
<tr>
<td>Type 2 diabetes</td>
</tr>
<tr>
<td>Insulin resistance</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Gallbladder disease</th>
<th>Stroke</th>
<th>Polycystic ovary syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyslipidaemia (imbalance of fatty substances in the blood eg high cholesterol)</td>
<td>Osteoarthritis (Knees)</td>
<td>Impaired fertility</td>
</tr>
<tr>
<td>Breathlessness</td>
<td>Hyperuricaemia (high levels of uric acid in the blood and gout)</td>
<td>Low back pain</td>
</tr>
<tr>
<td>Sleep apnoea (disturbance of breathing)</td>
<td>Psychological factors</td>
<td>Anaesthetic risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foetal defects associated with maternal obesity</td>
</tr>
</tbody>
</table>

Note: all relative risk estimates are approximate. The relative risk indicates the risk measured against that of a non-obese person of the same age and sex. For example, an obese person is two or three time more likely to suffer from hypertension than a non-obese person.

Failing to address excess weight will place an even greater burden on NHS resources. It estimated that the NHS in England spent £6.1 billion on overweight and obesity-related ill-health in 2014 to 2015. More broadly, the overall cost of obesity to wider society is estimated at £27 billion in obesity medication, obesity attributed days lost due to sickness, and costs to the NHS and social care. The UK-wide NHS costs attributable to overweight and obesity are projected to reach £9.7 billion by 2050, with the wider costs to society estimated by Foresight to reach £49.9 billion per year51.

**Effective Interventions**

There is now a broad consensus of the need for a whole systems approach to tackle obesity, reflecting that obesity is a complex and multifaceted problem. A whole systems approach requires a range of coordinated actions to change the food, physical activity and social environments. The McKinsey Global Institute report states that no single intervention will have sufficient impact on its own and a systemic and sustained range of initiatives, delivered at scale is needed to reverse obesity52. Evidence-based, effective and sustainable weight management interventions accessible to all individuals and families across the life course are needed.

The figure below presents the tiered system of weight management services defined by the NHS and PHE in 2013. This best practice approach recommends the provision of universal services at tier 1, lifestyle services at tier 2, a medical multidisciplinary service at tier 3 and bariatric and post-surgery services at tier 4 to support overweight and obese people achieve a healthy weight. Whole population prevention activities sit below the tier 1 services.

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Whole population prevention

The Eatwell Guide\textsuperscript{54} defines the government recommendations on eating healthily and achieving a balanced diet. It shows the proportions of the food groups that form a healthy, balanced diet. The Scientific Advisory Committee recommends that consumption of free sugars should not exceed 5\% of total dietary energy for all ages from 2 years as high consumption increases the risk of high energy intakes, causing weight gain and subsequent obesity related issues\textsuperscript{55}.

The Chief Medical Officers (CMO) recommend that adults achieve at least 150 minutes of moderate aerobic activity every week, and do strength exercises on two or more days a week to stay healthy. Children should achieve at least 60 minutes of physical activity every day and this should range from moderate activity to vigorous activity, on three days a week\textsuperscript{56}.

NICE has published comprehensive guidance on healthy weight for adults, children and families, including three integrated pathways on obesity, working with local communities and preventing type 2 diabetes\textsuperscript{57}. NICE Clinical Guideline 43 states that obesity cannot be viewed in isolation from the environment in which people live and cannot be addressed through primary care management alone. The most effective strategies for prevention and management share similar approaches.

\textsuperscript{57} NICE (2017) Obesity overview https://pathways.nice.org.uk/pathways/obesity [accessed on 17/11/2017]
Nurseries should provide regular opportunities for enjoyable active play and structured physical activity sessions. Head teachers and governors, in collaboration with parents and carers, should ensure the whole school environment promotes a healthy weight. Workplaces should provide opportunities for a healthy diet and physical activity through promotion of healthy options in restaurants and vending machines and providing a supportive physical environment such as cycle parking and showers, and recreational opportunities, such as lunchtime walks.

Local authorities should work with local partners to provide facilities such as walking and cycling routes and schemes and ensure buildings and spaces are designed to encourage people to be more physically active. Primary care and local authorities should only recommend self-help, commercial and community weight management programmes if they follow best practice58.

