CONTENTS

Appendix 1

Scope of work

NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

Scope of work (from original scope)

1 Guidance title

Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children.

1.1 Short title

Obesity

2 Background

a) The National Institute for Clinical Excellence ('NICE' or 'the Institute') has commissioned the National Collaborating Centre for Primary Care (NCC–PC) to work with the Health Development Agency (HDA) and develop guidance, for use in the NHS in England and Wales, on the prevention, identification, assessment, treatment and weight management of overweight and obesity in adults and children. This follows referral of the topic by the Department of Health and Welsh Assembly Government (see Annex). The guidance will provide recommendations for good practice that are based on the best available evidence of effectiveness, including cost effectiveness. The term 'guidance', rather than 'guideline' is used to reflect the broad nature of the task. The guidance has two key components. First, a guideline providing recommendations on the clinical management of overweight and obesity in the NHS will be developed through the NICE guideline development process. Second, advice on the prevention of overweight and obesity will be issued and will apply in both NHS and non-NHS settings.

b) The joint Institute and HDA guidance will support the implementation of National Service Frameworks (NSFs) (including those for Coronary Heart Disease, Diabetes, and the NHS Cancer Plan) in those aspects of care and prevention where a Framework has been published. The statements in each NSF reflect the evidence that was used at the time the Framework was prepared. The guidelines and technology appraisals published by the Institute after an NSF has been issued will update the Framework. The guidance will also support the implementation of the Priorities and Planning Framework 2003–6 and the new General Practitioner (GP) contract.

3 The need for the guidance

a) Obesity and overweight (pre-obese) are conditions in which weight gain has reached the point where it poses significant risks to health. Obesity is more than a lifestyle disorder. It may be considered as a disease and a risk factor for other diseases (for example, type 2 diabetes). In adults, the body mass index (BMI) is frequently used as a measure of overweight and obesity, with overweight being defined as a BMI 25-29.9 and obesity as a BMI $\geq$ 30. Epidemiological surveys of England indicate that the prevalence of overweight and obesity in adults has nearly trebled during the last 20 years. In 1980, 8% of adult women and 6% of adult men were classified as obese; by 2002 this had increased to 23% of women and 22% of men, with a further 43% of men and 34% of women being overweight. Therefore, around two-thirds of men and women, almost 24 million adults, were either overweight or obese in 2002. The Welsh Health Survey, undertaken in 1998, found that 1 in 6 adults

in Wales were obese (nearly 15% of men and 17% of women). Compared with 1985 levels, obesity in Wales had doubled among men and increased by half among women by 1998. The prevalence of obesity differs according to age, socio-economic group and ethnic group. The National Audit Office (NAO) (2001) found that obesity:

- increases with age
- is more prevalent among lower socio-economic and lower income groups, with a particularly strong social class gradient among women
- is more prevalent among certain ethnic groups, particularly among African-Caribbean and Pakistani women (from Joint Health Surveys Unit, 2001)
- is a problem across all regions in England but shows some important regional variations.

In children, the prevalence of obesity is also rising. In England in 2002, over 16% of boys and girls aged 2–15 years were obese compared with 10% of males and around 12% of females in 1995 (defined as a BMI above the 95th percentile) (Health Survey for England [HSE] 2002). Around a further 14% of males and females were estimated to be overweight (defined as a BMI between the 85th and 95th percentiles) compared with around 13% of males and females in 1995. There are inequalities in the prevalence of obesity. The HSE (2002) found that obesity was more common in children, particularly girls, from lower social groups and the National Diet and Nutrition Survey (NDNS) (1997) of young people found that obesity was more common among Asian groups and children living in Wales.

Obesity occurs as a result of consuming more calories than are expended for daily energy needs. In adults, obesity is associated with an increased risk of diseases that are a major cause of morbidity and mortality, notably type 2 diabetes, coronary heart disease, hypertension, many cancers and osteoarthritis. In children and teenagers, the associated morbidities include hypertension, hyperinsulinaemia, dyslipidaemia, type 2 diabetes, psychosocial dysfunction, and exacerbation of existing conditions such as asthma. However, the persistence of obesity into adulthood is the most important concern; the risk of persistence increases with increasing age of the child and severity of obesity.

Obesity imposes a considerable economic burden. The National Audit Office (NAO) (2001), estimated that in 1998 obesity directly cost the NHS at least £0.5 billion, while the indirect cost of obesity on the wider economy was around £2 billion a year.

b) There is evidence of variability in the management of overweight and obese people in the NHS. The NAO (2001) identified no central guidance on management of obesity and, at local level, only 28% of Health Authorities had taken action to address obesity as a health problem. It was also noted that primary care played an important role in the management of obesity but that GPs and practice nurses used a wide range of different methods to manage overweight and obese patients and many were uncertain as to which interventions were most effective. The NAO also highlighted the need for joint working with different agencies to facilitate cross-government initiatives to prevent obesity at both national and local level and the need to consider the broader environment in terms of its potential to support behavioural change. As the key representative for health within Local Strategic Partnerships,

Primary Care Trusts (PCTs) in England and Local Health Boards in Wales have a role to play which goes beyond the clinical setting and extends into the wider community through work in schools, workplaces and neighbourhoods.

c) National guidance is needed on the prevention of obesity and the identification, evaluation, and management of overweight and obese adults and children. The NAO (2001) noted that most general practices surveyed said they would find a national guideline for overweight and obesity useful. The reasons for needing guidance in this area are:
   - the rising prevalence of obesity and attendant rise in prevalence of diseases associated with obesity
   - the evidence of wide variations in care provided to adults and children with obesity, notably in primary care, and
   - the evidence that certain interventions can prevent excess weight gain, overweight and obesity .

4 The guidance

a) The guideline development process is described in detail in two booklets that are available from the NICE website (see 'Further information'). *The Guideline Development Process – An Overview for Stakeholders, the Public and the NHS* describes how organisations can become involved in the development of a guideline. *Guideline Development Methods – Information for National Collaborating Centres and Guideline Developers* provides advice on the technical aspects of guideline development.

b) This document is the scope. It defines exactly what this guidance will (and will not) examine, and what the guidance developers will consider. The scope is based on the referral from the Department of Health and Welsh Assembly Government (see Annex).

c) The areas that will be addressed by the guidance are described in the following sections.

4.1 Population

4.1.1 Groups that will be covered

a) This guideline will cover adults and children aged 2 years or older in following two categories: overweight or obese. This includes adults and children with established comorbidities, and those with or without risk factors for other medical conditions.
   The following special groups will be considered, where there is good evidence of effectiveness of interventions targeted at these groups:
   - Black and minority ethnic groups
   - lower socio-economic groups
   - vulnerable groups, including older people and women of child-bearing age.

b) Currently a healthy weight (defined as being neither obese nor overweight), in order to support them in maintaining a healthy weight.

4.1.2 Groups that will not be covered

a) Children aged less than 2 years.

b) The medical management of related medical conditions. However, links will be made to other appropriate NICE guidance, such as that for type 2 diabetes and eating disorders.

4.2 Healthcare settings

a) The guidance will cover the care provided by NHS healthcare professionals working with overweight and obese adults and children in primary, secondary and, where appropriate, tertiary care (Specialised Morbid Obesity Services). The guidance will address areas that require collaboration between primary, secondary and tertiary care.
b) The HDA has a remit to work with a wide range of organisations and agencies – not just in the NHS but within national and local government, the voluntary and academic sectors and the private sector.

4.3 Areas that will be covered

The guidance will cover the following areas:

4.3.1 Clinical management of overweight and obesity in adults and children aged 2 years or older

a) The identification of overweight and obesity in adults and children in primary and secondary care. This will include advice on the following,
    i. The best way to discuss weight in the clinical setting.
    ii. The role of BMI and waist circumference as a method of measuring overweight and obesity, including an appropriate definition of overweight and obesity.
    iii. The role of serial measurements of height and weight in the clinical setting.
b) The assessment of overweight and obesity in adults and children in primary and secondary care. This will include advice on the following.
    i. Assessment of any weight-related comorbidities (for example, diabetes, coronary heart disease), including the adult's or child's clinical need to lose weight.
    ii. Assessment of risk factors strongly associated with overweight and obesity.
    iii. Determining the adult's or child's readiness and motivation to try to lose weight.
    iv. Consideration of lifestyle factors that are likely to explain why energy imbalance has occurred, including weight control history, usual dietary habits and physical activity levels.
c) The management of overweight and obesity in adults and children in primary and secondary care. This will include advice on the following.
    i. How practitioners should develop goals and treatment strategies with the adult or child with overweight or obesity (and their parent/family as appropriate). This will include, as appropriate, the goal of weight maintenance as well as weight loss.
    ii. The role of non-pharmacological interventions. Where there is good evidence of effectiveness, the following interventions will be considered:

- dietary advice including the role of low-fat, low-carbohydrate and very low-energy diets, the role of meal replacements and the role of 'slimming clubs'
- physical activity
- psychological therapies
- professionally organised alternative therapies[1]

iii The role of pharmacological interventions. This will be limited to orlistat and sibutramine. These are currently the only anti-obesity drugs listed in the *British National Formulary* and available on prescription. The guidance will update the current NICE technology appraisals for these agents and when the guidance has been published the technology appraisals will be withdrawn.

- National Institute for Clinical Excellence (2001). *Guidance on the Use of Orlistat for the Treatment of Obesity in Adults*
- National Institute for Clinical Excellence (2001). *Guidance on the Use of Sibutramine for the Treatment of Obesity in Adults*

Note that guidance recommendations will fall within licensed indications: exceptionally, and only where clearly supported by evidence, can use outside a licensed indication be recommended. The guidance will assume that prescribers will use the Summary of Product Characteristics to inform their decisions for individual patients.

d) Morbid obesity in adults (BMI > 40) and children will be discussed in sufficient detail to inform primary and secondary care practitioners on best practice for referral to tertiary care (Specialised Morbid Obesity Services) and to identify key aspects of care for people with morbid obesity in tertiary centres. The following aspects of care will be considered.

i. The identification of morbid obesity in adults and children in primary and secondary care.

ii The criteria that should be used to determine when adults and children with morbid obesity should be referred to tertiary care.

iii. The assessment of morbid obesity in adults and children in tertiary care, including a health risk assessment based on presence of comorbidities.

iv. The management of morbid obesity in adults and children in tertiary care, including the role of an integral management approach aimed at weight loss and weight maintenance. The role of surgical treatment of morbid obesity will be addressed. The guidance will update the NICE technology appraisal on the use of surgery; when the guidance has been published the technology appraisal will be withdrawn.

- National Institute for Clinical Excellence (2002). *Guidance on the Use of Surgery to Aid Weight Reduction for People with Morbid Obesity*

4.3.2 The prevention of overweight and obesity in adults and children aged 2 years or older, who are currently of a healthy weight

a) The role of primary prevention approaches intended to support adults and children in maintaining a healthy weight. These approaches will be aimed mainly outside the clinical setting and will include advice on the following.

i. Raising awareness of what constitutes a healthy weight range and the need to stay within such a range.
ii. Identifying adults and children who should participate in prevention programmes based on their risk factors for obesity and readiness and opportunities to change their behaviour.
ii. Maintaining energy balance in adults and children of a healthy weight through a healthy diet and physical activity.
iv. Developing local strategies to prevent obesity and support weight maintenance in adults and children of a healthy weight. These will focus on multi-faceted interventions including:
    - community-based services including those to which individuals are referred from primary care services
    - broader environmental interventions in the community
    - interventions in workplaces
    - interventions in schools
    - interventions targeted at children aged 2–5 years
    - interventions targeted at black and minority ethnic groups, at vulnerable groups and at individuals at vulnerable life stages.

4.4 Areas that will not be covered

The guidance will not cover the following areas of clinical practice.

a) Population-based screening programmes for overweight or obesity.
b) Complementary therapy approaches to the treatment of overweight and obesity that are not included in the definition of 'professionally organised alternative therapies'.
c) Eating disorders, including binge-eating disorder.
d) In adults and children, the prevention or management of comorbidities (for example, type 2 diabetes) associated with overweight or obesity.
e) In children, the diagnosis and management of childhood syndromes (for example, Prader–Willi syndrome) or childhood diseases (for example, hypothyroidism) that lead to obesity.
f) In terms of prevention of overweight and obesity, the guidance will contribute to the evidence base leading to subsequent recommendations in national Government or European policies, including fiscal policy, food labelling policy and food advertising and promotion. The guidance is intended to support local practice whereas national or 'upstream' action will be addressed in the context of wider work such as the forthcoming Food and Health Action Plan.

4.5 Status

4.5.1 Scope

This is the final version of the scope.

4.5.2 Guidance

The development of the guidance recommendations will begin in September 2004.

[1] These are defined as: acupuncture, chiropractic, herbal medicine, homeopathy and osteopathy (House of Lords, 2000).

5 Further information

Information on the guideline development process is provided in:

- *The Guideline Development Process – An overview for Stakeholders, the Public and the NHS*

- *Guideline Development Methods – Information for National Collaborating Centres and Guideline Developers*

These booklets are available as PDF files from the NICE website (www.nice.org.uk). Information on the progress of the guideline will also be available from the website.

Annex – Referral from the Department of Health and Welsh Assembly Government

The Department of Health and Welsh Assembly Government asked the Institute:
"In consultation with the Health Development Agency, to prepare clinical guidance for the NHS in England and Wales for the prevention of obesity and for the identification, evaluation, and management of overweight and obese patients including the maintenance of weight loss. The guidance should:

- promote the best use of available NHS resources including workforce
- include a definition of obesity, standards for identification and evaluation, and guidance on effective methods of management and treatment, in primary care and other appropriate settings
- give appropriate emphasis to exercise, dietary approaches, group and individual behaviour modification, and to the scope for collaborative working between the NHS and other agencies
- make links to other appropriate NICE guidance."

Appendix 2

Questions and parameters

Key questions: public health

Raising awareness of what constitutes a healthy weight range and the need to stay within such a range

What is the effectiveness of public health interventions and the media to increase awareness of importance of staying a healthy weight?

What is the effectiveness of public health interventions and the media to increase awareness of behaviours associated with maintenance of a healthy weight (diet and activity)?

How can interventions best engage population/target groups?

Is an increase in awareness translated into action?

