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Health systems and health-related behaviour change: a review of primary and secondary evidence

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Executive summary

Health systems can be defined as the sum of the people, institutions and resources arranged together (in accordance with relevant policies) to maintain and improve the health of the population they serve. A health system is also responsive to people's legitimate expectations, protects them against the cost of ill health through a variety of activities, and has the primary aim of population health improvement at its heart (WHO 2005: www.who.int/features/qa/28/en). Moore et al. (2007) go further, suggesting that a health system encompasses:

> '…the complex interaction and feedback occurring among global contexts, organisational capacities, inter-organisational relationships, institutional environments and population health' (p282).

There is growing evidence to indicate that health systems have significant potential to change health behaviours and improve health. Indeed, the resolution passed at the fifty eighth Regional Committee of the World Health Organization Regional Office for Europe, in September 2008,[1] indicated the need to:

> 'facilitate the exchange and sharing of experiences among Member States with regard to case studies and demonstration projects in the field of behaviour change in the WHO European Region and beyond, in order to document the critical health system-related factors that are at play, and to enable lessons to be learned and achievements to be replicated'.

This is in addition to the potential for specific programmes and interventions delivered by health professionals to have a positive impact on health behaviour and health outcomes.

Harnessing and utilising health systems to prevent – rather than, or in addition to, treating conditions and illnesses – may also lead to significant cost savings.

This report presents the findings from three rapid research projects. It is based on learning gleaned from different types of evidence considered during development of

[1] Fiftty eighth Session of the WHO Regional Committee for Europe, 15-18 September 2008, Tbilisi, Georgia.

public health guidance by the National Institute for Health and Clinical Excellence (NICE).

This project was commissioned from the Centre for Public Health Excellence (CPHE) at NICE by the World Health Organization (WHO) in 2009. Building on earlier work by WHO (2008), it aimed to identify the characteristics of national, regional and local health systems and services that produce and support behaviour change.

Three pieces of research were undertaken between August and December 2009. The aim was to develop an evidence-based conceptual model of health-promoting health systems. Each project used a different type of data and thematic analysis to explore different facets of the health system and behaviour change. The research comprised a:

- review of NICE evidence reviews
- literature review
- review of stakeholder responses to NICE public health guidance consultation.

Evidence statements and evidence reviews

The first part of the report presents findings from a thematic analysis of evidence statements. These were taken from a set of 12 evidence reviews which had originally been developed to inform NICE public health guidance on CVD prevention. In addition to the model proposed by WHO (2008), several additional themes and sub-themes were identified including:

- the important role of policy and national programmes, media and marketing, the environment and planning in health stewardship and behaviour change
- the role of finance and sustainable resources in health-promoting systems
- how improvements in service design and delivery, such as tailoring and targeting interventions, building partnerships and networks, and using appropriate modes of delivery, can contribute to behaviour change and health promoting systems.

Literature review

The second part of the report presents a review of recent literature reviews relevant to health systems and behaviour change and carried out in member countries of the Organisation for Economic Co-operation and Development (OECD). A systematic literature search identified 32 reviews that included relevant concepts or outcomes.

Thematic analysis of the full papers identified several key concepts which were used to develop the model, including:

- the importance of a stable political context
- legislation as a tool for behaviour change
- the role of health systems in promoting equity
- the importance of involving stakeholders in the development of health systems and the wider community – and of partnerships beween health systems and the wider health network.

Additional 'outcome' evidence (that is, evidence of effectiveness) was identified in relation to several issues, including:

- the impact of 'flatter' organisational structures on ease of information flow and management within a health system
- factors that influence managers and their allocation of resources
- the impact of partnership and collaboration on health outcomes
- changing professional behaviour within a health system.

These themes and concepts were added to the developing model.

Stakeholder response to NICE consultations on public health guidance

Finally, the third part of the report describesa thematic analysis of stakeholder responses to consultations on four pieces of NICE public health guidance: behaviour change, community engagement, immunisation, and identifying and supporting those at risk of dying prematurely. Emergent themes and concepts included the importance of:

- clear leadership and chains of accountability
- investment in training and development
- use of information and intelligence for service development – learning systems
- partnerships and the concept of 'conectedness'.

Again, key themes and concepts were added to the developing model.

The remainder of this report considers the nature of health systems as both influences upon – and determinants of health – and outlines the model that emerges from our findings.

Health systems are determinants of health in two distinct senses:

1. Socially – because their existence has both intended and unintended effects on the health of individuals and populations.

2. As agents themselves, since they make deliberate attempts to affect human behaviour.

As 'agents', health systems further attempt to change the client group through the **actions** of the system, and by attempting to change its **constituent parts** – that is, by changingthe behaviour of internal personnel and the way services are provided.

This report highlights a distinction between the 'structures' and 'components' of a health system, and how it 'moves' or what it does. It also suggests that both the structures and components are key to its ability to promote and sustain behaviour change. Findings suggest that an 'effective' health system needs to contain elements that are stable and structured (resources, entry and access, motivated and trained personnel). At the same time, it also needs to react and evolve to recognise and meet the needs of its client groups.

In terms of fixed structures, research presented here suggests that an effective health system should contain:

- management and leadership
- stewardship and care
- finance
- service improvement and resources
- service design and delivery
- partnerships and connectedness.

However, static structures do not capture the dynamic nature of systems very well. The boundaries of any system – the gateways and entry points, the extent to which it reaches into other domains, the passage of clients and resources through it – are all facets of a 'live', evolving system, rather than inherent aspects of the structures themselves. Boundaries are also embedded in their broader social context.

This report concludes by presenting the proposed ‘fixed’ structures against the socially-situated concepts and themes identified. These structures and themes are also linked to potential areas that could be used as indicators to measure the impact of different parts of the system.

Mapping the practices, concepts and beliefs around each structure illustrates the way in which dynamic aspects of the health system – for example, how it treats and develops its staff, or the impact it has on the environment – may effect patient and system outcomes. It also provides a potential set of indicators by which the impact and effectiveness of a system may be monitored and assessed.

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1. Introduction

This report explores the relationship beween health systems, behaviour change and health improvement. It presents the findings from three rapid research projects that capture learning from different types of evidence, considered in the development of NICE guidance, on the characteristics of health systems that promote and sustain health-related behaviour change.

European epidemiological data fom the past 30 years show that it is possible to prevent or delay mortality and morbidity caused by a number of diseases (Yates et al. 2008; Lopez et al. 2009). Rates of cardiovascular disease (CVD) and many cancers, for example, are heavily influenced by lifestyle and behaviours which, in turn, are themselves influenced by a variety of social, economic, demographic and structural factors. There have been significant advances in the prevention of both these previously highly prevalent causes of death. To what extent can such improvements be accounted for by the actions and consequences of health systems? Some (for example, McKeown 1976) have argued that healthcare systems are not significant. He suggested that the advent of what we recognise as modern medicine, and the advent of the National Health Service in the United Kingdom, have actually contributed very little to health improvements seen in the past century. Instead, from a historical platform, he argued that improvements in sanitation, diet, housing, population control and improved civil safety were largely responsible for increases in life expectancy between the early 1800s and the early part of the 20th century. In Western Europe, improved quality of life has undoubtedly been a significant contributor to the prevention of mortality and morbidity. But to what extent have healthcare systems also played a role?

In a seminal paper on the role of medicine in creating health, Bunker (2001) acknowledged the progress in levels of health and life expectancy that was central to McKeown's thesis. Bunker however emphasised the importance of the role that many doctors and health professionals played in implementing pivotal improvements. Bunker's argument integrated the 'narrow' healthcare system and the wider social, economic and political structures that we inhabit, and he concluded:

> 'The provision of medical care, the development of healthier personal habits, and the creation of a more just social environment each harbour the potential to improve health' (p. 90).

This report considers the impact of health systems on health improvement, both directly through the provision and promotion of healthcare services, and indirectly through the effects of inter-sectoral working and partnerships, stewardship and care, advocacy and other activities implied in broader definitions such as that of Bunker (2001). These additional activities become increasingly important as Europe is faced with an ageing population, where the emphasis for health service activity is shifting from simply prolonging life to the more complex endeavour of adding quality to longer life expectancies.

1.1 What is a health system?

In its final report, the World Health Organization's Knowledge Network on Health Systems (WHO Commission on the Social Determinants of Health 2007) describes aspects of effective health systems, and argues that these systems are important because, like income, ethnicity or gender, they can act as determinants of health. Considering (for the most part) evidence from low- and middle-income countries, the report finds evidence to support the hypothesis that appropriately designed and managed health systems can impact positively on health equity. This is possible, it concludes, when systems specifically address the circumstances of socially disadvantaged and marginalised populations (for example, low-income groups, women, other groups excluded by stigma or discrimination). Furthermore, an effective health system may generate wider benefits, helping to create a sense of security, wellbeing and social cohesion in communities and populations. However, many health systems fail to realise this potential, and the barriers to their prosperity include disadvantageous economic policies and short-term political changes, commercialism, globalisation and the migration of key human capital and resources (the 'brain drain') from developing countries. The 2007 report summarises the features of health systems oriented to population health and health equity as follows:

- leadership, processes and mechanisms that promote partnership and cross-sector working
- organisational activities that promote community and population engagement
- healthcare financing arrangements that provide universal coverage and aim to distribute resources towards those who need them most

- revitalisation of primary healthcare settings as the 'frontline' for delivering direct medical care and a range of other health equity-promoting features and services.

In other words, a health system is broader than the (relatively) simple function of delivering clinical care, and should maximise its potential for prevention (and therefore better use of scarce national resources), and the promotion of equity.

Elsewhere, WHO has defined health systems as the sum of the people, institutions and resources arranged together (in accordance with relevant policies) to maintain and improve the health of the population they serve. A health system is also responsive to people's legitimate expectations, protects them against the cost of ill health through a variety of activities, and has the primary aim of population health improvement at its heart (WHO 2005: www.who.int/features/qa/28/en/index.htm) Moore et al. (2007) go further, suggesting that a health system encompasses:

> *'…the complex interaction and feedback occurring among global contexts, organisational capacities, inter-organisational relationships, institutional environments and population health'* (p. 282).

The nature and complexity of health systems is further illustrated by some of the challenges encountered in public health evaluation. Much of the evidence used to inform health commissioning and practice has been gathered within the evidence-based medicine paradigm, which tends to privilege randomised controlled trials (RCTs) and other controlled studies (Egger et al. 2001). These types of study often tell us about efficacy (impact in ideal conditions) rather than effectiveness (real-life change and impact effects once an intervention is rolled out) – but what works under controlled or ideal conditions may have less than the desired effect when implemented in the field (Swann et al. 2006; WHO 2008). In a qualitative study of multifactor programmes aimed at preventing CVD, Garside et al. (2009) note that population- and community-level programmes may enhance their effectiveness if principles and practices are embedded within the organisations and systems that deliver them.

However, experience shows that, even when an intervention or programme shows excellent results under 'experimental' conditions, this efficacy does not translate in full (or, sometimes, even in part) to the real world. Garside et al. (2009) carried out a series of qualitative interviews and focus groups with researchers participating in

major population-level interventions aimed at reducing levels of CVD, taking place in OECD countries over the past 25 years. Their findings about the nature of effective programmes can be summarised as follows.

- Programme development/fidelity: CVD programmes need to be flexible and have the ability to adapt in response to social/environmental change. For this to happen, there needs to be support from policy makers.

