Healthy lives
Children and young people

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1. Executive summary

The aim of this briefing paper is to provide background information and an overview of current evidence around factors affecting the health and wellbeing of children and young people, focusing on the 5–19 age-group. Like the other papers in this series (on Early Years, Workplace Health and Communities), it is a rapid review, not a full-scale systematic review of the literature. It is set in the context of three themes from the Marmot Review, *Fair Society, Healthy Lives*, namely: give every child the best start in life; enable all children, young people and adults to maximise their capacities and have control over their lives; and strengthen the role and impact of ill-health prevention (section 2).

Section 3 reviews the background and current position. While there have been some improvements in the wellbeing of UK children in recent years, there is concern that these do not compare well with gains made in other northern and western European countries. Furthermore, the aggregate figures hide the variations across socioeconomic classes, with disadvantaged children and young people bearing a disproportionate burden. Issues around the major lifestyle and environmental factors contributing to poor health are highlighted: food insecurity and hunger, poor diet, physical inactivity, the obesogenic environment and air pollution. Factors affecting mental health, cognitive skills, wellbeing and risky behaviour (sexual behaviour, smoking, excess alcohol intake and violence) are also discussed – for example, differences in the rate of maturation/activity of different parts of the brain (the prefrontal cortex and subcortical activity) can help explain why adolescents are more prone to risky behaviour than either younger children or adults. There is also evidence that adverse childhood experiences and poverty in childhood can impact on health, wellbeing and achievement in later life.

To address poor or risky behaviours – and therefore improve health and wellbeing, both immediately and for the future – it is important to identify children/young people at risk at an early stage and support them, their families, schools, health professionals and the community. There has been a big emphasis on using evidence-based interventions and this is discussed in section 4. On the basis of the systematic reviews listed in section 4.2, the research-based evidence is mixed and at best reported modest positive outcomes. The methodology is difficult and the quality of some of the studies is questionable. However, multidisciplinary, multicomponent approaches, particularly those involving both families and schools seem likely to be more successful (for example, in reducing BMI) than those addressing a single risk behaviour (such as increasing physical activity); this is not surprising given the diverse factors and contexts underlying health behaviours.

In section 4.3 a number of case studies are described that have been introduced in practice and have been evaluated/have ongoing evaluation planned. These illustrate the challenges/difficulties in knowing what has worked and what has not – even the future of initiatives that seem initially to be successful can be vulnerable to political and economic trends.

Therefore, to address the Marmot principles – give every child the best start in life; enable all children, young people and adults to maximise their capabilities and have control over their lives; and strengthen the role and impact of ill-health prevention – is challenging. Identifying and engaging with children and families at risk at an early stage (before unhealthy lifestyle behaviours are established) is critical in order to prepare them for the turbulent time of adolescence and future working life and parenthood, as discussed in section 5. When, where and how to intervene is not clear, despite all the efforts from researchers and practitioners to ascertain a reliable evidence base. What is clear is that all children and young people need high-quality care and education, with support for their parents/carers that is sensitive to social and cultural differences and that politicians and policymakers must be convinced of the resulting economic benefits.
2. Introduction

This briefing paper covers factors affecting the health and wellbeing of children and young people, focusing on the 5–19 age-group. It follows and complements the briefing paper that looked at the early years (0–5). The aim of the report is to provide background information and an overview of current evidence around the factors affecting health and wellbeing, together with examples of interventions designed to prevent or address health-detracting behaviour. These papers are part of the wider Healthy Lives programme, which also looks at community and workplace health.

As with the Early Years briefing paper, this paper particularly highlights issues that are relevant to three of the themes of the Marmot Review, Fair Society, Healthy Lives (Marmot 2010):

- give every child the best start in life;
- enable all children, young people and adults to maximise their capabilities and have control over their lives; and
- strengthen the role and impact of ill-health prevention.

The areas covered are: lifestyle and environmental factors, such as diet, physical activity and sedentary behaviour, pollution, advertising and social media; mental health, cognitive skills and wellbeing; and risky behaviours including smoking, alcohol consumption and sexual behaviour. The importance of health inequality and poverty as a factor in determining the outcomes for children and young people is discussed. Where appropriate, brief mention is made of issues relating to health systems and children and young people (for a detailed review on this topic see a recent report by the Nuffield Trust (2016), The Future of Child Health Services: New Models of Care).

3. The big issues – current position

3.1 Introduction

A 2013 report by UNICEF compared five dimensions of child wellbeing – material wellbeing; health and safety; education; behaviours and risk; and housing and environment – in 29 high-income countries including the United Kingdom (UNICEF 2013). A further useful overview of the health of the 15 million under-20s (who make up nearly a quarter of the population), based on a range of background statistics, is the second annual report (2015) of the Children and Young People’s Health Outcomes Forum (Department of Health 2015). Both these reports have shown improvements in the health and wellbeing of children living in the United Kingdom. However, the gains are not comparable with those made in other northern and western European countries (such as The Netherlands, Norway, Iceland and Finland) and, even where the gains have been made, aggregate figures hide worrying variations between different areas of the country, usually based on socioeconomic differences.

Together with information cited by Action on Smoking and Health (ASH 2015a; ASH 2015b), the Institute of Alcohol Studies (IAS 2013), the Sex Education Forum (Sex Education Forum 2016) and Allergy UK (Allergy UK 2016), the statistics provide an indication of the main areas that need to be addressed as well as the extent of the problems currently affecting young people. For example:

- more than a third of 11–15-year-olds are obese or overweight;
- only 14 per cent of boys and 8 per cent of girls aged 13–15 meet recommended physical activity levels;
- 10 per cent of 5–16-year-olds have a diagnosable mental health disorder and half of all mental illnesses, excluding dementia, start by age 14 and 75 per cent by age 24;
- 50 per cent of children have some sort of allergy and over 10 per cent of children have asthma;
- alcohol consumption in the 16–24 age-group is falling, but there is concern about binge drinking, particularly in young women;
• almost two thirds of adult smokers begin before they are 18, although there has been a decline in the number of children smoking;

• sexually transmitted infections are more common in young people than any other group; and

• under-20s account for over 4.9 million A&E attendance each year, compared with 3.6 million for those aged over 65.

Another milestone document covering children and young people up to the age of 25 in England is Our Children Deserve Better (CMO 2013). It makes the business case for securing improvements, pointing out that, despite the current challenging financial situation, lack of action now is likely to be costlier in the longer term. For example, the annual cost to the public sector in England associated with children born preterm until they reach 18 years old is estimated at £1.24 billion. The long-term costs of obesity in England are thought to be around £600 million a year. For mental-health disorders, the annual short-term costs of emotional, conduct and hyperkinetic disorders among children aged 5–15 in the United Kingdom are estimated at £1.58 billion and the long-term costs £2.35 billion. The CMO report argues that science and sound finance both support acting early, for example, a 6–10 per cent annual return on investment is expected as a result of spending on interventions early in life.

It also illustrates how the burden of disadvantage weighs heavily on children and young people: 26.9 per cent experience poverty or social exclusion compared with 22.6 per cent of the overall population. Quoting from statistics published by the European Commission in 2013, the CMO report says these rates compare poorly with the best-performing country – The Netherlands, which has 15.7 per cent of children in or at risk of poverty.

Schools are an important arena for a range of health-promoting interventions and delivery methods, going well beyond the formal academic curriculum (see the case studies and Evidence Tables in this briefing paper, and the Communities paper in this series, section 4.1.5.3).

3.2 Lifestyle and environmental factors

3.2.1 Diet and obesity

Children’s diet is an important factor in their health and development and therefore becomes a focus of attention when addressing areas of concern, such as obesity, food insecurity and tooth decay.

The NHS provides advice and recommendations for parents on how to maintain a healthy weight for children aged 6–15 (NHS Choices 2016a). The emphasis is on a balanced diet, the need for physical activity and the importance of involving the whole family with parents acting as role models. The new Eatwell Guide shows different types of food and the proportions needed for a healthy diet (NHS Choices 2016b). As well as the five-a-day portions of fruit and vegetables, parents should ensure that children get plenty of fibre through wholegrain varieties of bread, rice and pasta; the Scientific Advisory Committee on Nutrition has recently recommended that fibre intake should increase to 30g a day for those aged 16 and over, 25g for 11- to 15- year-olds and 20g for 5- to 11-year-olds (SACN 2015).

Poor diet is a key driver in obesity. The proportion of children who are more than a healthy weight significantly increases between the start and end of primary school increases from one in five to one in three, and reaches 34.6 per cent among boys and 36.2 per cent among girls aged 11–15. Although there has been an apparent levelling-off in the overall rate of child obesity, this masks serious inequalities – for example, the rate of obesity (as opposed to overweight and obesity) among children in the most-deprived decile is more than double (25.0 per cent) that of the least-deprived (11.5 per cent) (PHE 2016).

Issues around two more of the most pressing concerns – the impacts of food insecurity and excess sugar intake on children and young people – are highlighted below.

3.2.2 Food insecurity and hunger

Given the link between poor health outcomes and social deprivation, the increasing use of foodbanks in the UK, as identified in a 2014 parliamentary research briefing (Downing and Kennedy 2014), highlights the need to address the impact hunger may have on children’s health and wellbeing. Canadian researchers
reviewed the evidence to discover what is known about the effect of food insecurity and hunger on children’s health and behaviour (Ke and Ford-Jones 2015). Among their findings were possible links with:

- reduced learning and productivity;
- the risk of developing depression and suicidal ideation as well as mood, behaviour and substance-abuse disorders during late adolescence and young adulthood; and
- the risk of developing obesity and chronic conditions, including asthma.

Furthermore, mothers of these children were more likely to be at risk from depressive disorders, post-traumatic stress disorder or substance abuse, which in turn can affect the mother’s ability to respond to her child’s physical and emotional needs.

The Canadian report considers that school-based interventions such as nutrition programmes are needed to address this in the short term, but that the long-term solution is adequate incomes for families. Food banks do not offer a solution because often the food on offer has low nutrient value and take-up is poor. They are mostly seen as a last resource at times of extreme desperation.

A further area of concern is ‘holiday hunger’ – children who receive free school meals during term time not getting enough to eat over the holidays. There are 170 days of the year in which these children may not have a nutritious meal – of the 1.1 million three-day emergency food supplies provided by food banks run by the Trussell Trust in 2015/16 financial year, over 40 per cent went to children (Trussell Trust 2016a). The All-Party Parliamentary Group on School Food has established a task force on holiday hunger, and has published recommendations including developing a local-authority resource with a common evaluation framework, mapping of existing holiday provision, and more research into the scale of the issue (APPG on School Food 2015). Other practical options include providing free activities for children that include a basic lunch, running ‘lunch clubs’ for children, and providing supermarket vouchers for eligible families (North East Child Poverty Commission 2016). The Trussell Trust has also begun a The Trussell Trust’s Holiday Meals Project, allowing foodbanks to develop a holiday meals club without starting from scratch – this began in the Easter holiday 2016, and will be rolled out across the Foodbank Network in summer 2016 (Trussell Trust 2016b).

