

Clinical Guideline for the Management of Children and Young People who are Overweight and Obese

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Purpose

This guideline is intended to help clinicians manage children and young people who are identified as being overweight or obese, and includes the following;

- How to calculate the BMI and what this means
- Local weight management programmes and how to access them
- Important considerations in the history and examination
- Comorbidity Screening
- When to consider a referral to other specialities

Intended Audience

This guideline is relevant to clinicians who see children and young people in outpatient clinics or as inpatients. Most children and young people will be attending for reasons other than their weight so in many cases this will be an opportunistic finding after height and weight measurements are recorded.

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Appendix 1 – Public Health England “Let’s Talk about Weight”

Appendix 2 – Startwell Information

Appendix 3 – Live Lighter Information

Appendix 4 – SHINE information

Appendix 5 – CMO Physical Activity guidelines under 5 years

Appendix 6 – CMO Physical Activity guidelines over 5 years

Introduction

Prevalence of obesity

Public Health England data for Sheffield, 2019/2020, reports that 12.8% of Reception children are overweight and 11.2% are obese or severely obese. In Year 6, 13.3% are overweight and 22.4% are obese or severely obese.¹

It can therefore be expected that a significant proportion of the children and young people accessing services at Sheffield Children's NHS Foundation Trust (SC(NHS)FT) will be overweight or obese.

The impact of childhood obesity is vast. For many, if childhood obesity is left unaddressed, the psychosocial and physical co-morbidities will last into adulthood when associated morbidity is high and life expectancy is reduced. Those most socially deprived and those with learning disability are the most adversely affected.^{2,3}

Summary of Management (A-G)

A. Identify BMI centile and category, following routine height and weight management				
< 2 nd	2 nd - 91 st	>91 st – 98 th	98 th -99.6 th	>99.6 th
Under weight	Healthy weight	Overweight	Obese	Severe Obesity
B. Communicate BMI centile to patient and family and include BMI and discussion in the clinic letter				
C. Discuss healthy lifestyle (Healthy Eating and Physical Activity) and signpost to resources.				
		D. Consider the impact of raised BMI, including the needs for drug-dosing adjustment (trust guideline link)		
		E. Refer to weight management services		
				F. Clinical assessment, including comorbidity screen
				G. Consider need for referral to other specialist services

A. Identification of children and young people with a raised BMI

Body Mass Index (BMI) is the most appropriate measure of obesity in children, it has limitations and can overestimate in tall lean children, but it is the most reliable measure in routine practice.

All patients attending outpatients and inpatients at SC(NHS)FT should have their height and weight measured and recorded on eDMS growth charts. The Body Mass Index (BMI) is automatically calculated and plotted on the BMI centile chart.

Causes of obesity

For most children and young people, food and drink choices, and physical activity are the key contributors to their weight. Data for England shows that fewer than half of children and young people are taking part in the recommended daily physical activity⁴ and the average sugar consumption of 4–10-year-olds is more than double the daily recommended limit.⁵

B. Communicating BMI category to patients and their families

If it is children or young people are found to be overweight or living obesity this should be discussed sensitively. It can be useful to show the BMI chart as a visual aid.

Children who have already taken part in the National Child Measurement Programme (NCMP) in Reception and Year 6 will have received a letter about their weight and this could be a useful way to open the discussion and assess readiness for lifestyle change.

PHE have produced a step-by-step guide to conversations about weight management with children and families. The one-page summary can be found in Appendix 1 and the following link provides a more detailed document. <https://www.gov.uk/government/publications/child-weight-management-short-conversations-with-patients>

C. Healthy lifestyle discussion and promotion

Eating Habits

Ask about eating and drinking habits and consider the following areas to focus on as areas for change:

- Sugary foods (sugary cereals and snacks)
- Drinks (fizzy drinks, but also fruit juices, squashes and sugary hot drinks)
- Portion size
- Snacking behaviour
- Take away (e.g. pizza, fish and chips, burger and chips)

Healthy eating information can be found through the NHS website and change4life (including apps to download which provide information about sugar content and ideas for physical activities for families. <https://www.nhs.uk/live-well/healthy-weight/overweight-children-advice-for-parents/>)

Physical Activity (Active movement)