- Community engagement: population-level CVD programmes require effective community engagement. This involves building relationships on trust and respect, which are dynamic and which allow communities to shape and engage with programmes that are tailored to meet their needs.

- Project leadership: effective programmes require strong, committed, inspirational leadership to motivate staff and deliver services.

- Staff development: staff require appropriate and adequate training.

- Multidisciplinary teams: delivering CVD prevention programmes requires multidisciplinary teams working in partnership.

- Time frames/sustainability: funders, policy makers, staff and communities need to commit to the long-term nature of these programmes. This includes sustainable finances. Social and political change can impact severely on programme effectiveness.

- Monitoring and evaluation: programmes should be monitored routinely, and evaluated periodically, with findings communicated appropriately to all stakeholders.

The majority of these findings relate not to the content of the intervention or programme, but to the system in which it is located: in other words, Garside et al.'s (2009) study highlights the make-or-break potential of health systems, and all their component parts, in supporting (or disabling) health-improving behaviours.

This review employs the broader definition of health sytems described above, to encompass the structural, service and population components of the system itself, and the way in which the system – and all its parts – interact with other institutions, settings, and the social, political and economic environment.

1.2 Why behaviour change?

The behaviour of individuals, communities and populations is one of the major determinants of their health outcomes. Bunker (2001) estimated that elimination of inequalities in health could increase the life expectancy of the most disadvantaged by up to 9 years, and if it were possible to then remove all 'unhealthy personal habits' (p. 90), this would result in a further 2.5 life years gained – figures that, with 5 years of NICE public health guidance and cost effectiveness work now published, seem fairly conservative. The cost of treating disease that could be prevented through lifestyle or behaviour change represents a considerable burden on western health budgets, and there is significant potential for cost savings from effective interventions and programmes.

There is significant evidence that – given the right approach and appropriate conditions – health professionals, services or even governments may deliver services and interventions to individuals, communities or within populations in order to change health-related behaviours, reduce risk, and reduce levels of morbidity and mortality (see, for example, Jepson et al. 2006). There is also a growing body of RCT and review-level evidence, following in the tradition of evidence-based medicine and clinical practice, on effective public health interventions and programmes (see Bero and Rennie 1995). For the past 5 years, the Centre for Public Health Excellence (CPHE) at the National Institute for Health and Clinical Excellence (NICE) has been producing guidance on public health interventions and programmes, based on fit-for-purpose, high-quality evidence from research and practice (NICE 2009), that has concerned itself with effecting changes in behaviour – of individuals, communities, populations, public health professionals and even legislators – in order to improve health. That behaviour change is desirable, if not essential, in order to improve health is a central assumption of this report, and is well documented elsewhere (see, for example, NICE 2007).

1.3 The current project

In August 2009, WHO commissioned NICE to undertake some rapid primary and secondary analysis of evidence on the role and impact of health system characteristics on the effectiveness of interventions aimed at changing behaviour and improving health outcomes.

What are the characteristics of health systems and services – at national, regional and local level – that promote and support health-related behaviour change?

Three pieces of research were undertaken in order to develop an evidence-based conceptual model of health-promoting health systems. Each project used a different form of data, and employed a thematic analytical technique to explore different facets of health systems and behaviour change. The three research activities were:

- a review of NICE evidence reviews
- a literature review
- a review of stakeholder responses to NICE public health guidance consultation.

In its basic form, thematic analysis is a qualitative research technique, where the researcher seeks to identify consistent patterns or themes in the data set (Braun and Clarke 2006). Virtually any qualitative information – for example, talk or narrative accounts, articles, web dialogue or even images – can be subjected to thematic analytical techniques. The data are not necessarily taken as 'true', or at face value, as the researcher may choose to maintain a 'critical distance' from the text. In general, by uncovering such patterns, thematic approaches aim to illuminate any underlying constructs, beliefs or practices that are inherent in the data. This, in turn, can help the researcher to develop theoretical accounts or models about individuals, communities, populations or systems. Here, the intention was to use the patterns and concepts identified in each part of the project to develop themes and help build a conceptual model of the key structures and activities of health systems that promote or sustain health-related behaviour change.

In a paper presented to the 58th Session of the Regional Committee for Europe, WHO (2008) describes a flow chart to illustrate the dynamic process of effecting behaviour change through health systems (adapted in Figure 1).

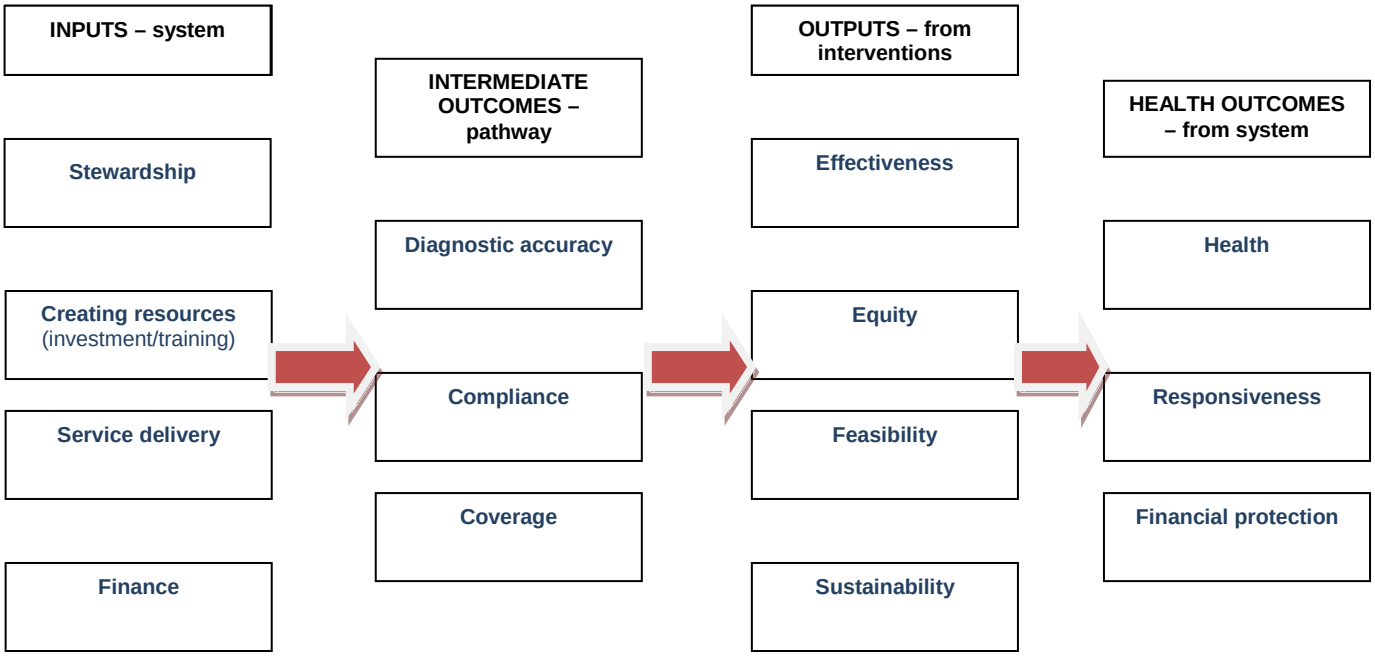

Figure 1: Addressing behaviour change through health systems (adapted from WHO 2008)

In Figure 1, improvements seen in the inputs, for example increases in resources or service delivery improvements, would impact positively upon intermediate outcomes – diagnostic accuracy, treatment compliance and coverage of the system – which, in turn, would impact on the intervention outputs and health outcomes.

This report builds on the inputs described in Figure 1 – the building blocks of a health-promoting health system – and uses findings from each of the research activities described below to develop and inform an adapted model, described in section 5.

1.3.1 NICE public health evidence reviews

The CPHE at NICE has been developing public health guidance for England and Wales across multiple areas and topics since 2005. At the time of writing, 21 guidance documents had been published (www.nice.org.uk/Guidance/PHG/Published) and a further 34 were in train. In developing the guidance, NICE systematically collates evidence from both within and outside[2] the UK on the effectiveness of interventions and programmes aimed at

[2] Generally, evidence from the UK is prioritised in the development of NICE public health guidance, although evidence from Europe and other developed countries will usually be considered (and rated for applicability to the UK setting).

changing behaviour and/or improving health. This can include evidence from published (and unpublished) RCTs and other outcome or evaluation studies, epidemiological and correlational research, qualitative research, expert testimony from researchers, practitioners and policy makers, evidence from practice (in the form of stakeholder consultation responses, and 'field work' to pre-test recommendations. For a full guide to NICE public health guidance development methods, see www.nice.org.uk/aboutnice/howwework/developingnicepublichealthguidance/publichealthguidanceprocessandmethodguides/public_health_guidance_process_and_method_guides.jsp?domedia=1&mid=F6A97CF4-19B9-E0B5-D42B4018AE84DD51)

The evidence used to inform and develop NICE public health guidance is selected according to the topic and referral[3]. Much of the evidence is received in the form of evidence reviews by NICE guidance committees: either the standing Public Health Interventions Advisory Committee (PHIAC), which develops intervention guidance, or Programme Development Groups (PDGs), which are formed to develop each piece of programme guidance. NICE works with an external academic review team to develop a protocol for one or more of these reviews – essentially rapid, systematic reviews of the evidence (usually one or two for intervention guidance; three to six for programme guidance). Once a satisfactory protocol has been agreed, the review team undertakes the work and the review is received by the committee some months later.

All reviews are developed according to the methods and processes set out in the NICE public health methods manual (NICE 2009), which itself has been subject to considerable development and consultation with stakeholders. Evidence included in the reviews is subject to rigorous assessments of quality and applicability, and each review includes 'evidence statements' – distillations or summaries of the evidence in particular areas (relevant to the review's research questions), which include quality assessment data and references for sources. These statements are used by committees and the NICE technical team in developing recommendations – each recommendation in a final guidance document refers back to the relevant evidence statement on which it is based.

[3] The UK government's Department of Health refers topics for guidance development to NICE: www.nice.org.uk/aboutnice/howwework/howguidancetopicsarechosen/how_guidance_topics_are_chosen.jsp.

To date, the majority of evidence reviews that have been conducted to inform NICE public health guidance are concerned with the effectiveness of interventions to effect behaviour change of some sort – in individuals, communities, populations or relevant health professionals. These reviews may examine the impact of changes in policy, environmental factors, professional practice or some other aspect of public health. And although many evidence statements focus on effectiveness, others may consider issues relating to health or social equity, barriers (and opportunities) to change, and the impact of different aspects of the health system on behaviour change. As each piece of public health guidance can generate between one and six evidence reviews (plus a cost effectiveness analysis and modelling), a decision was made to restrict the analysis to a case study of evidence reviews on primary risk factors (such as smoking and physical inactivity) and secondary risk factors (such as obesity and type 2 diabetes).

This part of the project undertook a thematic analysis of evidence statements in a pre-identified set of evidence reviews.

1.3.2 Literature review

A considerable amount of published research and reviews in health and public health deals with aspects of health systems, either directly or indirectly. Reviews of reviews – tertiary research – have been used elsewhere to gain a broad, rapid insight into current theory and practice (Swann et al. 2005, 2006). The second part of this project, detailed in section 3, provides a review of recent reviews (in OECD countries) relevant to health systems and behaviour change. As with the evidence statements in section 1.3.1, themes within relevant reviews are identified and used to develop the model in section 5.