Sub-questions:

- Does the impact vary by gender, age, ethnicity, religious practices or social group.
- Is the source of delivery important?
- Is the mode of delivery important?
- Is there any negative impact?

Identifying adults and children who should participate in prevention programmes based on their risk factors for obesity and readiness and opportunities to change their behaviour

What is the effectiveness of public health interventions to identify individuals who would benefit from participation in prevention/public health interventions to manage weight?

What are the existing UK and non-UK guidelines/recommendation in relation to identifying individuals who would benefit from participation in prevention/public health interventions to manage weight?

Sub-questions:

- Does effectiveness vary by gender, age, ethnicity, religious practices or social group?
- What is the most effective source of delivery?
- What is the most effective mode of delivery?
- To what extent are public health interventions effective in identifying individuals for referral to/from primary care (clinical or non clinical setting)?
- Is there any negative impact?

Maintaining energy balance in adults and children of a healthy weight through a healthy diet and physical activity

What are the factors helping individuals to maintain energy balance/prevent overweight and obesity?

What are the factors helping individuals to increase their activity levels to an extent which will help maintain energy balance/prevent overweight and obesity?

What are the factors helping individuals to improve their diet in such a way to help maintain energy balance/prevent overweight and obesity?

Consideration of the above should be given for 'at risk' groups.
Sub-questions:

- Does this vary by gender, age, ethnicity, religious practices or social group?
- Do factors vary whether individuals previously lost weight?
- How is impact sustained?
- Is there any negative impact? (i.e. consider the flip side of healthy eating/physical activity health promotion messages – increased parental control and anxiety over eating/ link with eating disorders/parents displacing their own concerns over eating to their children)
- What was helpful/unhelpful?

Community-based services including those to which individuals are referred from primary care services

What is the effectiveness of interventions through community based public health services in terms of helping individuals/populations maintain a healthy weight/prevent overweight or obesity?
What is the effectiveness of interventions through community-based public health services in terms of helping individuals/populations improve behaviours associated with maintenance of a healthy weight (diet and activity)?

What strategies are effective in engaging a broad range of organisations and encouraging partnerships?
Sub-questions:

- Does effectiveness vary by gender, age, ethnicity, religious practices or social group?
- Do recommendations vary whether individuals have previously lost weight?
- Is the source of delivery important?
- Is the mode of delivery important?
- Is there any negative impact?
- What strategies are effective in engaging a broad range of organisations and encouraging partnerships?

Broader environmental interventions in the community

What is the effectiveness of broader environmental interventions in terms of helping individuals/populations maintain a healthy weight/prevent overweight or obesity?
What is the effectiveness of broader environmental interventions in terms of helping individuals/populations improve behaviours associated with maintenance of a healthy weight (diet and activity)?
What strategies are effective in engaging a broad range of organisations and encouraging partnerships?
Sub-questions:

- Does effectiveness vary by gender, age, ethnicity, religious practices or social group?
- Do recommendations vary whether individuals have previously lost weight?
- Is the source of delivery important?
- Is the mode of delivery important?
- Is there any negative impact?
- What strategies are effective in engaging a broad range of organisations and encouraging partnerships?

Interventions in workplaces

What is the effectiveness of workplace interventions in terms of helping individuals/populations to maintain a healthy weight/prevent overweight or obesity?
What is the effectiveness of workplace interventions in terms of helping individuals/populations improving behaviours associated with maintenance of a healthy weight (diet and activity)?
What strategies are effective in attracting workplaces to invest in the health and activity of their workforce?
Sub-questions:

- Does effectiveness vary by gender, age, ethnicity, religious practices or social group?
- Do recommendations vary whether individuals have previously lost weight?
- Is the source of delivery important?
- Is the mode of delivery important?
- Is there any negative impact?
- What strategies are effective in engaging a broad range of organisations and encouraging partnerships?

Interventions in schools

What is the effectiveness of school interventions in terms of helping individuals/populations maintain a healthy weight/prevent overweight or obesity?
What is the effectiveness of school interventions in terms of helping individuals/populations to improve behaviours associated with maintenance of a healthy weight (diet and activity)?
What strategies are effective in engaging schools to undertake interventions?
What are the essential elements of a 'whole schools approach'?
Sub-questions:

- Does effectiveness vary by gender, age, ethnicity, religious practices or social group?
- Do recommendations vary whether individuals have previously lost weight?
- Is the source of delivery important?

- Is the mode of delivery important?
- Is there any negative impact?
- What strategies are effective in engaging a broad range of organisations and encouraging partnerships?

Interventions targeted at children aged 2–5 years

What is the effectiveness of interventions targeted at 2–5-year-olds, and their families/carers, in terms of helping children maintain a healthy weight/preventing overweight or obesity?

What is the effectiveness of interventions targeted at 2–5-year-olds, and their families/carers, in terms of helping children to improve behaviours associated with maintenance of a healthy weight (diet and activity)?

What strategies (identified in 8.1 or 8.2) are most effective in terms of participation and retention and which factors contribute to this success?

Sub-questions:

- Does effectiveness vary by gender, age, ethnicity, religious practices or social group?
- Do recommendations vary whether individuals have previously lost weight?
- Is the source of delivery important?
- Is the mode of delivery important?
- Is there any negative impact?
- What strategies are effective in engaging a broad range of organisations and encouraging partnerships?

Interventions targeted at black and minority ethnic groups, at vulnerable groups and at individuals at vulnerable life-stages

What is the effectiveness of interventions to help vulnerable groups maintain a healthy weight/prevent overweight or obesity?

What is the effectiveness of interventions to help vulnerable groups improve behaviours associated with maintenance of a healthy weight (diet and activity)?

What strategies (identified in 9.1 or 9.2) are most effective in terms of participation and retention and which factors contribute to this success?

Sub-questions:

- Does effectiveness vary by gender, age, ethnicity, religious practices or social group?
- Do recommendations vary whether individuals have previously lost weight?
- Is the source of delivery important?
- Is the mode of delivery important?
- Is there any negative impact?

- What strategies are effective in engaging a broad range of organisations and encouraging partnerships?

Interventions to manage overweight and obesity in non-clinical settings

What is the effectiveness of interventions in non-clinical settings (i.e. community-based and including commercial and self management) to help manage overweight or obesity?

What is the effectiveness of interventions in non-clinical settings (i.e. community-based and including commercial and self management) to help overweight and obese groups improve behaviours (diet and activity) associated with weight loss?

What non-clinical (i.e. community-based) strategies are associated with the maintenance of weight loss and continuation of improved behaviours (diet and activity) among overweight and obese individuals?

Additional questions on exercise referral in children

- What is the effectiveness of exercise referral programmes for children to help manage overweight or obesity?
- What is the effectiveness of exercise referral programmes for children to help increase physical activity to an extent that may aid the management of overweight and obesity?

General sub-questions:

- Does effectiveness vary by gender, age, ethnicity, religious practices or social group?
- Do recommendations vary whether individuals have previously lost weight?
- Is the source of delivery important?
- Is the mode of delivery important?
- Is there any negative impact?
- Does cost have an impact on effectiveness? (e.g. cost of attending slimming group compared with free group)
- What strategies are effective in engaging a broad range of organisations and encouraging partnerships?

Key questions: clinical management

NOTE: not all the ***Key clinical questions (KCQs)*** appear as individual reviews in the full guidance as some were used as background papers for the GuidelineDevelopment Group (GDG) and some were addressed using expert opinion of the GDG and co-optees. These questions are clearly identified in the Notes section of the table.

NEED TO CONSIDER 'WHAT EFFECT WILL THIS HAVE IN PRACTICE' – ELABORATE ON CARE PATHWAY i.e. How will the questions and their answers (therefore recommendations) help the HCP ***(Health care professional***)saying 'But what should I do?'				
	Adult	Child	Inclusion/exclusion	Notes
Identification				
1.1.1	What classifications of overweight and obesity should be used for body mass index (BMI), waist circumference or bioimpedance?	What classifications of overweight and obesity should be used for BMI, waist circumference, or bioimpedance? Which charts should be used for BMI?	Classification as specified in Key References.[2] Classification from recognised authorities and organisations including the World Health Organization (WHO), Department of Health (DoH) Expert reviews	STATUS: done
1.1.2	How do BMI, waist circumference and bioimpedance correlate with morbidity and mortality?	How do BMI, waist circumference and bioimpedance correlate with morbidity and mortality?	Systematic reviews and expert narrative reviews	STATUS: not KCQ. Background information.
1.1.3	Do BMI, waist circumference and bioimpedance correlate with morbidity and mortality in different ethnic groups?	Do BMI, waist circumference and bioimpedance correlate with morbidity and mortality in different ethnic groups?	Systematic reviews Primary studies carried out in the UK Primary studies carried out in the country of origin	STATUS: done

NEED TO CONSIDER 'WHAT EFFECT WILL THIS HAVE IN PRACTICE' – ELABORATE ON CARE PATHWAY i.e. How will the questions and their answers (therefore recommendations) help the HCP ***(Health care professional***)saying 'But what should I do?'				
	Adult	Child	Inclusion/exclusion	Notes
1.2.1	What test(s) in addition to BMI should be used to assess the degree of obesity?	What test(s) in addition to BMI should be used to assess the degree of obesity? And are different test(s) appropriate for different ages/lifestage? Should measurements of other family members, including siblings, parents be considered?	Systematic reviews Primary studies	STATUS: done
1.3.1	Is there evidence that 'opportunistic identification' of people who are overweight/obese leads to improved health outcomes?	Is there evidence that 'opportunistic identification' of people who are overweight/obese leads to improved health outcomes?		STATUS: done
1.3.2	What standards of equipment (e.g. type of scales) and methods (e.g. how to measure waist) should be used?	What standards of equipment (e.g. type of scales) and methods (e.g. how to measure waist) should be used?	Defined standards Expert opinion	STATUS: not evidence based KCQ.
Initial assessment				
2.1.1	What are the common weight-related comorbidities and how do they impact on the health of the individual, both now and in the future?	What are the common weight-related comorbidities and how do they impact on the health of the individual, both as a child and in the future as an adult?	Systematic reviews or expert narrative reviews	STATUS: background information
2.1.2	What factors should be considered in the *initial clinical assessment* of people who are overweight/obese?	What factors should be considered in the *initial clinical assessment* of children who are overweight/obese?	Systematic reviews or expert narrative reviews Supplemented by pragmatic randomised controlled trials (RCTs)	STATUS: done

[2] Key references are: National Health and Medical Research Council (NHMRC) guidelines (adult and child), National Institutes of Health (NIH) guidelines (adult), and Scottish Intercollegiate Guidelines Network (SIGN) guidelines (child) and other World Health Organization (WHO) expert papers.

NEED TO CONSIDER 'WHAT EFFECT WILL THIS HAVE IN PRACTICE' – ELABORATE ON CARE PATHWAY i.e. How will the questions and their answers (therefore recommendations) help the HCP ***(Health care professional***)saying 'But what should I do?'				
	Adult	Child	Inclusion/exclusion in the UK	Notes
2.2.1	How should an individual's readiness and motivation to change be assessed?	How should a child's and/or parent's readiness and motivation to change be assessed? Does this affect the choice/target of intervention?	RCTs of different methods of assessment. Process of care. Brief interventions review. Stages of change. Counterweight Rollnick. Pragmatic RCTs.	STATUS: lack of theory based evidence in obesity. Currently review being undertaken by Centre for Public Health Education (CPHE) on behaviour change – will link to as needed.
2.2.2	Is there evidence that delivering a brief intervention in primary care and other general clinical settings leads to improved outcomes for adults who are overweight and obese?		RCTs of brief interventions.	STATUS: done.
Further assessment				
2.3.1	What factors should be considered in the *further* clinical assessment of people who are overweight/obese?	What factors should be considered in the *further* clinical assessment of children who are overweight/obese?	Systematic reviews or expert narrative reviews.	STATUS: done
2.4.1	When should people who are overweight/obese be referred to other services (not including tertiary obesity services)?	When should children who are overweight/obese be referred to other services (not including tertiary obesity services)?	Audits and current practice reports. Expert opinion. Other guidelines.	STATUS: done.

NEED TO CONSIDER 'WHAT EFFECT WILL THIS HAVE IN PRACTICE' – ELABORATE ON CARE PATHWAY i.e. How will the questions and their answers (therefore recommendations) help the HCP ***(Health care professional***)saying 'But what should I do?'				
	Adult	Child	Inclusion/exclusion	Notes
Management (general)[3]				
3.1.1		Who should any intervention be targeted at? Child? Parent? Family? Child and parent? Does this affect the choice of intervention?		STATUS: done
3.2.1	How should the individual and the HCP develop goals and strategies for weight loss and/or weight maintenance and other goals as appropriate?	How should the child and the parent and HCP develop goals and strategies for weight loss and/or weight maintenance and other goals as appropriate?	RCTs of different strategies.	STATUS: lack of theory based evidence in obesity. Currently review being undertaken by CPHE on behaviour change – will link to as needed
3.2.2	What outcomes should be set and how should they be measured?	What outcomes should be set and how should they be measured?		STATUS: lack of theory based evidence in obesity. Currently review being undertaken by CPHE on behaviour change – will link to as

NEED TO CONSIDER 'WHAT EFFECT WILL THIS HAVE IN PRACTICE' – ELABORATE ON CARE PATHWAY i.e. How will the questions and their answers (therefore recommendations) help the HCP ***(Health care professional***)saying 'But what should I do?'				
	Adult	Child	Inclusion/exclusion	Notes
				needed
3.3.1	What is the role of dietary information in weight loss and/or maintenance and other specified outcomes in adults?	What is the role of dietary information (food intake, nutrition, eating habits) in weight loss and/or maintenance and other specified outcomes in children and their families?	RCTs	STATUS: done
3.3.2	What is the role of physical activity in weight loss and/or maintenance and other specified outcomes in adults?	What is the role of physical activity (increased physical activity, decreased sedentary activity) in weight loss and/or maintenance and other specified outcomes in children and their families?	RCTs	STATUS: done
3.3.3	What is the role of behaviour change strategies in weight loss and/or maintenance and other specified outcomes in adults?	What is the role of behaviour change strategies in weight loss and/or maintenance and other specified outcomes in children and their families?	RCTs	STATUS: done
3.3.4	What is the role of professionally organised therapies in weight loss and/or maintenance and other specified outcomes in adults?	What is the role of professionally organised therapies in weight loss and/or maintenance and other specified outcomes in children and their families?	RCTs	STATUS: done
3.3.5	What is the role of combined interventions (for example diet and physical activity) in weight loss and/or maintenance and other specified outcomes in adults?	What is the role of combined interventions (for example diet and physical activity) in weight loss and/or maintenance and other specified outcomes in children and their families?	RCTs	STATUS done
3.3.6	What is the role of orlistat and	What is the role of orlistat and	RCTs only	STATUS done

[3] Throughout evidence of effectiveness will be used to drive recommendations on who/where/when.