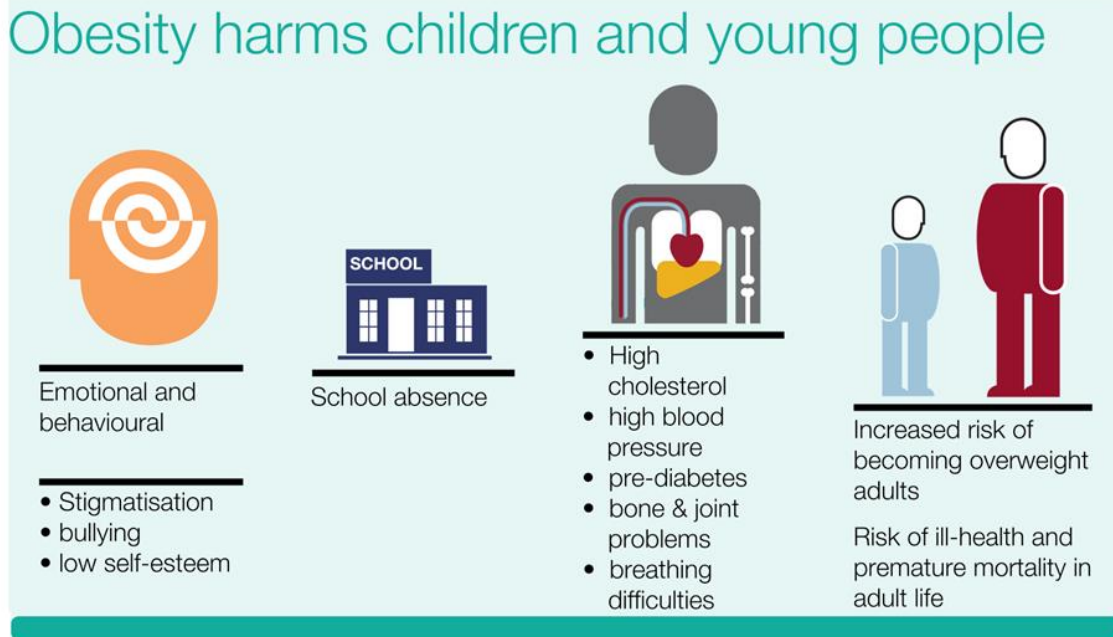
It is recommended that school aged children are physically active for 60 minutes a day. Ask about levels of physical activity and sedentary behaviours. Discuss the importance of physical activity and describe the physical and mental health benefits. PHE infographics [Physical activity for under 5s](#), [Physical Activity for 5-18 yrs](#)

Moving medicine (www.movingmedicine.ac.uk) outlines conversations to aid discussing movement in children and young people with obesity.

D. The Impact of Childhood Obesity



Public Health
England



Ask about the impact of Obesity, considering the following areas;

- Psychological
 - Low mood
 - Emotional and behaviour difficulties
 - Low self-esteem
 - Bullying
 - Poor school attendance and performance
 - Reduced involvement in social activities
- Physical
 - Exercise tolerance
 - Joint pain
 - Backache
 - Sleep difficulties
 - Breathing difficulties

Identifying the impact can help to focus the discussion on shared goals and act as an incentive for children and young people to make healthy changes.

E. Further management of children and young people who are Overweight and Obese

All children who are overweight or obese should be referred to one of the locally available lifestyle weight management programmes.

Lifestyle and Weight Management Programmes

Table 1: Services available in Sheffield and Rotherham (updated September 2021)

<p>Under 5 years</p>	<p>Startwell Sheffield (Sheffield City Council) (Appendix 2) Takes place at Children's centres across the city. Any family with a child under the age of 5 is eligible. 5x 2.5hr sessions and includes a free resource pack</p> <p>Information is available from local children's centre, or by phone 0114 273 5733, e-mail, startwell@sheffield.gov.uk, website www.sheffield.gov.uk/startwell or on facebook @startwell sheffield</p>
<p>5-17 years</p>	<p>Live Lighter Sheffield (Sheffield City Council) (Appendix 3) 12-week course, 1.5 hours a week covering nutrition and physical activity. After school and Saturday morning sessions available. Whole family are invited to sessions, but teenagers can go to Tier 2 adult services independently if preferred. Any child over the 91st centile is eligible including families where English is a second language (Interpreters are provided)</p> <p>Information is available by phone 0114 2702043 or e-mail Live.lighter@nhs.net or website www.livelightersheffield.com or on Facebook</p> <p>Courses run in Shirecliffe Community Centre, S5, Springs Academy, S2, The Old Rectory, Handsworth S13, Zest Centre, Uppertorpe, S6, Phillimore School, S9</p>
<p>10-17 years</p>	<p>Shine Health Academy (Charity run) (Appendix 4) 12-week course for families runs with school terms. Other programmes are available. Supports children with additional needs and caters for dietary requirements. All young people over the 99.6th centile are eligible, including those with medical conditions and other additional needs.</p> <p>Information, phone 07837 858801, e-mail debs@shinehealthacademy.org.uk, website www.shinehealthacademy.org.uk 300 Prince of Wales Road, S2 1FF</p>
<p>Rotherham 4-19 years</p>	<p>WHAM (weight health and attitude management) Weight management through 1-1 family support</p> <p>WHAM Tel: 01709 423214 e-mail: rg-h-tr.whamrotherham@nhs.net</p>

F. Clinical assessment for co-morbidities

The presence of comorbidities tends to be rare in pre-pubertal children. NICE guideline (CG189) suggests that assessment of comorbidities should be considered with a BMI at or above the 98th centile.⁶

Biochemical screening might not always need to be completed at the first consultation, particularly if it is felt that focussing on investigations will detract from the importance of changing modifiable lifestyle factors to optimise weight. If the patient is undergoing general anaesthetic or having blood investigations it is likely to be most appropriate to do the biochemical screening investigation at the same time.