### 3.2.3 Sugar intake

The case for action to reduce sugar intake is set out in both the Scientific Advisory Committee on Nutrition’s report *Carbohydrates and Health* (SACN 2015) and the Public Health England document *Sugar Reduction* (PHE 2015a). Evidence suggests that **consumption of high levels of sugar and sugary drinks leads to greater risk of tooth decay, weight gain and increases in BMI in teenagers and children and increases the risk of developing type 2 diabetes.** The SACN report recommended that the percentage of energy intake from sugar, currently 12–15 per cent across all age groups, should be halved to no more than 5 per cent. The current government recommendation that starchy carbohydrates (wholegrain where possible) should form 50 per cent of daily calorie intake should be maintained. The government has accepted SACN’s findings and they are now being integrated into official UK advice on the best dietary approach for health and key nutrition policy instruments, such as the Eatwell Guide and advice on institutional catering. It also announced in the March 2016 budget that from 2018 there would be a tax on sugary drinks, the money raised to be used on primary-school sports (BBC News 2016). Public Health England has estimated that by meeting the SACN targets within 10 years ‘we would not only improve an individual’s quality of life but could save the NHS, based on a conservative assessment, around £500 million every year’.

Public Health England calls for action across three main areas that affect individual decisions on sugar intake: influencers such as marketing, promotion and advertising campaigns; the food supply from supermarkets to cafés, bars, and workplace and school canteens; and knowledge, education, training and tools that can help individuals to make the right choices for themselves and to help others choose healthier diets. A recent *Lancet* paper (Lobstein et al. 2015) discusses in detail the role of the food industry, which they claim has ‘a special interest in targeting children’. It urges the public-health community, which has been campaigning for restrictions on the adverse marketing of breastmilk substitutes, to spend similar efforts to protect older children from the ‘sophisticated marketing of sedentary activities and energy-
dense, nutrient-poor food and drink’. According to a 2015 systematic review (Sonntag et al. 2015), the food industry uses marketing techniques to forge long-lasting relations and create brand loyalty, and there are six key ‘obesogenic’ environments through which the food industry may influence dietary behaviour in young children: schools, retailers, television, internet, home and promotional campaigns. It found that healthy foods were far less likely to be advertised than those high in sugar, fat and sodium and the authors suggest that these issues need to be taken into account in development of both health policy and interventions.

Children consume more than half of their daily calorie intake at home, so it might be assumed that parents’ eating habits are important in determining the diet of those aged 10–14. However, a review of evidence on how parents influence their children’s food intake when they are away from the home and taking decisions independently, for example at school, found little evidence of links between good practice in the home and the behaviour of children in independent settings (Reicks et al 2015).

The cause of obesity has been misunderstood, according to a study published *Frontiers in Pediatrics* (Zandian et al. 2015). The study argues that the reason for the limited success of interventions such as diet, exercise, pharmacological interventions and even individualised drugs is that body weight is mainly under external control; the brain permits us to eat under most circumstances and unless the financial or physical cost of food is high, eating and body weight increase by default. When energy-rich, inexpensive foods are so easily available, people need external support to maintain a healthy body weight. One possible intervention might be the use of feedback on computer screens, as currently used successfully by people with eating disorders.

### 3.2.4 Physical activity and sedentary behaviour

**Rates of sedentary behaviour across all age groups remain ‘stubbornly high’** in the United Kingdom, according to the British Heart Foundation’s physical-activity statistics for 2015 (BHF 2015). The report shows little increase in physical activity since the government’s recommendations were announced in 2011, in spite of growing evidence of the links between lack of activity and non-communicable diseases, affecting both physical and psychological health. In fact, for children and young people, particularly in the teenage years, levels of activity actually dropped between 2008 and 2012 (BHF 2014) and many children in the United Kingdom do not achieve recommended physical-activity levels of minimum 60 minutes a day which, on three days a week, should involve vigorous exercises such as push-ups, jumping and running, to develop strong muscles and bones (NHS Choices 2016c). The BHF believes that UK governments should ensure all children have equal access to enjoyable sports and activities, by prioritising physical activity in and around the school day, raising awareness of the physical-activity guidelines and promoting the benefits of regular activity among children, young people and their parents. Physical activity outdoors in green space can also have particular benefits for mental and physical wellbeing (see Communities briefing paper in this series, Table C).

A 2013 study investigated sedentary behaviour in children aged 8–11 in order to discover whether reports suggesting that adults benefit from breaks in sedentary time could be replicated with children. The study involved 286 boys and 236 girls with at least one obese biological parent. Behaviour was measured over seven days and outcome measures included waist circumference, body mass index z-score* and a variety of biomarkers. Results suggested that breaks in sedentary time and short bouts of sedentary behaviour were independently and beneficially associated with these markers of cardiometabolic risk in the children studied (Saunders et al. 2013).

The availability of media equipment has been found to be associated with children’s screen based sedentary behaviour in the home environment (Maitland et al. 2013) and observational studies indicated that the physical and social environment at home, particularly the role of parents, was important. However, considering the substantial amount of time children spend at home there has been little investigation of how the physical parameters of the home space may constrain or support children’s sedentary behaviours and physical activity. At school, too, an ‘active’ environment – more than just the physical features – is

* BMI standard deviation – a measure of relative weight adjusted for the child’s age and sex.
important in reducing sedentary time of adolescents, according to an evidence briefing from the Centre for Diet and Activity Research. It suggests that ‘schools wanting to increase physical activity should think beyond PE, consult with students, address gender, ethnic and socio-economic diversity and develop strong leadership to support physical activity culture’ (CEDAR 2016).

A systematic review to assess the relationship between sedentary behaviour and indicators of mental-health problems in school-age children (Suchert et al. 2015) indicated that there is strong evidence that high levels of screen time are associated with more hyperactivity/inattention problems as well as with lower psychological wellbeing and perceived quality of life. Self-esteem was negatively associated with sedentary behaviour but no clear conclusion could be drawn in terms of depressive symptoms, eating-disorder symptoms and anxiety symptoms.

Recent years have seen a huge drop in the amount of time children spend in risky outdoor behaviour, mainly due to concerns about safety and accident prevention. However, the findings of a systematic review (Brussoni et al. 2015) suggest that the benefits (including social health and behaviours as well as increased physical activity) may outweigh those risks. These positive results reflect the importance of supporting children’s risky outdoor-play opportunities as a means of promoting children’s health and active lifestyles, the review concludes.

### 3.2.5 Air pollution

A recent report from the Royal College of Physicians and the Royal College of Paediatrics and Child Health (RCP/RCPCH 2016) highlights the impact that air pollution is currently having on health in the United Kingdom. As discussed in the Early Years briefing paper in this series (section 3.1), in the first thousand days of life children are particularly vulnerable to the effects of air pollution – but the risks continue during childhood and adolescence and into adulthood (particularly for those living in high areas of pollution such as near busy roads). Pollutants have been linked to the risk of developing cancer and other non-communicable diseases. They originate from a variety of sources, but the most common is probably vehicle exhaust, and one of the recommendations from the RCP/RCPCH report is the promotion and facilitation of active transport – cycling and walking – which also addresses the issue of sedentary behaviour discussed in section 3.2.4.

Tobacco smoke is another contributor to air pollution and, although the percentage of people who smoke is falling across all age-groups – averaging 19 per cent among those aged 16 and over in 2013, compared to 26 per cent in 2003 (HSCIC 2016) – the figure is still high enough to cause concern. Children need to be particularly safeguarded from passive smoking because it harms their health and means they are much more likely to become smokers themselves. An ASH smoking factsheet on second-hand smoke (ASH 2014) points out that thousands of children are admitted to hospital each year for smoking-related diseases, and children breathing in other people’s cigarette smoke results in around 300,000 GP visits each year in the United Kingdom. (See section 3.6.2 for smoking among children.)

### 3.2.6 Asthma and allergies

The prevalence of allergies and asthma has increased over the past 40 years in both developed and developing countries (in parallel with the transition to a western lifestyle) and is now a major public-health concern. There is a considerable body of evidence linking environmental factors, including exposure to microbes, air pollution and the western diet, with the failure to develop a mature immune system and therefore the increasing incidence of allergic and autoimmune disease (McCoy and Koller 2015; Rutkowski et al. 2014; Thorburn et al. 2014). Furthermore, a large international study of more than 10,000 children aged 8–12 in both affluent and less affluent countries indicated a link between the simultaneous increase in childhood obesity and asthma worldwide (Weinmayr et al. 2014). For children and young people in particular, asthma and allergies are stressful conditions and there is some evidence that seasonal allergic rhinitis (hayfever) is associated with decreased examination performance in UK teenagers (Allergy UK 2016).
3.3 Mental health

Mental-health problems affect about 1 in 10 children and young people (Mental Health Foundation 2016), the most common being depression, self-harm, anxiety, post-traumatic stress disorder, hyperactivity (including ADHD) and eating disorders. Surveys suggest that such problems have increased over the last 30 years, but despite this only 30 per cent of those affected receive appropriate early interventions.

The lack of reliable and current information on Children and Adolescent Mental Health Services (CAMHS) means that those planning and running such services are operating ‘in a fog’, according to the House of Commons Heath Committee in 2014, which found problems throughout the system, from early intervention to inpatient services for the most vulnerable young people. The committee recommended a revamp of the funding system for CAMHS (which it said currently includes ‘perverse incentives’) and a clear national policy, underpinned by adequate funding (House of Commons Health Committee 2014).

3.4 Cognitive skills and academic achievement

It has long been recognised that preterm birth has a negative effect on later development, as described in section 3.1 of the Early Years briefing paper in this series. A systematic review looking at academic performance of school-age children who had been born preterm included 33 studies, and argued that the evidence confirms the long-term vulnerability of pre-term infants across motor development, behaviour and school performance (Moreira et al. 2014). The review proposes that follow-up of preterm children at this later stage is crucial, as school requires basic skills that have not previously been demanded and which may be impaired.

There is evidence that obesity is another indicator of impaired academic attainment, at least for girls (Booth et al. 2014). This UK study used data from the Avon Longitudinal Study of Parents and Children, involving 5,966 participants at age 11. Of these, 71.4 per cent were healthy weight (1,935 males and 2,325 females), 13.3 per cent overweight (372 males and 420 females) and 15.3 per cent were obese (448 males and 466 females). Academic attainment was assessed by national tests at 11, 13 and 16. Girls who were obese at 11 had lower academic achievement at 11, 13 and 16 compared with their peers of healthy weight. The association between weight and educational success was less clear in boys.

Recent research, cited in a Public Health England briefing, ‘What works in schools and colleges to increase physical activity?’ (PHE 2015b), indicates that, as well as promoting health and wellbeing, physical activity has a positive effect on academic attainment that is likely to continue into adult life. Time spent in sedentary behaviour at age 14 had an inverse relationship to GCSE results at 16 and the proportion of students achieving 5 A*–Cs at specialist sports schools improved by 7.8 per cent between 2007 and 2010, compared with the national average of 4 per cent.

Social inequality also has a significant impact on educational attainment, as set out in section 3.8 and in the final paper in this series.

3.5 Wellbeing

The Good Childhood Report 2015 (Children’s Society 2015), undertaken as a partnership between The Children’s Society and the University of York, measured the subjective wellbeing of children aged 10–15. It found that 5–10 per cent of children in the United Kingdom are experiencing low levels of wellbeing and need support. A comparison with children in 15 other countries in the Children’s Worlds survey (cited in Children’s Society 2015) showed that English children have relatively low levels of subjective wellbeing – England is in the bottom half of the table for 24 out of 30 aspects of life and ranks 14th for life satisfaction. A key issue was bullying, and girls in particular were unsatisfied with their body, appearance and self-confidence.