1.3.3 Stakeholder responses

A final source of information about the elements of health systems that promote and support, or hinder, behaviour change comes in the form of stakeholder responses. NICE ensures that all draft public health guidance – and the evidence on which it is based – goes out for consultation with stakeholders (organisations may register as stakeholders to the guidance at any point in the development process), for a minimum of 8 weeks. An earlier stage in the process, the draft scope that sets out the plans and boundaries for proposed guidance, is also consulted upon for 4 weeks, bringing the total consultation period for NICE public health guidance to 12 weeks. Stakeholders are invited to comment on all sections of the evidence and draft

guidance, noting – among other things – whether evidence has been missed, whether there are inconsistencies in the way the evidence is used or interpreted, and how the guidance fits in with their own organisation or practice. The information provided by stakeholders can help committees to finesse the final guidance, flag up any potential issues, problems or opportunities, and assist with the implementation process. Stakeholder consultation responses – and the replies given to these responses by NICE – are also published on the NICE website, but have not yet been subjected to any further assessment or analysis.

The third (and final) research activity to inform this report is a thematic analysis of stakeholder responses to consultations on four pieces of NICE public health guidance relevant to health systems[4]: behaviour change, community engagement, immunisation, and identifying and supporting those at risk of dying prematurely. As with the previous two sections, a thematic analysis was carried out on the responses in order to identify key patterns and constructs with which to develop the model in section 5.

1.4 Summary

The remainder of this report presents the findings from each area of work, and concludes with a discussion of the findings, and their implications for developing an evidence based conceptual model of change-promoting health systems.

[4] See www.nice.org.uk/Guidance/PHG/Published: Behaviour change (PH6); Community engagement (PH9); Reducing differences in the uptake of immunisations (PH21); Identifying and supporting people most at risk of dying prematurely (PH15).

2. Health systems and behaviour change: a review of evidence reviews

2.1 Introduction

A thematic analysis of evidence statements used to inform NICE public health guidance was undertaken to contribute to a review of the role and impact of the characteristics of health systems on the effectiveness of interventions aimed at changing behaviour and improving health outcomes. The analysis considered a sample of evidence reviews related to coronary heart disease and behaviour change, including data from case-study primary risk factors (such as smoking and physical inactivity) and secondary risk factors (such as obesity and type 2 diabetes), in addressing the following research question:

What are the characteristics of health systems and services – at national, regional and local levels – that promote and support health-related behaviour change?

2.2 Method

Twelve evidence reviews related to primary or secondary risk factors for CVD were selected for inclusion in this review, as follows. Citations of these evidence reviews are in bold in the text; full references are given in the list of 'References for included evidence reviews' on page 30.

Behaviour change

1. A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour (**Jepson et al. 2006**)[5]

Cardiovascular disease and statins[6]

2. Prevention of cardiovascular disease at population level. Question 1 Phase 1 (**Pennant et al. September 2008**)[7]

[5] Sections from this report on smoking prevention and cessation, healthy eating and physical activity were included in the current review. Data on sexual risk-taking and alcohol use were excluded.
[6] Each review carried out for NICE public health guidance on CVD (2, 3 and 4) deals with a different element of the research questions identified in the scope for that guidance.

3. Prevention of cardiovascular disease at population level. Question 1 Phase 2 (**Pennant et al. October 2008**)

4. Prevention of cardiovascular disease at population level. Question 1 Phase 3 (**Pennant et al. November 2008**)

5. Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins (**Turley et al. 2007**)

Obesity prevention

6. Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') (**NICE 2006**)

Physical activity

7. Physical activity and the environment. Review Four: Policy (**NICE PHCC – Physical Activity December 2006**)

8. Physical activity and the environment. Review Two: Urban Planning and Design (**NICE PHCC – Physical Activity October 2006**)

9. A rapid review of the effectiveness of exercise referral schemes to promote physical activity in adults (**NICE PHCC – Physical Activity 2006**)

Smoking

10. NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services (**Bauld et al. 2007**)

11. NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England (**Bell et al. 2006, updated November 2007**)

12. Rapid review of brief interventions and referral for smoking cessation (**Academic & Public Health Consortium 2005**)

[7] Reviews 2, 3 and 4 were carried out to inform guidance on prevention of CVD at population level; each review dealt with a different aspect of implementing and evaluating large-scale CVD interventions at this level.

As described in section 1, the analysis was initially informed by input areas in Figure 1, with further themes and concepts emerging as the analysis progressed.

The evidence statements in each evidence review were scanned by one reviewer (MR), and the initial themes and analysis were then assessed by a second reviewer (CS). Evidence statements were initially selected for extraction based on the following criteria.

Include evidence statements that can be classified under the main aspects of health systems, which for this review are:

- **stewardship and leadership** – the care for populations, communities and individuals that is built into health systems and services, and the extent to which principles of stewardship and leadership are shared by those working within the system
- **finance** – for example, sources, continuity and distribution of funds within a system
- **service delivery** – the extent to which principles of stewardship, leadership, equity and care that are built into systems are taken up and implemented by services (and those working within health services)
- **creating resources** – variations in investment in staff, materials and other resources.

NICE evidence reviews tend to prioritise data from the UK, although they often include non-UK data (OECD countries) along with an assessment of applicability to a UK setting.

2.3 Results

The evidence statements were compiled into tables by risk factor/issue (smoking, obesity, physical activity, statins/proactive casefinding, CVD) which listed information as follows:

- substantive theme (either from inclusion criteria or an additional theme; some evidence statements were listed twice or more as they covered more than one theme), colour coded by theme for easy reference
- sub-theme, identified by the reviewer (for example, policy related, settings, etc.)

- evidence statement
- evidence quality grading (according to the source document)
- references
- source document.

Examples of evdidence statements under each theme are given in the narrative below. The evidence tables – with full details on each statement – are presented in Appendix 1.

The tables for CVD are organised differently, as the reports relating to this area are different from the rest of the reports. The CVD reports looked at specific projects that targeted risk factors, and reported on effectiveness findings overall and in three stages. This information could not have been compiled into the table format described above without losing important data or making the table unreadable. The CVD tables summarise the findings of the three-stage process as well as the overall findings.

2.3 Emergent themes

Table 1 sets out the themes and sub-themes related to the research question that were identified in the 12 evidence reviews. These themes relate to the way health systems (or aspects of the health system) impact on intervention effectiveness (in particular where that intervention is concerned with promoting or supporting behaviour change in order to improve health).

Substantive themes (from Figure 1 inputs)	Other themes
Stewardship and leadership	
	National programmes
	Policy
	Media and marketing
	Environment and spatial planning
Finance	
	Financial incentives to providers
	Financial incentives to participants
	Affordable to target audience
	Cost concern by providers
Service delivery	
	Service design
	Life course/life stage
	Monitoring and targeting local needs (e.g. specific groups)
	Setting
	Partnerships and links
Creating resources	
	Pharmacotherapy
	Staff training and development
	Self-help resources
	Service personnel/workforce development
	Information resources
	Incentives to participants

Table 1: Thematic structure of the analysis

Interventions and effectiveness

The highest proportion of evidence statements were concerned with smoking prevention and cessation, and obesity prevention. They also fell, for the most part, under the substantive theme of 'service delivery' – there was less evidence about the impact of leadership and legislation, finance or other resources. This is hardly surprising: RCTs, controlled before-and-after studies, and other effectiveness studies are better suited to examining micro-technologies of service delivery than they are to the other elements in Figure 1.

Equally, a substantive amount of data was concerned with the delivery of effective interventions at local level. On the whole, there was greatest support in the evidence for multi-component interventions, and for those that were more intensive (more sessions/interaction), findings that concur with recommendations in the NICE behaviour change guidance (NICE 2007). The statements highlighted a lack of evidence about the mid- to longer-term benefits of interventions.

Stewardship and leadership

The concept of stewardship (here, the way in which a healthcare system manages and cares for the people, property and interests that move within it) receives considerable support in the evidence statements. However, a related theme (that overlaps with service delivery and creating resources, below) emerges from this concept – the theme of leadership, the way that care and stewardship is championed and delivered through national policy and communicated through the media.

Policy and national programmes

Health-promoting national policy – policy that encourages behaviour change or supports healthy habits – was identified as an effective tool for health improvement in six evidence statements. For example:

> '*The evidence from one (3–)*[8] *study suggests there may be an association between national policies on physical activity which include a focus on improving the environment, and increased recreational physical activity and sport*' (**NICE PHCC – Physical Activity 2006**).

National programmes – interventions and approaches that are implemented at population level – also featured within several (five) evidence statements:

> *'There is evidence from two case studies evaluating phase one ([+]17) and phase two ([–]*[18]*) of the Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) to suggest that adding cardiovascular screening to state breast and cervical cancer screening programmes reaches financially disadvantaged and minority women and identifies a number at risk of coronary heart disease. No conclusions can be made on participation rates or physician referrals as these outcomes have not been reported. Applicability and transferability of these programmes to a UK setting requires further study'* (**Turley et al. 2007**).

However, these constitute only a small number of evidence statements within the total data set, and although it seems intuitively obvious that support policy and universal programmes should constitute part of a health-promoting health system,

[8] Numbers, letters and +, ++ or – notations within evidence statements refer to the type, applicability and quality of the relevant evidence cited – please see individual reviews for more information.

interventions and activities at this level can be hard to evaluate and so are poorly represented in the evaluation research literature.

Media and marketing

Marketing and advertising campaigns help to set social context, establish health leadership and communicate health messages. For example:

> *'There is evidence of variable quality (2–, A), that shows an effect of community wide mass media interventions on increasing physical activity.'*
>
> *'There is evidence of good quality (level 1++, A), which shows that mass media interventions have an effect on preventing the uptake of smoking in young people.'*
>
> *'There is evidence of variable quality (2–, C), that media campaigns and concurrently implemented tobacco control programmes (or policies) have a strong effect on the reduction in smoking prevalence.'*
> (**Jepson et al. 2006**).

However, other evidence (see, for example, NICE 2007) has shown that media campaigns may not be enough in themselves to promote behaviour change.

Environment and spatial planning

Of course, the concept of 'stewardship' is not confined within a narrow definition of health systems. Policies and strategies from outside the health sector – for example, town planning or transport – can have a direct impact on health and wellbeing. Evidence statements from behaviour change, obesity and CVD evidence reviews highlight the importance of cross-sector relationships.

> *'There is a body of evidence that creation of, or enhanced access to space for physical activity (such as walking or cycling routes), combined with supportive information/promotion, is effective in increasing physical activity levels.'*
>
> *'Changes to city-wide transport, which make it easier and safer to walk, cycle and use public transport – such as the congestion charging scheme in the City of London and Safer Route to School schemes, have the potential to make active transport more appealing to local users.'*
> (**NICE 2006**)

Finance

Finance – its provenance, distribution, and longevity – plays an important part in the stability and impact of a health system. Again, it is notable that little formal research was reported in the evidence statements on general issues of finance sources and sustainability, presumably because of the difficulties (once more) in capturing these issues in controlled studies. However, it is present as a theme in the evidence statements in the form of financial incentives, affordability of interventions, and provider concerns about cost impact, as seen in the following examples.