The local council should use its leasing and licensing powers to influence the provision of healthier food in outlets that operate from premises it owns or controls. Planning policies designed to restrict the opening of new takeaways should be clearly linked to local evidence-based policies to promote health and wellbeing. Healthier catering schemes that show clear business benefits can be used to encourage restaurants and cafes to make small changes to menus and catering practices59.

**Adults**

NICE Clinical Guideline 89 recommends that opportunities to measure an individual’s BMI for referral to weight management programmes include registration with a general practice, consultation for related conditions and other routine health checks. The choice of weight management intervention should be discussed and agreed with the person, according to their preferences and lifestyle. Individuals with severe or complex obesity should be referred to a tier 3 service60.

Being referred to a weight management service by a trusted health care professional may have a positive impact on an individual’s motivation. A brief 30 second opportunistic intervention by trained primary care physicians to motivate weight loss in patients who were obese was found to be helpful and highly acceptable to patients. When combined with supportive systems the intervention led to overall population weight loss. 40% of patients attended the weight management programmes offered and 54% of the patients assigned to the active intervention took effective action to manage their weight compared with 11% of the control participants61.

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The Royal College of Physicians is championing the development of the role of clinicians, particularly in primary care, and have produced a range of teaching packages for the prevention and treatment of obesity. Physical activity and lifestyle has been announced as a clinical priority by the Royal College of General Practitioners for 2016-2019⁶².

Multicomponent interventions that include behaviour change strategies to help individuals increase physical activity levels, improve eating behaviour and reduce energy intake are the treatment of choice at all tiers of the weight management service. Advice should allow for a flexible and individual approach to reducing energy intake and increasing energy expenditure⁶³.

Guidelines for tier 2 lifestyle weight management programmes suggest a realistic goal for sustainable weight loss in adults of 0.5-1kg bodyweight per week, or around 5–10% of baseline weight over a 6-12 month period⁶⁴. However, evidence shows that the percentage weight loss from participating in a lifestyle weight management programmes is somewhat lower, with an average of around 3% of baseline weight. More health benefits, such as reduced blood pressure or improved control of blood glucose are seen with the greater level of weight loss, however losing a relatively small of weight (3%) is still likely to lead to health benefits⁶⁵.

PHE (2017) recommends that adult tier 2 weight management programmes should include appropriate expertise from a registered nutritionist or dietitian, physical activity specialist and behaviour change expert. Programmes should last at least 12 weeks, consider a graduated exit and provide additional follow-up support for those that require it. Advice should follow the Eatwell Guide and aim to reduce calorie intake whilst reducing sedentary behaviour and increasing physical activity.

There should be no BMI or upper age limit for individuals to access a tier 2 weight management programme. Evidence-based interventions are likely to be applicable to most population groups, however services should make reasonable adaptations for individuals with learning or physical disabilities, or poor mental health to engage with the service⁶⁶.

A recent review of the critical features of successful tier 2 weight management programmes for adults showed that the most effective programmes used a group delivery approach and fostered supportive relationships with providers or peers. Weight management programmes which intentionally provide a high level of direction and support at the initiation stage and build in a graduated exit are likely to be the most appropriate model. It appears that a high level of direction and support are predominantly important at the initiation stage of weight management programmes to

develop relationships and motivation. The educational aspects of the programme only become significant at later stages. Maintenance is best encouraged by either providing exercise sessions or gradually decreasing the frequency of the sessions67.

Online weight management interventions may offer an alternative cost-effective solution for some individuals. They appear less effective than in-person treatment, but do independently promote weight loss and can augment interventions involving personal contact68. Further research in this area found that an online behavioural counselling tool is effective at helping people lose weight if combined with brief support from a nurse in primary care. Those that received the intervention combined with brief face-to-face support lost the most weight and maintained it at one year compared to those that received support via email and telephone contact. Those that received no additional support lost the least weight69.

Specialist tier 3 services should provide the link between tier 1/2 population-wide services/lifestyle interventions and tier 4 multidisciplinary specialist bariatric surgical services. They are included in the NICE obesity pathway and recommendations include an integrated approach between local providers across the care pathway to manage and prevent obesity70. Referral to tier 3 services should be considered if the person has complex disease states, needs that cannot be managed adequately in a tier 2 service, or if conventional treatment has been unsuccessful. Individuals should also be referred if specialist interventions are required, or if bariatric surgery is being considered71.