NEED TO CONSIDER 'WHAT EFFECT WILL THIS HAVE IN PRACTICE' – ELABORATE ON CARE PATHWAY i.e. How will the questions and their answers (therefore recommendations) help the HCP ***(Health care professional***)saying 'But what should I do?'				
	Adult	Child	Inclusion/exclusion	Notes
	sibutramine in the management of overweight/obesity in adults?	sibutramine in the management of overweight/obesity in children?		
3.4.1	What should happen if agreed goals are not achieved as assessed by both the individual and/or the HCP?	What should happen if agreed goals are not achieved, as assessed by both the child and/or parent and/or the HCP?	RCTs if available Audits and current practice reports. Expert opinion.	STATUS: lack of theory based evidence in obesity. Currently review being undertaken by CPHE on behaviour change – will link to as needed
3.5.1		What are the harms associated with intervention in children? Specifically does intervention cause/promote eating disorders or anxiety in children who are identified as overweight/obese?	RCT evidence. Cohort studies. Expert opinion.	STATUS: done
3.6.1	When should an adult with severe obesity be referred to specialist services?	When should a child with severe obesity be referred to specialist services?		STATUS: done using expert opinion
Severe obesity				
4.1.1	How should severe obesity be defined in adults?	How should severe obesity be defined in children?	Key references and expert opinion.	STATUS: done
4.2.1	What biological factors need to be considered as potential causes of severe obesity?	What biological factors need to be considered as potential causes of severe obesity?	Systematic reviews and expert narrative reviews.	STATUS: done using expert opinion

NEED TO CONSIDER 'WHAT EFFECT WILL THIS HAVE IN PRACTICE' – ELABORATE ON CARE PATHWAY i.e. How will the questions and their answers (therefore recommendations) help the HCP ***(Health care professional***)saying 'But what should I do?'				
	Adult	Child	Inclusion/exclusion	Notes
4.3.1	What factors should be considered in the clinical assessment of people who are severely obese?	What factors should be considered in the clinical assessment of children who are severely obese?	Systematic reviews or expert narrative reviews.	STATUS: done using expert opinion
4.4.1	How should severe obesity be managed in tertiary care, including an integrated management approach?	What special consideration should be given to a child with severe obesity, including an integrated management approach to care?	RCTs of different service configurations, for example specialist clinics, integrated clinics.	STATUS: done using expert opinion
4.5.1	What is the role of surgical interventions in the management of severe obesity in adults?	What is the role of surgical interventions in the management of severe obesity in children?		STATUS: done
Models of care				
5.1.1	Who is the most appropriate HCP to undertake any of the above?	Who is the most appropriate HCP to undertake any of the above?	RCTs of different HCPs delivering intervention.	STATUS: done
5.1.2	What is the most appropriate setting to undertake any of the above?	What is the most appropriate setting to undertake any of the above?	RCTs of different service configurations.	STATUS: done
5.1.3	What are the barriers (individual/HCP/family/carer/other) to the management of weight in the clinical setting?	What are the barriers/motivations (individual/HCP/family/carer/other) to the management of weight in the clinical setting? (See previous questions on motivation to change for individuals)	Qualitative studies identifying barriers/motivation to management of overweight/obesity (focus groups, interviews, surveys, etc.). Barriers to be identified by participants	STATUS: done

NEED TO CONSIDER 'WHAT EFFECT WILL THIS HAVE IN PRACTICE' – ELABORATE ON CARE PATHWAY i.e. How will the questions and their answers (therefore recommendations) help the HCP ***(Health care professional***)saying 'But what should I do?'				
	Adult	Child	Inclusion/exclusion	Notes
			themselves, not presupposed by researchers Population generalisable to UK.	
5.1.4	What are the key skills/core competencies/attributes of HCPs in the assessment and management of people who are overweight/obese?	What are the key skills/core competencies/attributes of HCPs in the assessment and management of children who are overweight/obese?	Key documents from professional organisations.	STATUS: done
5.1.5	What organisational or professional interventions are effective in improving the management of overweight/obesity in the clinical setting?	What organisational or professional interventions are effective in improving the management of overweight/obesity in the clinical setting?	RCTs of effectiveness (Effective Practice and Organisation of Care EPOC quality criteria).	STATUS: done

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Comment [EJS1]: Effective Practice and Organisation of Care – Cochrane Group

Review parameters: public health

Study year and type

- Rapid review to include search for interventions and evaluations and also cohort, qualitative and survey studies for corroborative evidence.

- In line with NICE methodology, if sufficient high quality, up-to-date evidence is found for a specific question, older studies and/or those using weaker designs will not be examined.

- English language papers only will be included.

- Papers not held at the British Library will be excluded.

Evidence of effectiveness

- Weight outcomes – include all RCTs and all controlled clinical (non-randomised) trials (CCTs) from 1990. To ensure that any key data published pre 1990 is not overlooked, an additional search of the Cochrane Trial database 1966–89 to be undertaken and any relevant RCTs included. In addition, where systematic reviews (published 1995 onwards) are identified, any included RCTs published before 1990 to be considered in rapid review. For topic areas with limited or no RCT/CCT evidence we will use the best available evidence.

- Intermediate outcomes (i.e. physical activity and diet) – include systematic review evidence from 1995 plus more recent RCTs and CCTs where available. For topic areas with limited or no systematic reviews, RCT/CCTs we will use the best available evidence.

- Cost outcomes – as intermediate outcomes (NB: this criteria for rapid reviews; additional search on costs likely to be undertaken).

- Changes in knowledge, attitudes and awareness *alone* will not be considered within the main body of reviews but will be considered in a separate 'mini review'. This restriction is due to time constraints.

Cohort studies
(NB: of particular relevance to review addressing *The Determinants of Weight gain and Weight Maintenance*)

- Prospective cohorts of at least 12 months duration that assessed factors potentially associated with weight gain or weight control in adults and/or children who were not all obese at baseline and reported a weight outcome at baseline and follow-up included.

- There are no structured reporting requirements for observational longitudinal studies. Tooth et al. (2005) have recently developed and tested a checklist.

Corroborative evidence

- Evidence from UK to be included in all reviews. Relevance of evidence from outside UK to considered by question though ability to include constrained by time limitations.

Length of follow-up

- Minimum requirement for studies of effectiveness is at least one data point before and one after the intervention.

- Minimum time period of 3 months between baseline and repeat measures for interventions.

Treatment of systematic reviews

- To avoid 'double counting', where more than one systematic review is available to answer a question, the 'best systematic review' will be included. The 'best' will invariably be the most recent but older reviews will be included if better quality than more recent reviews. The excluded review(s) will be checked to ensure all appropriate studies included.

'Unpicking' individual studies within systematic reviews

- The need to 'unpick' the 'best' available systematic review to its individual study components should be considered on a 'case-by-case' basis.

- Where a review is judged to be of high quality and meets the NICE inclusion criteria, there is no need to unpick the review down to the components of individual studies. However, where the reviewers are in some doubt as to the quality of the review, or there are concerns about the lack of intervention detail presented within the review, then the review should be unpicked.

- The outcome measures and follow up time are critical in determining the need to unpick a review (i.e. a review that includes two different studies, one with a 2-week follow-up time and the other with 4-month follow-up should be unpicked).

- The benefits of 'unpicking' a review should be carefully balanced against time constraints.

Combining systematic reviews and individual studies

- Where a systematic review and a more recent individual study are identified, the approach should be to update the review rather than treating the review and study separately. However, how reviews and individual studies are combined should be the judgement of reviewers.

- NICE technical team to advise where there is some doubt as to how specific review(s) and studies should be combined.

Grading systematic reviews

- The grade of review should be based on the study type for which the conclusions are primarily based (i.e. if a review included five RCTs and fifteen CCTs but overall conclusions predominantly based on CCT evidence, then grade should be as a review of CCTs not as a review of RCTs).

Critical appraisal tools

- There is not currently a NICE appraisal tool for non-randomised controlled studies. Agreed that reviewers should use relevant EPOC forms as where NICE tools are not currently available.

Intention to treat

- To use the Cochrane Handbook definition of intention to treat (ITT) (see section 8.4; http://www.cochrane.dk/cochrane/handbook/hbook.htm).

- Contrary to current NICE guidelines, where RCTs do not include ITT the *quality* of the study should be downgraded, not the study type.

- It was agreed that the lack of ITT is a quality issue and not a design issue and that the current NICE methodology handbook is incorrect in implying that RCTs without ITT should be 'downgraded' to non-RCTs.

Review parameters: clinical management

Generic parameters applied for intervention studies are as below.
In summary, reviews included:

- Systematic reviews from 1995 and single studies (predominantly RCTs and non-randomised trials). No time restriction was applied for the Adult reviews, but Child reviews were limited to studies published since 1985.

- Studies which reported outcome measures of weight change (in kg for adults, and using any appropriate measure for children).

- Studies with at least 12-months follow-up for adults, and 6 months for children.

Where specific parameters were applied, the details are reported in the evidence review.

Appendix 3

The effectiveness of public health interventions to identify individuals who would benefit from participation in prevention/public health interventions to manage weight

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SUMMARY

Evidence for identification of individuals at risk of overweight and obesity:

Eight observational longitudinal studies, one retrospective cohort study and one ongoing prospective study were found providing evidence of interventions or potential interventions to identify those at risk of overweight and obesity. Eight studies examined interventions with children (or studies tracing from childhood to adulthood) and two studies examined interventions with adults. All studies had some confounders. Only one study (Metcalf 2002) was carried out in the UK.

Children

Eight moderate quality studies (Barba 2001; Freedman 2001; Maffeis 2001; Freedman 2002; Guo 2002; He 2002; Metcalf 2002; Toschke 2004) examined interventions to identify children at risk of overweight and obesity.

Two studies (Guo and He) found that growth and probability charts were useful tools to identify those who are at risk of becoming overweight and obese in adulthood. One small UK-based study (Metcalf) determined that accelerometers were a well-tolerated effective way to identify the habitually inactive child (mean age 4.8 years) who may be at risk of future obesity.

Of the four studies measuring anthropometric variables, one (Maffeis) concluded that measurement of waist circumference at 8 years may be a promising index to predict overweight at puberty, and two linked studies (Freedman; Freedman) concluded that a measurement of height could be used to identify more accurately children who are likely to become overweight adults, although this may only be true for those children already overweight. The fourth study (Toschke) concluded that although weight gain from birth to 24 months was the best predictor of overweight at school entry, a positive predictive value of 19% implied that 81% of children with large infant weight gain would receive an unnecessary intervention if action were taken.

A further study (Barba 2001), in which anthropometric variables were measured and lifestyle factors such as diet and physical activity (by self-reported responses to a questionnaire) were examined, concluded that large-scale involvement of primary schools in screening programmes could identify those children at risk of being overweight and obese in adulthood and for whom strategies to prevent overweight and obesity would be most effective.

Adults

Two studies with some confounders (St Jeor 1997; Kroke 2002); examined interventions to identify adults at risk of overweight and obesity. The large (n = 18001) study (Kroke 2002) evaluating the influence of recent weight changes on subsequent weight changes concluded that the data indicated a need for a thorough weight history assessment to identify those most likely to gain weight.

The smaller (*n* = 385) study (St Jeor 1997) studied natural weight changes to develop a weight classification system that could identify weight maintainers, gainers and losers. The authors concluded that a criterion of a 5 lb (2.3 kg) weight change to identify departures from weight maintenance should initiate early interventions and weight monitoring as strategies to prevent weight gain.

Cost-effectiveness data

No cost-effectiveness studies were found.

EVIDENCE TABLE 1: IDENTIFYING ADULTS AND CHILDREN WHO SHOULD PARTICIPATE IN PREVENTION PROGRAMMES BASED ON THEIR RISK FACTORS FOR OBESITY AND READINESS AND OPPORTUNITIES TO CHANGE THEIR BEHAVIOUR

First author	**Study design**	**Research type**	**Research quality**	**Study population**	**Research question and design** (include power calculation if available)	**Length of follow-up**	**Main results** (include effect size(s)/confidence intervals for each outcome if available)	**Confounders** (potential sources of bias)**/comments**
Evidence of efficacy (internal validity) for weight maintenance/reduction								
CHILDREN								
Toschke 2004	Retrospective cohort study	3	+	German school children participating in the obligatory school entry health examination in 1999–2000. City and rural participants from six different areas in Bavaria, Germany. *n* = 6862 Age range 5.0–6.9 years. Full data available *n* = 4235 children and used for analysis.	**Aim:** To assess the best anthropometric predictor from birth to 2 years for later overweight. Measurements taken from paediatric preventive health care examinations at 6, 12 and 24 months, and at the school entry examination. Weight, kg, length in cm, body mass index (BMI) and ponderal index (kg/m^3) were all calculated and differences between	Retrospective study, but data used from 6 months to between 5.0 and 6.9 years.	Final sample consisted of only those with all measures (4235/6862 [62%]) Weight gain >9764 g from birth to 24 months was the best predictor of overweight at school entry, compared with length gain, BMI gain, or ponderal index gain. Two-year interval better predictor than shorter intervals. The odds ratio for overweight at school entry associated with weight gain greater than 9764 g was 5.7 (95% confidence interval [CI] 4.5, 7.1). This contrasts with a corresponding low positive likelihood ratio of 2.39 (95% CI	Only subjects with all measures included in sample. Bavaria, Germany. Probably generalisable to the UK. Cites Euro-growth study which doesn't find difference in growth patterns among populations of European infants.