> *'Evidence from three studies indicated the importance of providing additional staff resources to encourage or support the uptake of services in people living in socially deprived areas. One US moderate quality RCT ([+][2]) in a predominantly black population from a low income area found improved uptake of services with a tracking and outreach intervention, where community health workers supported patients in completing referral to their physician for high blood pressure. Evidence from one non-comparative UK case study ([+][3]) indicates that additional resources for tertiary cardiology may have reduced socioeconomic inequities in angiography without being specifically targeted at the needier, more deprived groups, but the impact on revascularisation equity is not yet clear. Evidence from one UK case study ([–][4]) suggested that a project funding one nurse and one exercise worker to support GP practices in a socially deprived area increased the practice's provision of cardiac rehabilitation services such as exercise programmes, psychological and social support and dietary advice. Project nurses worked directly with practice nurses and GPs to develop their skills in identifying and monitoring patients with CHD, giving lifestyle advice and ensuring optimum medication regimes, and an exercise worker worked with practices and the community to identify and facilitate the provision of exercise resources suitable for CHD patients.'* (**Turley et al. 2007**)

> *'There is a body of evidence to suggest that young people's views on barriers and facilitators suggest that interventions should:*
> *(i) modify physical education lessons to suit their preferences,*
> *(ii) involve family and peers, and make physical activity a social activity,*
> *(iii) increase young people's confidence, knowledge and motivation relating to physical activity, and*

(iv) make physical activities more accessible, affordable and appealing to young people.' (**NICE 2006**)

'There is a body of evidence from UK-based qualitative research that time, space, training, costs and concerns about damaging relationships with patients may be barriers to action by health professionals (GPs and pharmacists).' (**NICE 2006**)

Finance-related evidence did not address issues such as equity or distribution of financial resources.

Service delivery

The majority of evidence statements in the reviews included dealt, inevitably, with aspects of service delivery and interventions, most often at local or regional level. Again, this is hardly surprising given the focus and content of most evidence reviews. Multiple categories emerged beneath this general theme heading.

Service design

Aspects of service or intervention design were consistently identified as levers to produce and sustain health improvement in the evidence statements. For example:

'There is evidence from two reviews (1++, A; 1–, C), that shows a small but short-lived effect of home-based, group-based, and educational physical activity interventions on increasing physical activity among older people'
(**Jepson et al. 2006**)

Service or intervention setting, different components or intervention structures, number of sessions/intensity, and mode of delivery were key elements within this major theme.

Targeting and tailoring

The need for services, interventions and staff within the healh system to target and tailor activity towards those in most need was a recurrent theme, both explicitly expressed and also implied. Monitoring and/or needs assessment of clients or populations was a related construct. For example:

'One cohort study [+]1 provides evidence of the potential benefit of basing smoking cessation services in the workplace of manual groups to increase cessation rates.' (**Bauld et al. 2007**)

Life stage and setting

Multiple evidence statements referred to services or interventions clustered around specific stages in the life course, within appropriate settings. This emphasises the 'wraparound' nature of health systems across life, and the need for staff and services to tailor levels of engagement appropriately – for example, by locating services in schools, or targeting new parents.

Mode of delivery

Mode of delivery – the way in which an intervention or service is delivered, through which medium (face to face, internet, phone, etc.) and by whom – constitutes another recurrent category under the theme of service delivery. Multiple health professionals and media are cited in the evidence reviews, for example:

'Evidence from two 3– bulletins indicates that intermediate interventions delivered by community advisors achieve self-reported cessation rates of between 34–45% at 4 weeks – although these results do not necessarily reflect the outcomes currently being achieved by these interventions given the substantial development of the services since 2001' (**Bell et al. 2006**)

Partnerships and relationships

Relationships between sectors, services and community are also consistently cited. Engaging parents in services and interventions for children, or working across different sectors and settings, are examples of this theme.

'One randomised controlled study of level 1+ evidence directly relevant to the UK setting demonstrated the potential effectiveness of a short training session to increase referrals to smoking cessation services by GPs. One controlled trial study of level 2+ evidence directly relevant to the UK setting reported an effect of pharmacist training on the increased likelihood of pharmacists referral of smokers to GPs for smoking cessation support.'
(**Academic & Public Health Consortium 2005**)

'There is evidence of good quality (1&2+, A), that shows an effect of multi-component interventions complementing classroom activities in school wide initiatives (with young people aged 11–16 years) as well as involving parents on promoting healthy eating' (**Jepson et al. 2006**)

Creating resources

Training and development of staff to promote effective services was a strong and consistent theme within the evidence statements. These are currently listed under 'service delivery' in the evidence tables in Appendix 1, but could equally be located within this theme. Investment in and use of information technology was another strand running within this theme – using information and new media to deliver services and engage audiences more effectively.

Service personnel and workforce development

The role of appropriately trained personnel in delivering effective services within the system was a recurrent theme.

'The type of health professional who provides the advice is not critical as long as they have the appropriate training and experience, are enthusiastic and able to motivate, and are able to provide long-term support' (**NICE 2006**)

'One randomised controlled study of level 1+ evidence directly relevant to the UK setting demonstrated the potential effectiveness of a short training session to increase referrals to smoking cessation services by GPs.'
(**Academic & Public Health Consortium 2005**)

There is clear overlap here between the role of trained personnel in delivering effective services, and the act of investment in staff training and development as a way of creating and developing resources within the health system; it is not possible here to distinguish between the two.

Few other resources were mentioned in the context of the evidence reviews. Use of non-financial incentives was cited, for example:

'There is good quality evidence (1&2+, C), that shows a small effect of "Quit and Win" contests on community prevalence of smoking is small.'
(**Jepson et al. 2006**)

2.4 Discussion

2.4.1 Public health and health systems: themes and concepts from the evidence statements

The four 'starter' concepts – stewardship, finance, service delivery and creating resources – in Figure 1 were present, in varying degrees, in the current data set. However, there is some overlap among the concepts, particularly between service delivery and creating resources. There are also other emergent themes – leadership (developing from stewardship), partnerships and relationships, the 'connectedness' of the system with external agencies and the 'gateways' into it, and a wealth of detail around effective, responsive service design to facilitate behaviour change.

The majority of evidence statements concerned aspects of intervention design and delivery, fitting within a broad 'service delivery' theme. They indicate that, for example:

- multi-component interventions are commonly more effective than single-component interventions
- more intensive interventions tend to be more effective
- school-based and workplace-based interventions can be effective in the short term, but longer-term benefits are less clear
- smoking bans in the workplace and in public places are effective
- involving parents and carers is important in effecting behaviour change for children
- family-based interventions focusing on obesity prevention are effective
- programmes focusing on CVD risk factors show the strongest effect in dietary change and body mass index (BMI)
- brief interventions from health professionals (doctors, nurses, dentists, pharmacists) about smoking are effective
- policy related to the physical environment and transport systems makes a difference to physical activities such as walking, although the size of the effect varies across studies
- mass media campaigns can be effective in increasing levels of awareness and knowledge, but there is less evidence on their effects on behaviour, and the evidence that exists is mixed
- methods such as telephone counselling and postal prompts can be effective

- incentives to participants (not financial incentives) seem to work in the short term or while the intervention lasts.

Considering the additional themes and concepts identified in the evidence statements, it is possible to expand the original starter themes taken from the concepts in Figure 1 to those set out in Table 2. These themes are developed in the following two sections.

Themes	Evidence
Leadership and management	
	Target setting and performance management
	Role models and the media
	Service evaluation
Stewardship and care	
	Responsive, appropriate policy
	Advocacy
	Active casefinding and outreach
Relationships and connectedness	
	Cross-sector working
	Relationships between settings and services
	Client/provider relationships
	Gateways into the system
Finance	
	Incentives
	Ability to pay/barriers
	Provider concerns and profit
Service improvement and resources	
	Staff development and training
	New technology and development
	Performance management
	Service enhancement
Service design and delivery	
	Effective intervention characteristics
	Settings
	Targeting
	Monitoring and evaluation

Table 2: Revised system concepts, based on thematic analysis of evidence statements

2.4.2 Considerations

There are several issues to be taken into account when considering this analysis. Firstly, evidence reviews as they are currently undertaken – and the process of distilling information into evidence statements – privilege evidence on service and intervention characteristics and outcomes. Information and evidence about the system in which interventions are delivered, and the contribution of context to the process of behavioural change, are often absent from these reviews. Yet

understanding the health system and the service context of an intervention may be crucial to exploring how and why interventions are effective, and how they may be implemented and made to work outside trial conditions.

A second observation concerns the dynamic nature of health systems. A proportion of the evidence statements included in this review were concerned with relationships – between different health professionals, different sectors, or professional and client groups. Others dealt with the related theme of 'gateways' into the system, either directly (through referral from other health professionals) or via non-health settings or structures that had been primed to act as a conduit to health intervention. These are facets of a 'living', responsive system and, once more, do not fit easily into more traditional approaches to evidence assessment. Nor are they simple to capture in a static conceptual model.

Thirdly, whilst all the reports included here were consistently transparent in describing their methodology for assigning evidence quality gradings (and referenced the NICE public health methods manual), not all used the same *method* of describing the quality of evidence. This means that comparisons between evidence statements from different reviews must be treated with caution where quality is an issue. That said, for the most part evidence gradings appeared to be the same, but described differently.

Almost all the reports commented on the lack of good quality evidence about effective interventions and approaches targeting groups such as black and minority ethnic groups, young people, lower-income groups, socially deprived and excluded groups, those with low literacy, and so on. Evidence reviews are developed in such a way that evidence on inequity and vulnerable groups is routinely searched for, and this represents a real lack of information on how health systems can best be configured to meet the needs of those at greatest risk of early morbidity and mortality.

Jepson et al. (2006) summarise the issue thus:

'*There was no evidence, from any of the systematic reviews, which could substantiate conclusions regarding the effectiveness of interventions in targeting health inequalities within particular population sub-groups…Our review of reviews found no evidence that was substantial enough to provide data on inequalities related to the following:*

- *Inequalities in smoking and tobacco use; physical activity; alcohol misuse; healthy eating; illicit drug use; and sexual risk taking among young people*
- *Inequalities in access to interventions to promote change in attitude, knowledge or behaviour*
- *Inequalities in recruitment to interventions of 'hard-to-reach' groups'.*

(p. 110)

References for included evidence reviews

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3. Health systems and behaviour change: A review of the literature

3.1 Introduction

The second research activity carried out was a review of current research literature on health systems and behaviour change. Initial scans of the literature by one of the authors of this report (MR) indicated the following issues with the potential data pool.

- Size: a high volume of papers touch on the issue of health systems and behaviour change, either directly or indirectly. When search strategies incorporated terms and concepts from Figure 1 and section 2, this further increased the potential data pool.

- Diversity: even within the healthcare and public health literature, different bodies of literature exist – each employing different terms and approaches to health systems and behaviour change. For example, there is a substantive amount of health service management literature dealing with human resources and service delivery, and a markedly different literature from health psychology and behavioural sciences on behaviour change and service configuration.

- Relevance: the majority of papers appeared to deal with one or two (at most) aspects of health systems and behaviour change, particularly primary research. Relatively few papers took a whole-system approach, and those that did so tended to be theoretical accounts or position papers.

- Quality: of the papers – mostly reviews – that did consider issues from a system-level perspective, the fact that many were narrative or theory-based reviews meant that it was very difficult (and of questionable validity) to make judgements about quality.

The decision was taken to carry out a rapid 'review of reviews' and carry out further thematic analysis on key points and findings from the papers identified. This analysis would, in turn, feed into the final section of this report.

3.2 Aims and objectives

This review of reviews aimed to build upon the themes and concepts described in section 2, and to address the following research question.

What are the characteristics of health systems and services – at national, regional and local level – that promote and support health-related behaviour change?

