Clinical Guideline

Secondary Care Management of Obesity in Children and Young People

Dr Scott Williamson, Consultant Paediatrician, NHS Ayrshire & Arran
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NOTE
This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.
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Purpose of Guideline

➤  Guidance for the management of obesity in children and young people
   <16yrs who have been referred to secondary care paediatrics in Scotland.

➤  Who should use this document:
  o Paediatricians, Paediatric Endocrinologists – this guideline is not intended for
    use in primary care.
  o For primary care, please refer to SIGN guideline 115, and consider referral to
    local child healthy weight initiative.

Patients to whom this document applies:
Obese children and young people <16yrs who have been referred to secondary care.

Definitions

Obesity is defined in SIGN 115 – Management of Obesity (1) and OSCA consensus statement
(2) as follows:

  Overweight:  BMI >91st centile of UK 1990 ref chart.
  Obesity:   BMI > 98th centile
  Severe obesity:  BMI > 99.6th centile
  Extreme Obesity:  BMI 3.5 Standard Deviations or more above the mean for
                   age (See Ref 3 for use of SDS)
Who should be referred to secondary care? (Appendix 1)

Most obese children will not require assessment and/or investigation in secondary care.

Although obesity in childhood is associated with an increased risk of developing Type 2 diabetes, features of the metabolic syndrome and cardiovascular disease, very few obese children will have diagnosable underlying disorders (e.g. endocrinopathies). Rather more will have current consequential health issues.

The 2012 OSCA consensus statement outlines which children should be referred to Secondary Care (2):

A. Extreme obesity (BMI greater than 3.5 SDs above mean). Those extremely obese should be referred regardless of additional risk factors.

B. Obesity ≥98th centile: Only those with:

1. Suspicion of Secondary or genetic causes of obesity.

Short stature for parental growth potential is an important marker of a potential endocrine or genetic syndrome, as obese children are almost always tall for age. The presence of any significant dysmorphisms or associated learning difficulties should precipitate a referral to secondary care.

2. Obesity with significant comorbidities or high-risk of comorbidities.

NICE guidance recommends that professionals ‘consider referral to a specialist if the child has significant comorbidity or complex needs …’ The authors recommend that children with BMI ≥ 98th centile are assessed in secondary care if the child or family are seeking help and the child has one or more risk factors for either possible underlying pathology or future morbidity. (Appendix 1) Note that there should be a higher index of suspicion to investigate and refer children and young people from black or South Asian ethnicities, because of increased metabolic risk.

Overweight and obese children who do not have these additional concerns (vast majority) may be referred directly from primary care to their regional/local Child Healthy Weight Programme. Details of this can be obtained from the local public health or paediatric department.

Secondary Care Management of Childhood Obesity

(Appendix 1 for summary, from OSCA consensus statement (2))

Purpose of Secondary Care Involvement in Childhood Obesity

1. To diagnose pathological causes of obesity (secondary obesity).

2. To manage morbidity associated with obesity (co-morbidities).

Advice about treatment of primary obesity, without significant co-morbidities is not covered in this document. Please refer to the SIGN or NICE guidance (1,4)
History and examination

History should establish:

- Age of onset of obesity.
- History suggesting obesity-associated morbidities e.g. benign intracranial hypertension, sleep apnoea, obesity hypoventilation syndrome, orthopaedic problems and psychological morbidity.
- Any learning difficulties – may be associated with syndrome e.g. Prader-Willi Syndrome.
- Symptoms of diabetes - polyuria/polydipsia.
- Symptoms of obstructive sleep apnoea- snoring, restless, daytime tiredness.
- In post-pubertal girls – symptoms of PCOS (Polycystic Ovarian Syndrome) including oligo/amenorrhoea persisting 2 years post menarche, hirsutism. (N.B. occasionally PCOS can present as primary amenorrhoea).
- Lifestyle issues leading to obesity: diet, inactivity
- Willingness to change lifestyle.

Examination should include:

- Assessment of growth and development.
- Measure both parents if possible: Is the child short for their parents? – children with nutritional/simple obesity are usually tall whereas short stature and obesity may indicate an endocrinopathy.
- Calculation of BMI.
  The Growth Charts found in the app below are useful for the calculation of BMI Z scores:
  
  ![Apple](image)
  ![Android](image)
- Description of presence of dysmorphic features- obesity syndromes, e.g. Prader-Willi Syndrome (PWS), Bardet-Biedl Syndrome.
- Blood pressure measurement.
- Presence of striae, plethora or other signs which may suggest Cushing’s syndrome, although the presence of striae alone does not suggest Cushing’s syndrome.
- Height velocity is also important in Cushing’s Syndrome as these children grow poorly. School photographs to compare appearance may also be helpful.
- Acanthosis Nigricans - *darkened, thickened patches of skin in the armpit and around the groin and neck, indicating insulin resistance.*
Note that whilst Acanthosis Nigricans is indicative of insulin resistance and indicates an increased risk of developing Type 2 diabetes, there are no investigations which will indicate when that might occur and no currently recommended interventions other than to moderate diet, behaviour and exercise. Marked Acanthosis Nigricans which appears out of proportion to the degree of obesity may be a sign of a very rare insulin resistance syndrome – in these circumstances we suggest discussion with an endocrinologist.