Table 2: Comorbidity screen recommendations⁷

Clinical History	<ul style="list-style-type: none"> • Early onset of rapid weight gain in infancy with severe obesity under 2 years and hyperphagia with learning disability are indicators of syndromic or monogenic cause of obesity (consider genetic and/or endocrine referral) • History of disturbed sleep, pauses in breathing at night, daytime sleepiness and loud snoring with gasping or snorting can indicate sleep disordered breathing (consider obstructive sleep apnoea and referral to respiratory) • Family history of familial dyslipidaemia (history of early ischaemic heart disease or stroke in family members)
Examination	<ul style="list-style-type: none"> • Blood Pressure (repeated measurement with an appropriate cuff which covers 2/3 of the length of the arm with the inflatable bladder covering at least 80% of the arm circumference) plotted on a centile chart. There are centile charts in the trust hypertension guideline http://staff/documents/3-clinical-guidelines/2060-blood-pressure-and-hypertension and page 12 contains a table with BP screening values, based on 90th centile for age and sex. • Dysmorphic features (can indicate syndromic obesity) • Presence of acanthosis nigricans (indicator of insulin resistance and type 2 diabetes) • Short stature (height outside of potential genetic range) can indicate underlying genetic cause of obesity (consider genetic and/or endocrine referral). Genetic height potential can be calculated as follows; <ul style="list-style-type: none"> ○ male, mothers height (cm) +13 cm and add to fathers height (cm) and divide by 2.

	<ul style="list-style-type: none"> ○ female, father's height (cm) -13 cm and add to mothers height (cm) and divide by 2.
<p>Biochemical blood screen (0.5ml yellow 2-3ml orange)</p>	<ul style="list-style-type: none"> ● Fasting Insulin and Glucose (>6 hours of fasting, therefore usually pre-breakfast) HOMA (homeostatic model assessment) is a measure of insulin resistance = [fasting insulin (mU/L) x fasting glucose (mmol/L)]/22.5. At Sheffield Children's the insulin will be reported in picomol/L and can be converted to mU/L by dividing by 6. If HOMA>4.5 it can indicate long term risk of type 2 diabetes, this should be taken into consideration as part of the clinical assessment.⁸ If the HOMA score is substantially raised discuss with the Endocrine Team. ● Liver Function Tests Non-alcoholic fatty liver disease (NAFLD) is common. ALT > twice the upper limit of normal is suggestive of fatty liver but ALT can also be normal. Deranged LFTs are likely to improve with weight loss and this is the first line management, if LFTs are consistently elevated over a 3-6m period or rise despite weight loss consider a Liver USS (hyper-echogenic areas in NAFLD) and discussion with the Liver Team. ● Fasting Lipid Profile Raised triglycerides and cholesterol may be present and typically respond to weight loss. ● Thyroid Function tests Hyperthyrotropinaemia (mildly elevated TSH [<10.0] with a normal peripheral thyroid hormone level) is common in obesity and should improve with weight loss. It does not usually need treatment in the absence of a suggestion of autoimmune thyroid disease (no goitre on examination, or evidence of thyroid autoimmunity (negative thyroid antibodies) ● Vitamin D Vitamin D is fat soluble and therefore often low in obesity, supplementation is recommended for all children and young people regardless of weight.

G. Management and referral to other specialties and services

Most children and young people with obesity will not need referral to other specialties, and will be managed in primary care and general paediatrics. If there are concerns about the presence of comorbidities associated with obesity then these should be discussed with the relevant teams.

It is important to include information about overweight and obesity in correspondence to the GP so support and relevant management can be followed up and continued in primary care. All Sheffield GP practices have a link-worker for social-prescribing. The link-worker can provide information and support to access non-pharmaceutical lifestyle interventions. Sheffield Futures <https://www.sheffieldfutures.org.uk/> manage all the social prescribing for over 13-year-olds in Sheffield and provide practical support to young people to access weight management programmes and physical activity opportunities.