3.3. Method

Initial scoping of databases and search terms indicated that relevant reviews were located across several different disciplines (including health and social care, psychology and sociology), and employed diffuse terminology. Therefore a search strategy was developed that was primarily sensitive (rather than specific) and used terms that fell within three broad concepts – health systems, behaviour change and health behaviour. Results sets were large and numbers were reduced to manageable levels by limiting searches to reviews of the literature (systematic and non-systematic), and to reviews published in or since 2002.

A range of electronic sources were searched, including:

- HMIC (Health Management Information Consortium)
- ASSIA (*Applied Social Sciences Index and Abstracts)*
- Sociological Abstracts
- psychinfo
- Medline (National Library of Medicine)
- PAIS (Public Affairs Information Service).

Database results were downloaded to Reference Manager software (Adept Scientific) for screening. The detailed search strategy is set out in full in Appendix 2.

The literature review included only OECD countries in its scope. Therefore the authors suggest that the data and conclusions in this report should be broadly applicable – with consideration, and almost certainly not without adaptation to local context – in OECD countries. Applicability outside an OECD context is likely to be less certain.

3.4 Results: searches and papers

The searches described above returned a total of 1793 abstracts of published papers and dissertations. These were scanned by one reviewer (CS), who compared each abstract against the inclusion criteria outlined above in order to identify the following types of data for inclusion in this report:

- conceptual evidence: reviews of primary studies, or narrative reviews presenting theoretical accounts of aspects of health systems and behaviour change

- outcome evidence: reviews of primary studies, or systematic reviews presenting evidence for the impact or effectiveness of interventions or programmes associated with health systems and behaviour change.

Of the 1793 abstracts screened, 91 were identified as potentially relevant to this report and requested for further appraisal. Of these, 86 papers were received by the cut-off date of 27 November 2009, of which 32 contained conceptual or outcome evidence of relevance to this project. The remaining 54 papers were excluded (see Appendix 3 for a list of references) either because they contained no relevant evidence, or because they did not meet other inclusion criteria (most commonly the OECD country criteria): see Appendix 4 for a quorum diagram of these results.

Evidence from the papers included is summarised below; citations in bold are provided under 'References for included papers' on page 48. As before, the concepts outlined in section 1 were used to guide reading and extraction, and other emergent themes or sub-themes were added as the narrative developed.

3.5 Results: data and narrative

Conceptual evidence

Leadership and management

Policy and stability

In a 'primer' review on prevention, **Frank and Di Ruggiero (2003)** note that in order to be effective, public health interventions need to be multiple in nature, reinforce one another, and be delivered at multiple levels and in multiple settings. They also emphasise the importance of policy, legislation and national leadership in creating

effective, sustainable health systems, arguing that politicians and funders need to be able to see the relationship between intervention/costs now, and health improvement/reduced costs in the future (possibly under a different administration).

There are significant barriers to producing an informed and coherent analysis of health systems across Europe, the USA and Australia. These include the poor and/or inappropriate quality of available evidence; difficulties in locating evidence because of inconsistent terminology within and between countries; and a lack of evidence about key points in the system, or key population groups (Swann et al. 2006). **Asthana and Halliday (2006)** propose that systematic assessment of a common set of structures and institutional arrangements of countries' public health regimes would facilitate comparison, and would provide a more appropriate account of process and change in public health than more traditional approaches to evidence. They propose an analytical framework for undertaking such assessments, incorporating key aspects of political, legal, social, economic, organisational and cultural domains.

Legislation and policy

According to **Duncan (2002)**, European countries are generally resistant to broad EU legislation, preferring to take responsibility for this aspect of the health system at country level. The EU, keen to be actively engaged in health and health promotion, has a mandate to encourage and support cooperation in public health, to ensure that health is protected within its policies and activities, and to spend money on Union-level health projects (**Duncan 2002**) – but cannot pass laws harmonising public health measures in member states. Despite these limitations, EU law, policy and practice – whether or not directly related to health – can exert a profound effect across the Union – and lobbying is a primary mechanism for influencing law and policy likely to impact on health.

Stewardship

Equality

In a narrative review of the impact and effect of health policy, **Coyte and Holmes** (2006) argue that governments need to consider the potential for health policy to exclude and/or disadvantage some population groups, as well as considering the potential for positive impact. They note in particular that policies which promote patient choice and patient centred care may also exclude some recipients on the grounds of their ability to participate in the opportunities that are presented. The

authors suggest that identifying the interest groups advantaged by policy, and being aware of the potential for policy to disadvantage others, is a first step to addressing exclusion.

Engagement

Wise (2008) notes that in Australia, before colonisation the indigenous population had, over centuries, developed social, economic, environmental and health policies and practices that served to safeguard or promote their health and wellbeing. With colonisation, which began in the 1800s, those policies and practices were dismantled and superseded, with disastrous health and social consequences for the indigenous population. Health promotion initiatives began to take root in the 1970s, and overall there has been a 25% increase in average life expectancy for the population. However, there has been only limited reduction in the 17-year gap between indigenous and non-indigenous Australians, and an 8-year gap between richest and poorest population groups. The author argues that investment, building evidence, building sector capacity, leadership by government, and incentives for health professionals to use effective health promotion strategies are all building blocks for improvement. **Wise (2008)** further identifies the need to redistribute political power and engage the whole population in political decisions as vital to engagement in health and behaviour change.

Relationships and connectedness

Partnerships

Campbell (2006) also reviews recent UK initiatives to promote partnership working, noting the increasing emphasis of interprofessional working and collaboration in UK health policy. She suggests that a combination of factors have driven this forward: Ever more complex health systems have meant that there is an increased need for coordination to improve advocacy, reduce duplication, promote sustainable projects and improve commissioning. The author proposes that effective partnerships may be developed through the development of clear partnership models, identification of appropriate collaborators (in consultation with stakeholders and communities), incorporation of partnership principles in health professional training, and dissemination of good practice examples. However, no empirical evidence is presented for this approach.

Community and client involvement

Murphy (2005) reviews literature on citizen deliberation in setting healthcare priorities, focusing in particular on four recent UK studies. She concludes that the benefits of citizen involvement work two ways: citizens may benefit in terms of gaining insight into their experiences and their own, or their community's, aspirations. Services and communities may benefit as citizens who share values such as respect, equality or generosity inform healthcare priorities that create opportunities for the wider community.

System 'gateways' and health over the life course

In a comprehensive review of the life course health development (LCHD) framework, **Halfon and Hochstein (2002)** argue that developmental trajectories – and, ultimately, health outcomes – can be redirected (and improved) by appropriate, population-based intervention in early childhood. Risk of serious disease and disability in adulthood may be reduced if vulnerable children and young people are identified sufficiently early and given appropriate support and intervention. Relocating health services within an LCHD framework would require integration of clinical, public health and epidemiology services, and a long-term view on financing and investment in health (spend on prevention, save on treatment).

The extended system: workplace

Reporting on good practice in workplace health, **Baranski (2002)** describes the GP good practice in health, environment and social management in enterprises (HEMSE) approach to healthy workplaces. At enterprise or business level, the criteria for implementing the approach include:

- commitment – organisational leadership, from commitment by the CEO (or equivalent) in the form of policy development and implementation planning, including the implementation of a management structure for delivering GP HEMSE and training for staff
- needs assessment – management, staff and health professionals work together to carry out a full needs assessment for health information and knowledge, health status, environment and safety, social factors and management culture
- risk assessment and management – a full risk assessment for employees and clients, including hazard identification, risk assessment, hazard

communication, planning and implementation of risk control, and monitoring exposure and controls
- participation of employees
- competence – the level of knowledge about health, safety and environmental issues among employees and management
- planning – development of a HESME action plan
- management – integration of health, safety and environmental issues into the workplace policy and management system
- reporting requirements – producing annual reports of activity and process
- performance indicators – development of an appropriate set of performance indicators by which to monitor progress against planning.

Finance

Funding and equity

In a selective review of the European literature, **Blinkhorn et al. (2005)** consider the use of policy and strategy in improving oral health. Based on their findings, the authors recommend that countries should introduce a public, subsidised oral healthcare service (if not already in place), supported by central taxation or compulsory insurance, with equity as a key consideration so that vulnerable target groups (such as those on low incomes) receive free or subsidised care.

Funding sources

Ensor and Ronoh (2005) review selective literature on the financing of maternal health services, in order to identify the impact of different finance models on equity. The authors note that indirect means of financing maternal healthcare (taxes, insurance) are preferable to – and more equitable than – direct methods of payment.

Service improvement and resources

Sharing information – impact

White (2004) report that copying referral letters from clinicians to other NHS services may improve the quality of healthcare by fostering partnership between patients and health professionals, ensuring patients are well informed, and correcting inaccurate beliefs and information. However, he also notes that language and comprehension issues may be a barrier for many patients.

Performance management and service improvement

Scuthfield et al. (2009) review key studies on developing and using public health performance data for improving health systems in the USA. They recommend routine collection of public health infrastructure data (for example on workforce, practice, performance or training issues), which should be widely disseminated in accessible form to relevant professionals.

Information and monitoring

In a review of the federal health monitoring system in the USA, **Brown (2008)** identifies a series of criteria for effective health monitoring. They include: frequent updating, separate estimates for key subgroups, adequate precision, provision of estimates at appropriate geographical levels, topical coverage, and easy accessibility by decision makers. The author compares existing monitoring provision for adolescent health in the USA against these criteria, and finds that although a rich and diverse body of health information on adolescents is routinely collected at national level, more could be done to ensure this information is analysed and used appropriately by the right groups of professionals. His recommendations include the creation of an annual report on indicators of early adult health; an online interactive database for key health data sources, bringing existing estimate data together onto one media or platform; and augmenting existing data source sample sizes to support more precise state-level estimates.

Kukafka et al. (2007) consider the use of electronic health records (used primarily to inform clinical practice) to support public health in the USA. They suggest that incorporation of environmental, psychosocial and other key factors (such as economic data) into patients' health records would enable the routine collection of data relevant to broader public health initiatives.

In a critical review of evidence on communication in health and healthcare settings, **Gravois Lee and Garvin (2003)** note that most interactions are founded on an assumption that information provision to clients/patients is both necessary and sufficient to effect behaviour change – despite considerable evidence to the contrary. They argue instead for a move from information transfer to information exchange – where a health system (or professional) takes into account the social, environmental and economic context of behaviour, tailoring information and intervention accordingly.

Conceptual models of health systems

System maps

Presenting a rapid assessment approach for health professionals and new nurse administrators, **Clark (2004)** argues that for a health professional to operate efficiently within a complex system, they need to be familiar with the 'map' and layout of that system, and the way in which it operates. The author proposes that training health professionals in methods of system analysis (such as the Health Systems Analysis Model) will enable them to perform a rapid assessment of the key internal elements (mission and goals, culture, services, resources, outcomes), environmental factors (social attitudes, political or economic climate, competition), and the client group (characteristics of their local potential client group, patients/clients currently within the system) – and thus perform their role more effectively. No evidence is offered to support this thesis; however, the paper provides a useful model for health system structures.

Effective systems, effective interventions

In a critical review of interventions aimed at promoting dietary change, **Adamson and Mathers (2004)** argue that public health issues such as obesity need to be considered – and tackled – within their social, economic and political context. For there to be sustained change in behaviours (diet, exercise) that will lead to a reduction in levels of obesity, the authors conclude:

> *'To be effective, change ... must be supported by national leadership and through policies that address not only the individual but also the environment in which the individual lives, their access to high-quality information and health care, as well as to appropriate food choices and opportunities for other positive lifestyle choices, such as decreasing inactivity'* (p. 545).