				No socio-economic data reported.	measures at the ages above were compared by receiver operating characteristic curves and predictive values. Unclear who delivered although all measures taken at standard 'well-child' check-ups or school entry examination. No power calculation provided. International Obesity Task Force (IOTF) BMI classifications used.		2.20, 2.59) and a positive predictive value of 19% (95% CI 17, 21), suggesting that only one of five children with a large weight gain in the first 2 years is overweight at school entry indicating poor predictability in the general population. The authors concluded that the results imply that 81% of children with large infant weight gain would undergo an unnecessary intervention, with potential adverse effects if intervention was based on large early weight gain.	
Freedman 2002	Observational Longitudinal Study	3	+	Subjects (n = 1055 of a possible 4043) from Louisiana, USA. Biracial (one-third black) community of approximately 43,000 residents. Included city and surrounding rural populations. Mean age at baseline	**Aim:** To determine whether childhood height is related to adult adiposity and whether the association is independent of childhood levels of BMI and triceps skinfold thickness. Anthropometric measures (height,	Mean follow-up: 18 years	Only those with both measurements included in analysis (n = 1055). Compared with children whose heights were below the gender- and age-specific median, a child with a height-for-age above the 95th percentile was approximately 2.5 times as likely to have a BMI ≥30 kg/m^2 and approximately five times as likely to have a skinfold thickness sum >90th	**Providers of intervention:** Bogalusa Heart Study. Only those with both measurements included in analysis (26.1% or original sample). Only examined 2–8-year-olds. Possibly only children who are already

				7 ± 1years Mean age at follow-up 24 ± 3 years 62% female 33% black From Bogalusa Heart Study – community-based study of cardiovascular disease risk factors among children and young adults.	weight and triceps skinfold thickness) taken at age 2–8 years (1973–82) and re-measured at adulthood, >18 years (1985–96). Longitudinal relations of childhood height to relative weight and skinfold thicknesses in adulthood examined. No power calculation provided. Probably Higher Education researcher delivered, but not stated. BMI-for-age percentiles calculated using a modification of the 'LMS technique'.		percentile in adulthood. Although height and adiposity among childhood were associated (r = 0.29) among children, the observed longitudinal relations persisted after controlling for BMI and the triceps skinfold thickness in childhood. Height in children ≥9 years was not related to adult adiposity. The authors concluded that it is possible that information on height could be used to identify more accurately children who are likely to be obese in later life. It is possible that tall, overweight children could be targeted with specific interventions aimed at preventing the development of adult obesity. Examines differences in height with the same BMI. Second checker.	overweight. Louisiana, USA – probably generalisable to the UK.
Guo 2002	Observational longitudinal study	3	+	Cohort of 166 males and 181 females* from the Fels longitudinal study, Ohio, USA 100% white	Study of the new Centers for Disease Studies (CDC) BMI charts and definitions of adult overweight and obesity to predict adult overweight and	On-going longitudinal study. Data used from birth to 35 years	The sensitivity and specificity of the chosen cut-off (50th percentile for overweight and 72nd percentile for obesity) were excellent for predicting overweight and obesity at 35 years of age from BMI values at 18 years of	Part of the (US) Fels Longitudinal study. US White subjects only for this study but the CDC charts were developed from data on

				Data collected from birth onwards. Many participants were from families where all members were enrolled in the study. No socio-economic data reported. Part of long-term large longitudinal study (Fels longitudinal study) (1929 – still ongoing. Serial multidisciplinary study, longest running in the World. Now part of Lifespan Health Research Center at Wright State University, Dayton, OH, USA.)	obesity. Update of previous report (1994) on use of CDC BMI-for-age growth charts to identify those who are likely to be overweight at 35 years. Logistic models were fitted to relate adult overweight and obesity to childhood and adolescent BMI values at each age (collected at 3-month intervals for the first year, 6-month intervals thereafter to age 18 years and every 2 years thereafter) No power calculation given. Probably Higher Education researcher delivered but not stated. BMI for overweight and obesity follow		age. The sensitivity and specificity at 3, 8 and 13 years of age were lower than those at 18 years of age for the chosen cut-off, and they were lower in the males than in the females. The authors concluded that this cut-off could facilitate public health screening programmes by detecting children and adolescents with a high probability of being overweight or obese at 35 years of age.	white and black children and adolescents at all ages, plus Mexican American from age 2 to 6 years. Sampling strategy unclear. US – probably generalisable to UK *'because of missed measurement at various ages, data are missing for some participants at some ages; thus at any age or for any age group, the number of participants varies and therefore differs slightly from the total number of participants.'

					definitions of WHO, National Heart, Lung and Blood Institute, the National institutes of Health and the US Department of Health and Human Services.			
He 2002	Longitudinal Growth Study	3	+	Healthy grade school children born in Gothenburg and surrounding areas in Sweden. *n* = 3650 Sample size for each gender varied between 582 and 1857 for various ages; at 18 years: Males *n* = 1849 Females *n* = 1801 No socio-economic data reported.	**Aim:** to develop a probability chart of adult overweight based on childhood BMI values and to evaluate BMI change during the BMI rebound period during childhood in different populations with the use of risk function curves. Weight and height values obtained from birth to 18 years. No power calculation provided. Delivered by four trained Higher Education investigators and two school nurses. IOTF BMI	Approx. 18 years Data were collected between April and November 1992 (97% of children born between 1973 and 1975).	A probability chart for reaching a BMI >23 kg/m^2 at 18 years was constructed for boys and girls. For example, a BMI of 18 kg/m^2 at 4 years of age is associated with a 0.70 probability of attaining a BMI >23 kg/m^2 at 18 years in boys: a BMI of 16 kg/m^2 at 4 years of age leads to a 0.40 probability of having a BMI >23 kg/m^2 at 18 years in girls. Children with an obvious BMI rebound before 8 years of age have a high risk of being overweight at 18 years of age. The authors concluded that probability charts for adult overweight developed in this study will provide a useful tool for paediatricians to identify those children who are at a high risk of becoming overweight in adulthood so that clinical intervention can be started as	Data were collected retrospectively from birth register and doctors and nurses notes. Some subjects excluded due to lack of presence of all measurements. Sampling strategy unclear (although exclusion criteria are stated, the number of children who did not meet the exclusion criteria and for each specified criterion is not confirmed). Sweden – probably generalisable to the UK.

					classifications used.		early as possible.	
Metcalf 2002	Observational longitudinal Study	3	+	Healthy children recruited at school entry from a random, stratified sample of schools in Plymouth, UK *n* = 100 Mean age 4.8 years. 'Schools representing all socioeconomic groups.' Part of 'EarlyBird' prospective cohort study monitoring effects of lifestyle on the metabolic status of healthy children.	Aim: To establish the range of physical activity (PA) undertaken by contemporary children; and to assess the feasibility of using activity monitors to screen for the habitually inactive child. Each child fitted with a CSA (computer science and applications) activity monitor to be worn, on the hip, during waking hours for 7 consecutive days (5 school days and both weekend days). This monitor is both lightweight and tamperproof. Records time and sums changes in acceleration for each 1 min interval, from which are displayed the timing, intensity, and duration of the child's PA. Data	Not known – only baseline data available	82/100 children (37 boys and 45 girls) provided data for at least 4 weekdays and both weekend days and were included in the analysis. The authors concluded that accelerometers singled out habitually inactive children, most of them girls, who did little, whether at school or over the weekend. Accelerometers are of potential value in identifying, from an early age, children at risk of becoming obese. Accelerometer is well tolerated and generates quality data from >80% of children. Fourteen of the 16 children recording the lowest quintile of weekend activity were girls. Children who were inactive during the week were also inactive at the weekend. The authors also concluded that the activity monitor could prove an important tool for 'assessment' if schools are to take back responsibility for physical as well as academic education.	Providers of intervention: EarlyBird Research Centre (supported by a grant from the NHS Executive SW and by Roche Pharmaceuticals, the Henry Smith Foundation, the Child Growth Foundation, Eli Lilly, the London Law Trust and the EarlyBird Diabetes Trust). Analysis did not include all of starting sample. No confounders discussed.

					downloaded to PC and analysed according to week/weekend day and gender. No power calculation provided. Higher Education Researcher and research nurse delivered. Test–retest correlation (for CSA monitor output) over 12 months of *r* = 0.47 (<0.001)			
Barba 2001	Ongoing prospective study	3	+	All children of the II Circolo Didattico Primary School in Avellino, Italy were invited to participate; 509 (66.4%) accepted. Data here are from a preliminary analysis of 363 subjects for whom computerised data was available. Age: Males 8.7	Aim: to evaluate dietary habits and anthropometric factors in a sample of school children aged 6–12 years living in Southern Italy in the framework of an ongoing prospective study aimed and childhood obesity prevention. BRAVO project – part of an education programme on	N/a	Data from baseline: *n* = 363 (62% of eligible sample of this age group). The authors propose a strategy of evaluating dietary habits and anthropometric factors aiming at the identification of children in whom preventive strategies would be more effective. Data were pooled for boys and girls. For any age class, a considerable large proportion of children, almost 50%, had BMI above the age-specific centile	Part of a larger research project that includes an educational programme on nutrition for the teachers. Analysis does not take into account all of eligible sample. May be largely focussed on identification of childhood obesity as a risk factor for adulthood obesity.

				± 1.4 years; Females 8.86 ± 1.3 years Male *n* = 181 Female *n* = 182 No socio-economic data provided.	nutrition for the schoolchildren and their families. All participants underwent brief medical examination during which detailed anthropometry (including height and weight) were measured. Used standard balance beam with attached ruler. Children were examined by a trained dietitian under the supervision of a physician, within the school premises. A detailed questionnaire on medical history, lifestyle and dietary habits was filled in at home by the parents and checked during the visit. Prevalence of obesity was estimated according to the		that predicts the risk of being overweight in adult life. Among those at risk, many children – ranging from 20 to 30% across age-classes – were above the percentile curve that predicts the risk of overt obesity in adult life. Only half the sample (52.9%) regularly practised PA (as assessed by a questionnaire response), which was more common among girls in comparison to boys (56 vs. 44%, chi-square = 5.614, $p < 0.05$). Fruit intake appeared to be poor (10–20% ate fruit every day) whilst daily consumption of high-energy snacks was rather common among children (45%). The authors concluded that their data, though preliminary, suggest that the large-scale involvement of primary schools in screening programmes could represent an effective preventive strategy against the increased risk of childhood obesity. The study focused on the risk of children being overweight or obese in adult life, thus aiming at the identification of children in whom preventive strategies, involving	Southern Italy – probably generalisable to the UK. Screening in primary schools to identify those at risk of overweight and obesity.

					standard definition adopted by the IOTF. No power calculation provided.		targeted changes in dietary habits and lifestyle, would be more effective.	
Freedman 2001	Observational longitudinal study	3	+	Subjects (*n* = 105, of a possible 272) from Louisiana, USA. Biracial (one-third black) community of approximately 43,000 residents. Included city and surrounding rural populations. Age = 5 years in 1973 (beginning of study). From Bogalusa Heart Study – community-based study of cardiovascular disease risk factors among children and young adults. Sample demographics and socio-economic data not reported.	**Aim:** To examine whether the relation of adiposity rebound increases the risk for overweight in adulthood and whether this relation is independent of childhood BMI levels. Seven cross-sectional studies of children conducted during school years between 1973 and 1991. Total number of children studied in this analysis *n* = 105 comprising 5-year-olds who were examined in 1973, and were eligible for re-examination in 1974, 1975, 1976 and in 1987–91 (as 19–23-year-olds). Subjects had been examined at age 5 years, re-examined	14–18-year follow-up	105/272 subjects included in analysis (only those with sufficient data). Subjects who experienced rebound (age at which minimum BMI occurred – 'age_{min}") at ≤5 years were, on average, 4–5 kg/m^2 heavier in early adulthood than were subjects whose age_{min} was >7 years. Age_{min}, however, was also correlated with childhood BMI levels (r ~ –0.5), and age_{min} provided no additional information on adult overweight if the BMI level at age 7 years (or 8 years) was known. In contrast, childhood height, which was also correlated with age_{min} (r = –0.47), was independently related to adult BMI. Among relatively heavy (BMI = 16.0 kg/m^2) 5-year-olds, a child with a height of 120 cm was estimated to be 1.2 kg/m^2 heavier in adulthood than would a 104-cm tall child. **Conclusion:** Although an early BMI rebound was related to higher levels of	Small study sample (*n* = 105). Total sample and sampling frame have not been reported (although it is likely that this data has been reported in an earlier and/or companion study). USA – probably generalisable to the UK. The importance of childhood height needs to be examined in other longitudinal studies and research is needed to determine the possible mechanisms.

					at ages 19–23 years and had at least two (of three possible) measurements at ages 6, 7 and 8 years. No power calculation provided. Probably higher education researcher delivered, but not stated. No validation of measures discussed.		relative weight in adulthood, this association was not independent of childhood BMI levels. The relation of childhood height to adult BMI needs to be confirmed in other cohorts, but it is possible that childhood height may help identify children who are likely to become overweight adults. It is possible that childhood height could provide a simple tool in more accurately predicting which children are likely to become overweight adults.	
Maffeis 2001	Observational longitudinal study	3	+	Healthy pre-pubertal children recruited through questionnaires distributed to teachers at public and private primary schools in Italy. *n* = 112 Age = 8.7 ± 0.9 years Female = 58 Male = 54 100% White Response rate not stated.	**Aim:** To identify in a group of 8-year-old prepubertal children the anthropometric parameter with the highest prediction power of overweight, measured 4 years later. Four-year study with baseline and 4 year measurement of weight and body composition Measurements of	Baseline and 4 years	100% provided data at follow up. RelBMI (relative body mass index; %) at baseline showed significant correlation with waist circumference ($r = 0.89$; $p < 0.001$). Partial correlation analysis showed waist circumference had significant independent association with relBMI at follow-up, when basal BMI controlled for ($r = 0.23$, $p < 0.02$). Waist circumference measured at age 8 years is the best predictor of overweight (relBMI) at age 12 ($r^2 = 0.64$; $p < 0.001$). Each	All White children. No full description of recruitment. Parental BMI self-reported One of the funders Nestle Italiana Spa. Italy – probably generalisable to UK

					weight, height, skinfold thicknesses and waist circumference taken (on standardised equipment) at baseline and follow up at the hospital, and self-reported weight and height of the parents taken at baseline. No power calculation provided. Delivered by paediatricians in project laboratory at hospital.		centimetre increase of waist circumference at age 8 years doubles risk of having relBMI >120% at age 12 years. The authors concluded that the results of this study showed that waist circumference measured at the age of 8 years, which is simple to perform and easy to reproduce, may be a promising index to assess adiposity as well as to predict overweight at puberty.	