Use of social media among year 10 schoolgirls in one (unnamed) local authority area has been surveyed by the Schools and Students Health Education Unit (SHEU 2015). It found heavy use of social media to be linked to poor emotional wellbeing, with the heavier users scoring higher on negative factors such as low self-esteem, diet, smoking, alcohol, drugs, belief that most people in their age group have had sex before age 15, and worrying about their own or a family member’s mental health. Light social-media users were
more likely to know a trusted adult to whom to talk about their worries. (See the Communities paper in this series, section 3.3.1, for more on the impact – positive as well as negative – of social media.)

Substantial benefits are likely to be gained throughout life if ways can be found of enhancing social and emotional skills in childhood (Feinstein et al. 2015). The Early Intervention Foundation researchers combined a literature review of evidence relating to the link between social and emotional skills in childhood and adult outcomes, alongside an analysis of a wide range of outcomes using the 1970 British Cohort Study. The study concluded that when social and emotional skills are compared with cognitive ability, both assessed at age 10, the former matter more for general mental health/wellbeing and the two matter equally for health-related outcomes such as reduced risk of obesity, smoking and drinking. This was confirmed by analysis of data from the Millennium Cohort Study, which comprises 19,000 children born in the United Kingdom at the turn of the millennium.

3.6 Risky and antisocial behaviour

Research carried out by the Institute for Fiscal Studies and University College London (Chowdry et al. 2013) looked at risky behaviour involving the 13–19 age-group. Specific forms of behaviour included in the study were substance use (including smoking, alcohol consumption and drug use), engagement in criminal activity, and risky sexual behaviour. The study found that such behaviours start at a young age, are persistent, and are predictive of later participation in other forms of risky behaviour. Although there is generally a downward trend in rates of self-reported risky behaviour since 2000, there are still high-risk groups, for example young women – hospital admission rates show a link between early drug and alcohol admission and the probability of giving birth aged 17–19. Risk factors for both men and women include attitudes to crime and education, being a victim of bullying or crime, and truancy or exclusion from school. A strong link between smoking and other substance use has also been confirmed (HSCIC 2014).

There are beginning to be insights into the biological factors that contribute to risky behaviour of adolescents (Ward and Ashley 2013). High levels of subcortical activity create a reward-seeking propensity during the adolescent period; however, the prefrontal cortex, an area of the brain important in advanced cognitive functions including attention regulation and response inhibition, matures more slowly. As a result, adolescents are more susceptible to excitatory and less responsive to aversive stimuli than either younger children or adults. These changes support enhanced risk taking and sensation seeking because the behavioural brakes are either low to respond or intermittent. Therefore, during adolescence there is a lower likelihood of avoiding harm and being responsive to the negative consequences of behaviour.

3.6.1 Sexual health

Sexually transmitted infections are higher in young people than any other group (Sex Education Forum 2016), yet young people are the least likely to access sexual-health services for a variety of reasons, including limited opening hours, location, lack of publicity about the services, and concerns about privacy and confidentiality. While teenage pregnancy rates in the United Kingdom are falling, down to 25,977 births to women under 20 in 2014 – the fewest since 1946 – the United Kingdom still has the fourth-highest rates of teenage pregnancy in Europe, behind only Bulgaria, Romania and Slovakia (Guardian 2015) – and there is a social gradient, with under-18 conception rates highest in the most deprived parts of England in 2009–11 (ONS 2014).

3.6.2 Smoking

Using data from the annual surveys of secondary-school pupils in England and national statistics of numbers of adult smokers, it is estimated that around 207,000 children aged 11–15 start smoking in the United Kingdom every year, equating to 463 English children, 55 Scottish, 30 Welsh and 19 Northern Irish children beginning to smoke each day (Hopkinson et al. 2013). The younger children are when they start to smoke the more damaging it is to their health, with a considerable increase in the risk of developing lung cancer.

Smoking in adolescence is strongly linked with parental smoking, with children living in households where parents or siblings smoke being three times more likely to take it up than if they live in non-smoking households – each year, it is estimated that at least 23,000 young people in England and Wales start
smoking by the age of 15 as a result of exposure to smoking in the home. The intergenerational link is strongest in lower socioeconomic groups: of those in managerial and professional households about one third start smoking before age 16, compared with almost half of those in routine and manual households (ASH 2015). The best way of breaking the cycle of smoking from one generation to the next, particularly in disadvantaged families, is to maximise cessation among adult smokers (RCP 2010). Other factors that encourage children to start smoking include friends and peers, siblings, socioeconomic status, exposure to tobacco marketing, and the way that smoking is depicted in the media.

3.6.3 Alcohol

Overall consumption of alcohol by 16–24-year-olds has fallen in recent years, but the Institute of Alcohol Studies (IAS) warns that these figures hide the ‘binge drinking’ culture that has developed (IAS 2013).* While young people’s weekly alcohol consumption is now less than the UK average, they are more likely to be binge drinkers. Young women are the biggest group, with 18 per cent consuming at least twice the recommended number of units in one session. The effects are clear: accidents due to alcohol are the leading cause of death among 16–24-year-olds, and the IAS also highlights an upward trend in hospital admissions for alcohol-related conditions. From 2002–10, admissions of males aged 15 to 24 went up by 57 per cent and for females by 76 per cent. Regular recreational consumption and binge drinking in adolescence is also a strong predictor of alcohol dependency in adulthood (Bonomo et al. 2004; Jefferis et al. 2005).

The Joseph Roundtree Foundation has published several reports on what influences young people to drink, based on surveys of children and young people in the United Kingdom (Eadie et al. 2010; Bremner et al. 2011; Sumnall et al. 2011; Valentine et al. 2010). The overall conclusions are that parents/families play the biggest part in influencing the future drinking habits of young people, key factors being the point at which alcohol is introduced to children and their exposure to adult drinking/drunkenness. Parents can be successful in conveying the advantages/disadvantages of social pleasures of drinking versus the risks, and the need for moderation. However, the health consequences of drinking are not often addressed. Other influencers are peers and the media.

Another major influence on young people’s drinking appears to be advertising, according to a study of 1,786 sixth-grade children at a school in South Dakota, one of the top ten states for adolescent binge drinking (Collins et al. 2007). The children were surveyed again a year later – and those exposed to high levels of alcohol advertising whether on television, in magazines or store promotions, were 50 per cent more likely to drink and 36 per cent more likely to intend to drink than those whose exposure was low. A report by Rand Europe (Winfenny et al. 2012) indicated that adolescents in the United Kingdom and The Netherlands were more likely than adults to be exposed to alcohol advertising on television, and that these adverts were appealing to young people.

There is also considerable online presence of alcohol brands on social media. However, the role of social media as an influencer of young people’s alcohol consumption is still not entirely clear – there are both positive and negative opportunities. For example, social media can be a source of pro-alcohol messages, but at the same time is potentially a means of collecting data about the behaviour of individual users and is being considered as a platform for delivering interventions (Moreno and Whitehill 2014).

3.6.4 Violence

Violent behaviour in children and adolescents can manifest itself in a number of ways: explosive temper tantrums, physical aggression, fighting, use of weapons, cruelty to animals, arson and intentional destruction of property and vandalism (AACAP 2015). Risk factors include exposure to violence in the home, being a victim of abuse or bullying, exposure to violence in the media, use of drugs or alcohol and a combination of stressful family socioeconomic factors. Although young children can exhibit signs of

* It is not easy to say exactly how many units in one session count as binge drinking, as everyone is different – but the definition used by the Office of National Statistics for binge drinking is having over eight units in a single session for men and over six units for women (DrinkAware 2016).
violence, the problem is greater in adolescence, when the brain is more responsive to excitatory and less responsive to aversive stimuli than in either children or adults (Ward and Ashley 2013). It is argued that punishment-based approaches to adolescent violence are unlikely to be successful and that the focus should be on interventions involving the family, schools and community that are designed to build resilience and provide protective environments – for example, addressing the access to harmful substances. Importantly, young people should be involved in the discussions so that the creative energy of adolescents is at the centre of interventions.

3.7 Adverse childhood experiences

Adverse childhood experiences (ACEs) are traumatic events experienced during childhood that can have negative effects on health and wellbeing in later life. They include poverty, physical and sexual abuse, and the emotional turmoil surrounding the death or separation/divorce of a parent. Data from the US National Survey of Children’s Health has been used to estimate the prevalence of ACEs, as reported by their parents – poverty was found to be the most common, followed by parental divorce or separation (Sacks et al. 2014). Not surprisingly, the highest risk of negative outcomes was associated with multiple adverse childhood experiences. A smaller retrospective cross-sectional study of 1,500 UK residents aged 18–70 also indicated that ACEs can contribute significantly to poor life course, health and social outcomes in a country other than the United States, where most studies to date have been carried out (Hughes et al. 2016).

3.8 Health inequalities

Adolescence is a formative life stage for adult health but is often neglected in health policy, according to the authors of an international time-series analysis (Elgar et al. 2015). Between 2002 and 2010 this international team of researchers from the Health Behaviour in School-Aged Children network examined trends in data from 34 North American and European countries, investigating inequalities and health disparities among adolescents across factors that lead to an increased risk of developing non-communicable diseases in later life. They found that rising national wealth in high-income countries was associated with an increase in socioeconomic inequality in many areas of adolescent health, coinciding with the unequal distribution of income between rich and poor.

There is evidence of a negative effect of income poverty on the cognitive development of UK children (Dickerson and Popli 2015). Using data from the UK Millennium Cohort Study and structural equation modelling, the authors showed that children born into poverty had significantly lower test scores at three, five and seven than their peers who had not experienced poverty. Poverty during early childhood had a cumulative negative effect on their cognitive development, and the authors therefore argue that policies to alleviate poverty should be targeted at early years.

There are clear inequalities in childhood development and education – for example, in 2010 while an average of 55.7 per cent of children achieved a good level of development at age five, figures ranged between local authorities from 41.9 per cent to 69.3 per cent (LKiT 2012). And the chances of the most disadvantaged children in England achieving less academically than their peers lasts throughout their school days. They are almost three times more likely to be behind in reading when they finish primary school than their better-off peers (Save the Children/FAST 2016) and only a third of children on free school meals achieve five good GCSEs, compared with nearly two-thirds of their more affluent classmates (Joseph Rowntree Foundation 2015). UCAS, the universities admission body, reported in 2014 that, although the number of children receiving free school meals who applied for a university place had risen by 8 per cent, they were still only half as likely to apply as their peers (UCAS 2014). Low levels of educational attainment are an important determinant of future health – so this can have lifelong consequences.

4. What works and what doesn’t

4.1 Introduction

The Early Intervention Foundation (EIF 2016) emphasises that intervention is ‘not just about early years but also preventing adolescents and young adults from developing problems’. It argues that it is important to
identify children at risk and work with them and their families, together with schools, health professionals and the local community, to provide timely and effective support for those at risk. Furthermore, as highlighted in the Early Years paper (section 4.1), the education of mothers of the future has a strong influence on the health behaviours of her offspring, and school-based interventions aimed at adolescents are a good place to start.

Interventions aiming to improve the health of children and young people are mainly focused on lifestyle behaviours such as diet, physical activity, alcohol, tobacco use and risky sexual behaviour.