The British Obesity & Metabolic Surgery Society commissioning guide for tier 3 services recommends referring adults with a BMI of 40kg/m² or ≥35kg/m² with an obesity-related comorbidity to a tier 3 weight management service. Specialist weight management clinics should consist of a multidisciplinary team (MDT) and should contain at least a bariatric physician, a dietician, a specialist nurse, a clinical psychologist and a liaison psychiatry professional, and there should be access to a physical therapist. The guidance also includes recommendations of when to refer to bariatric surgery at tier 472. This guide was revised in 2017 and provides updated guidance on referral and recommended treatment in adult weight assessment and management clinics, and guidance and pathways for the assessment of children and adolescents. Tools for

67 Sutcliffe, Richardson, Rees, Burchett, Melendez-Torres, Stansfield, Thomas (2016) What are the critical features of successful Tier 2 weight management programmes for adults? A systematic review to identify the programme characteristics, and combinations of characteristics, that are associated with successful weight loss. Department of Health Reviews Faculty: London
measuring equity of access into the clinics and referral onwards to surgery have also been updated\textsuperscript{73}.

There is a lack of evidence on the realistic clinical outcomes and efficacy of tier 3 services at scale, however research has demonstrated that effective tier 3 weight management services can be provided for complex obese patients in a primary care setting. Participants described high levels of satisfaction with the multidisciplinary approach and achieved progressive and substantial reductions in bodyweight at 1 year. This approach is often more convenient for patients and may be more cost effective for the NHS. Tier 3 services may need additional outcome measures as percentage weight loss may not reflect all the appropriate clinical goals, such as appropriate treatment before referral to bariatric surgery, improved diabetes control or detection of undiagnosed co-morbidities such as obstructive sleep apnoea\textsuperscript{74}.

Following the introduction of the best practice tiered approach for weight management services, a specialist national working group concluded that CCGs were the preferred option to commission multidisciplinary, tier 3 specialist weight management services for severe and complex obesity. Local authorities should remain commissioners of the tier 1 and 2 obesity care pathway\textsuperscript{75}. Tier 4 services are commissioned by NHS England.

**Maternal health and early years**

NICE guidance on weight management before, during and after pregnancy states that women who are overweight or obese and planning to become pregnant should be advised of the health benefits of losing 5–10\% of their weight before pregnancy. An update to the 2010 NICE guidance has been recommended for women during pregnancy as new evidence shows there are no harms to the mother or unborn associated with ‘controlled’ weight loss (eating a healthy diet that may lead to weight loss) during pregnancy\textsuperscript{76}. It is recommended that all pregnant women with a BMI >30 are referred to a dietitian or appropriately trained professional for individual advice.

The period after pregnancy and childbirth is a time when women are likely to gain weight and many women may conceive again during this period. Supporting women to manage their weight in the first few years after childbirth provides an opportune time for behaviour change and it may reduce the risk of women entering the next pregnancy overweight or obese. Advice should be tailored to the woman’s circumstance, taking into account the demands of caring for a baby and any other children, any fatigue being experienced and pregnancy related complications. Activities need to be affordable and at suitable times, with affordable childcare provision if possible\textsuperscript{77}.


\textsuperscript{74} Hughes (2015) The rewards and challenges of setting up a Tier 3 adult weight management service in primary care


\textsuperscript{76} NICE (2017) Surveillance report 2017 – Weight management before, during and after pregnancy (2010) NICE guidance PH27 [Link no longer available] [accessed on 17/11/2017]

\textsuperscript{77} NICE (2010) PH27: Weight management before, during and after pregnancy \url{https://www.nice.org.uk/guidance/ph27/chapter/1-Recommendations} [accessed on 17/11/2017]
Breastfeeding can be an important component of the strategies to reduce the risk of obesity in children. Interventions aimed at the prevention of obesity in childcare settings should be multicomponent and offer tailored support incorporating behaviour change techniques to improve the diet and physical activity levels of the parents, carers and children. They should be sustained, rather than one-off events and include interactive activities such as group discussions and cookery sessions and provide practical ideas for active play in safe local facilities.

**School aged children**

NICE guidance 43 recommends that lifestyle weight management programmes for children should be multi-component, family based and adopt a multi-agency approach. They should be based on local need identified through JSNA and NCMP data and engage the local community. The core components of the programme should be physical activity, healthy eating, behaviour change, positive parenting skills and family role modelling.