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ADULTS

Kroke 2002	Observational longitudinal study	3	+	General population (those in the EPIC-Potsdam study, Germany), *n* = 18001 Males *n* = 6689; mean age 52 (range 24–69) years. Females *n* = 11312; mean age 49 (range 19–70) years Women: 57.36% with college or university degree. Men: 68.56% with college or university degree Sample selected from *n* = 27,548 in EPIC Potsdam study, after excluding those who did not respond to follow-up in 2000, those who smoked, those	**Aim:** To evaluate the influence of recent weight changes (weight gain, loss and cycling) on subsequent weight changes. Baseline information on lifestyle and health-related variables obtained from interviews. Baseline anthropometric measurements of body height and weight. Subjects questioned as to whether or not weight loss/gain was intended, to distinguish weight cyclers. Follow-up – self-assessment questionnaires for assessment of body weight and incident diseases. No power calculation provided.	2 years	Polytomous logistic regression (using stable weight group as the reference category and adjusting for potential confounders) demonstrated that weight cycling before baseline was strongest predictor of subsequent large weight gain (≥2 kg) with odds ratio (OR) 4.84 (95% confidence interval (CI) 3.34–7.02) in men. In women, prior weight loss was strongest predictor of subsequent large weight gain (OR 4.77; 95% CI 3.63–6.03) followed by weight cycling (OR 3.02; 95% CI 2.15–4.25). The authors concluded that these data indicate the need for thorough weight history assessment to identify those who are most likely to gain weight.	The subjects' weight-change variable derived from the difference between measured weight at baseline and self-reported weight at follow-up. This was otherwise a high quality study. Some subjects excluded from analyses due to lack of data. Germany – probably generalisable to the UK.

				with illness and pregnant women, and those with missing data. Providers of intervention: EPIC Potsdam Study.	Measurements taken by 'trained personnel', possibly Higher Education researchers. No validation of measure discussed.			
St Jeor 1997	Observational longitudinal study	3	+	USA, healthy subjects, including normal and overweight men and women. *n* = 508, mean age 44.1 ± 14.1 years. Of 385 included in analyses, 180 women (92 normal weight, 88 obese) and 205 men (105 normal weight, 100 obese). No socio-economic data reported.	**Aim:** To study natural weight changes and to develop a weight classification system that can identify weight maintainers, gainers and losers. Series of body composition measurements (done 'according to established protocol') taken annually in a clinic. Measures analysed to determine maintainers, losers and gainers (defined by changes in weight of ± 5 lbs [2.3 kg]) during the 5 years. No power calculation	5 years (1985–90).	Recruitment and response rate: 385/508 = 76% 46% maintainers, 34% gainers, 20% losers over total 4-year interval. Subjects more likely to become gainers over successively longer time periods ($p < 0.05$) for 4 years against 1 or 2. Only 22% were gainers in any given 1-year period. The authors concluded that weight changes of greater than ± 5 lb (2.3 kg) can classify a person as a weight maintainer, gainer or loser. Although annual weight changes were used in this study, a weight change of more than 5lb (2.3 kg) between any two points in time may suggest non-maintenance of weight or weight instability that needs further evaluation. The criterion of a 5 lb (2.3 kg)	Relationships of Energy, Nutrition, and Obesity to Cardiovascular Disease Study. Motivated, generally healthy population. Biased towards working men and women. Selection of ± 5 lb (2.3 kg) choice slightly arbitrary. Analysis did not include non-completers. USA – probably generalisable to UK.

					provided. Probably Higher Education researcher delivered, but not stated.		weight change to define departures from weight maintenance at any point should initiate early interventions and weight monitoring as strategies to prevent weight gain.	

1
2

Evidence of corroboration (external validity)								
Evidence of salience – is it appropriate for the UK?								
First author	**Study design**	**Research type**	**Research quality**	**Study population**	**Research question and design**	**Length of follow-up**	**Main results**	**Confounders/comments**
Metcalf 2002	Observational longitudinal study	3	+	Healthy children recruited at school entry from a random, stratified sample of schools in Plymouth , UK *n* = 100 Mean age 4.8 years. 'Random stratified sample of Plymouth schools representing all socioeconomic groups'. Part of 'EarlyBird' prospective cohort study monitoring effects of lifestyle on the metabolic status of healthy children.	See above.	See above.	See above.	See above.
Evidence for implementation – will it work in the UK?								

First author	Study design	Research type	Research quality	Study Population	Research question and design	Length of follow-up	Main results	Confounders/comments
Evidence of cost-effectiveness								
First author	**Study design**	**Research Type**	**Research quality**	**Study population**	**Research question and design**	**Length of follow-up**	**Main results**	**Confounders/comments**
Cost-effectiveness summary: No cost-effectiveness studies found								

EVIDENCE TABLE 2: EXISTING UK AND NON-UK GUIDELINES/RECOMMENDATIONS IN RELATION TO IDENTIFYING INDIVIDUALS WHO WOULD BENEFIT FROM PARTICIPATION IN PREVENTION/PUBLIC HEALTH INTERVENTIONS TO MANAGE WEIGHT

SUMMARY

For the purposes of this review a clinical or practice guideline was defined as a document that aimed to identify, summarise and evaluate the best evidence and/or most current data about the prevention, management and/or identification of overweight or obesity or the prospective risk of developing overweight or obesity. Clinical guidelines were based on or likely to be based on a systematic review of the current research evidence.

Public/policy statements and recommendations were defined as documents that aimed to provide advice on or recommendations for the prevention, management and/or identification of overweight or obesity or the prospective risk of developing overweight or obesity. Public/policy statements and recommendations are likely to have been developed based on consensus agreement by an expert panel.

Guidance from UK guidelines/recommendations

No usable UK guidelines were identified.[4]

Evidence from four UK recommendations, all for children only, suggests that there is currently no consensus available for the screening of children for unhealthy weight gain. One policy statement (UK National Screening Committee, 2005), based on expert consensus opinion, recommended that screening should not be offered while the evidence from a briefing paper prepared by the Child Growth Foundation (2004) firmly recommended universal serial BMI monitoring for children at least until the end of primary school. One further report (House of Commons Select Committee on Health, 2004), supported the guidance suggested by the Child Growth Foundation and suggested that BMI measures should be recorded annually for school-aged children. Evidence underpinning the identified recommendations is not available or is of lower-level quality. Recently published guidance for Primary Care Trusts (Department of Health 2006 [4663]) recommends measurement of BMI in reception and year 6 children on an annual basis for the purpose of population monitoring. The guidance discourages giving out BMI to children or parents.

Quality assessment of UK guidance

According to the AGREE instrument for the appraisal of guidelines (see paper 9.3a, section 3.3.2) only three publications would be recommended (Child Growth Foundation 2004; UK National Screening Committee 2005; Department of Health 2006), two with provisos (UK National Screening Committee; Department of Health).

Guidance from non-UK guidelines/recommendations

Of the 11 identified guidance documents, overall evidence from nine non-UK recommendations suggests that periodic monitoring of weight status and BMI and waist circumference measurements should be routinely provided. One US-based practice guideline (US Preventive Services Task Force 2003) did not support screening for asymptomatic adults and one recommendation statement from Canada (Douketis 1999) concluded that there was insufficient evidence to recommend for or against BMI measurement in the periodic health examination of the general public.

Clinical practice guidelines

Five clinical practice, evidence-based guidelines were identified, of which four recommended recurrent screening for weight gain. Three of these were from the USA, one from Canada and one from Australia. Of the US-based recommendations, one (Institute for Clinical Systems Improvement 2004) recommended that height, weight and BMI measurements be taken annually for mature adolescents and adults, one (Expert Panel on the Identification, Evaluation and Treatment of Overweight in Adults, 1998) recommended that adults who are not overweight or who have no history of overweight should be screened for weight, BMI and weight circumference every 2 years, and one (US Preventive Services Task Force 2003) firmly recommended against screening for obesity for asymptomatic adults. The Canadian guideline (Registered Nurses' Association of Ontario 2005), based on expert opinion, advocated the inclusion of monitoring and surveillance data on nutrition, PA and measures of adiposity for children in public health policies. The Australian guideline (National Health & Medical Research Council 2003) recommended recurrent measurement of height and weight in a nationally representative sample of children and adolescents. Supporting evidence for clinical practice guidelines was obtained from controlled comparative studies, observational data and expert judgement from clinical experience.

Recommendation statements

Two recommendation statements, one US-based and one from Canada, proposed conflicting advice. The Canadian evidence-based statement (Douketis 1999) concluded that there was insufficient evidence to recommend for or against BMI measurement in the periodic health examination of the general public, while the US-based statement (Holcomb 2004), proposed an algorithm to determine a child's BMI at health visits. It recommended that good nutrition and exercise should be encouraged at health visits if a child's BMI <75th percentile and weight management advice should be provided if a child's BMI measurement is <85th percentile but >75th. No supporting evidence for the US statement is available and the frequency for health visits is not indicated.

Policy statements

[4] The results from the only UK clinical practice guideline for adults (Scottish Intercollegiate Guidelines Network 1996 [26]) cannot be included in the guidance summary. Robin Harbour, Quality & Information Director SIGN, confirmed that the link to the evidence in this guideline is not available and that it is currently under review to be updated or withdrawn (by telephone 9 August 2005). SIGN have advised us not to use it. SIGN Guidance for Children (2003 [25]) considered, but excluded it as it discusses identification of overweight and obesity only.

Three policy statements all supported serial assessments for weight monitoring. Two US-based statements recommended recurrent measurement of BMI, one of which (Krebs, 2003) recommended annual routine assessments to calculate and plot BMI measurements for children and the assessment of eating and activity patterns for excessive weight gain relative to linear growth. The other US-based statement (Nawaz, 2001) recommended periodic BMI measurement for all adults, independent of weight or BMI, along with consistent counselling about healthful dietary and PA patterns from primary care practitioners. There are no apparent links to supporting evidence for either of these statements. One evidence-based collaborative policy statement from Canada (Dietitians of Canada, Canadian Paediatric Society, The College of Family Physicians of Canada, Community Health Nurses Association of Canada, 2004) suggested that repeated height and weight measurements be part of scheduled well-baby and well-child health visits and that health maintenance visits for children be organised according to a child's immunisation schedule. Continued growth monitoring on an annual basis at primary care visits for older children and adolescents was also recommended. These recommendations were based on expert opinion only. BMI-for-age screening from age 2 years onwards to track and predict future risk of being overweight was also advised.

Taskforce report

One taskforce report from Australia (National Obesity Taskforce Secretariat 2003) recommended, as part of its national action agenda, regular tracking of height and weight status in the community as well as monitoring of knowledge, attitudes, intentions, behaviours and other indicators of healthy eating and active living. The recommendation from this report is not evidence-based.

Quality assessment of non-UK guidance

According to the AGREE appraisal criteria all five clinical practice guidelines would be strongly recommended. One guideline counsels against screening for adults (US Preventive Services Task Force 2003). The remaining four guidelines recommend screening for children (Registered Nurses' Association of Ontario 2005), children and adolescents (National Health & Medical Research Council, Australia, 2003), mature adolescents and adults (Institute for Clinical Systems Improvement, ICSI, USA, 2004) and adults (Expert Panel on the Identification, Evaluation and Treatment of Overweight in Adults, USA, 1998).

The five recommendation and policy statements are broadly recommended with provisos although one (Holcomb, 2004) is an identification algorithm only for children and adolescents and would not be recommended as a guideline. One recommendation document concludes that there is insufficient evidence for screening of adults (Douketis, 1999). The remainder recommend screening for children and adolescents (Holcomb, 2004), screening for adults (Nawaz, 2001), or monitoring for children (Krebs 2003; Dieticians of Canada,2004).

The taskforce report (National Obesity Taskforce Secretariat 2003) advises monitoring for children and their families but would not be recommended for use according to the AGREE criteria.

Cost-effectiveness data

No cost-effectiveness data were found.

EVIDENCE TABLE 2

UK GUIDELINES/RECOMMENDATIONS

First author	Guideline design/AGREE grading	Country of origin	Guideline topic Screening or monitoring Adults and/or children	Guidance/recommendation	Comments
Department of Health 2006 [4663]	Guideline. Recommend with provisos. Scope and purpose 100% Stakeholder involvement 63% **Rigour of development 36%** Clarity and presentation 75% Applicability 75% Editorial independence 63%	UK	Monitoring. Children.	The guidance recommends measurement of BMI in reception and year 6 children on an annual basis for the purpose of population monitoring. The guidance discourages giving out BMI to children or parents.	

UK National Screening Committee 2005	Policy statement **Recommend with provisos – policy statement, not guidelines** Scope and purpose 100% Stakeholder involvement 56% **Rigour of development 33%** Clarity and presentation 81% Applicability 50% Editorial independence 25%	All UK.	Screening Children	Screening should not be offered [to children].[1]	The NSC received the report of a consensus conference held at Coventry on 29 July 2000 and agreed that there is not enough evidence, at this time, to recommend screening for obesity. [1]Child Growth Foundation Seminar on the Epidemic of Obesity in Childhood – RCP London, 29–30 July 2000. The original conference consensus report states three main reasons for rejecting screening (see Appendix C – supporting information).
House of Commons Select Committee on Health 2004	Report **Would not recommend** Scope and purpose 50% Stakeholder involvement 25% **Rigour of**	All UK.	Monitoring. Population-wide (recommendation refers to children).	Throughout their time at school, children should have their BMI measured annually at school, perhaps by the school nurse, a health visitor or other appropriate health professional. Where appropriate, BMI measurement could be carried out alongside other health care interventions that are delivered at school, for example inoculation programmes.	Paragraph 369. No apparent link to evidence.

	development 25% Clarity and presentation 50% Applicability 25% Editorial independence 25%				
Child Growth Foundation, 2004	Briefing paper **Recommend** Scope and purpose 100% Stakeholder involvement 58% **Rigour of development 72%** Clarity & presentation 100% Applicability 100% Editorial independence 25%	All UK.	Monitoring. Children.	Universal serial BMI assessments must be recommended. Although those children at most risk of becoming obese can easily be targeted, only universal assessment will pick up the child who is in a healthy BMI range today but has been/may still be insidiously putting on weight and be obese 'tomorrow'. Monitoring should be implemented at a frequency* reasonably to allow a trend of significant unhealthy weight gain to be identified from birth and at any age thereafter. BMI monitoring should be the standard measure.[1] *A protocol outlining frequency is included in this briefing paper and recommends monitoring yearly through primary school (up to year 6)	Briefing paper prepared by pressure group [Guideline Development Group advice] for the clinical Guideline Development Group. [1]Hall D, Elliman D. *Health for All Children*. 4th Edn. Oxford: Oxford University Press, 2003.

