

# Treating childhood obesity through lifestyle change interventions

## **A briefing paper for commissioners**

November 2009

## Introduction

This briefing paper aims to support commissioners by providing a brief guide to current best available evidence on effective treatment interventions for children and young people who are overweight or obese. For the purpose of this paper 'effective' is defined as interventions that can demonstrate positive lifestyle changes that can help children and young people to achieve a healthy weight. A parallel paper is available on effective **prevention** interventions.

The paper is concerned with services available for the treatment of obesity among children and young people (aged 2-18 years old) with a focus on diet, physical activity, or both in combination, and covers a range of approaches, including interventions conducted with individuals on a one-to-one basis or in groups, and in clinical or community settings. It refers to any service that explicitly sets out to reduce body weight or prevent further weight gain among children and young people who are currently defined as obese or at risk of becoming obese. Medical interventions such as surgery and medications, or wider environmental interventions such as changes to the built environment are not included.

This paper has been commissioned to support: *Healthy Weight, Healthy Lives: One Year On*,<sup>1</sup> theme three: effective services for those at risk; and should be used in conjunction with *Healthy Weight, Healthy Lives: Child weight management programme and training providers framework*<sup>2</sup> and *Healthy Weight, Healthy Lives: Commissioning weight management services for children and young people*.<sup>3</sup> The evidence presented has been extracted from national guidance documents and systematic reviews.

## Background

Latest data from the 2007/08 National Child Measurement Programme (NCMP) have shown that in England, 13.0% of 4-5 year olds, and 14.3% of 10-11 year olds are overweight.<sup>a</sup> In addition, 9.6% of 4-5 year olds, and 18.3% of 10-11 years are obese.<sup>b,4</sup> From 2008/09, Primary Care Trusts have been asked to start routinely feeding back NCMP results to parents<sup>5</sup> (although this is not yet mandatory). This process has placed additional emphasis on the need to commission appropriate interventions to support those children who have been identified as overweight or obese.<sup>c</sup>

The Foresight report<sup>6</sup> referred to obesity as a "complex web of societal and biological factors that have, in recent decades, exposed our inherent human vulnerability to weight gain". The report presented an obesity system map with energy balance at its centre. Around this, over 100 variables directly or indirectly influence energy balance, which can

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<sup>a</sup> Overweight is defined using the population monitoring definitions of a BMI between the 85<sup>th</sup> and 94<sup>th</sup> centile of the UK1990 Growth Reference (UK90).

<sup>b</sup> Obesity is defined using the population monitoring definition of a BMI  $\geq 95^{\text{th}}$  centile of the UK90 Growth Reference.

<sup>c</sup> For routine feedback clinical definitions of overweight are used: defining overweight as a BMI of between the 91<sup>st</sup> and 97<sup>th</sup> centile and obesity (referred to as 'very overweight' in the parental letters) is defined as BMI  $\geq 98^{\text{th}}$  centile, using the UK90 Growth Reference.

be broadly categorised into biology, food consumption and environment, physical activity and activity environment, individual psychology and societal influences.

The most recent, rigorous, and systematic reviews of the evidence for tackling childhood obesity have been undertaken by the National Institute for Health and Clinical Excellence (NICE)<sup>7,8</sup> and the Cochrane Collaboration.<sup>9</sup> The data from these reviews have been extracted for this paper and are shown in Appendices 1 and 2.

The Cochrane review focuses solely on high quality data from Randomised Controlled Trials (RCTs). NICE reviews acknowledge that a strict focus only on RCTs may produce insufficient evidence of effectiveness, and in many cases may be inappropriate for the types of interventions being considered. Evidence from NICE is therefore extracted from a variety of sources, with the evidence weighted according to its quality.

The recommendations from both sources show that there is sufficient evidence to justify well-targeted action on obesity. The evidence base tends to lack detail on the effectiveness of specific approaches or individual programmes, with the result that guidance tends to be somewhat general in nature. For example, both evidence reviews identify a huge variation in study design, and a general lack of evidence from: UK studies; vulnerable and minority groups; standard service settings; studies with long (more than one year) follow up; and studies that include robust cost effectiveness data.

As it is essential that we continue to tackle childhood obesity, this paper has been produced to provide a summary of best available evidence upon which to commission new interventions. The National Obesity Observatory (NOO) recommends that all new programmes, for which evidence of effectiveness does not already exist, are thoroughly evaluated to ensure the gaps identified by NICE and Cochrane are filled, resulting in a stronger evidence base, and improvements to future commissioning. Guidance on evaluation is available in the NOO Standard Evaluation Framework.