Evidence demonstrates that childhood weight management interventions that utilise the school environment show the most promising results. Incorporating healthy eating and body image into the curriculum showed positive results, alongside increased physical activity sessions. A whole school approach should be encouraged with environments and cultural practices that support healthy eating and physical activity. Parental support is needed to encourage children to eat nutritious food, be physically active and to have less screen time at home.

Physical activity interventions alone, particularly for primary school aged girls may help prevent children becoming overweight in the short term, however combined diet and physical activity school-based interventions may help prevent obesity in children in the long term.

PHE 2017 recommends that children’s tier 2 weight management programmes should be group based where possible to ensure participants benefit from peer support. Programme components should focus on interactive and practical sessions to support families to develop confidence and learn in a fun and engaging environment. Weight management programmes for primary school aged children should differ in design to those aimed at young people and include behaviour change techniques to support...

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80 Cochrane Systematic Review (2016) *Improving the implementation of healthy eating, physical activity and/or obesity prevention policies, practices or programmes in childcare services.*
81 NICE (2006) CG43: *Obesity prevention*
83 Brown (2009) *Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity: an update to the obesity guidance produced by the National Institute for Health and Clinical Excellence* [https://www.researchgate.net/profile/C_Summerbell/publication/23143459_Systematic_Review_of_SchoolBased_Interventions_that_Focus_on_Changing_Dietary_Intake_and_Physical_Activity_Levels_to_Prevent_Childhood_Obesity_An_Updat e_to_the_Obesity_Guidance_Produced_by_the_Nation/links/0c960523c16485be4d000000.pdf] [accessed on 17/11/2017]
families embed lifestyle changes. Programmes should consider maintaining low level support as an exit strategy and consider a phased exit84.

A review of the critical features of successful tier 2 weight management programmes for children aged 0-11 showed there were three key features that supported the development of skills, confidence and resilience considered necessary for successful weight management. The three features were showing families how to change rather than telling them what to change through practical sessions, ensuring the whole family are on board rather than just the participating child, and enabling social support through group sessions specifically for parents and children from peers85.

Services and Activity

Whole population prevention activity

Cornwall Council is striving to tackle the obesogenic environment in CIOS with teams across Well-being and Public Health, Economic Growth and Development, and Neighbourhoods and Public Protection beginning to work together in a more integrated way across a range of interventions.

Partners in planning teams are looking to combine healthy weight issues into the current review of The Design Guide and the forthcoming local plan review. The transport team are delivering a new dedicated infrastructure for walking and cycling as well as supporting active travel in schools, workplaces and communities. Trading Standards and Environmental Health teams deliver healthy food advice alongside labelling and food safety discussions with food businesses. The public health team is developing Sugar Smart Cornwall to reduce sugar consumption and is looking to restrict the proliferation of fast food outlets around schools.

Physical activity is a key component in improving the health at both an individual and population level. The vision of the Cornwall Physical Activity Strategy is that everybody in CIOS is active as part of daily life, regardless of age, gender, culture or circumstances. The target is for 50,000 more people in CIOS to be more physically active as part of daily life by 2020.

There is a range of services and opportunities for adults, young people and children for physical activity including commercial and local authority sport and leisure centres, GP referral schemes, a network of walking and cycling trails and hubs, bicycle hire, a walking for health programme, Bikeability for children and adult cycle training. Active

85 Sutcliffe K, Burchett H, Rees R, Melendez-Torres GJ, Stansfield C, Thomas J (2016), What are the critical features of successful Tier 2 lifestyle weight management programmes for children aged 0-11 years? A systematic review to identify the programme characteristics, and combinations of characteristics, that are associated with successful outcomes. London: EPPI Centre, Social Science Research Unit, Institute of Education, University College London.
travel maps are available for most key towns to provide sustainable travel information including walking, cycling and public transport information together in one place.

The Food and Cornwall Programme was set up in 2013 by local social enterprises, charities, and food activists working with local health and well-being, economic and nature partnerships and Cornwall Council with support from the DoH and LGA. Priority areas include improving food access and developing longer term food security plans for Cornwall. The group continues to flourish in 2017 and is now called Kernow Food Collective.