Fiore et al. (2007) consider the evidence supporting six different healthcare system-level approaches to reducing tobacco use. Based on their interpretation of these approaches, the authors suggest four strategies for implementing tobacco interventions at this level:

- organisation – ensuring clinical systems are organised to prompt assessment of smoking status and provide assistance to smokers

- information – providing relevant performance feedback to clinicians
- funding – providing full insurance coverage for smoking cessation interventions
- performance – including tobacco cessation treatment as a measured standard of care by national accreditation organisations.

Outcome evidence

Leadership and management

Organisational structure

Reviewing current literature and reporting the findings of a small (*n* = 25) qualitative study, interviewing Directors of Nursing in the Republic of Ireland about the impact of organisational structure on their role, **Carney (2004)** suggests that 'flat' organisational structures (defined here as one to three hierarchical layers) were perceived by participants as enhancing communication and engagement in policy making and delivery. Complex organisational structures (four or more layers), on the other hand, were perceived as promoting poor communication flow, and poor access to senior managers and power.

Management resources

Fraser and Estabrooks (2008) conducted a systematic review on the factors that influence managers' resource allocation decisions in healthcare. A total of 11 studies (five qualitative, six quantitative) were included in their analysis. Despite wide variation in outcome measures, methods and study quality, the authors propose a descriptive taxonomy of the factors that influence the way in which managers allocate funding within health services, as follows:

- client-related factors – client preferences, needs, cues, current levels/provision of services/care and client resources were all found to be related to allocation of healthcare resources
- information-related factors – decision support tools, guidelines and policies, 'human sources' (colleagues) of information and research-based evidence were identified as influencing resource allocation

- system/programme-related factors – workload, caseload size, environment, staff turnover, and organisation structure were also found to be related to resource allocation.

Relationships and connectedness

Working across settings

Whitehead (2005) conducted a critical review of the evidence on health-promoting hospitals, looking at how well the hospitals in question make use of existing resources, and are integrated into a broader public health approach. Based on findings from 72 studies, he suggests that the move towards locating an explicit health promotion function within hospitals requires more radical reform that has generally been seen to date. The author also argues that the professionals working within these settings – and nurses in particular – need to recognise public health and health promotion as part of their role.

Minkler et al. (2006) assess the impact of a community-based participatory research partnership between a local university nursing school and local government (the Healthy Cities Committee in New Castle, Indiana) on making healthier choices in the local community. They identify as success factors for these types of partnerships clear roles for partners, community engagement in research, making sure effective practices are built in or 'institutionalised' into the organisation, and fundraising.

Partnerships and outcomes

Smith et al. (2009), in a systematic review of the impact of organisational partnerships (including partnerships forged under Health Action Zones, New Deal for Communities, Health Improvement Programmes, Healthy Living Centres and the National Healthy Schools Standard), found that there was little evidence of direct effects on health outcomes. The nature of 'partnerships' was rarely well described, interventions were usually complex and attribution of effect to partnership characteristics was not possible, and/or interventions changed over time.

Pronk et al. (2004) used a systematic approach to synthesise evidence from research and stakeholder dialogue on the way in which multiple behavioural risk factors (smoking, sedentary lifestyles, poor diet) are addressed in primary care. They conclude that the risk factors that impact on the 'big killers' (cancers, CVD and

coronary heart disease) can be successfully addressed only by a collaborative approach, including:

- development of platforms for multiple stakeholder dialogues
- using stakeholder views to inform priorities and policy
- supporting initiatives aimed at getting evidence into practice
- further research and development of innovative projects (through demonstration projects)
- further research on multiple risk factor interventions.

Finance

Finance and sustainability

Hadley (2003) reviews 51 large (*n* > 500) multivariate US studies of different funding models in healthcare in order to evaluate the impact of health insurance (which provides funding for healthcare) on health service use and health outcomes. He concludes that, although the research literature is variable in quality, there is a substantial body of research to support a positive relationship between health insurance and better health – and that better health leads to higher workforce participation and higher income.

Service improvement and resources

Information and new media

Sorian and Baugh (2002) report from a survey of 292 US state government policy makers found that the media of communication preferred by key decision makers varied by age (with younger respondents preferring electronic media and older respondents preferring printed materials.

Service design and delivery

Changing health professional behaviour

In a review of 235 studies of interventions aiming to influence or change physicians' behaviour (usually towards compliance with clinical guidelines), **Grimshaw et al.**

(2002) conclude that interventions involving active dissemination of good quality information, educational outreach, reminders and multifaceted (as opposed to single-factor) approaches based on assessment of potential barriers to change were most likely to be effective.

Conceptual models of health systems

Comparisons of different healthcare models

Kodner (2006) reviews and compares three different North American healthcare models for the frail elderly, looking in particular at linkage (the way in which health and social care providers work in partnership), coordination (communication and organisation between different parts of the system to ensure no gaps in provision), and integration (the degree to which all necessary services are incorporated into the system). He concludes that four main factors account for the success of a healthcare model for this population, as follows:

- umbrella organisational structures – where strategic, managerial and service delivery sections are all integral parts of the system, promoting joint working, efficient use of resources and effective service delivery
- multidisciplinary case management – so that clients have a single entry point into the system, from which they make contact with all the relevant professional and service groups
- organised provider networks – standardised referral procedures, service agreements, joint training and shared information help the system to provide seamless care and maintain quality
- financial incentives: provision of incentives to professionals/services helps to promote prevention and rehabilitation.

Characteristics of effective health systems:

Mays et al. (2009) review empirical studies (no number/information specified) published between 1990 and 2007 on aspects of public health organisation,

financing, staffing and service delivery, identifying four ‘dimensions’ key to the delivery of public health services. These dimensions are:

- system boundaries and size – the size and scope of a system is key to delivery of effective services, with larger systems generally performing better
- organisational and inter-organisational structures – the authors identify some evidence to support ‘multi-governmental’/multi-professional, decentralised, locally governed and administered systems
- financing and economics – stable finances/funding, intelligence-led fund allocation, and use of interventions and services that have been identified as cost-effective are proposed by the authors to be key to system success, although they acknowledge a lack of evidence in this area
- workforce characteristics – again, the authors found a lack of evidence about the impact of staffing levels and training on effectiveness, but note that in the USA a large proportion of the public health workforce lack training, and are not distributed evenly/according to need.

Discussion and conclusions

Reviews of reviews (tertiary data) have limitations in their scope and use, as documented elsewhere (Swann et al. 2006). This review of reviews was intended to provide a rapid overview of current theory and evidence on health systems and behaviour change. The large volume of data identied as the search strategy was developed indicates that there is considerable scope for a full, thorough systematic review of primary data, were resources available. However, a traditional systematic review would probably exclude what we have termed here ‘conceptual’ evidence – narrative reviews and position pieces that, although not grounded in ‘traditional’ empirical (outcome) evidence, speak eloquently of beliefs, practices and constructs in current use.

There is less information and evidence in the literature here about service delivery, and there is a shift towards higher-level concepts and structures: the configuration of the system, leadership and management, and partnerships. As with section 2, key starter concepts from Figure 1 are present in the data considered here, with some additions.

- Leadership and management:
    - flatter organisational structures with clear lines of accountability to facilitate effective services
    - need for economic, political and social stability
    - difficulties in comparing systems or findings across countries because of differences in their systems and structures.
- Stewardship:
    - need for principles of equity and fair access to be written into the policies and processes that drive the system.
- Relationships and connectedness:
    - increased need for partnerships as health systems become more complex
    - little good evidence about what makes partnerships effective
    - importance of client involvement in service design and delivery
    - need to structure services and systems around key life stages (leaving work, moving school) and settings (nurseries, schools).
- Finance:
    - need for financial stability and negative impact of instability
    - public healthcare that is subsidised/free at point of care or contact, and/or indirect payment systems, mean that patients are more likely to use services when they need them.
- Service design and delivery:
    - importance of monitoring and evaluation
    - importance of targeting services/interventions at those in need

  - educational outreach, reminders and financial incentives may all be useful tools to promote professional behaviour change
  - multidisciplinary teams within the system minimise change and promote consistency.

- Service improvement:
  - performance management, targets and objectives
  - importance of sharing information – information should follow patients/clients through the system
  - importance of good communication
  - active forms of information exchange, such as dissemination.

The type of data contained within these reviews is also helpful in understanding and developing the data in section 2: The higher-level concepts and themes within reviews provide a context within which to understand narrower, intervention-focused evidence statements. It is apparent here that a health system is made up of structures: what it *is* – the key themes and concepts that describe the 'shape' of the system, where it is located, for what purpose, and who moves within it; and what it *does* – the dynamic aspects of delivery, relationships and connectedness, and the shfting and re-forming of boundaries to encompass local needs. This distinction between structure and action is useful to keep in mind as we move to consider section 4 of this report: at this stage, the revised main concepts proposed in section 3 remain the same, but there is now the potential to develop a set of actions or indicators through which to recognise and assess these concepts.

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4. Health systems and behaviour change: a thematic analysis of stakeholder perspectives

4.1 Introduction

Stakeholder views and experiences are a further source of information about the elements of health systems that promote and support, or hinder, behaviour change. NICE ensures that all draft public health guidance – and the evidence on which it is based – goes out for consultation. During consultation, stakeholders are asked to comment on all sections of the evidence and draft guidance, noting (among other things) whether evidence has been missed, whether there are inconsistencies in the way the evidence is used or interpreted, and how the guidance fits in with their own organisation or practice. These views and experiences are given by professionals working in the UK system to promote and sustain behaviour change, and the information can help committees to finesse final guidance, flag up any potential issues, problems or opportunities, and assist with implementation.

The third (and final) research activity to inform this report was a thematic analysis of stakeholder responses to consultations on four pieces of NICE public health guidance relevant to health systems[9]: behaviour change, community engagement, immunisation, and identifying and supporting those at risk of dying prematurely. As with the previous two sections, a thematic analysis was carried out on the responses in order to identify key patterns and constructs.

4.2 Research question

This section of the project aimed to build upon the themes and concepts described in sections 2 and 3, and to address the research question:

> *What are the characteristics of health systems and services – at national, regional and local level – that promote and support health-related behaviour change?*

4.3 Methods

Full sets of stakeholder responses to the draft NICE public health guidance were anonymised, sorted and themed by one reviewer (CS). These data sets are all on public record at NICE, along with NICE's own responses to each issue raised

[9] See www.nice.org.uk/Guidance/PHG/Published: Behaviour change (PH6); Community engagement (PH9); Reducing differences in the uptake of immunisations (PH21); Identifying and supporting people most at risk of dying prematurely (PH15).

(www.nice.org.uk/Guidance/PHG/Published: select a guidance document from the list and click 'How this guidance was produced'). Themes were checked against those described in sections 2 and 3. Consistency within themes, as well as positive and negative examples, were used to identify and confirm themes, and any additional concepts and patterns were noted. The data were extracted into summary tables (see Appendix 5). These themes and tables were then checked by a second reviewer (CC).

Within each data set were multiple responses with no identifiable theme (of relevance to this project) – such as responses thanking NICE for the opportunity to comment, providing a reference, or correcting a grammatical error. These were discarded.