## Commissioning overview

Given the prevalence of obesity and seriousness of associated co-morbidities, commissioning of child weight management services should be given a high priority. It is important for commissioners to be aware of the multifaceted nature of obesity and the challenges of defining effective interventions. It may, for example, be difficult to demonstrate the effectiveness of a specific intervention within a short timescale given the complex interplay of different environmental, biological and social determinants. Although this may result in small changes at individual level the public health impacts at population level may be significant.

The following therefore provides a summary of the current best available evidence, and should be used as a foundation for the commissioning of new interventions.

### **NICE and Cochrane evidence:<sup>7,9</sup>**

#### ***Intervention content:***

- Programmes should be multi-component interventions, ideally addressing diet and physical activity together, as previous studies have shown that interventions that target both activity and diet together, rather than in isolation, are likely to be more effective. The emphasis should be on encouraging positive changes in behaviour that can be maintained over the long term. It may be beneficial if the components of the intervention are marketed in a way that is tailored to known behaviours of the target population.
- Programmes should involve family and peer support where possible, using behavioural programmes aimed at changing diet and physical activity patterns. Previous studies have shown that interventions involving parents, carers, siblings or peers with similar weight issues, could prove more successful than those that target individuals alone. Parents or carers should be encouraged to take responsibility for lifestyle changes in overweight and obese children and young people. The programmes should be age appropriate, accounting appropriately for the level of maturity of the child and acknowledging the differing preferences of child and adolescent populations. Most of the evidence in this field is from school-age children so in some cases may not apply directly to very young children.
- Programmes should consider the influence of age, sex, socio-economic status and ethnicity. Interventions should be tailored to the target population; different approaches will be required for different populations. New programmes should be developed in consultation with the target population wherever possible.
- Programmes should be based on a strong theoretical framework, with clear underpinning logic models.<sup>d</sup>

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<sup>d</sup> A logic model sets out the way a project is predicted to progress and the processes of change that might take place. Discussing and agreeing a logic model is a critical stage in a project's development because it reveals what needs to be measured at each stage of the project (see section 2.8 SEF [www.noo.org.uk/sef](http://www.noo.org.uk/sef)).

- Programmes should have a positive emphasis on managing a healthy lifestyle, rather than tackling obesity. Interventions that are marketed as treatments for obesity can be perceived as stigmatising.

### **Outcome measures:**

- Goals should be set that are achievable and sustainable over the longer term. Maintaining a healthy weight is a life-long target therefore it is important that interventions encourage behaviour changes that are likely to be sustained in the long term.
- All programmes should assess long term outcome measures (at least one year; preferably longer). This is important in order to assess sustainability of the programme outcomes, particularly given that much of the current evidence is based on findings from short term studies (under one year: with the majority of studies lasting just 12 weeks). However it is still important to assess some short-term indicators in order to assess progress within commissioning timetables.
- Because children are still growing it is not possible to recommend a suitable effect size (i.e. how much weight loss can be expected from an effective intervention). The success of interventions targeting children should be assessed in the context of the target population. Indeed some interventions may aim to support children and young people to 'grow into their weight' (which may of course involve maintaining their weight over time as they grow taller) rather than lose weight. It is therefore important to examine changes in measures such as BMI centile or z score<sup>e</sup> rather than just focusing on weight loss per se. It is also important to look at any changes in the context of quality of life and behaviour change indicators.
- All programmes should evaluate cost effectiveness and sustainability. Currently there is insufficient evidence to compare the cost effectiveness of different programmes. Economic impact analyses remain difficult to calculate due to a lack of robust data on the long term health and service implications of childhood obesity and overweight. However where other co-morbidities have been identified, these should be included in any economic analysis where possible. Tools to estimate the local prevalence of, and costs associated with, obesity can be found in section D of Healthy Weight, Healthy Lives: a toolkit of developing local strategies.<sup>8</sup>

### **Additional NOO recommendations:**

- All programmes should be thoroughly evaluated. Good quality evaluations will strengthen the evidence base and support effective commissioning in the future. The Department of Health recommends that interventions are evaluated using the NOO Standard Evaluation Framework for weight management interventions: [www.noo.org.uk/sef](http://www.noo.org.uk/sef)

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<sup>e</sup> A BMI z score or Standard Deviation score indicates how far a child's score is above or below the mean BMI value for their age group and sex, expressed in terms of the number of standard deviations from the mean.