**Adult services**

The Health Promotion Service delivers the Cornwall Healthy Weight programmes.

Tier 1 services include:

- Cookery programmes for specific groups
- Swimming for health programmes
- Online weight management programmes
- Healthy eating and weight management sessions in the workplace
- A walking rugby programme for men
- Weekly weigh-in sessions in GP surgeries and community venues

Healthy Weight Adults is a tier 2 healthy lifestyle programme, incorporating nutrition advice, physical activity and behaviour change. The programmes are delivered over a 12 week period, in 6 localities in Cornwall every quarter. Some evening sessions are delivered, however this does depend on staff capacity in some areas. 82% of the referrals in 2016-17 were self-referrals, and only 9% were from GPs or practice nurses, suggesting further work is required to promote these weight management programmes to primary care. 26 programmes were delivered during 2016-17:

- 479 people were enrolled on the active intervention
- 43% were between 45-64 years of age
- 38% were ≥65 years of age
- 17% were ≤44 years old
- 80% were female

A total of 419 people started on the active intervention during 2016-17. 292 people (69.7%) completed:

- 88% of participants lost weight at the end of the active intervention
- 78.4% of completers lost a minimum of 5% of their baseline body weight
- 3.4% of completers lost a minimum of 10% of their baseline body weight
- 16.8% of completers provided a weight measure at 6 months
- 4.1% of completers provided a weight measure at 12 months

A recent review of the Cornwall Healthy Weight data for 2012-16 showed that people who completed the programme tended to be healthier, older, and were more likely to be
from deprivation quintiles 1-3 than 4 or 5. The programme did not produce any statistically significant improvements in weight status in the long term, however improvements in data collection and other ways of evaluating the programme to include changes in diet or physical activity were recommended.

Commercial providers also deliver lifestyle weight management programmes across Cornwall. Slimming World offer weekly sessions at 61 sites (65 sessions in total) and have a good spread across Cornwall, with opportunities to attend in the daytime or evening. Weight Watchers offer weekly sessions at 23 sites across Cornwall (28 sessions in total) during the daytime and evenings. Average attendance at meetings is around 30 participants each meeting.

Living Well Taking Control has been commissioned to deliver the National NHS Diabetes Prevention Programme (NDPP) Healthier You across Cornwall86. The programme is available to adults diagnosed with pre-diabetes and is delivered for 13 weeks over a 12 month period. Participants are supported to lose weight and learn how to prevent the development of type 2 diabetes.

The Dietetics service at Royal Cornwall Hospital Trust (RCHT) sees approximately 8 new overweight or obese patients per month in general clinics for weight management advice. The majority of patients are referred onto Cornwall Healthy Weight programmes at tier 2.

There is a limited specialist community weight management service at tier 3 for adults in Cornwall that are not on the surgical (bariatric) pathway. The current service offers complex obesity support assessment exclusively for those eligible, and choosing bariatric surgery for weight loss. Adults with severe and often complex obesity are currently being referred to the tier 2 weight management programmes, however these programmes do not offer the specialist dietary advice or psychological support that is often required at this level of obesity.

The specialist obesity tier 4 service is delivered by RCHT for adults with severe or complex obesity. It is a multidisciplinary service that includes bariatric assessment, psychological and dietetic support and a physical activity review. Patients are referred to the tier 2 Cornwall Healthy Weight Programmes for support to lose weight before surgery. 368 referrals were received in 2015/16, and approximately 180 received bariatric surgery that year.

There currently is not a healthy weight pathway for adults in CIOS, and some tier 1 and 2 interventions are delivered on a rather ad-hoc basis. There is there is a clear need to develop and promote an integrated pathway of care that includes prevention, self-management and treatment of obesity to ensure people receive the right treatment for their needs. A full review of the current programmes and evaluation framework, including community consultation, is recommended to accurately determine if current service provision for adult healthy weight at tiers 1-3 is meeting local need, services are cost effective, and not under or over intervening across the care pathway.