4.2 Research-based evidence: systematic reviews

Tables 1–4 in Annex 2 give examples of systematic reviews assessing the strength of the scientific evidence around a variety of interventions addressing health behaviours in children and young people. It is important to recognise that these make up only a small fraction of the available literature and are not necessarily representative. However, they do highlight the issues associated with this type of research, particularly study design and methodological issues affecting the quality of the evidence. Many authors of these reviews concluded that even when there were positive effects, they were modest and should be treated with caution. However, even small effects could be beneficial at the population level (Martin et al. 2014). Multicomponent, multidisciplinary approaches, particularly those involving both families and schools, were likely to be more successful in, for example, reducing BMI than those addressing single risk behaviours. Peer-led approaches seem promising, but delivery via social media has had mixed success, at least in part because of poor experimental design. However, in relation to childhood obesity interventions, trying to find a ‘one-size-fits-all’ approach is probably not appropriate, given the diverse factors and contexts underlying health behaviours (Ickes et al. 2014). In addition, data on adolescents is often bundled up with other age-groups (see Children and Young People paper in this series, section 4.1.2).

4.3 What is happening in practice: practice-based evidence

The evidence base for public-health interventions has traditionally relied on findings from empirical studies/research-based evidence such as those listed in section 4.2. However, a recent systematic review (Ng and de Colombani 2015) highlighted the importance of considering ‘practice-based evidence’ and proposed that successful interventions should meet most of the following criteria – relevance, community participation, stakeholder collaboration, ethical soundness, replicability, effectiveness, efficiency and sustainability.

This section draws on the issues set out in section 3. It highlights some case studies of interventions that have been/are being implemented and evaluated, and also includes information on some of the resources available to assist parents, teachers and practitioners.

4.3.1 Diet and obesity

4.3.1.1 School meals

Ten years ago there was much criticism of the nutritional value of school lunches in England, particularly by the celebrity chef Jamie Oliver, who has led campaigns to improve not just school meals, but nutrition of the population more generally (Jamie Oliver Food Foundation 2016). In 2005, the School Food Trust (now the Children’s Food Trust) was created to address this issue – initially as a non-departmental public body, and becoming a registered charity in 2007. In response to the criticisms, food- and nutrient-based standards for school lunches were introduced in 2006, to be implemented in all primary schools by 2008. A study funded by the Department of Health in England (Spence et al. 2013) was carried out to determine the effectiveness of these new standards, using a natural experimental evaluation in 12 schools in the north-east, with data collected from 4–7-year-olds pre- and post-implementation. After the policy was implemented, researchers found significant improvements in the nutritional content of school lunches and this was reflected in improvements to the overall diet of children who took school meals. They concluded that school food- and nutrient-based standards can play an important role in promoting dietary health and may contribute to tackling childhood obesity.
Between 2009 and 2011 a pilot to test the impact of free school meals was carried out in three areas. In Newham and Durham ‘universal’ free school meals were available to all pupils, while in Wolverhampton entitlement to free meals was ‘extended’ to all primary- and secondary-school pupils from low-income families (i.e. not just those on out-of-work benefits but also families receiving Working Tax Credit). The pilots also included activities to interact with parents and encourage take-up of school meals. The evaluation of the impact of these pilots (Kitchen et al. 2013) found that most pupils in the ‘universal’ pilots took up the offer of free meals so there was a shift in the types of food eaten at lunch time from packed lunches to hot meals. There was also a positive impact on attainment, which was strongest amongst pupils from less-affluent families and those with lower prior attainment. In contrast, there was little increase in take-up of meals or in attainment in the ‘extended entitlement’ pilot. The report concludes that it is only through the universal provision of free nutritious school meals and accompanying activities undertaken by schools and local authorities to encourage parents to engage with the offer that outcomes have improved. Since September 2014 there has been a legal duty on all state-funded schools in England to offer a free school lunch to all pupils in reception, year 1 and year 2, regardless of family income (Department for Education 2014).

A programme initiated by Jamie Oliver’s Food Foundation is the Kitchen Garden Project (Jamie’s Kitchen Garden Project 2016), which aims to ‘empower primary school teachers to integrate growing and cooking into the school day’; over 500 schools are now taking part. The Royal Horticultural Society (RHS) also recognised the opportunity to promote gardening in schools as a way of educating children about nutrition and improving their diet, and funded an RCT to evaluate the impact of a school gardening intervention on children’s fruit and vegetable intake. (Christian et al. 2014). 641 children (mean age 8.1 years) from 23 schools in London boroughs, were randomised into two groups: 10 schools received the intensive RHS-led intervention and the other 13 received a simpler teacher-led intervention, supported by the RHS. A second set of schools provided a control (no intervention) comparison group. A 24-hour food diary (Child and Diet Evaluation Tool) was used to collect baseline and follow-up dietary intake 18 months apart, and in addition participants were asked to complete a gardening questionnaire at baseline and follow-up. Disappointingly, the results found very little evidence to support the hypothesis that, on its own, school gardening can improve children’s daily fruit and vegetable intake. However, the authors suggest that when a gardening intervention is implemented at a high level within the school it may have the potential to improve children’s daily fruit and vegetable intake by a portion.

For a further, innovative example of addressing food options outside the school gate, see case study 7 in the Communities paper in this series – ‘Box Chicken project: creating new, healthy takeaway services’.

4.3.1.2 Interventions addressing weight management and treatment of obesity

As shown in Annex 2: Table 1, there is an enormous scientific literature reporting studies on interventions for weight management and obesity; results have been mixed, and at best effects are modest over relatively short time periods. Multicomponent approaches seem to be most effective. The big question, which is discussed in this section, is what works in practice and is cost-effective. On the latter point a systematic review (Hollingworth et al. 2012) evaluated the economic impact of lifestyle interventions to treat overweight or obesity in children, identifying 10 randomised control studies, covering a broad range of interventions. The authors concluded that interventions to treat childhood obesity could have health benefits and also be cost saving but only after six or seven decades.

Increasing young people’s physical activity levels is part of the strategy to prevent obesity and a government briefing paper (PHE 2015b) reviewed the evidence around ‘What works in schools and colleges to increase physical activity?’ It identified eight ‘promising principles’ for practice: develop and deliver multicomponent interventions; ensure a skilled workforce; engage the student voice; create active environments; offer choice and variety; embed physical activity in the curriculum; promote active transport; and embed monitoring and evaluation in the implementation of interventions. Sustrans, a leading charity in the promotion of active transport, works with over 2,000 schools to promote active transport, and has a number of resources to help schools and others working with young people to encourage physical activity both in and outside the classroom (Sustrans 2016).
There has been a big effort to address obesity in the United States, as shown in a factsheet bringing together data from 51 programmes on childhood obesity prevention that form part of the Lifecourse Interventions to Nurture Kids programme. All of the reviewed programmes targeted children, adolescents and/or young people aged from one to 19, and measured a combination of nutrition, physical activity and/or weight loss outcomes (Hadley et al. 2010). Many of the programmes had mixed reviews and the authors concluded that the ideal format for a successful, comprehensive obesity prevention programme is still unclear. However, a variety of programme components and settings can combine in order to produce positive outcomes: promising strategies included formulating action plans, mandatory physical activity, knowledge-based curricula, parent involvement, improving school meals, and requiring participants to log and track their progress.

Some case studies (see sections 4.3.1.3 and 4.3.1.4) from the United Kingdom and Europe tend to bear out the conclusion that it is not clear what makes up a successful obesity-prevention programme. The evaluation of three programmes (OSCAR, MEND and BUFFALO: case study 1), which used different emphases to combat childhood obesity in East Lancashire found positive benefits from all three; evaluation of a family-based intervention in Liverpool (case study 2) found improved physical activity and dietary behaviours at the family level, and small improvements in children’s BMI; small but significant benefits were also found in health behaviours as a result of a school-based programme in Derbyshire, FLIP (case study 3), but it is not clear whether this programme is continuing, despite it’s relatively low cost. The impact of EYTO (case study 4), a European collaboration to deliver campaigns aimed at improving the lifestyle of disadvantaged children, was unclear and it is unlikely that campaigns on their own will have a significant impact. EPODE (case study 5), another European collaboration, uses a community-based approach to encourage healthy lifestyles. It is at an early stage, but initial signs are promising; evaluation is integrated across the programme and it will take some time before firm conclusions of its effectiveness are evident (see also case study 12 in the Communities paper in this series).

There are indications that childhood obesity in the United Kingdom is now stabilising in younger children (2–10 years old) (van Jaarsveld and Guilliford 2014) but it will be difficult to determine which, if any, of the numerous interventions that have been implemented have contributed to this. There are also clear indications that the overall rate masks inequalities between socioeconomic groups (see section 3.2.1).

A recent initiative at University College London, the PROMISE programme (Paediatric Research in Obesity Multimedia Intervention and Service Evaluation) may assist in the evaluation of practice-based evidence. It aims to improve the assessment and treatment of childhood obesity through research addressing key gaps in the evidence base (PROMISE 2016). It supports the NICE Pathway for ‘lifestyle weight management services for overweight or obese children and young people’ (NICE 2013a and 2013b), aiming to build a coherent programme of clinical and public-health research that significantly contributes towards improving the treatment of childhood obesity in the NHS.

PROMISE’s ongoing research studies are covering the impact of the National Child Measurement Programme (NCMP), improving childhood obesity management; Healthy Eating and Lifestyle Programme (HELP), effectiveness of an anti-obesity drug, and evaluation of an adolescent bariatric-surgery programme. These studies are at an early stage, but two papers on the NCMP illustrate the complexities around such investigations. 1,844 parents of children aged 4–5 and 10–11 who received weight feedback as part of the 2010–11 NCMP were surveyed before and after getting the feedback. In this population the provision of feedback encouraged some parents to seek help, and there was no evidence of unfavourable effects (Falconer et al. 2014). However, 52 parents of overweight/obese children who had received written feedback and then participated in semi-structured interviews disregarded the feedback because they regarded ‘health and happiness as more important than weight’ (Syrad et al. 2014).

### 4.3.1.3 Case studies from the United Kingdom

<table>
<thead>
<tr>
<th>Case study 1: Evaluation of children and young peoples’ weight loss and health lifestyle programmes in the locality of NHS East Lancashire</th>
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<td>This evaluation (Jinks et al. 2010) looked at three programmes designed to combat childhood obesity, but with different approaches. The programmes were:</td>
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- Obesity Support for Children and Relatives (OSCAR), a family-based support programme with educational and activity sessions for overweight/obese children;
- Mind, Exercise, Nutrition, Do it (MEND), which aims to encourage healthy eating and active lifestyles for overweight/obese children and is delivered in a group setting with participation by children and parents/carers; and
- Burnley Food and Fitness Aimed at Lowering Obesity (BUFFALO), which delivers school-based interventions designed to prevent weight gain, including food-awareness and non-sport exercise.

Basic characteristics of each programme were compared using the National Obesity Observatory framework. The study concluded that no one programme is more cost effective or produces better health outcomes than another, but that the programmes have different emphases all of which are necessary in combating the significant risk that childhood obesity poses for the future health of the population.

**Case study 2: Service evaluation of Getting Our Active Lifestyles Started (GOALS) family-based childhood-obesity treatment interventions during the first three years of implementation**

GOALS was a Liverpool-based childhood-obesity treatment intervention based on social cognitive theory to promote whole family lifestyle change (Watson et al. 2015). 70 overweight or obese children, mean age 10.5 years, and their parents/carers took part. Sessions covered physical activity, diet and behaviour change over 18 two-hour weekly group sessions, lasting approximately six months. The primary outcome measure was the child’s BMI, collected at baseline, post-intervention and 12 months. Secondary outcomes included changes in family diet and physical activity. Completion of GOALS was associated with small improvements in child BMI z-score and improved family physical-activity and dietary behaviours. Several intervention modifications were necessary during the implementation period, and it is suggested that childhood-obesity treatment interventions need time to embed before a definitive evaluation is conducted.