- Programmes should align with government messages such as '5 A DAY' and the recommendation for 60 minutes of daily moderate-vigorous activity among children.
- Programmes should aim to be enjoyable, engaging and easy for the target audience to access.
- Given the limited robust effectiveness data currently available, it may be beneficial, where financially viable, to examine innovative approaches and programmes, as long as these are based on a clear theoretical framework, and are well evaluated.

A series of case studies that support these recommendations is being compiled on the National Obesity Observatory website. If you would like more information or to submit a case study please contact: [info@noo.org.uk](mailto:info@noo.org.uk)

## References

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8. Healthy Weight, Healthy Lives: A toolkit for developing local strategies (2008) London: Department of Health
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Links to all listed references can be found on: [www.noo.org.uk/resources](http://www.noo.org.uk/resources)

## Appendix 1

### Summary of evidence from NICE (2006)<sup>8</sup> - Treatment of childhood Obesity

Full evidence summaries are also available in *Healthy Weight, Healthy Lives: A toolkit for developing local strategies*.<sup>9</sup>

- NICE found a lack of evidence on the effectiveness of intervention in children and young people, particularly from the UK.
- Interventions for childhood overweight and obesity should address lifestyle within the family and in social settings.
- Some evidence suggested home-based interventions may be more effective.
- It is unclear whether efficacy varies with age, gender, ethnicity, social status or previous weight loss attempts.
- The influence of the source of delivery (e.g. health professional, school staff etc.) is as yet unclear.
- There is no clear evidence on the effectiveness of physical activity alone, or which dietary intervention is most effective in children and young people.
- High quality systematic reviews demonstrated that in specialist weight management programmes: diet and physical activity combined are more effective than diet alone; targeting sedentary behaviour may be as effective as promoting physical activity; lifestyle exercise e.g. walking to school, could be more effective than structured exercise sessions. This evidence also demonstrated that behavioural treatment combined with diet and/or exercise can provide an effective treatment, although it is unclear as to which behavioural therapy is the most effective.
- High quality systematic reviews also reported that specialist weight management programmes can: improve fitness levels if physical activity is a component; can improve eating behaviour and dietary quality if diet and physical activity is included; have a positive effect on dietary quality and improve self control and self esteem if behavioural treatment is included; if run as in-patient programmes, with cognitive behaviour therapy can improve quality of life over time. Evidence on the impact upon cholesterol and triglycerides and blood pressure was conflicting.
- Referral to an appropriate specialist should be considered for children and young people who are overweight or obese, and who have significant co-morbidities or complex needs (for example, learning or educational difficulties).

## Appendix 2

### Cochrane treatment recommendations (2009)<sup>9</sup>

- The review identified 64 RCTs, 12 of which focused on lifestyle interventions around physical activity and sedentary behaviour, 6 examined diet and 36 behaviour modification. Ten studies also examined drug intervention, but are not applicable to this paper.
- There were not enough data to recommend one treatment programme over another, although the review was able to demonstrate that combined behavioural lifestyle interventions compared to standard care or self help can produce a significant and clinically meaningful reduction in overweight in children and adolescents. Such lifestyle programmes can reduce the level of overweight in child and adolescent obesity 6 and 12 months after the beginning of the programme.
- Further evidence is required around psychosocial determinants of behaviour change, cost effectiveness and strategies to improve clinician-family interaction.

## Reader Information

<b>Title</b>	Treating childhood obesity through lifestyle change interventions. A briefing paper for commissioners
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<b>Publication date</b>	November 2009
<b>Target audience</b>	Obesity service / intervention commissioners Obesity/ physical activity/ nutrition professionals in: central government; regional government; local authorities; Primary Care Trusts; Strategic Health Authorities. Public Health Observatories Obesity and related academics
<b>Description</b>	This paper aims to support commissioners by summarising best available evidence on effective treatment interventions for children and young people who are overweight or obese. A parallel paper is available on effective <i>prevention</i> interventions.
<b>How to cite</b>	Ells LJ, Cavill N. Treating childhood obesity through lifestyle change interventions. A briefing paper for commissioners. Oxford: National Obesity Observatory, 2009
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