NON-UK GUIDELINES/RECOMMENDATIONS

First author	Guideline design/AGREE grading	Country of origin	Guideline topic Screening or monitoring Adults and/or children	Guidance/recommendation	Comments

Registered Nurses' Association of Ontario 2005	Clinical practice guideline **Strongly recommend** Scope and purpose 75% Stakeholder involvement 69% **Rigour of development 96%** Clarity and presentation 100% Applicability 75% Editorial independence 100%	Canada	Screening and advice. Children.	Nurses advocate for healthy public policies that include monitoring and surveillance data at the population level regarding nutrition, PA and measures of adiposity including obesity and overweight status.[1]	Level of evidence IV. [1]Raine KD. *Overweight and obesity in Canada: a population health perspective*. Ottawa: Canadian Institute for Health Information, 2004.
Institute for Clinical Systems Improvement 2004	Clinical practice guideline **Strongly recommend** Scope and purpose 75% Stakeholder involvement 63% **Rigour of**	USA	Screening and advice. Mature adolescents and adults.	Measure height, weight and calculate BMI preferably annually for screening and as needed for management. A BMI calculation is worthwhile in the growing patient because it provides a reference point for future comparison. Subsequent observations establish a relative trajectory for this index of obesity.[1]	Supporting evidence is of classes D (cross-sectional study, case series, case report), R (consensus statement, consensus report, narrative review). [1]Barlow SE, Dietz WH. Obesity evaluation and treatment: expert committee recommendations. *Pediatrics* 1998;102:E29. (Class R).

	development 50% Clarity and presentation 100% Applicability 50% Editorial independence 100%				Algorithm 1 is currently being updated. It is anticipated that revisions will be completed by the end of September 2005. The Insitute for Clinical Systems Improvement (ICSI) will forward updated revisions as soon as they are available.
US Preventive Services Task Force 2003 US Preventive Services Task Force 2003	Clinical practice guideline **Strongly recommend** Scope and purpose 58% Stakeholder involvement 50% **Rigour of development 68%** Clarity and presentation 81% Applicability 50% Editorial independence 63%	USA	Screening and advice. Adults.	The USPSTF recommends against routinely providing [the service] (screening for obesity in adults) to asymptomatic patients. *The USPTF found at least fair evidence*[1] *that [the service] is ineffective or that harms outweigh benefits.*	[1]Fair evidence is sufficient to determine the effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies; generalisability to routine practice; or indirect nature of the evidence on health outcomes. No apparent link to evidence.
Expert Panel on the Identification,	Clinical practice guideline	USA	Screening and advice. Adults.	Patients should receive periodic monitoring of their weight, BMI* and waist circumference. Patients who are not overweight or have no	*Only apparent evidence available is that linked to the recommendation for the

Evaluation and Treatment of Overweight in Adults 1998 National Institutes of Health 2000	***Strongly recommend*** Scope and purpose 83% Stakeholder involvement 44% **Rigour of development 79%** Clarity and presentation 81% Applicability 58% Editorial independence 63%			history of overweight should be screened for weight gain every 2 years. While this time span is not evidence-based, it is believed to be a reasonable compromise between the need to identify weight gain at an early stage and the need to limit the time, effort and cost of repeated measurements. *Practitioners should use the BMI to assess overweight and obesity.	measurement of BMI to assess overweight and obesity in the clinical setting. Evidence category C (evidence is from outcomes of uncontrolled or nonrandomised trials or from observational studies). Epidemiological and observational studies have shown that BMI provides an acceptable approximation of total body fat for the majority of patients. Because there are no published studies that compare the effectiveness of different measures for evaluating changes in body fat during weight reduction, the panel bases its recommendation on expert judgment from clinical experience. No apparent link to evidence.
National Health & Medical Research Council 2003	Clinical practice guideline **Strongly recommend** Scope and purpose 67%	Australia	Screening and advice. Children and adolescents.	The prevalence of overweight and obesity in children and adolescents in Australia is high enough to warrant both intervention and preventive action. Height and weight should be measured recurrently in a nationally representative sample of children and adolescents.	Evidence level III-2 evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case–control studies, or interrupted time series with a control group.

	Stakeholder involvement 50% **Rigour of development 82%** Clarity and presentation 75% Applicability 50% Editorial independence 100%				No apparent link to evidence.
Douketis 1999	Recommendation **Recommend with provisos** Scope and purpose 67% Stakeholder involvement 44% **Rigour of development 64%** Clarity and presentation 69% Applicability 50% Editorial independence	Canada	Screening and advice. Adults.	Because of lack of evidence supporting long-term effectiveness of weight-reduction interventions, there is insufficient evidence to recommend for or against BMI measurement in the periodic health examination of the general population (C).*	*C Grade There is poor evidence relating to the inclusion or exclusion of a condition or manoeuvre in a periodic health examination, but recommendations can be made on other grounds. (See Appendix C – supporting information for evidence.)

	100%				
Holcomb 2004	Proposal for recommendations **Would not recommend as guideline – Algorithm for identification only** Scope and purpose 58% Stakeholder involvement 25% **Rigour of development 25%** Clarity and presentation 63% Applicability 50% Editorial independence 25%	USA	Algorithm for screening and identification. Children and adolescents.	Proposed identification and management algorithm for overweight and obese children. Determine child's BMI at each visit. If BMI is <75th percentile, continue to encourage good nutrition and exercise to parents and child. If BMI is <85th percentile but >75th percentile, instruct parents and child regarding weight management, diet, and exercise. Advise on limiting television to no more than 2 hours/day. Reassess the child annually.*	*No direct evidence linked to proposed algorithm. Supporting evidence may be Best Practice Group. *Best Practices in the Diagnosis and Treatment of Childhood Obesity*. Kansas: Metropolitan Health Council, 2003. Centers for Disease Control. BMI for Children and Teens. http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm
Krebs 2003	Policy statement **Recommend with provisos – as position statement only** Scope and purpose 50%	USA	Monitoring Children	Calculate and plot BMI once per year in all children and adolescents. Use change in BMI to identify rate of excessive weight gain relative to linear growth. Routine assessments of eating and activity patterns in children and recognition of excessive weight gain relative to linear growth are	*Miller LA, Grunwald G, Johnson SL, Krebs NF. Disease severity at time of referral for pediatric failure to thrive and obesity: time for a paradigm shift? *Journal of Pediatrics* 2002;141:121–124.

	Stakeholder involvement 44% **Rigour of development 32%** Clarity and presentation 63% Applicability 67% Editorial independence 25%			essential throughout childhood. The CDC and Prevention percentile grids for BMI are important tools for anticipatory guidance and discussion of longitudinal tracking of a child's BMI.*	
Nawaz 2001]	Policy statement ***Recommend with provisos*** Scope and purpose 50% Stakeholder involvement 25% **Rigour of development 36%** Clarity and presentation 63% Applicability 50% Editorial independence 25%	USA	Screening and advice. Adults	Independent of weight or BMI, all adult patients should consistently receive counselling about healthful dietary and PA patterns in the context of primary care. Periodic measurement of BMI is recommended for all adults. Although an emphasis on health-promoting behaviours may be preferred to an emphasis on weight per se, weight monitoring is considered useful to both clinician and patient in gauging the adequacy of behavioural interventions.	No apparent link to evidence.

Dietitians of Canada, Canadian Paediatric Society, The College of Family Physicians of Canada, Community Health Nurses Association of Canada 2004	Collaborative policy statement **Recommend with provisos** Scope and purpose 67% Stakeholder involvement 50% **Rigour of development 50%** Clarity and presentation 63% Applicability 50% Editorial independence 100%	Canada	Monitoring. Assessment and monitoring growth (growth charts). Infants and children.	Serial measurements of recumbent length (birth to ages two or three) or height (age ≥2 years), weight and head circumference (birth to age 2 years) should be part of scheduled well-baby and well-child health visits in order to identify infants and children with disturbances in rates of weight gain or physical growth. Although the ideal number of health maintenance visits for children has not been established, current recommendations are that they be organised according to the immunization schedule with additional visits within the first month and also at 4, 6, 9, 12, 18, 24 months and 4–6 years. The frequency for monitoring older children and adolescents is unknown; however, it seems reasonable to continue monitoring growth on an annual basis at primary care visits for the early identification and referral of a child whose growth appears abnormal. To yield accurate measurements, weights and measures should be obtained using calibrated, well-maintained quality equipment and standardised measurement techniques. An individual child's measurements should be recorded in the data table of a consistent growth chart appropriate for age and gender, and then plotted to identify any disturbances in height or weight gain. BMI-for-age is recommended to screen children from age 2 years onwards to identify those who may be at risk for conditions and illnesses related to excess body fat. BMI-for-age provides a reference of overweight for older children and	I recommendation (i.e. based on 'expert opinion' as there is insufficient evidence in quantity or quality to make a recommendation; however, other factors may influence decision-making). (Canadian Task Force on the Periodic Health Examination. *The Canadian Guide to Clinical Preventive Health Care*. Ottawa: Supply and Services Canada, 1994; Saunders NR, Shouldice M. Health maintenance visits: a critical review. In: Feldman W, ed. *Evidence-based Pediatrics. Hamilton*: B.C. Decker Inc., 2000). B recommendation, (i.e. there is fair evidence to recommend this action). (World Health Organization. Physical status: the use and interpretation of anthropometry. Report of a WHO Expert Committee. *World Health Organization Technical Report Series* 1995; 834; Henry JJ. Routine growth monitoring and assessment of growth disorders. *Journal of Pediatric Health Care*

				adolescents that was previously not available. It is consistent with adult BMI, so it can be used continuously from age 2 years to adulthood and can therefore track body size throughout the lifecycle. In addition, BMI-for-age is also a predictor of health risks and future risk of being overweight. A Canadian Pediatric Nutrition Surveillance System should be developed for organised and ongoing collection of anthropometric measurements to follow growth and nutritional status of Canadian children and describe trends in key indicators of their nutritional status.	1992;6(5 Pt 2):291–301; US Department of Health and Human Services, Maternal and Child Health Bureau. Using the CDC growth charts: accurately weighing and measuring: equipment http://depts.washington.edu/ growth [accessed November 2003]). B recommendation, (i.e. there is fair evidence to recommend this action) (Whitaker RC, Wright JA, Pepe MS, Seider KD, Dietz WH. Predicting obesity in young adulthood from childhood and parental obesity. *New England Journal of Medicine* 1997;337(13):869–873). This recommendation is not graded.
National Obesity Taskforce Secretariat 2003	Report **Would not recommend** Scope and purpose 67% Stakeholder involvement 44%	Australia	Monitoring. Adults and children (families).	The NOTS national action agenda recommends improved regular tracking of height and weight status in the community as well as monitoring of knowledge, attitudes, intentions, behaviours and other indicators relating to healthy eating and active living; scope and develop specifications for national nutrition and PA monitoring and surveillance systems; design a comprehensive, regular, coordinated monitoring system for height and weight status (particularly of young	No supporting evidence available.

	Rigour of development 25% Clarity and presentation 50% Applicability 33% Editorial independence 63%			people) and a series of validated indicators of key behaviours and environments related to healthy eating and active living.	

SEARCH STRATEGIES

1. exp obesity/
2. (obes: or overweight or weight gain: or weight change: or weight retention or BMI).mp.
3. (risk factor: or "high risk:").mp.
4. (stage: of change: or readiness for change: or behavio:r change: or attitude: to change: or intention to change: or motivat: to change).mp
5. exp Health Promotion/
6. Health Education/
7. health promotion.ti,ab.
8. health education.ti,ab.
9. Public Health/
10. primary prevent:.mp.
11. preventive health services/ or "early intervention(education)"/ or school health services/
12. exp mass screening/
13. (identif: or target: or detect: or locat: or predispos:).mp.
14. (alcohol: or apnea or arteriosclerosis or atherosclerosis or arthriti: or asthma: or brain or cancer: or carcinoma: or cardiovascular disease: or coronary: or cystic fibrosis or dementia or diabet: or fracture: or growth hormone: or haemodialysis or heart disease: or hypercholesterol: or hypertens: or insulin or metabolic syndrome or myocard: or osteoarthritis or osteoporosis or PCOS or polycystic ovar: syndrome or pressure ulcer: or thrombosis or varicose vein: or venous thrombosis).mp.
15. or/1-2
16. or/3-4
17. or/5-13
18. and/15-17
19. 18 not 14
20. Animals/
21. Human/
22. 20 not (20 and 21)
23. 19 not 22
24. limit 23 to (english language and yr="1990 – 2005")

For guidelines and recommendations the McMaster guidelines search filter was used

guidelines.pt.
practice guidelines.pt.
exp guidelines/
health planning guidelines/
or/1-4

Data sources

The following information sources were searched for interventions:

MEDLINE
HealthPromis
Centre for Reviews and Dissemination, York: www.york.ac.uk/inst/crd
EPPI-Centre - http://eppi.ioe.ac.uk/
NCCHTA (National Coordinating Centre for Health Technology Assessment) - http://www.ncchta.org.uk
New Zealand Health Technology Assessment (NZHTA): www.nzhta.chmeds.ac.nz/
Google + Google Scholar: www.google.co.uk
NRR(National Research Register): www.nrr.nhs.uk/
CRISP(Computer Retrieval of Information on Scientific Projects): www.crisp.cit.nih.gov/

The following information sources were searched for guidelines:

MEDLINE
HealthPromis
Eguidelines: www.eguidelines.co.uk
National Guideline Clearing House (NGC): www.guideline.gov
NeLH guidelines finder: www.libraries.nelh.nhs.uk/guidelinesFinder
SIGN Guidelines: www.sign.ac.uk
New Zealand Guidelines Group (NZGG): www.nzgg.org.nz
Google + Google Scholar: www.google.co.uk

The electronic search strategies were developed in Medline and adapted for use with the other information sources.

