Scottish Paediatric Endocrine Group

Secondary Care Management of Obesity in Children and Young People

NOTE

This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined based on 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.

Contents

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:

- Paediatricians, Paediatric Endocrinologists – this guideline is not intended for use in primary care.
- 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 reference 3 for use of SDS)

Who should be referred to secondary care?

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 (Appendix 1):

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  Android

- Users of iGrow can also get Z score of BMI when measurements are plotted.
- 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)

Severe obesity WITHOUT developmental delay
If a child has early onset severe obesity (BMI > +3.5 SDS prior to 5th birthday) and NO global developmental delay, autism or dysmorphic features, then they are a candidate for single gene obesity panel testing
Request form for 'Severe Early Onset Obesity panel' can be found here:
https://www.nhstayside.scot.nhs.uk/OurServicesA-Z/Genetics/PROD_295543/index.htm

Severe obesity AND developmental delay
If there is both severe obesity AND developmental delay, autism spectrum disorder or dysmorphic features, they are not a candidate for single gene panel testing but instead should have a CGH array and Prader-Willi screening (if typical features present)
Consider also referring to clinical genetics if these tests are negative and/or there is strong clinical suspicion of a specific genetic condition.

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

National Genomic Test Directory

Growth Charts – calculation of BMI Z scores:


Apple


Android

Health Scotland has produced a number of resources for parents and health professionals regarding healthy weight. They can be found here:

Diet and healthy weight

References

1. Scottish Intercollegiate Guidelines Network. Management of Obesity - SIGN Guideline
115. 2010.
2. Viner RM, White B, Barrett T, et al Assessment of childhood obesity in secondary care: OSCA consensus statement. Archives of Disease in Childhood - Education and Practice. 06/2012; 97(3):98-105
3. National Institute for Health and Clinical Excellence (2006), CG043: Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children
4. Levy-Marchal C, et al. (2010): Insulin Resistance in Children: Consensus, Perspective, and Future Directions. J Clin Endocrinol Metab: 95;1589-98. doi: 10.1210/jc.2010-1047.

Appendix 1. From OSCA consensus statement[2]