Investigations
Before considering Investigations:
A clear history and examination will rule out a pathological cause for obesity in the vast majority of obese children and will rule out the need for any further investigations.

Initial investigations may include:
- TSH, FT4
- LFT – Abnormal in Non- Alcoholic fatty liver disease (NAFLD)
  Fasting glucose
- Lipids
- HbA1c

If there are any symptoms of diabetes:
Consider Oral Glucose Tolerance Testing (N.B OGTT is not useful for the assessment of insulin resistance), although HbA1C and fasting glucose may preclude this.

If the child is not symptomatic, the benefits of investigation for insulin resistance are unproven (See also SPEG DFT handbook).

Unusual features (e.g. very early onset / learning difficulties)
If early onset obesity/learning difficulties, CGH array (Comparative Genomic Hybridisation - has now replaced karyotyping for developmental delay investigations). This may be useful as first line and then consider GOOS (Genetics of Obesity Study) (http://www.goos.org.uk) www.ukgtn.nhs.uk Consider also Prader-Willi syndrome.

An obesity gene panel is now available on the NHS. You can discuss this or be directed through your local clinical genetics service.

Suspicious of Cushing’s (growth failure, striae, cushingoid, buffalo hump)?
This is an extremely rare diagnosis in childhood so if you are considering this, please discuss with your local or regional paediatric endocrinologist. Note: most severely obese children have striae, and children with Cushing’s disease do not present with striae and obesity alone

Other rare causes to consider
Pseudohypoparathyroidism, short stature and short metacarpals.
Other co-morbidities
Consider sleep study if obstructive sleep apnoea suspected
Blood pressure monitoring if hypertensive
If symptoms suggestive of PCOS consider measurement of LH, FSH, Oestradiol, Testosterone, androgens, pelvic USS and discuss with endocrinology.

Treatment
Unless a specific cause for the obesity is identified, the best current management advice remains lifestyle modification (diet and exercise) (1, 3).

Refer to local Child Healthy Weight Programme
Pharmacological treatment
Drug treatment is not recommended for children younger than 12 years. Orlistat is the only recommended treatment for obesity in young people >12yrs, but may only be used in exceptional circumstances, if severe co-morbidities are present (1, 3).

Follow up
If no specific co-morbidity requiring follow up is isolated, the child can be discharged from secondary care with advice.

Other Resources and References
Child Healthy Weight Programme
Every health board in Scotland has a child healthy weight programme, set up to achieve HEAT 3 – to achieve completion targets for child healthy weight interventions. Children can readily access these by either self-referral or clinician referral. Information should be available in local clinics. If not, contact the local public health department.

Resources
www.ukgtn.nhs.uk

Growth Charts – calculation of BMI Z scores:

[Apple link]
[Android link]

Health Scotland have produced a number of resources for parents and health professionals regarding healthy weight. They can be found here:
http://www.healthscotland.com/topics/child_healthy_weight.aspx
References


Appendix 1. From OSCA consensus statement (ref 2)

OSCA PATHWAY FOR THE ASSESSMENT FOR OBESE CHILDREN

PRIMARY CARE ASSESSMENT

BMI >98th centile
and seeking help
Or Evidence that the child’s health
is affected by their
obesity (e.g. asthma, mobility)

LIFESTYLE MANAGEMENT IN PRIMARY
CARE OR COMMUNITY

REFER TO SECONDARY CARE IF:
There is a possibility of secondary obesity
• Short stature for genetic potential/poor growth
• Dysmorphisms (see Table 1)
• Learning difficulties
• A likelihood of comorbidity:
  • Hypertension
  • Symptoms of sleep apnoea
  • Acanthosis nigricans
  • Evidence of PCOS
  • Psychological morbidities
  • Child safeguarding concerns
• Biochemical evidence of impaired glucose tolerance;
dyslipidaemia, liver dysfunction
• Family hx in close relatives: type 2 diabetes before 40
  years or cardiovascular diseases before 60 years

SECONDARY CARE ASSESSMENT

History
• Lifestyle assessment
• Menstrual history
• Sleep symptoms: snoring, difficulty breathing,
morning headaches, fatigue
• Symptoms of comorbidity
• Drug use
• Family history
• Examination
• Height, weight, BMI
• Obesity pattern: generalised, abdominal, buffalo hump
• Blood pressure
• Puberty assessment
• Acanthosis nigricans
• Signs of endocrinopathy
• Dysmorphisms (see Table 1)

Investigations
• Urinalysis
• Thyroid function
• Fasting glucose and insulin
• Fasting lipids (total and HDL-cholesterol, triglycerides)
• Liver function including ALT

REFER TO PAEDIATRIC OBESITY/ ENDOCRINOLOGY OR OTHER SPECIALIST SERVICE
IF FURTHER INVESTIGATION IS REQUIRED:

For endocrinology
• Genetic studies
• Thyroid studies (T3, thyroid antibodies, PCOS studies (LH, FSH, adrenal
calcium, phosphate)
• Cushing syndrome investigations

For comorbidities
• Oral glucose tolerance test
• PCOS studies (LH, FSH, adrenal
androgens, SHBG, prolactin, pelvic ultrasound)
• Sleep study