**Case study 3: Family Lifestyle Intervention Programme (FLIP)**

The Family Lifestyle Intervention Programme (FLIP) was a Derbyshire-wide intervention programme based in schools aiming to prevent and treat childhood overweight/obesity (Roberts et al. 2011). Funded by the county council, it was based on NICE guidelines and a systematic review of relevant evidence. It was delivered via three programmes: a 12-week universal programme for all children in school years 4 and 5; a six-week programme targeted at children in years 4 and 5 who had been referred from the first group; Health 4 Life, a 12-week programme for children in years 7 and 8 who had been referred by school nurses and teachers. Approximately 4,000 children had the opportunity to participate in the programme during the 2009/2010 academic year. Data were received for a sample of 779 pupils, with outcome data being provided for 646 pupils.

The estimated cost per head varied across local authority areas but was considered relatively low at £14. Most children agreed that they enjoyed attending the programme (89 per cent), that they understood more about healthy eating (83 per cent) and that they felt much healthier than when starting the programme (66 per cent). One in four also agreed that they made friends. Of the 132 parents who responded to a survey, 23 per cent said that the programme has helped the child and 14 per cent said that it has influenced the whole family greatly. Small but significant changes in behaviour were reported: a decrease (from 26 per cent to 20 per cent) of children eating no/one portion of fruit and vegetables per day, an increase (from 91 per cent to 93 per cent) in those who ate breakfast, and an increase (45 per cent to 49 per cent) in children who engaged in physical activity in addition to PE. There were no significant changes in consumption of snacks or time spent watching TV/DVDs.
There is no indication that FLIP has continued in Derbyshire, although HENRY (Healthy Exercise Nutrition for the Really Young – see the Early Years paper in this series, section 4.3.2) is available (Derbyshire County Council 2016).

4.3.1.4 Case studies from European collaborations

**Case study 4: European Youth Tackling Obesity (EYTO) project**

EYTO is a multicentred programme delivered in the United Kingdom, Portugal, Spain and the Czech Republic, investigating the effectiveness of campaigns in improving the lifestyles of socioeconomically disadvantaged and vulnerable adolescents. It was led by the National Children’s Bureau Health and Social Care team in the United Kingdom, working in partnership with organisations in the other three countries and aimed to a) recruit groups of disadvantaged young people to lead the development of new campaigns; b) provide support to the young people to research, create and pilot the campaigns; and c) develop webpages to promote campaign messages across Europe.

The initial targets outlined in the programme objectives were that the campaigns would increase the motivation of young people to live healthily and result in increased physical activity or health. The evaluation (Amalathas and Rix 2015) found that all were youth-led and involved peer-to-peer interaction, although campaigns were tailored for audiences in the different countries. The most common type of activity was face-to-face events, followed by website-based and paper-based activities. However, about twice as many individuals (9,503) engaged with paper-based activities than with events, and even fewer engaged with web-based activities; there were significant differences between countries – for example, from a total of 2,984 individuals engaged with web-based activities, 1,370 were from Portugal and only 181 from the United Kingdom.

There is evidence that EYTO has been successful in increasing the skills and confidence of young people using social-marketing techniques in campaigns, and that it has raised awareness of obesity and increased motivation to address unhealthy lifestyles. However, the authors conclude that campaigns alone may not bring about the desired behaviour change, particularly in the long term, although they do have messages for practitioners and policymakers about the need for holistic, collaborative approaches for tackling childhood obesity – such as youth-led, peer-to-peer, along with a family model approach and support for parents.

**Case study 5: EPODE (Ensemble Prévenons l’Obésité Des Enfants) – Together Let’s Prevent Childhood Obesity**

This ongoing collaboration is supported by the European Commission and private companies and aims to influence local environments, childhood settings and family norms to encourage the adoption of healthy childhood lifestyles (enjoyment of healthy eating, active play and recreation) (Borys et al. 2012). The EPODE International Network brings together 43 programmes in 30 countries. At a central level, a coordination team trains and coaches a local project manager nominated in each EPODE community by the local authorities.

The critical component is a community approach, including political commitment, sustainable resources, support services and, in addition, strong scientific input – drawing on the evidence base – together with evaluation of the programme. The programme is at an early stage but preliminary results from the Viasano pilot in two Belgian towns suggest that the EPODE approach can be effective in decreasing the prevalence of overweight/obese children, even in a short time, and at helping families to make healthy lifestyle choices (Vinck et al. 2015) (see also the Communities paper in this series, case study 12).
4.3.2 Families and parenting

Successive UK governments have recognised the importance of helping parents, particularly those from disadvantaged families, develop their parenting skills and between 2008 and 2011 all local authorities in England received funding from the Department for Children, Schools and Families (now the Department for Education) for a Parenting Early Intervention Programme (PEIP) offering one or more evidence-based parenting programmes shown to improve parent and child outcomes. Participation was weighted towards disadvantaged families and examples of aims include treatment and prevention of childhood-behaviour problems, addressing alcohol and drug use in adolescents, and enhancing parents’ knowledge, skills and confidence.

An evaluation in 2011 (Lindsay et al. 2011) reported on four of the programmes:

- Incredible Years: for 8–13-year-olds and groups of 10–14 parents (originated in the United States);
- Strengthening Families Programme: for 10–14-year-olds and up to 12 families (originated in the United States);
- Triple P (Positive Parenting Programme): for 0–16-year-olds and 10–12 parents (originated in Australia); and
- Strengthening Families Strengthening Communities: for 3–18-year-olds and group of 8–15 parents (originated in the United States).

Overall, the report concluded that the national roll-out of PEIP was successful in increasing the support available for parents concerned about their child’s behaviour. Outcomes were positive both for the parents of 8–13-year-olds, and for parents of younger children. All four main parenting programmes were effective in improving outcomes for parents and children, and these outcomes were maintained one year on from the end of the programme. The positive effects that these programmes have on parents’ mental wellbeing and style of parenting, as well as on children’s behaviour, are all key factors known to contribute to positive long term child outcomes.

PEIP programmes are currently offered by a number of local authorities, sometimes alongside other parenting programmes: Warwickshire (Warwickshire County Council 2016) offers Triple P; Cambridgeshire (Cambridgeshire County Council 2016) offers Incredible Early Years and Incredible Early Years 6+; and Bath and North East Somerset’s Parenting Strategy 2016–18 states the intention to offer the Incredible Years and the Strengthening Families, Strengthening Communities programmes but, given the high unit costs of delivering such programmes, they will only be offered locally as part of an agreed plan (for example, for parents who are subject of a Parenting Order) (Bath and North East Somerset Council 2016).

Families and Schools Together (FAST) is another programme introduced into the United Kingdom following evidence that it was successful in more than 20 countries, including the United States, Australia and Brazil (Save the Children/FAST 2016). It brings together families, teachers and the wider community to make sure children get the support they need to fulfil their potential both inside and outside school. The programme provides an eight-week cycle of activity sessions for disadvantaged primary-school children alongside help for parents. Parents and children take part in structured activities together so that parents can support their children’s learning and development at home. In addition, it encourages engagement between parents, children, teachers and the school community.

Between 2009 and 2015, 11,658 UK families took part in the programme. Those who participated in school year 2013–14 reported that:

- children’s behavioural problems decreased by 26 per cent;
- family conflicts dropped by 24 per cent; and
- 74 per cent of parents felt abler to support their child in his or her education.

FAST aims to reach more than 50,000 children by 2017. This will help the organisation build evidence to present to the government, to ensure parental-support programmes such as FAST are available to all families. An evaluation is being carried out with Loughborough University, the National Foundation for
Education Research and the Education Endowment Foundation to conduct a large-scale trial. Up to 160 schools will be taking part in the trial – the first of its kind outside the United States.

4.3.3 Risky behaviours

The United States has also been at the forefront the developing interventions to prevent risky behaviour in young people. Investigation (Jepson et al. 2014) of three US case studies – Raising Healthy Children in Seattle, Focus on Youth with Impact (backed by the national Centers for Disease Control) and the California-based Aban Aya project aimed at young African Americans – concluded that the most effective/promising approaches for addressing multiple risk behaviours are to:

- target underlying risk and protective factors of risk behaviours;
- target more than one of the four domains of risk and protective factors (individual/peers, family, school, community);
- promote family- and/or school-connectedness;
- intervene early (pre-adolescence) and continue through adolescence; and
- maintain and strengthen family connectedness during adolescence.

Risk-Avert is an interesting approach developed in the UK by The Training Effect and Essex County Council (Risk-Avert 2016). It is aimed at year 8 pupils and is based on the belief that young people benefit from learning skills that help them to identify and manage risk alongside knowledge of risks and risky situations. Teachers are trained to deliver seven sessions for all year 8 pupils. Evaluation of the pilot across 37 schools, involving 6000 young people, produced some positive outcomes – children liked the programme and relations with teachers improved. The work is currently being evaluated at Essex University with findings expected over the next year.

There are many examples of interventions to address a specific behaviour, and some case studies are described below.

4.3.3.1 Alcohol

Two of the four case studies described in the boxes below are delivered in the school setting. Talk About Alcohol (case study 6), which is delivered by teachers to secondary schools, has been evaluated and showed positive effects. KAT (case study 7), a pilot RCT aimed at primary-school children and their parents was less successful – two schools withdrew from the study and it was concluded that it would not be appropriate to take it further.

The third example (case study 8) aimed to determine whether Alcohol Brief Interventions, which have been successful in the primary-care setting, could be delivered in wider settings and concluded that, although potentially acceptable, this would be a challenging undertaking. A strong case for the inclusion of youth organisations in alcohol interventions is evidenced by the final example (case study 9), which covered 28 countries, mainly in Europe.

Case study 6: Talk About Alcohol

An evaluation of the Alcohol Education Trust’s intervention in secondary schools in England was carried out by the National Foundation for Education Research (Lynch et al. 2013). Talk About Alcohol gives teachers free tools to encourage students to make informed decisions. The resources include: a teacher workbook of lesson plans and DVD; a 500-page website (www.talkaboutalcohol.com) with areas for teachers, students and their parents; information booklets for parents and young people; an opportunity to host a ‘talkaboutalcohol’ parents’ event in school; and resources set out by subject for teachers via www.alcoholesducationtrust.org. The key aims are to:

- delay the age at which teenagers start drinking;
- help ensure that if they choose to drink, they do so responsibly; and
reduce the prevalence of drinking to get drunk and the antisocial consequences of drunkenness. There is some evidence that the increase in knowledge of alcohol and its effects resulting from involvement in Talk About Alcohol has helped to improve decision-making among the young people in the intervention group, which has translated into a statistically significant delay in the onset of drinking.

Case study 7: Preventing alcohol misuse in young people: an exploratory cluster RCT of the Kids, Adults Together programme (KAT)

The KAT project was a two-year pilot to investigate the feasibility of running an intervention to prevent alcohol misuse in primary schools. The programme consists of classwork addressing the effects of alcohol, a family event for children and parents/carers, and a ‘goody bag’ containing fun items, including a DVD for families to watch together. A study has examined the value and feasibility of an effectiveness trial for KAT (Segrott et al. 2015). Five schools formed the intervention group, which comprised KAT plus existing alcohol-related activities and lessons, but two withdrew from the study. Four schools formed the control-group and continued with existing alcohol-related lessons and activities. The study concluded that it would not be appropriate to proceed to an effectiveness trial of KAT because of doubts about its potential effects, the suitability of measures, and the large number of schools that would be required for an effectiveness trial, as well as the cost and the feasibility of follow-up in secondary schools.