The stakeholders commenting on draft guidance included here were all based in the UK, and for the most part in England and Wales, therefore the same issues of potential applicability to non-UK (particularly non-OECD) settings apply, as described in section 2.

Results are presented in Appendix 5, and in narrative form below.

4.4 Results and analysis

As with section 3, the key starter themes from Figure 1, developed further in section 2, were present in the stakeholder responses, with some additional concepts and patterns of responses.

Stewardship

Equity and care was mentioned in the context of policy and levers for change in numerous responses. In particular, respondents bought up key sub-themes around:

- writing equity into all levels of the system
- identifying those at most risk, or in most need, and tailoring services and access to them
- careful use of community resources towards health improvement for all.

Leadership and management

The need for leadership and strong management ran as a theme throughout many accounts. In particular, the following issues were noted in at least two responses:

- having identified key leads and chains of responsibility for intervention and service delivery, working in a team context (with all objectives flowing from a team target)
- allowing sufficient time to see effects from national leadership and policy
- the effectiveness of legislation and taxation as interventions for change
- national guidance (for example, NICE guidance) providing leadership and impetus for change.

Service improvement and resources

Resources – particularly in the form of staff and training – were consistently reported. Sub-themes here included:

- delivering appropriate training to health professionals, in particular targeted training for those working with specific groups
- allowing more time for consultation/practice for those working with seldom accessed/vulnerable groups
- ensuring large employers – such as the NHS in the UK – adopt health promotion techniques with their staff as well as clients
- promoting swift data flow between professional groups and parts of the system, using new technologies
- intelligent use of monitoring, surveillance and evaluation.

Service design and delivery

There was less information on this aspect of the health system, at least in part because of the context and way in which stakeholder responses are collected (in response to draft guidance, as opposed to evidence). Sub-themes here included:

- developing access around client needs
- tailoring interventions and services to at-risk and vulnerable groups

- recognising key 'tipping points' and life stages within the system, and providing support and intervention at these stages in appropriate settings
- involving clients and communities in service design and delivery
- entry points to the system being 'gateways' to other services, especially for high-risk and vulnerable groups.

Finance

Financial resources were important in this context, too. For example:

- hard-to-reach/vulnerable groups would require additional resources to effect behaviour change
- 'flat' incentives may not always encourage health professionals to target those most at risk, but may inadvertently discriminate against clients/patients who are harder to reach
- short-term and project-based funding skews performance
- there is a need to support and reward community members involved in improving the services and system.

Partnerships and connectedness

Again, the dynamic nature of health systems was apparent in these responses. Sub-themes included:

- ensuring partnerships and alliances are appropriated – configured around life stages and settings (nurseries, schools, workplaces)
- promoting good information flow and proactive communication between partnerships and alliances
- involving community members in service and intervention design and delivery right from the beginning
- resourcing partnerships and alliances – not assuming they are cost-free, but investing in order to produce returns later

- ensuring partnerships are reciprocal, with benefits for both sides.

4.5 Discussion and conclusion

The types of data found in stakeholder responses to draft guidance are generally practice-related, and tend either to expand on points made in the guidance (with examples or information from organisational practice), to offer alternative interpretations of evidence, or to consider implementation and training issues. Stakeholder responses are less concerned with service design and delivery, but describe and help the reader to understand the (often multiple) practice and service context to public health guidance. In section 2, it was noted that information on service and intervention design and delivery – the type of evidence contained within evidence reviews and statements – is generally insufficient to make recommendations about health systems and behaviour change. However, stakeholder responses can be a useful source of information with which to supplement this evidence.

A key finding from both sections 3 and 4 is that systems need to be dynamic and responsive in order to promote and sustain behaviour change: that there needs to be sufficient information flow and flexibility for a system to configure itself around points of need, and to provide multidisciplinary care with the minimum of access points and optimal sharing of information between practitioners. This dynamism – what an effective health system *does* (as opposed to what it *looks like*), its ability to re-form and flow – runs through participants' responses.

5. Discussion

Health systems can be both influences on, and determinants of, health and health-related behaviours. They are determinants of health in two distinct senses: (i) socially (because their existence has both intended and unintended effects on the health of individuals and populations); and (ii) as agents themselves (since they make deliberate attempts to effect human behaviour). As agents in themselves, health systems further engage in the process of attempting to change the client group through the *actions* of the system, and also in that of attempting to change the behaviour of *constituent parts* of the system, in the form of internal personnel and services. Running through the research sections of this report, too, is a distinction between the structures and components of a system, and how it moves or what it does – which is key to its ability to promote and sustain behaviour change. It is clear from the data considered here that (despite the limitations discussed in each section), an effective health system needs to contain elements that are stable and structured (resources, entry and access, motivated and trained personnel), whilst reacting and evolving to recognise and meet the needs of its client groups. The remainder of this report considers the nature of health systems as both influences on, and determinants of, health; the constituent structures and parts of the system; and its movement and actions.

5.1 A revised conceptual model: structures

Taking key themes from our data as the structures inherent in an effective health system, Figure 2 develops and reconfigures the starter concepts described in Figure 1.

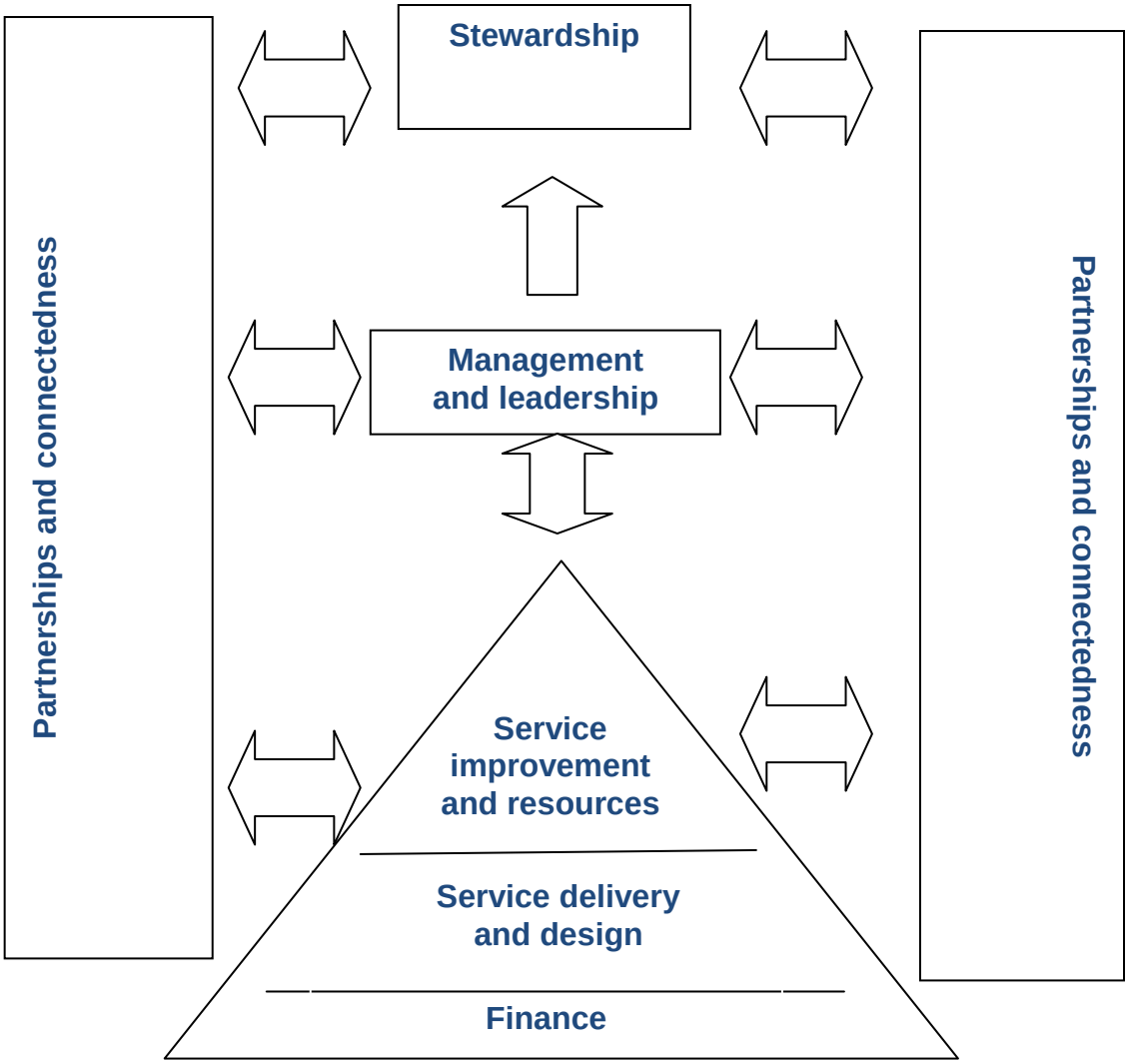

Figure 2: Revised conceptual health system model

However, the static image in Figure 2 does not capture the dynamic nature of the system very well. The boundaries of the system – the gateways and entry points, the extent to which it reaches out beyond its boundaries and into other domains, the passage of clients and resources through it – these are all facets of a live, evolving system, things it does and actions it takes, rather than inherent aspects of the structures themselves, and are related to the broader social context.

5.2 Health systems and behaviour change: intended and unintended consequences

Organisations and professions involved in the delivery of healthcare are, like any other institution, located in a social, political and economic context, within social systems and structures. They tend to be large, expensive and powerful. Everyone who falls into their catchment will rely on them at some point in their life, especially at

times of extreme stress and anxiety, when they themselves or their loved ones are ill or dying. Such organisations have a significant role in delivering health protection, disease prevention and health promotion. They provide relief from pain and suffering, and have a profound impact on quality of life through the management of chronic illness.

Due to modern drug therapy – for example, drugs that control epilepsy or diabetes – many conditions that once were either fatal or highly debilitating are no longer so, and instead the person with the condition can live a full and often quite active life. There are also drug interventions that significantly reduce risk of certain diseases such as heart attack and stroke (statins and anti-hypertensives). There are now multiple surgical techniques to significantly improve quality of life, such as knee and hip replacemants, and cataract surgery. All these types of intervention account for about 40% of health improvement (Bunker 2001), compared with environmental and behavioural changes. However, 60% of health improvement over the course of the past century or so remains unaccounted for by clinical evolution and practice. It is the failure to deliver these improvements equitably or efficiently that reveals the impact of social factors.

The patterns of access to – and exclusion from – services have famously been described as the 'inverse care law' (Tudor Hart 1971). Tudor Hart argues that the need for care varies inversely with the care provided. In other words, those in most need receive the worst care, and those in least need the best. In this sense the systems have profound effects on health-related behaviour and on health outcomes. Tudor Hart saw this as contributing significantly to health inequality. His observation is widely replicated in many healthcare settings, including those where there is no fee for service and care is free at the point of delivery, like the UK, and those based on social insurance as well as market based systems (Mackenbach 2006; Gilson et al. 2007; CSDH 2008).

Tudor Hart's observation at first seems to fly in the face of older evidence which suggested that services were of relatively minor importance when compared with sanitation, housing and nutrition in improving health (McKeown 1976). The answer to this apparent contradiction, as noted in section 1 of this report, is that historically, and especially in the era of rampant infectious disease, health services probably played a relatively minor role in maintaining the overall health of populations (although they sometimes relieved suffering at the individual level). However, as technologies and

care improved, they became more effective. Consequently, services – and the systems within which they are delivered – have become an increasingly critical variable in determining health outcomes, health experience and ultimately mortality, at population and individual levels (Bunker 2001; Kelly et al. 2009). Therefore services constitute an important gateway to health life chances, both individually and at population level. The access that people have to a whole range of care, from preventive services to acute and primary care, mediates health outcomes (Kelly et al. 2009).