86 http://www.lwtcsupport.co.uk/ [accessed on 17/11/2017]
**Maternal health service**

An automatic referral to the Health Promotion Service by midwives was implemented in 2017 for pregnant woman who are obese (BMI $\geq 30\text{kg/m}^2$). The service also accepts referrals for pregnant women who are overweight (BMI 26-29kg/m$^2$). Women are offered tailored support and advice around healthier food choices and physical activity over the phone and via online services. 375 referrals were received in 2016-2017 and 228 healthy weight information packs were sent out following the brief advice. The dietetic service at RCHT supports pregnant women with complex or severe obesity, although less than 10 women are seen per year. The specialist midwives support women with gestational diabetes.

Following birth, once the woman has had her 6-8 week check with the GP the individual is then signposted to the tier 2 Cornwall Healthy Weight adult weight management programmes or sign-posted to commercial providers. Currently there is no postnatal specific weight management programme or formalised referral pathway to lifestyle services.

Women are first introduced to breastfeeding and peer support whilst pregnant through attendance at the antenatal education programme ‘Bump to Baby’. All the maternity and health visiting services and children centres are accredited against the Unicef baby friendly guidelines which promote breast feeding, consistency of advice and for those who chose not to breast feed, a consistent approach for response led feeding. The breastfeeding rates in Cornwall at initiation are between 75–80% and at 6-8 weeks between 48-51%.

**Children’s services**

Healthy Early Years (HEY) is an accreditation scheme that offers good practice guidance for early years settings. HEY promotes embedding a whole setting ethos, centred on optimum health and wellbeing which helps children achieve the five national outcomes of Every Child Matters$^{87}$. HEY also supports staff to increase their knowledge and awareness of children’s health needs, and to improve their own health by modelling good practice.

The Nippers’ Nutrition programme aims to support early year’s settings in Cornwall to ensure their provision of food and drink provision is nutritious and safe to eat. The programme is currently under revision and due for relaunch autumn 2017.

There is currently no tier 2 weight management programmes for children aged 4-7 years in Cornwall. Every child is weighed and measured as part of a growth check by a health visitor at age 2 and young children can be identified as overweight or obese at the NCMP reception age measurement. Both these checks offer the opportunity for early intervention which currently isn’t being fully utilised.

Lifestyle, Eating and Activities for Families (LEAF) is a tier 3 weight management programme delivered by RCHT for children aged 0-6; it is for children under the age of

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two with significant weight concerns and children over two years old with a BMI of >3.33sd. It is led by a multidisciplinary team consisting of dietitians, paediatricians and physical activity specialists that work with families in both a clinical and a home setting. LEAF accepted 23 referrals in 2016-17; 23 started and 18 completed. 8 one off support sessions were completed. 5 referrals were not accepted as they were outside of the age criteria.

Healthy Weight 7-13 is a family focussed tier 2, multi-component lifestyle weight management programme, delivered by the health promotion service, which includes healthy eating, behaviour change and physical activity. The programme is delivered weekly over a 12 week period, usually within a school setting, outside of school time. 8 programmes were delivered during 2016-17; 75 children started and 46 (61.3%) completed. 17.3% reduced their BMI Z-Score, although there was insufficient data to accurately measure other primary outcomes.

One to one support is available for young people (aged 14-17) and includes 7 sessions delivered over a 12 week period. The advice is tailored to the needs and focus of the participants. 126 young people started 24 completed (19%) in 2016/17.

Referral numbers to children’s weight management programmes slightly increased from 2015-16 to 2016-17, but appeared to lack in quality, with a number of families reporting not being aware of the referral, getting upset about the referral, or not ready to change. Recruitment is a challenge and once booked onto the programmes retention and completion rates are variable. Further work is required to promote and engage young people with the service.

There is currently no tier 3 weight management service for children aged between 7-17 years in Cornwall. Children in the highest percentile of BMI (≥98th centile) are referred to the tier 2 programmes but they are often unsuitable for their needs, which often results in poor attendance or drop out. These families may be better suited to a personalised, family specific intervention that includes psychological support at tier 3. The British Obesity & Metabolic Surgery Society commissioning guide for tier 3 services recommends that at least one tier 3 specialist children’s weight assessment and management clinic should be established in all regional centres serving a population of approximately 1 million children88.

The provision of weight management for children is sporadic across the localities in Cornwall and dependant on referrals rather than utilising local data to target interventions. The evaluation measures, quality of data collection and quality control needs to be improved for effective evaluation of the programmes. A full review of the children’s weight management programmes is recommended, including consultation with healthcare professionals and the community to further understand behaviour determinants and needs.

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