Case study 8: Process evaluation of Alcohol Brief Interventions in wider settings

Alcohol Brief Interventions (ABIs) are time-limited interventions focusing on changing drinking behaviour, which have been shown to be effective in primary care settings. NHS Scotland commissioned a study (Stead et al. 2014) to explore the feasibility and acceptability of ABIs delivered to young people in wider social-work settings, such as centres that gave advice on alcohol use, mobile vans or sports centre. It investigated how feasible a future outcome evaluation of ABIs in these settings would be, and the issues and challenges that would be involved in such a study. It did not examine whether individuals who received ABIs changed their drinking behaviour and improved their health.

The team concluded that it seems feasible and acceptable to deliver ABIs in young people’s settings. The young people themselves felt that the projects were delivered in a way that was welcoming and safe and at a time and place that was appropriate. However, they did not always respond positively to form-filling, and project staff could be reluctant to collect data. Consequently, it could be challenging to undertake research in these settings to identify whether ABIs are effective.

Case study 9: Engagement of youth organisations in prevention interventions in the field of alcohol policy

67 organisations in 28 mainly European countries were part of this study, carried out by the Institute for Research and Development, Slovenia, in partnership with the Alcohol Policy Youth Network and funded by the European Commission (Kosir and Talic 2014). It concluded there is great potential for the involvement of youth organisations in prevention, especially using multicomponent approaches in collaboration with other stakeholders. In terms of what does not work, the researchers warned against one-off interventions and those which take a ‘just say no’ approach.
4.3.3.2 Substance abuse

A US-based Child Trends research centre factsheet (Bandy and Moore 2008) describes experimentally evaluated programmes and interventions that use prevention and cessation strategies to deter substance use among adolescents and young people.

It brings together data from the LINKS searchable database of interventions and the findings suggest that prevention- and cessation-based substance-use programmes can work. It concludes that multicompartment programmes that reach young people through a variety of approaches – school, family, community, social activities – can be effective in preventing substance abuse. Successful approaches included educational and skills-based programmes in schools to help deter drug use (Faggiano et al. 2008), and those that were peer-led, combined with adult facilitation.

4.3.3.3 Sexual behaviour

A 2010 report discusses types of sexual-health service provision in the United Kingdom in light of evidence from systematic reviews and a survey of school nurses and other staff, and covers current models, effectiveness, cost-effectiveness and research opportunities (Owen et al. 2010). It identifies the lack of a single model for sexual-health services offered to young people, but recognises three broad types of provision: school-based services (SBSHS) staffed by school nurses, offering ‘minimal’ or ‘basic’ levels of service; SBSHS and school-linked (SLSHS) services staffed by a multiprofessional team, but not medical practitioners, offering ‘basic’ or ‘intermediate’ levels of service; SBSHS and SLSHS staffed by a multiprofessional team, including medical practitioners offering ‘intermediate’ or ‘comprehensive’ levels of service. The systematic review showed that school programmes are not associated with higher rates of sexual activity among young people, nor with an earlier age of first intercourse, and there was evidence of positive effects in terms of reductions in births to teenage mothers, and in chlamydial infection rates among young men, although this came primarily from the United States. Findings from the mapping study also indicate that broad-based services, which include medical practitioner input within a multiprofessional team, meet the stated preferences of staff and young people most clearly.

Over 3,000 men and women aged 17–24, surveyed as part of the United Kingdom’s 3rd National Survey of Sexual Attitudes and Lifestyle, confirmed the value of school-based programmes. Those who had gained information about sexual health reported fewer incidences of negative sexual-health outcomes, and this was particularly the case with women. Over the past 20 years, schools have increasingly been important in sexual-health education (Tanton et al. 2015) and are now more often the primary source of information, than either parents or health professionals (Maddock et al. 2015). The majority of survey participants want more information on a broad range of topics, including psychosexual matters and sexually transmitted infections. The data suggest a need to broaden the Sexual Relationships Education statutory requirements and also suggest additional support for parents. (See also the Communities paper in this series, section 4.1.5.4, Table E.)

Children in the care of the state (‘looked-after’) are at increased risk of risky sexual behaviour compared with their peers and a peer-mentoring intervention has been introduced in three local authorities in England in an attempt to reduce teenage pregnancy in this group (Mezey et al. 2015). Mentors were young women aged between 19 and 25 who had experienced the care system. Mentees appeared to value the intervention but had difficulty in meeting weekly as required. Only one in four of the relationships continued for the full year. Organisational and logistic problems were also identified, so further development is clearly needed before this intervention can be properly evaluated and implemented.

4.3.3.4 Asthma and allergies

Information and support for children and young people suffering from asthma and allergies is available from the two major charities with an interest in this area.

- The Asthma UK website provides information and support for patients, health professionals and researchers. There is a Monday–Friday helpline for patients, staffed by nurse experts in asthma care, with a section dedicated to managing children’s asthma including advice on using the asthma action plan. Asthma UK is involved in research projects on all aspects of the condition (Asthma UK 2016).
Allergy UK’s website also provides information and advice on children’s asthma, but within a wider context, looking at conditions such as allergic rhinitis, eczema, dermatitis and food allergy. There is a dedicated helpline and an online forum, as well as practical guides to diagnosis, keeping a diary of symptoms and getting the most from appointments with professionals (Allergy UK 2016).

The emphasis is mainly on treating and managing symptoms but some individualised home-based interventions to remove allergens and pollutants were found to have significant clinical benefit to asthmatic children living in inner cities in the United States (Morgan et al. 2004). Many of these allergens and pollutants are also present in the inner-city school environment, where children spend 7–12 hours per day (Huffaker and Phipatanakul 2014). This latter review summarises the importance and challenges of school-based environmental assessment and intervention studies, such as introducing HEPA filters which have been shown to improve asthma outcomes in other settings. Given the difficulties with logistics as well as the cost involved it seems unlikely that this will be a high priority in the United Kingdom in the foreseeable future.

### 4.3.3.5 Mental health and wellbeing

A report by the Early Intervention Foundation on Social and Emotional Learning (Feinstein et al. 2015) includes an independent evaluation of ‘what works in enhancing social and emotional skills development during childhood and adolescence in the UK’. The authors investigated 39 school-based programmes, which aimed to increase their repertoire of coping, emotional understanding and interpersonal problem-solving skills. Out-of-school interventions were broader and included arts, sport, family-skills training, mentoring and cultural awareness. The report provides a detailed analysis of the evidence and concluded that the programmes implemented in schools (both primary and secondary) were beneficial in developing social skills, problem-solving and coping skills, and that this impacted on both children’s social and emotional competencies and their educational outcomes. Adopting a ‘whole school’ approach (i.e. involving staff, parents and the wider community) was particularly effective, especially in the prevention of bullying. Targeted programmes for students at high risk of developing problems were also successful. The impacts of the out-of-school programmes were less clear.

A number of organisations offer information and support for children, young people, their parents, carers and teachers. Some examples are given in the box below, and more sources of information are listed in Annex 1 and in the DebateGraph accompanying these briefing papers. In addition, there is a web-based modular intervention Robusthed.dk/Myresilience.org (Robusthed 2016), which aims to build resilience in children and young people. It is part of the Child Mental Health Research Program at Aarhus University, run in partnership with the Central Denmark regional authority, ‘robusthed’ being the Danish word for resilience. The website provides information, games and tools that are directly useful in daily life, with case studies and cartoons. It is introduced for target groups in lectures and courses and is essentially a self-directed programme with a strong recommendation for parent and professional cooperation. A preliminary evaluation (Bak et al. 2015) found that the website is easy to understand for all children and adolescents. The programme may contribute to building a ‘safe mental environment’ for disadvantaged adolescents and the staff around them in social youth clubs. Further, it may be ‘a low cost, brief intervention that can contribute to the solution of societal mental health challenges’. An ongoing randomised trial is due to report in 2018.

It will also be interesting to follow the progress of SEED (Social and Emotional Education Development), which is designed to address social and emotional in primary school children (SEED 2016). It is based on the US project CASEL – Collaborative for Academic, Social and Emotional Learning – and the Gatehouse project in Australia, and was piloted at four Glasgow primary schools before being refined and extended into trials at primary schools recruited from three Scottish local authorities. It involves a pupils’ needs assessment on the basis of which appropriate approaches/are identified and then implemented, such as classroom packages, training for teachers/parents or whole-school initiatives. The trial runs from 2012 to 2017 and is currently in the Follow-up 1 phase.
Mental health and wellbeing resources

The Royal College of Psychiatrists offers free resources with tailored information for young people, parents, teachers and carers on its website page ‘Improving the lives of young people with mental illness’. The information available covers the physical and psychological changes that occur in adolescents, and addresses a range of specific situations that may prove difficult, as well as the various conditions that can affect young people. Resources include factsheets (RCPsych 2016) and the 2013 book Mental Health and Growing Up, which covers drugs and alcoholism as well as attention deficit hyperactivity disorder (ADHD).

http://www.rcpsych.ac.uk/healthadvice/parentsandyouthinfo/parentscarers/adolescence.aspx

The Mental Health Foundation website contains information about measures that can keep children and young people mentally well. It advises eating well and taking exercise, time and freedom to play indoors and outdoors, good family relations, going to a school that looks after the wellbeing of its children, and taking part in local activities for young people. Other important factors include feeling loved, being interested in and enjoying life, being hopeful and optimistic, accepting who they are and recognising what they are good at, a sense of belonging, some control over their own life, having the strength to cope and the ability to solve problems.

https://www.mentalhealth.org.uk/

MIND has a section for children and young people on its website, providing information and support for young people and their parents. MIND provides booklets, case studies, training courses and other resources, as well as useful contact information for other organisations.


STEM4 is a charity that supports teenagers’ mental health through early intervention and by raising awareness. It focuses activity on four main areas: eating disorders, depression and anxiety, self-harm and addiction. Target audiences are young people affected by these conditions, their friends, families and carers, schools, teachers and nurses. STEM4 provides evidence-based information delivered at workshops in schools run by qualified mental-health professionals.


Young Minds is a charity committed to improving the emotional wellbeing and mental health of children and young people, including ADHD. It has information and resources on its website for children and young people as well as health professionals. (Young Minds 2016a and 2016b).

http://www.youngminds.org.uk

5. Challenges and gaps

5.1 Introduction

While there have been improvements in the health of UK children over recent years, there are concerns that these have not been comparable with those made in other northern and western European countries. Children and young people aged between 5 and 19 are undergoing a period of continuous growth and development that is strongly influenced by lifestyle and environmental factors (see section 3.2). Areas of particular concern are overweight/obesity (related to excess calorie intake, physical inactivity and the obesogenic environment), mental health and wellbeing, and risky adolescent behaviours such as smoking, binge drinking and taking drugs.

Politicians are well aware of the importance of ensuring a healthy childhood and adolescence, as demonstrated by various reports from parliamentary select committees and government departments (for example, House of Commons Health Committee 2015 and Department of Health 2015). But they also need
to be convinced that proposed interventions have cost-benefits or are cost-effective, and policies such as free school meals for all pupils are vulnerable to economic and political pressures.