Hypertension

Hypertension (HTN): SBP and/or DBP greater or equal to the 95th percentile for age, sex and height on three or more occasions over days to weeks depending on clinical circumstances. The classification of hypertension and the subsequent management is outlined in the trust guideline for Hypertension. <http://staff/documents/3-clinical-guidelines/2060-blood-pressure-and-hypertension> See page 12 for cut-offs and definitions.

Hypertension is more likely to have a secondary cause in pre-pubertal children and the key to diagnosing hypertension is correct measurement, which requires using the correct sized cuff; (2/3 arm length) with the inflatable bladder 80 – 100 % of the arm circumference.

Obstructive Sleep Apnoea

Obesity is known to be a significant risk factor for developing obstructive sleep apnoea (OSA). The following questions may be helpful to screen for the presence of OSA and inform a referral to the Respiratory team.

- Loud snoring? This may be continuous or crescendo and associated with gasping or snorting. Does it occur all night or in clusters? OSA is likely to be worse in REM.
- Witnessed apnoeas? When and for how long?
- Positional? Worsening of symptoms on lying down are indicative of obstruction.
- Morning headache? Presence of a headache in the morning can be a feature of hypercapnia as a consequence of obstructive sleep apnoea.
- Daytime Sleepiness? This can indicate inadequate night time sleep, especially if there has been an appropriate sleep time.
- Restlessness night and sweatiness in sleep can also be associated with OSA.

Primary or Secondary Endocrine Pathology

Rarely, obesity has an underlying endocrine cause. Concerns about a genetic or syndromic cause of obesity on clinical assessment can be discussed with the endocrine team.

Type 2 diabetes is a complication of obesity, if this is suspected (examination findings of acanthosis) then an oral Glucose Tolerance Test should be undertaken.

If the result of the oral glucose tolerance test is >11 mmol/L then a diagnosis of diabetes has been made and a referral should be made to the diabetes team.

If the result of the oral glucose tolerance test is between 7.9 mmol/L and 11.0 mmol/L this shows Impaired Glucose Tolerance and these patients can be discussed with the endocrine team (rather than the diabetes team).

In very rare cases of patients with severe obesity, drug treatment or bariatric surgery will be considered and referral to the endocrine team will be required, this should be after engagement with weight management services.

Non-alcoholic Fatty Liver Disease (NAFLD)

NAFLD is considered to affect around 1/3 of children and young people living with obesity. It is associated with extra-hepatic morbidity and in adulthood is associated with cirrhosis and hepatocellular carcinoma. The treatment of NAFLD is through healthy eating and

weight loss.⁹ If LFTs are consistently elevated over a 3-6m period or rise despite weight loss consider a Liver USS (hyper-echogenic areas in NAFLD) and discussion with the Liver Team.

Safeguarding and Childhood obesity

If during the management of obesity emerging safeguarding concerns are identified, consider discussion with the health-visitor or school nurse (Trust 0-19 service) and referral to MAST (Multi-Agency Support Team) by completing an Early Help Assessment form <https://www.sheffield.gov.uk/home/social-care/early-help-assessment>

If concerns persist discuss with the safeguarding team.

If at any time you feel that the child or young person is suffering from neglect or abuse then discuss with the safeguarding team and be prepared to make a referral to children's social care for further assessment.

In 2010 *Russell Viner et al*¹⁰ published a framework to help identify safeguarding concerns. This framework is summarised and presented in the table below.

Table 3: Childhood obesity and safeguarding: Framework for practice

Childhood obesity alone is not a child protection issue	<ul style="list-style-type: none"> • Talk to the child or young person alone if possible • The aetiology of obesity is too complex to reach the threshold for concern in isolation.
Failure to reduce weight alone is not a child protection issue	<ul style="list-style-type: none"> • Outcomes for weight management programs are mixed • Healthcare professionals are yet to find the optimal method to manage obesity • Weight loss is multifactorial, if families are engaging this should be supported
Consistent failure to change lifestyle and engage with support can indicate neglect	<ul style="list-style-type: none"> • Consider this when parents behave in a way that promotes weight loss failure • Failure to engage with professionals and support • Failure to attend health appointments • Particularly concerning in the presence of co-morbidities
Obesity may be part of wider concerns about neglect or emotional abuse	<ul style="list-style-type: none"> • Poor school attendance • Exposure to violence • Neglect • Poor hygiene • Parental mental health difficulties • Emotional or behavioural difficulties (aggressive, tearful)

Assessment should include systemic (family and environmental) factors	<ul style="list-style-type: none"> • Obesogenic environment • Predisposing – parental weight and eating behaviours • Precipitating – food availability, safe outside spaces for exercise • Perpetuating – family understanding, ability to access healthy foods and exercise
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Drug Dose Adjustment in Obesity

Sheffield Children's Trust guideline on drug adjustment in obesity can be found on the trust intranet and accessed via this link [Drug dose adjustments in obese patients.](#)

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