EXCLUDED REFERENCES

Excluded guidelines

Paper	Reason for exclusion
All-Party Parliamentary Group on Obesity. *Prevention is better than a cure*. London: National Obesity Forum; 2003]	Does not meet inclusion/exclusion criteria (only recommendations quoted are from other original sources).
All-Party Parliamentary Group on Obesity. *Obesity and Disease: cholesterol and stroke*. London: National Obesity Forum; 2005	Does not discuss identification.
American Association of Clinical Endocrinologists, American College of Endocrinologists. AACE/ACE position statement on the prevention, diagnosis, and treatment of obesity. *Endocrine Practice* 1998;4(5):297–350	Does not discuss identification.
Anonymous. Clinical guidelines on the identification, evaluation and treatment of overweight and obesity in adults. *Wisconsin Medical Journal* 1998;97(9):20–37	Study design.
Baker S, Barlow S, Cochran W, Fuchs G, Klish W, Krebs N, Strauss R, Tershakovec A, Udall J. Overweight children and adolescents: A clinical report of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. *Journal of Pediatric Gastroenterology and Nutrition* 2005;40:533–43	Clinical guidance for the management of overweight and obesity. Although screening for BMI gain in children is recommended, no references given and the generally poor developmental rigour suggest exclusion.
Barlow SE, Deitz WH. Obesity evaluation and treatment: expert committee recommendations. *Pediatrics* 1998;102(3):e29–e40	Discusses identification of overweight and obesity only.
Batch JA, Baur LA. Management and prevention pf obesity and its complications in children and adolescents. *Medical Journal of Australia* 2005;182(3):130–5	Discusses identification of overweight and obesity only.
Berg F, Buechner J, Parham E, et al. Guidelines for childhood obesity prevention programs: promoting healthy weight in children. *Journal of Nutrition Education and Behavior* 2003;35(1):1–4	Does not discuss identification.
Board of Science. *Preventing childhood obesity*. London: British Medical Association; 2005	Discusses identification of overweight and obesity only.
Brigham and Women's Hospital. *Obesity in women. A guide to assessment and management*. Boston, MA: Brigham and Women's Hospital; 2003	Discusses identification of overweight and obesity only.

British Columbia Ministry of Health Guidelines and Protocols Advisory Committee. *Overweight, Obesity and Physical Inactivity*. Victoria: BCMH, 2005	Does not discuss identification.
Canadian Task Force. Periodic health examination, 1994 update: 1. Obesity in childhood. *Canadian Medical Association Journal* 1994;150(6):871–79	Discusses of overweight and obesity only.
Crepaldi G, Belfiore F, Bosello O, et al. Special report: Italian consensus conference – overweight, obesity and health. *International Journal of Obesity* 1991;15:7817–90	Discusses identification of overweight and obesity only.
Daniels SR, Arnett DK, Gidding SS, et al. Overweight in children and adolescents : pathophysiology, consequences, prevention and treatment. *Circulation* 2005;111(15):1999–2012	Does not discuss identification.
Douketis J. and Feldman W. Prevention of obesity in adults. In *Canadian Task Force on the Periodic Health Examination. Canadian Guide to Clinical Preventive Health Care*. Ottawa: Health Canada 1994;574–84	Discusses identification of overweight and obesity only.
Feldman W, Beagan BL. Screening for Childhood Obesity In *The Canadian Guide to Clinical Preventive Health Care Section 2 – Paediatric Preventive Care.* Ottawa: Health Canada; 1994	Discusses identification of overweight or obesity only.
Gibson P, Edmunds L, Halsam DW, et al. *An approach to weight management in children and adolescents (2–18 years) in primary care*. London:the Royal College of Paediatrics and Child Health and National Obesity Forum; 2002	Does not discuss identification.
Himes JH, Dietz WH. Guidelines for overweight in adolescent preventive services: recommendations from an expert committee. *American Journal of Clinical Nutrition* 1994;59:307–16	Discusses identification of overweight and obesity only.
Institute for Clinical Systems Improvement (ICSI). *Preventive services for children and adolescents*. Bloomington (MN): Institute for Clinical Systems Improvement; 2004	Does not meet inclusion/exclusion criteria (does not state obesity specifically re periodic examination).
Institute for Clinical Systems Improvement (ICSI). *Preventive services for adults*. Bloomington (MN): Institute for Clinical Systems Improvement; 2004	Does not meet inclusion/exclusion criteria (Does not state obesity specifically re periodic examination).
Lyznicki JM, Young DC, Riggs JA, et al. Obesity: assessment and management in primary care. *American Family Physician* 2001;63(11):2185–96	Discusses identification of overweight and obesity only.
Magnusson J. Childhood obesity: prevention, treatment and recommendations for health. *Community Practitioner* 2005;78(4):147–49	Does not discuss identification.
Ministry of Health. *Tracking the Obesity Epidemic: New Zealand 1977–2003*. Wellington: Ministry of	Does not discuss identification.

Health, 2004	
National Health and Medical Research Council (NHMRC). *Acting on Australia's weight. A strategic plan for the prevention of overweight and obesity*. Canberra: NHMRC; 1997	Does not meet inclusion/exclusion criteria (strategic plan only).
National Health and Medical Research Council (NHMRC). *Clinical Practice Guidelines for the Management of Overweight and Obesity in Adults*. Canberra: NHMRC, 2003	Does not discuss identification.
National Health and Medical Research Council (NHMRC). Overweight and Obesity in Children and Adolescents A Guide for General Practitioners. Canberra: NHMRC, 2003	Does not discuss identification.
National Health and Medical Research Council (NHMRC). Overweight and Obesity in Adults A Guide for General Practitioners. Canberra: NHMRC, 2003	Does not discuss identification.
National Obesity Forum. *Guidelines on management of adult obesity and overweight in primary care*. National Obesity Forum website; 2005	Does not discuss identification.
Obesity Management Task Force. Management of obesity in adults: project for European primary care. *International Journal of Obesity* 2004;28:S226–31	Discusses identification of overweight and obesity only.
Orzano AJ, Scott JG. Diagnosis and treatment of obesity in adults: an applied evidence-based review. *Journal of the American Board of Family Practice* 2004;17(5):359–69	Discusses identification of overweight and obesity only.
Russell RM, PIMA Health System. *Prevention and reduction of pediatric overweight and obesity Clinical Practice Guidelines*. Tucson: PIMA Health System, 2005	Discusses identification of overweight and obesity only (Arizona Health Care Cost Containment System).
Scottish Intercollegiate Guidelines Network (SIGN). *Management of obesity in children and young people. A national clinical guideline*. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2003	Discusses identification of overweight and obesity only.
Scottish Intercollegiate Guidelines Network. *Obesity in Scotland, integrating prevention with weight management*. Edinburgh, Scotland: Scottish Intercollegiate Guidelines Network; 1996	Robin Harbour, Quality and Information Director SIGN, confirmed that the link to the evidence in this guideline is not available and that it is currently under review to be updated or withdrawn (by telephone 09.08.05). SIGN have advised us not to use it.
Speiser PW, Rudolf MCJ, Anhalt H, et al. Consensus statement: childhood obesity. *Journal of Clinical Endocrinology and Metabolism*	Discusses identification of overweight and obesity only.

2005;90(3):1871–87	
University of Texas at Austin, School of Nursing, *Family Nurse Practitioner Program. Evaluation and treatment of childhood obesity*. Austin (Texas): University of Texas at Austin, School of Nursing: 2004	Discusses identification of overweight and obesity only.
US Preventive Services Task Force. Screening and interventions for overweight in children and adolescents: recommendation statement. *Pediatrics* 2005;116(1):205–9	Discusses identification of overweight and obesity only.
Whitlock EP, Williams SB, Gold R, et al. Screening and interventions for childhood overweight: a summary of evidence for the US Preventive Services task Force. *Pediatrics* 2005;116(1):125–44	Discusses identification of overweight and obesity only.

Excluded papers

Paper	**Reason for exclusion**
Agras WS, Hammer LD, McNicholas F. Risk factors for childhood overweight: a prospective study from birth to 9.5 years. *Journal of Pediatrics* 2004;145(1):20–25.	Discussion of risk factors only.
Armstrong J, Reilly JJ, Child Health Information Team. The prevalence of obesity and undernutrition in Scottish children: growth monitoring within the Child Health Surveillance Programme. *Scottish Medical Journal* 2003;48(2):32–37	Discusses identification of overweight and obesity only.
Bak H, Petersen L, Sorensen TIA. Physical activity in relation to development and maintenance of obesity in men with and without juvenile onset obesity. *International Journal of Obesity* 2004;28:99–104	Outcomes not relevant to review (relationship of physical activity to obesity).
Ball K, Crawford D, Ireland P, et al. Patterns and demographic predictors of 5-year weight change in a multi-ethnic cohort of men and women in Australia. *Public Health Nutrition* 2002;6(3):269–80	Identifies critical periods only.
Ball K, Crawford D. Socioeconomic status and weight change in adults: a review. *Social Science and Medicine* 2005;60:1987–2010	Literature review.
Blair SN, Nichaman MZ. The public health problem of increasing prevalence rates of obesity and what should be done about it. *Mayo Clinic Proceedings* 2002;77(2):109–113	No study design (discussion paper).
Blundell JE, Cooling J. Routes to obesity: phenotypes, food choices and activity. British	Does not discuss identification.

Journal of Nutrition 2000;83(Suppl 1):S33–38	
Borra ST, Kelly L, Shirreffs MB, et al. Developing health messages: qualitative studies with children, parents, and teachers help identify communications opportunities for healthful lifestyles and the prevention of obesity. *Journal of the American Dietetic Association* 2003;103(6):721–28	Not relevant to this review.
Boudreaux ED, Wood KB, Mehan D, et al. Congruence of readiness to change, self efficacy, and decisional balance for physical activity and dietary fat reduction. *American Journal of Health Promotion* 2003;17(5):329–336	Outcomes not relevant to review (relations between decisional balance and self-efficacy variables on stage of change).
Brown WJ, Miller YD, Miller R. Sitting time and work patterns as indicators of overweight and obesity in Australian adults. *International Journal of Obesity* 2003;27(11):1340–6	Not relevant to this review.
Buiten C, Metzger B. Childhood obesity and risk of cardiovascular disease: a review of the science. *Pediatric Nursing* 2000;26(1):13–18	No study design (discussion paper).
Bulik CM, Sullivan PF, Kendler KS. Genetic and environmental contributions to obesity and binge eating. *International Journal of Eating Disorders* 2003;33:293–8	Discussion of risk factors only.
Burton WN, Chen CY, Schultz AB, et al. The costs of body mass index levels in an employed population. *Statistical Bulletin – Metropolitan Insurance Companies* 1999;80(3):8–14	Not held at British Library. Unable to trace.
Burton WN, Chen CY, Schultz AB, et al. The economic costs associated with body mass index in a workplace. *Journal of Occupational and Environmental Medicine* 1998;40(9):786–92	Not relevant to this review.
Chomitz VR, Colling J, Kim J, Kramer E, McGowan R. Promoting healthy weight among elementary school children via a health report card approach. *Archives of Pediatric Adolescent Medicine* 2003;157: 765–72	Essentially concerns the identification of overweight children.
Coday M, Klesges LM, Garrison RJ, et al. Health Opportunities with Physical Exercise (HOPE): social contextual interventions to reduce sedentary behavior in urban settings. *Health Education Research* 2002;17(5):637–47	Not relevant to this review.
Cole TJ. Children grow and horses race: is the adiposity rebound a critical period for later obesity? *BMC Pediatrics* 2004;4(1):6–12	Not relevant to this review.
Cook C, Simmons G, Swinburn B, et al. Changing risk factors for non-communicable disease in New Zealand working men – is workplace intervention effective? *New Zealand Medical Journal*	Does not discuss identification.

2001;114(1130):175–78	
Danielzik S, Langnase K, Mast M, et al. Impact of Parental BMI on the manifestation of overweight 5–7 year old children. *European Journal of Nutrition* 2002;41:132–38	Discussion of risk factors only.
Danielzik S, Czerwinski-Mast M, Langnase K, et al. Parental overweight, socioeconomic status and high birth weight are the major determinants of overweight and obesity in 5–7 y-old children: baseline data of the Kiel Obesity Prevention Study (KOPS). *International Journal of Obesity* 2004;28(11):1494–502	Discusses identification of overweight and obesity only.
Dausch JG. The problem of obesity: fundamental concepts of energy metabolism gone awry. *Critical Reviews in Food Science and Nutrition* 1992;31(4):271–98	Literature review/discussion of risk factors only.
de Onis M. The use of anthropometry in the prevention of childhood overweight and obesity. *International Journal of Obesity* 2004;28:S81–5	No study design.
De Pinto C. Childhood obesity. A review of the causes, prevention, and the role of the primary care provider. *Maryland Medicine* 2004;5(3):9–11, 13–5.	Literature review.
Dietz WH, Gortmaker SL. Preventing obesity in children and adolescents. *Annual Review of Public Health* 2001;22:337–53	Literature review.
Dietz W. How to tackle the problem early? The role of education in the prevention of obesity. *International Journal of Obesity* 1999;23(Suppl 4):S7–S9	No study design (framework discussion paper).
DuBose KD, Kirtland KA, Hooker SP, et al. Physical activity trends in South Carolina, 1994–2000. *Southern Medical Association* 2004;97(9):806–10.	Does not discuss identification.
Dwyer T, Blizzard CL. Defining obesity in children by biological endpoint rather than population distribution. *International Journal of Obesity* 1996;20:472–480	Not relevant to this review.
Elgar FJ, Roberts C, Moore L, et al. Sedentary behaviour, physical activity and weight problems in adolescents in Wales. *Public Health* 2005;119:518–24	Does not discuss identification.
Elliott MA, Copperman NM, Jacobson MS. Pediatric obesity prevention and management. *Minerva Pediatrica* 2004;56(3):265–276	Literature review.
Faith MS, Berkowitz RI, Stallings VA, et al. Parental feeding attitudes and styles and child body mass index: prospective analysis of a gene-environment	Study population with diagnosed risk.