5.2 Primary school

The early school years and family relationships (including adverse childhood experiences and poverty) can set the pattern for lifestyle behaviours in later life and impact on future health, wellbeing and achievement. As in the early years (see the Early Lives briefing paper in this series), it is important to identify those at high risk and to intervene as early as possible. The challenge is **how to engage with those at high risk**, who may be ‘hard to reach’ and this is not necessarily straightforward, as demonstrated by the piloting of free school meals (section 4.3.1.1), which were not taken up significantly when they were offered only to disadvantaged pupils, but when free meals were available to all pupils there were positive impacts on attainment that were strongest in children from less-affluent families.

5.3 Preteen years and adolescence

Adolescence (the teenage years) and the preteen years (9–12) are critical times, with many pressures both at school and in social life. Furthermore, there is evidence that during adolescence the brain is more susceptible to excitatory stimuli than to aversive stimuli, resulting in a tendency to more risky behaviour – and its subsequent effects on health – than either young children or adults (section 3.6). The challenge is **how to prepare young people, their families and teachers, to manage this potentially turbulent period of life** and prepare them for parenthood and working life.

5.4 Interventions

5.4.1 Introduction

All the environmental factors highlighted in section 3 are, in theory at least, potentially modifiable. It is important to identify children and young people at risk and support them and their families, together with schools, health professionals and the local community, in initiatives to prevent or address health-deterring behaviours. There is an enormous range of advice and resources designed to help with this (section 4, Annex 1 and the DebateGraph accompanying this series) and, while the quality of some of the research-based evidence is questionable and, at best, modest impacts have been reported, multicomponent interventions involving families and schools are considered the most promising approach.

5.4.2 The early stages of research into interventions

As indicated in section 4.2, there are some major scientific challenges in demonstrating the effectiveness of interventions to address lifestyle and health behaviours. These include

- study design – the ‘gold standard’ randomised controlled trial is difficult to set up in a lifestyle situation and other designs often suffer from lack of adequate control groups;
- difficulties in recruitment and retention of participants, leading to small sample sizes that are prone to bias;
- short duration of the studies;
- choice of outcome measures, which are often proxies for health outcomes; and
- the effect of confounding factors (which may be known or unknown) on the results.

The challenge for researchers (and funders and publishers of scientific journals) is to **ensure that preliminary intervention research is robust**. The challenge for those who are looking for research-based evidence to support implementation of an intervention is to **know what to make of all the confusing and conflicting findings**! These challenges hold true for all the areas covered in these briefing papers.
5.4.3 Implementing and evaluating interventions in practice

There has been significant investment from government and local authorities to implement and evaluate interventions that have shown promise at the research/pilot stage, and there are indications of some positive benefits – a good example is free school meals for primary-school pupils. Interest and support from celebrities and lay organisations are to be encouraged (see section 4.2.1.1), but it is important that they are realistic about the challenges in carrying out lifestyle interventions and the difficulties in demonstrating their effectiveness. As in the case of Early Years, the challenge for policymakers and practitioners is to know how to adapt evidence-based interventions to their local situation and how to evaluate impact in the face of a continually changing landscape.

There are, therefore, some major challenges in fulfilling the three Marmot themes – to give every child the best start in life, enable all children, young people and adults to maximise their capacities and have control over their lives, and to strengthen the role and impact of ill-health prevention. In particular:

- identifying and engaging with children and families at risk, many of whom are likely to be ‘hard to reach’;
- identifying the most appropriate way to intervene – this may vary, depending on the individual context;
- preparing preteens for adolescence and future parenthood and working life; and
- assessing the evidence base from the economic and practical as well as scientific standpoints.

6. Talking points

- How do we prepare young people, their families and teachers for the turbulent time of adolescence and, following that, parenthood and working life?
- What is the best strategy to engage with the ‘hard to reach’ families?
- How do we make sense of the confusing and conflicting ‘evidence’ around interventions?
- Are interventions where there is evidence for small positive outcomes worth pursuing because, assuming these outcomes are the same at the population level there will be positive effects on relatively large numbers of participants?
- What is the best way to make use of the enthusiasm and resources of committed ‘lay’ individuals and organisations?
Annex 1: Key players

There is a host of organisations who commission and/or fund research and evaluation into the health of children and young people. The resources listed below are selected from the large number available, and a short description, URL and (where appropriate) important publications of the organisations appear in the DebateGraph mapping that accompanies this scoping project. (Contact hester.rice@c3health.org for more information.)

****

- Alcohol Education Trust
- American Academy of Child and Adolescent Psychiatry
- ASH – Action on Smoking and Health
- Asthma UK
- Barnado’s
- Beat the Street
- Big Lottery Fund
- Bill and Melinda Gates Foundation
- British Association for Early Childhood Education
- British Heart Foundation
- British Nutrition Foundation
- Bromley-by-Bow Centre
- CEDAR – Centre for Diet and Activity Research
- Centre for Longitudinal Studies
- Childhood Development Initiative
- Children and Young People Scrutiny Committee
- Children and Young People’s Health Outcomes Forum
- Children and Young People’s Services Committees
- Children’s Society
- Department for Communities and Local Government
- Department for Education
- Department of Health
- Early Intervention Foundation
- Economic and Social Research Council
- EPODE
- Faculty of Public Health
- FitFans
- Food Coops
- Groundwork Community Spaces Programme
- Health and Social Care Information Centre
- Health Behaviour in School-Aged Children Network
- Health Complexity Group
- Healthy Child Programme (Department of Health)
- Healthy London Partnership (NHS)
- Healthy New Towns (NHS)
- HEY - Healthy Early Years
- Inclusive Change
- Inclusive Neighbourhoods
- Institute of Alcohol Studies
- Institute of Child Health (UCL)
- International Diabetes Federation
- Jamie Oliver Food Foundation
- Joseph Rowntree Foundation
- LEAP – Lambeth Early Action Partnerships
- LGA Knowledge Hub
- Living Streets
- Local Government Improvement and Development
- Medical Research Council
- Mental Health Foundation
- MIND
- MyTime Active UK
- National Centre for Health and Clinical Excellence
- National Child Measurement Programme (Health and Social Care Information Centre)
- National Children’s Bureau
- National Foundation for Educational Research
- National Institute of Mental Health
- Nesta
- NHS Alliance
- Nuffield Trust
- Nutrition Society
- Prevention and Early Intervention Network
- Prince’s Trust
- PROMISE – Paediatric Research in Obesity Multi-modal Intervention and Service Evaluation programme
- Public Health England
- RAND Europe
- Robert Woods Johnson Foundation
- Royal College of Midwives
- Royal College of Nursing
- Royal College of Obstetricians and Gynaecologists
- Royal College of Paediatrics and Child Health
- Royal College of Physicians
- Royal College of Psychiatrists
- Royal Foundation
- Royal Society for Public Health
- Save the Children
- Schools and Students Health Education Unit
• SEED – Social and Emotional Education Development
• SEED – Study of Early Education and Development
• Sex Education Forum (National Children’s Bureau)
• SHINE HIT – Supporting Healthy Inclusive Neighbourhood Environments
• STEM4
• Sure Start
• The Young Foundation
• TrimTots
• Trussell Trust
• UK Health Forum
• Understanding Society
• UNICEF
• Wellcome Trust
• World Health Organization
• World Obesity Federation
• Young Minds
## Annex 2: Evidence tables

### Table 1: Lifestyle interventions – systematic reviews

<table>
<thead>
<tr>
<th>Title</th>
<th>Reference</th>
<th>Intervention</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Controlling childhood obesity: a systematic review on strategies and challenges</td>
<td>Kelishadi et al. 2014</td>
<td>Compares the effectiveness of programmes delivered in the family, the school or the clinic. Most studies included were high-quality clinical trials. There was wide variation in the interventions (e.g. nutrition education, increasing quality of physical education, behavioural strategies) and outcome measures (e.g. BMI, dietary behaviour, physical activity).</td>
<td>The authors concluded that a multidisciplinary approach in schools, with involvement of the family, could be the best and most sustainable approach for management of childhood obesity.</td>
</tr>
<tr>
<td>Interventions for preventing obesity in children</td>
<td>Waters et al. 2011</td>
<td>Reviews 55 studies of interventions for the prevention of obesity, mainly targeting children between 6 and 12 years old. Study design was controlled (with or without randomisation) and lasted at least 12 weeks. A broad range of programme components were used in these studies.</td>
<td>Strong evidence to support beneficial effects of child obesity prevention programmes on BMI, particularly for programmes targeted to children aged 6–12. However, the studies were heterogeneous and prone to small-study bias, so these findings must be interpreted cautiously. Promising strategies included healthy eating as part of the school curriculum, physical-activity sessions, and support for teachers and parents.</td>
</tr>
<tr>
<td>Effect of school-based interventions to control childhood obesity</td>
<td>Amini et al. 2015</td>
<td>Four systematic reviews and four meta-analyses were included. Some used a single strategy to improve physical activity or dietary behaviour, others combinations. Primary outcome measures included weight or BMI, but there was a range of other outcomes measured including, in some studies, adiposity. Study designs included RCTs /non-RCTs, cluster case controlled trials and experimental studies with a control group.</td>
<td>The effect on weight/BMI was mixed but multicompartment interventions seemed to be more effective in reducing adiposity than single-component approaches. Studies varied in length and the authors point out that more studies are needed to determine how long is needed to demonstrate effectiveness. They also comment on the need for measures of adiposity other than BMI and for long-term follow-up to evaluate sustainability.</td>
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<tr>
<td>Title</td>
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<td>Description</td>
<td>Conclusion</td>
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<tr>
<td>Lifestyle intervention for improving school achievement in overweight or obese children and adolescents</td>
<td>Martin et al. 2014</td>
<td>Reviews six studies of overweight and obese children and adolescents, four studies with multicomponent lifestyle interventions and two with only physical activity interventions. Study designs were (cluster) randomised and controlled clinical trials. Outcome measures included achievement in school, cognitive function and future success.</td>
<td>The authors concluded that multicomponent interventions targeting physical activity and healthy eating could result in small positive effects on school achievement and cognitive ability; nevertheless, a large number of young people could benefit at a population level. They also commented on methodological issues affecting the quality of the evidence.</td>
</tr>
<tr>
<td>Global school-based childhood obesity interventions: a review</td>
<td>Ickes et al. 2014</td>
<td>Reviews 20 studies. Study designs varied from quasi-experimental to RCTs; a wide variety of methods were used to improve nutrition education and increase physical activity. Outcome measures included BMI, nutrition-related behaviour and physical activity.</td>
<td>Positive results were obtained, with varying approaches were used to achieve success. The authors conclude that a one-size-fits-all approach is not necessary to impact childhood obesity. Building on successful interventions, future school-based obesity-prevention interventions should integrate culturally specific intervention strategies, aim to incorporate an environmental component, and include parents where possible.</td>
</tr>
<tr>
<td>Enhancing nutritional environments through access to fruit and vegetables in schools and homes among children and youth: a systematic review</td>
<td>Ganann et al. 2014</td>
<td>23 studies were included. Interventions were mainly via regional or state-level policies, but there were also a number of curriculum-type interventions in schools and community groups, and a garden intervention. The majority of studies were in high-income countries.</td>
<td>The authors concluded that most promising strategies are through local school food service policies. Broader regional level policies and family-based interventions were less successful. However, the studies have a high risk of bias.</td>
</tr>
<tr>
<td>Promoting family meals: a review of existing interventions</td>
<td>Dwyer et al. 2015</td>
<td>Reviews the literature on strategies to promote family meals among families with school-aged children and adolescents. Six interventions and 43 other studies presenting data on correlates of or barriers to family meals were included. Strategies included interactive group activities and goal setting; interventions targets included cooking and shopping, delivered in home, community and work settings.</td>
<td>There were mixed findings, at least in part due to methodological issues, but the authors concluded that barriers to family meals included time/scheduling challenges, cost and food preferences. Promising approaches include providing support for families with limited time for meal preparation and involving young people more.</td>
</tr>
<tr>
<td>Effectiveness of intervention on physical activity of children: systematic review and meta-analysis of controlled trials with objectively measured outcomes (EarlyBird 54)</td>
<td>Metcalf et al. 2012</td>
<td>Study designs were RCTs or controlled clinical trials. Intervention were designed to increase physical activity in children/adolescents and lasted at least four weeks. Outcomes were increased physical activity measured objectively with accelerometers.</td>
<td>The findings of this review indicate that physical-activity interventions have at best a small effect on children’s overall activity levels.</td>
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Table 2: Risky behaviour – systematic reviews