interaction. *Pediatrics* 2004;114(4):429–46	
Freedman DS, Kettel Khan L, Serdula MK, et al. The relation of childhood BMI to adult adiposity: The Bogalusa Heart Study. *Pediatrics* 2005;115:22–7.	Discussion of risk factors only.
Freedman DS, Khan LK, Serdula MK, et al. Inter-relationships among childhood BMI, childhood height and adult obesity: the Bogalusa Heart Study. *International Journal of Obesity* 2004;28(1):10–6.	Outcomes not relevant to review (appropriateness of preferential classification of taller children as overweight).
Fulton JE, McGuire MT, Caspersen CJ, et al. Interventions for weight loss and weight gain prevention among youth. *Sports Medicine* 2001;31(3):153–65	Literature review.
Garrow JS. Is it possible to prevent obesity? *Infusionstherapie* 1990;17:28–31	No study design (discussion paper).
Gill TP. Key issues in the prevention of obesity. *British Medical Bulletin* 1997;53(2):359–88	Literature review.
Gill T, King L, Caterson I. Obesity prevention: necessary and possible. A structured approach for effective planning. *Proceedings of the Nutrition Society* 2005;64:255–61	Literature review.
Goran MI, Figueroa R, McGloin A, et al. Obesity in children: recent advances in energy metabolism and body composition. *Obesity Research* 1995;3(3):277–89	Does not discuss identification.
Goran MI. Measurement issues related to studies of childhood obesity: assessment of body composition, body fat distribution, physical activity, and food intake. *Pediatrics* 1998;101:505–18	Not relevant to this review.
Griffiths M, Payne PR, Stunkard AJ, et al. Metabolic rate and physical development in children at risk of obesity. *The Lancet* 1990;336:76–8	Discussion of risk factors only
Haire-Joshu D, Nanney MS. Prevention of overweight and obesity in children: influences on the food environment. *Diabetes Educator* 2002;28(3):415–23	Literature review
Harris HE, Ellison GTH, Clement S. Relative importance of heritable characteristics and lifestyle in the development of maternal obesity. *Journal of Epidemiology and Community Health* 1999;53(2):66–74	Does not discuss identification.
He Q, Karlberg J. Prediction of adult overweight during the pediatric years. *Pediatric Research* 1999;46(6):697–703	Superseded by more recent paper (He Q, 2002).
Heywood A, Firman D, Sanson-Fisher R, et al. Correlates of physician counseling associated with obesity and smoking. *Preventive Medicine*	Outcomes not relevant to review (variables associated with GP identification of overweight and

1996;25:268–76	smoking status and occurrence of counselling for these risk factors).
Hill JO, Wyatt HR, Melanson EL. Genetic and environmental contributions to obesity. *Medical Clinics of North America* 2000;84(2):333–46	Discussion of risk factors only.
Hill JO, Melanson EL, Wyatt HT. Dietary fat intake and regulation of energy balance:I mplications for obesity. *Journal of Nutrition* 2000;130(2S Suppl):S284S–8	Not relevant to this review.
Houng V. Putting prevention into practice: counseling patients about behaviour change, part 1. *Journal of the Oklahoma State Medical Association* 2005;98(4):147–50	No study design (discussion paper).
Irving LM, Neumark-Sztainer D. Integrating the prevention of eating disorders and obesity: feasible or futile? *Preventive Medicine* 2002;34:299–309	Does not discuss identification.
Jacobsen BK, Njolstad I, Thune I, et al. Increase in weight in all birth cohorts in a general population. *Archives of Internal Medicine* 2001;161(3):466–72.	Not relevant to this review.
Jensen GL, Kita K, Fish J, et al. Nutrition risk screening characteristics of rural older persons: relation to functional limitations and health care charges. *American Journal of Clinical Nutrition* 1997;66:819–28	Does not discuss identification.
Jonides LK. Childhood obesity: an update. *Journal of Pediatric Health Care* 1990;4(5):244–51	Literature review.
Karp WB. Childhood and adolescent obesity: a national epidemic. *Journal of the California Dental Association* 1998;26(10):771–3	No study design (discussion paper).
Kealy MM. Preventing obesity: exploring the Surgeon General's outline for action. AWHONN lifelines 2003;7(1):24–7	Literature review.
Kearney JM, de Graaf C, Damkjaer S, et al. Stages of change towards physical activity in a nationally representative sample in the European Union. *Public Health Nutrition* 1999;2(1A):115–24	Not relevant to this review.
Kiernan M, Winkleby MA. Identifying patterns for weight-loss treatment. *Archives of Internal Medicine* 2000;160:2169–76	Discusses identification of overweight and obesity only.
Kral JG. Preventing and treating obesity in girls and young women to curb the epidemic. *Obesity Research* 2004;12(10):1539–46	No study design (discussion paper).
Kumanyika SK. Minisymposium on obesity: overview and some strategic considerations. *Annual Review of Public Health* 2001;22:293–308	Literature review.

Laing P. Childhood obesity: a public health threat. *Paediatric Nursing* 2002;14(10):14–6	No study design (discussion paper).
Lambert EV, Lambert MI, Hudson K, et al. Role of physical activity for health in communities undergoing epidemiological transition. *World Review of Nutrition and Dietetics* 2001;90:110–26	Does not discuss identification.
Mascarenhas MR, Tershakovec AM, Stettler N. Nutrition interventions in childhood for the prevention of chronic diseases in adulthood. *Current Opinion in Pediatrics* 1999;11(6):598–604	Not relevant to review.
McElroy SL, Kotwal R, Malhotra S, et al. Are mood disorders and obesity related? A review for the mental health professional. *Journal of Clinical Psychiatry* 2004;65(5):634–51	Study population with mental disorders in the care of health professionals.
McGarvey E, Keller A, Forrester M, et al. Feasibility and benefits of a parent-focused preschool child obesity intervention. *American Journal of Public Health* 2004;94(9):1490–5	Not relevant to this review.
Mo-suwan L, Tongkumchum P, Puetpaiboon A. Determinants of overweight tracking from childhood to adolescence: a 5 y follow-up study of Hat Yai schoolchildren. *International Journal of Obesity* 2000;24(12):1642–7	Discussion of risk factors only.
Montiero POA, Victoria CG. Rapid growth in infancy and childhood and obesity in later life – a systematic review. *Obesity Reviews* 2005;6:143–54	Discussion of risk factors only.
Muller MJ, Asbeck I, Mast M, et al. Prevention of obesity – More than an intention. Concept and first results of the Kiel Obesity Prevention Study (KOPS). *International Journal of Obesity* 2001;25(Suppl 1):S66–74	Does not discuss identification.
Ness AR. The Avon Longitudinal Study of Parents and Children (ALSPAC) – a resource for the study of the environmental determinants of childhood obesity. *European Journal of Endocrinology* 2004;151:U141–9	Discussion of risk factors only.
Neumark-Sztainer D. School-based programs for preventing eating disturbances. *Journal of School Health* 1996,66(**2**):64–71	No study design (framework discussion paper).
NSW Centre for Public Health Nutrition. *Best options for promoting healthy weight and preventing weight gain in NSW*. Sydney: NSW Department of Health; 2004	Literature review.
Ong, KKL, Ahmed ML, Emmett PM, et al. Association between postnatal catch-up growth and obesity in childhood: prospective cohort study. *British Medical Journal* 2000;320:967–71	Discussion of risk factors only.

Parsons TJ, Power C, Logan S, et al. Childhood predictors of adult obesity:a systematic review. *International Journal of Obesity* 1999;23(Suppl 8):S1–107	Discussion of risk factors only.
Perusse L, Bouchard C. Role of genetic factors in childhood obesity and in susceptibility to dietary variations. *Annals of Medicine* 1999;31(Suppl 1):19–25	Literature review.
Pietrobelli A, Peroni DG, Faith MS. Pediatric body composition in clinical studies: which methods in which situations? *Acta Diabetologica* 2003;40:S270–3	Literature review.
Pietrobelli A. Outcome measurements in paediatric obesity prevention trials. *International Journal of Obesity* 2004;28:S86–9	Outcomes not relevant to review.
Power C, Lake JK, Cole TJ. Body mass index and height from childhood to adulthood in the 1958 British birth cohort. *American Journal of Clinical Nutrition* 1997;66(5):1094–101	Does not discuss identification.
Power C, Lake JK, Cole TJ. Measurement and long-term health risks of child and adolescent fatness. *International Journal of Obesity* 1997;21(7):507–26.	Does not discuss identification.
Prochaska JO, Norcross JC, Fowler JL, et al. Attendance and outcome in a work site weight control program: processes and stages of change as process and predictor variables. *Addictive Behaviors* 1992;17:35–45	Does not discuss identification.
Reilly JJ, Armstrong J, Dorosty AR, et al. Early risk factors for obesity in childhood: cohort study. *British Medical Journal* 2005;330(7504):1357–63	Discussion of risk factors only.
Reilly JJ. Assessment of body composition in infants and children. *Nutrition* 1998;14(10):821–5	Not relevant to this review.
Resnicow K. School-based obesity prevention: population versus high-risk interventions. *Annals of the New York Academy of Sciences* 1993;699:154–66	Does not discuss identification.
Rocchini AP, Pierpont ME. The child at risk for developing heart disease. *Minnesota Medicine* 1992;75:25–92	Literature review.
Rodriguez G, Moreno LA, Blay MG, et al. Body composition in adolescents: measurements and metabolic aspects. *International Journal of Obesity* 2004;28:S54–8	Discusses identification of overweight and obesity only.
Sardinha LB, Going SB, Teixeira PJ, et al. Receiver operating characteristic analysis of body mass index, triceps skinfold thickness and arm girth for obesity screening in children and adolescents. *American*	Discusses identification of overweight and obesity only.

Journal of Clinical Nutrition 1999;70(6):1090–5	
Schmitz MKH, Jeffery RW. Public health interventions for the prevention and treatment of obesity. *Medical Clinics of North America* 2000;84(2):491–512	Literature review.
Schumann L, Nichols MR, Livingston D. Preventing pedatric obesity: assessment and management in the primary care setting. *Nurse Practitioner* 2002;14(2):55–62	Discusses identification of overweight and obesity only.
Schwartz F. Obesity in adult females:the relationship among personality characteristics, dieting and weight. *AAOHN Journal* 1993;41(10):504–9	Not relevant to this review.
Sherwood NE, Morton N, Jeffery RW, et al. Consumer preferences in format and type of community-based weight control programs. *American Journal of Health Promotion* 1998;13(1):12–8	Does not meet inclusion/exclusion criteria (weight management programme).
Shunk JA, Birch LL. Girls at risk for overweight at age 5 are at risk for dietary restraint, disinhibited overeating, weight concerns, and greater weight gain from 5 to 9 years. *Journal of the American Dietetic Association* 2004;104:1120–6.	Discusses identification of overweight or obesity only.
Skinner JD, Bounds W, Carruth BR, et al. Predictors of children's body mass index: a longitudinal study of diet and growth in children aged 2–8 y. *International Journal of Obesity* 2004;28:476–82	Discussion of risk factors only.
Steinbeck KS. The importance of physical activity in the prevention of overweight and obesity in childhood: a review and an opinion. *Obesity Reviews* 2001;2:117–30	Literature review.
Stice E, Presnell K, Shaw H. Psychological and behavioural risk factors for obesity onset in adolescent girls:a prospective study. *Journal of Consulting and Clinical Psychology* 2005;73(2):195–202	Discussion of risk factors only.
Strauss R. Perspectives on childhood obesity. *Current Gastroenterology Reports* 2002;4(3):244–50	Literature review.
Strock GA, Cottrell ER, Abang AE, et al. Childhood obesity: a simple equation with complex variables. *Journal of Long-Term Effects of Medical Implants* 2005;15(1):15–32	Literature review/does not discuss identification.
Strumpf E. *The obesity epidemic in the United States: causes and extent, risks and solutions*. New York: The Commonwealth Fund; 2004	Does not discuss identification.
Swinburn BA, Caterson I, Seidell JC, et al. Diet, nutrition and the prevention of *excess* weight gain and obesity. *Public Health Nutrition 20*04;7(1A):123–	Literature review.

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Talvi AI, Jarvisalo JO, Knuts LR. A health promotion programme for oil refinery employees: changes of health promotion needs observed at three years. *Occupational Medicine* 1999;49(2):93–101	Does not discuss identification.
Thomas NE, Baker JS, Davies B. Established and recently identified coronary heart disease risk factors in young people: the influence of physical activity and physical fitness. *Sports Medicine* 2003;33(9):633–50	Literature review.
Vanltallie TB. Waist circumference: a useful index in clinical care and health promotion. *Nutrition Reviews* 1998;56(10):300–13	Literature review.
Veugelers PJ, Fitzgerald AL. Effectiveness of school programs in preventing childhood obesity: a multilevel comparison. *American Journal of Public Health* 2005;95(3):432–5	Does not discuss identification.
Weinstein Y, Kamerman T, Berry E, et al. Mechanical efficiency of normal-weight prepubertal boys predisposed to obesity. *Medicine and Science in Sports and Exercise* 2004;36(4):567–73	Discussion of risk factors only.
Whitaker RC. Predicting preschooler obesity at birth: the role of maternal obesity in early pregnancy. *Pediatrics* 2004;114(1):29–36	Discussion of risk factors only.
Widga AC, Lewis NM. Defined, in-home, prenatal nutrition intervention for low-income women. *Journal of the American Dietetic Association* 1999;99(9):1058–62.	Not relevant to this review.
Wiecha JL, Casey VA. High prevalence of overweight and short stature among head start children in Massachusetts. *Public Health Reports* 1994;109(6):767–73	Discussion of prevalence only.
Williams CL, Gulli MT, Deckelbaum RJ. Prevention and treatment of childhood obesity. *Current Atherosclerosis Reports* 2001;3:486–97	Literature review.
Wing RR. Changing Diet and exercise behaviours in individuals at risk for weight gain. *Obesity Research* 1995;3(Suppl 2):s277–82	Not held at British Library. Unable to trace.
Wisemantle W, Maynard LM, Guo SS, et al. Childhood weight, stature and body mass index among never overweight, early-onset overweight and late-onset overweight groups. *Pediatrics* 2000;106(1):14–22	Discusses identification of overweight and obesity only.
Yancey AK, Jordan A, Bradford J, et al. Engaging high-risk populations in community-level fitness promotion: ROCK! Richmond. *Health Promotion*	Outcomes not relevant to review (risk of chronic disease).

Practice 2003;4(2):180–8	

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