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<th>Title</th>
<th>References</th>
<th>Interventions</th>
<th>Findings</th>
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<tr>
<td>An overview of prevention of multiple risk behaviour in adolescence and young adulthood</td>
<td>Jackson et al. 2012</td>
<td>Reviews the evidence on effective interventions to prevent multiple risk behaviour (tobacco, alcohol and illicit drug use, and risky sexual behaviour).</td>
<td>A range of approaches, with varying degrees of effectiveness, are described. The effectiveness of studies addressing single risk behaviours was mixed (e.g. family/parenting programmes) or limited (e.g. school-based programmes). The most promising interventions were multicomponent, and the authors suggest that the way forward is to aim to increase resilience and promote environments at home and/or school that support positive social and emotional development. However, wider influences on risk behaviour, such as culture, media and social climate, also need to be addressed through broader social policy change.</td>
</tr>
<tr>
<td>Peer-led interventions to prevent tobacco, alcohol and/or drug use among young people aged 11-21 years: a systematic review and meta-analysis</td>
<td>MacArthur et al. 2015</td>
<td>Peer education is ‘the teaching/sharing of health information, values and behaviours between individuals with shared characteristics’. This paper reviewed 17 studies of peer-led RCTs designed to prevent tobacco/alcohol and/or illicit drug use among 11–12-year-olds.</td>
<td>Meta-analysis of school-based interventions targeted at smoking and alcohol use indicated positive effects in the peer-led group compared with the controls. There was insufficient data to come to a conclusion about drug use.</td>
</tr>
<tr>
<td>Family-based programmes for preventing smoking by children and adolescents</td>
<td>Thomas et al. 2015</td>
<td>This review covers RCTs of interventions to prevent tobacco use by children or adolescents, using a family-based approach. Participants did not use tobacco at baseline and the primary outcome was smoking status at least six months from the start of the intervention.</td>
<td>The trials were very heterogeneous in the components of the family intervention, but the authors concluded that there was moderate-quality evidence to suggest that family-based interventions can help deter children and adolescents from starting to smoke. They suggest that a common feature of the most effective interventions was encouraging authoritative (but not authoritarian) parenting.</td>
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<td>Topic</td>
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<tr>
<td>Tobacco use prevention by integrating inside and outside of school based programmes: a systematic review</td>
<td>Khayyati et al. 2015</td>
<td>Review covered trials with random and non-random designs and cohort studies that assessed the application of integrated control programmes. Most studies were from the United States.</td>
<td>The trials were very heterogeneous but the authors concluded that multifaceted community-based interventions – for example, including media campaigns or involvement of voluntary groups – that were integrated with school-based programmes were most effective.</td>
</tr>
<tr>
<td>Alcohol screening and brief intervention for adolescents: the how, what and where of reducing alcohol consumption and related harm among young people</td>
<td>Patton et al. 2014</td>
<td>Review of the evidence base on the effectiveness of alcohol-screening tools and brief intervention (i.e. short sessions on one or more occasions) in reducing alcohol use by adolescents.</td>
<td>The CRAFT and AUDIT tools were recommended for identifying ‘at risk’ adolescents. Motivational interviewing and motivational enhancement therapy are promising approaches.</td>
</tr>
<tr>
<td>Youth violence prevention and empowerment strategies</td>
<td>Reischl et al. 2011</td>
<td>Review of published studies of youth violence prevention efforts that engage youth in developing or implementing violence prevention activities. The reviewed studies suggest the promise of youth empowerment strategies and the need for systematic outcome studies of empowerment programmes. After reviewing empowerment theory applied to youth violence prevention programs, it presents a case study of the Youth Empowerment Solutions (YES) for Peaceful Communities programme.</td>
<td>YES engages middle-school youth in an after-school and summer programme that includes a culturally tailored character development curriculum and empowers the young people to plan and implement community improvement projects with assistance from adult neighbourhood advocates. The case study focuses on outcome evaluation results and presents evidence of the YES programme effects on community-level outcomes (e.g. property improvements, violent crime incidents) and on individual-level outcomes (e.g. conflict avoidance, victimisation). The literature review and the case study suggest the promise of engaging and empowering youth to plan and implement youth violence prevention programmes.</td>
</tr>
<tr>
<td>Sexual health outcomes in adolescents</td>
<td>Downing et al. 2011</td>
<td>Systematic review using NICE method guidance. Overall, 17 studies met the inclusion criteria. Most evidence is from the United States.</td>
<td>Findings showed that parent-based interventions were inconsistently effective at reducing young people’s sexual risk behaviours. Parent-based interventions had greater impact on parent/child communication than family-based interventions,</td>
</tr>
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</table>
which showed no evidence of effectiveness. However, increasing parent/child communication showed no effect on sexual risk behaviours. Preliminary evidence suggests that effectiveness was greater in those studies aiming to affect multiple risk behaviours. However, this may be due to longer programme delivery and follow-up times; further evidence is required. Sexual-health communication was sensitive to intervention. Studies addressing multiple risk behaviours may be as effective as targeted interventions at affecting sexual risk behaviours.
### Table 3: Mental health – systematic reviews

<table>
<thead>
<tr>
<th>Title</th>
<th>Reference</th>
<th>Interventions</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Psychological interventions for mental health disorders in children with chronic physical illness: a systematic review</td>
<td>Bennett et al. 2015</td>
<td>10 studies were included involving 209 children, 70 in control groups. Two were RCTs and the remainder non-randomised. One study was rated weak quality, the rest moderate or strong, though some had small sample sizes and the results therefore need to be treated with caution. Interventions included cognitive behavioural therapy for depression and a variety of formats for anxiety.</td>
<td>The authors conclude that there is preliminary evidence that cognitive behavioural therapy is effective in treating children with chronic diseases for symptoms of depression and anxiety.</td>
</tr>
<tr>
<td>Cognitive training for attention-deficit/hyperactivity disorder: meta-analysis of clinical and neuropsychological outcomes from randomised controlled trials</td>
<td>Cortese et al. 2015</td>
<td>This review did a meta-analysis of 16 studies (759 children with ADHD) investigating the effect of cognitive training for ADHD.</td>
<td>Although there were indications of improved working memory performance, cognitive training had limited effects on ADHD when studies were blinded.</td>
</tr>
<tr>
<td>Parents and prevention: a systematic review of interventions involving parents that aim to prevent body dissatisfaction or eating disorders</td>
<td>Hart et al. 2015</td>
<td>Reviewed studies that delivered childhood/adolescent intervention designed to reduce eating factors or body dissatisfaction or their risk factors and included a component for parents. Outcome measures were effectiveness in reducing eating or body dissatisfaction.</td>
<td>20 studies meeting the inclusion criteria were identified. Of these, two of four high-quality studies reported a positive effect of parental involvement.</td>
</tr>
<tr>
<td>Systematic review of the effects of family meal frequency on psychosocial outcomes in youth</td>
<td>Harrison et al. 2015</td>
<td>Studies on children/adolescents that investigated the role of family meals on psychosocial outcomes (e.g. substance abuse, eating disorders, depression) and had an adequate study design (cross-sectional or longitudinal cohort studies and RCTs with appropriate statistical methods) were included in this review.</td>
<td>Overall the results indicated that there is a positive relationship between frequent family meals and increased self-esteem/school success, and an inverse association with psychosocial outcomes. There were differences between the genders, with females having more positive results.</td>
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### Table 4: Social-media interventions – systematic reviews

<table>
<thead>
<tr>
<th>Title</th>
<th>Reference</th>
<th>Interventions</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>The use of behaviour change theory in internet based asthma self-management interventions: a systematic review</td>
<td>Al-Durra et al. 2015</td>
<td>Evaluates internet-based interventions published in 85 papers between 2004 and 2014 with respect to use of behavioural-change theoretical frameworks, applied clinical guidelines and assessment tools.</td>
<td>The authors conclude that the design of most of these studies was ad hoc, and not informed by any documented behavioural-change theory, clinical guidelines and/or assessment tools.</td>
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<tr>
<td>Impact of mobile apps to combat obesity in children and adolescents: a systematic literature review</td>
<td>Quelly et al. 2015</td>
<td>Reviews nine studies. Approaches included using social media for motivational behaviour and goal-setting.</td>
<td>Positive benefits were observed, but the evidence is limited and mixed. The authors suggest further studies to assess the impact of social media interventions on childhood obesity-related outcomes such as attitudes, perceptions, physical activity and dietary habits.</td>
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<tr>
<td>Online peer-to-peer support for young people with mental health problems: a systematic review</td>
<td>Ali et al. 2015</td>
<td>Reviews the evidence around effectiveness of online peer-to-peer support for young people with mental-health problems. Six studies satisfied the inclusion criteria. The studies targeted a range of mental-health problems including depression and anxiety, general psychological problems and eating disorders. Four studies investigated Internet support groups and the remaining two focused on virtual reality chat sessions. Study designs were varied – three RCTs, two pre-post studies and one randomised trial.</td>
<td>In most studies the peer support intervention was moderated by health professionals, researchers or consumers. Two of the RCTs were associated with a significant positive outcome in comparison to the control group at post-intervention. In the remaining four studies, peer-to-peer support was not found to be effective. This systematic review identified an overall lack of high-quality studies examining online peer-to-peer support for young people.</td>
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<tr>
<td>Friending teens: systematic review of social media in adolescent and young adult health care</td>
<td>Yonker et al. 2015</td>
<td>87 studies were included, of which 75 were purely observational and 12 were interventional. Ways in which social media was leveraged by these studies included: (1) observing adolescent and young adult behaviour; (2) providing health information; (3) engaging the adolescent and young adult community; and (4) recruiting research participants. Common health topics included high-risk sexual behaviours, alcohol, tobacco and other drug use, internet safety, mental-health issues and medical conditions.</td>
<td>Social-media technologies offer an exciting new means of engaging and communicating with adolescents and young adults; they have been used successfully to engage this age group, identify behaviours, and provide appropriate intervention and education. Nevertheless, the majority of studies to date have been preliminary and limited in their methodologies, and mostly centre around evaluating how adolescents and young adults use social media and the resulting implications of using social media.</td>
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</tbody>
</table>
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All URLs correct as of 1 April 2016


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