There are a number of dimensions of the structures involved here that are discernable in the data considered in this report, and which can be easily described (Kelly et al. 2009; NICE 2009, Appendix 1), as follows.

- Availability: people can only use a service if it is there.
- Entitlement: in the UK, entitlement is universal regardless of any other social or economic factor. This is not the case in market systems or others that in some way limit entitlement through other mechanisms. Even with universal provision, it does not follow that there will be universal access.
- Service configuration: this can impact upon access. Included here are the ways the service is organised and delivered, and the behaviour of employees in the service to clients and patients and to each other. Configuration also includes flexibility and responsiveness to the client group, innovation in care and new pharmaceuticals, and the ability to implement new ways of working.
- Relationship between the professional and managerial cadres, and of both cadres to the bureaucratic or other mechanisms of organisation. In organisational terms, all these things have a profound impact on effectiveness of care at all levels, and all have a profound impact on the way clients engage with the service (Friedson 1970).
- Behaviour of the client groups themselves: for well documented and rational reasons, people make different use of all types of service. They delay seeking treatment, they avoid preventive opportunities, and they overuse services or use them inappropriately. They can act in ways that will not necessarily maximise the benefits they may derive individually from the service, and in

ways that may diminish the effectiveness of interventions at population level (Mechanic 1962; Rosenstock 1974; Becker et al. 1977; NICE 2007).

The complex interaction of these five factors produces the overall patterning at the social level.

5.3 Organisations as motivated agents: effecting change within health systems

Governments, municipalities and institutions of all sorts seek to influence and change the behaviour of individuals and groups under their jurisdiction. From ancient times to the present, authorities claiming suzerainty over others have sought by various means to bend others to their will. Modern health systems are just one in a long line of organisations that have deliberately sought to change people (Halpern et al. 2004; Oliver 2009). The ways in which healthcare systems may act deliberately to effect change in themselves (internal change) have been summarised as follows (Kelly et al. 2004):

- translating knowledge from research about the most effective and implementable action
- providing policy advice to support effective practice
- increasing access to quality-assured information on what to do, and how to do it
- creating and sustaining networks for knowledge transfer
- finding ways of supporting changes in practice at local, regional and national levels.

From the data presented in sections 2–4 of this report, we could also add implementing effective health promotion, and improvement and development within their own staff and structures.

Organisations also need to be supported to set the necessary conditions for effective implementation. Equipping managers with the skills they need to operate in the challenging public health environment is essential if they are to balance multi-stakeholder interests, understand complex accountabilities, and manage for social outcomes (Hunter and Killoran 2004). There is much to be learned from the business

sector to help to manage change in this complex environment (Ackerman 1997; Weick and Quinn 1999).

The New South Wales capacity-building framework (NSW Health Department 2001) provides a useful model of the complex system changes that are required to secure effective delivery. They propose five areas that need to be considered in order to ensure that evidence from research can be effectively translated into action and can be sustained. These five areas, which echo the structures in Figure 2, are: workforce development, organisational development, resource allocation, partnerships and leadership. Some of the key questions that should be asked of any health system or service against the five areas are as follows.

- Workforce development – who are the frontline practitioners? Do such 'practitioners' think of themselves as such? What are the key irritations experienced by frontline staff in getting the work done? Are there examples of good local practice, where problems have been solved on the ground either because of, or in spite of, policies and initiatives? Are local initiatives that are the products of local development, such as examples of local training sessions, accessible to others? Are frontline staff/providers able to identify negative but unintended consequences of recent policy initiatives and management strategies in the field?

- Organisational development – how are current services provided? What is the organisational framework that defines the delivery of services? What are the typical structures? Are they nationally universal, or do they vary locally?

- Resource allocation – who organises it? Who manages it? Who funds it? Is there any statutory framework that governs the activity or aspects of it?

- Partnerships – are there networks of practitioners that have been/could be utilised? What are the links to other sectors and other professionals?

- Leadership – is local leadership important? Do local champions have a role?

These questions begin to provide us with a set of actions or indicators through which to assess the impact and effectiveness of system structures, and the answers to them provide a map of the territory on which the barriers and conduits to change are readily identified. This approach is also effective in identifying the roles and responsibilities of the key actors required to take action on the social determinants of health (Bonnefoy et al. 2007).

5.4 Health systems that effect change

The ways in which health systems may seek to bring about change in others are described in the NICE (2007) guidance on behaviour change.

Interventions (service design and delivery)

It is important to specify three things with respect to any intervention that aims to change behaviour. First, be as specific as possible about its content. Second, spell out what is done, to whom, in what social and economic context, and in what way. Third, make it clear which underlying theories will help make explicit the key causal links between actions and outcomes (Weiss 1995; Davidson et al. 2003; Pawson 2006). Interventions may have unintended and negative consequences. When planning an intervention, it is often helpful to conduct a prospective health and equity impact assessment. No single method can be universally applied to influence all behaviour and all people. Universal interventions do not invariably have uniform effects, and may be more effective among some population groups, or in some settings, than in others.

An intervention aimed at changing one behaviour may inadvertently lead to other changes. For example, someone who gives up smoking may start eating more food to compensate, leading to other health risks.

Planning

It is important for those planning health improvement interventions to be clear about the behaviours that need to be changed, any relevant contextual changes that also need to be made, and the level at which the intervention will be delivered (individual, community or population). The following questions should be used as a guide:

- Whose health are you seeking to improve (target population/s)?

- What behaviour are you seeking to change (behavioural target)?
- What contextual factors need to be taken into account (what are the barriers to and opportunities for change, and what are the strengths/potential of the people you are working with)?
- How will you know if you have succeeded in changing behaviour (what are your intended outcomes and outcome measures)?
- Which social factors may directly affect the behaviour, and can they be tackled?
- What assumptions have been made about the theoretical links between the intervention and outcome?

A range of resources provide access to good quality, up-to-date evidence on the effectiveness of interventions and programmes aimed at changing behaviour. These include: NICE public health guidance, research and review databases (for example, the Database of Abstracts of Reviews of Effectiveness, the Cochrane Library, Medline, and the Social Science Citation Index), and current texts on behaviour change (for example, Conner and Norman 2005). When drawing up plans to change people's behaviour, enough time needs to be set aside to consult these resources to establish which interventions and programmes will be most appropriate.

Monitoring and evaluation

Time and resources should be set aside for evaluation. The size and nature of the intervention, its aims and objectives, and the underlying theory of change used should determine the form of evaluation. All interventions need to be developed and evaluated in stages, using an established approach such as the Medical Research Council's framework for the development and evaluation of complex interventions (Campbell et al. 2000; see also Flay 1986; Nutbeam 1998). Such an approach will help ensure interventions are based on the best available evidence of feasibility, acceptability, safety, effectiveness, efficiency or equity.

Targeting

Attempts to change behaviour have not always led to universal improvements in the population's health. For example, different groups (measured by age, socioeconomic position, ethnicity or gender) react differently to incentives and disincentives, or 'fear' messages. Effective interventions target specific groups and are tailored to meet their needs. This is particularly important where health equity is one of the goals. Views of service users may be helpful when planning interventions. Changing behaviour may not be a priority for the individuals being targeted. People do not necessarily make their own long-term health a priority and may want to focus on other, more immediate needs and goals (for example, relieving stress or complying with peer pressure). Motivated individuals actively seeking to make changes in their behaviour require a different approach from those who are unmotivated. The latter may need more information about the benefits of change, as well a realistic plan of action. Equally, different methods may be required at different times and to reach different people. Enabling individuals and communities to develop more control (or enhancing their perception of control) over their lives can act as a buffer against the effects of disadvantage, facilitating positive behaviour change.

Partnerships and connectedness

The cultural acceptability and value of different forms of behaviour vary according to age, ethnicity, gender and socioeconomic position. It is important not to stereotype or stigmatise groups or individuals because of these variations. This can be avoided by working closely with communities over time, by tackling prejudice and discrimination in professional practice, and by using needs assessments to gather local and cultural information to ensure interventions are tailored appropriately. Some damaging, and therefore apparently negative, health behaviours may provide positive psychological, social or physical benefits for individuals in certain social and cultural contexts. For example, smoking cigarettes may provide 'time out' for people in difficult circumstances. Effective interventions take account of the social, cultural and economic acceptability of the intervention, and the target group's attitudes toward the behaviour. They should recognise diversity in the values people use to guide their lives and behaviour.

Stewardship

A range of cognitive, social and environmental resources can help to boost the resilience of people living in difficult circumstances. These resources can help promote their health and protect them against illness and other negative outcomes. They include a positive attitude to health (leading to positive, health-related behaviours), coping skills and 'social capital', the relationships of trust and reciprocity built up through, for example, friendship, family and faith networks. Action taken earlier, rather than later, in an individual's life can sometimes be more effective in preventing health-damaging behaviours. Consequently, interventions that focus on children and young people (and usually their carers too) are important. However, interventions with other population groups can be highly effective and cost-effective.

5.5 Relationships between system, behaviour and change: what sort of knowledge do we need?

The ideas that underpin this type of approach are based on a very familiar idea of causation. In theory, the argument that 'if we do x, the expected outcome is y' is tenable so long as the relationship between x and y is reasonably well defined, in the sense that there is a well known and understood association between the two things and, most importantly, there is an understanding of why there is a relationship between x and y, and why we might reasonably expect that if we change x then there will be a change in y. This principle goes to the heart of western understandings of cause that originate with the ancient Greeks and were formalised during the enlightenment by writers such as Kant and Hume. It is fundamental to all sorts of thinking, not least thinking about ways of using policy or administrative mechanisms to achieve certain goals.

In the original philosophical expositions of this principle, the relationship between x and y was assumed to be direct, an idea that comes into the modern scientific method in the form of the independent and dependent variable. If I change the independent variable x, I will observe a change in the dependent variable y. In the social sciences, the importance of developing this idea further was suggested by the methodologist Paul Lazarsfeld, who described *intervening* variables between dependent and independent variables that would moderate or mediate the effects of x on y (Lazarsfeld 1966). The elementary scientific method acknowledges that the nature of the causal relationship may not be unidirectional, and that in real life (as opposed to, for example, an RCT), variables seldom exist in this isolated type of

relationship, but exist within a complex web of relationships or complex systems with other variables, which also change as variable x changes, and that all sorts of covariance and confounding have to be built into our overall understanding of the phenomena. Whether complex or simple, the length of the causal chain involved in health behaviour change tends to be long. To be effective, these long public health causal chains have to be explicated (Ellis et al. 2003; Victora et al. 2004).

The device that is needed to unravel this complexity is a conceptual map and associated logic model that describes the processes involved – something health systems have usually signally failed to do. Such logic models can be derived in a variety of ways, but it is most helpful if the models are made consistent with an overarching theoretical or conceptual framework that describes individual- *and* population-level processes (NICE 2009). The great advantage of constructing such conceptual maps and models is that doing so throws into stark relief the fact that much of the evidence that is typically collected in public health studies tends to deal with end points and outcomes, rather than the intermediate points along the causal chain – but it must be located within a shared understanding about what a health system is, what it is for, who it serves, and how. The precepts that have been developed by authors such as Pawson (2006) and Weiss (1995), which direct attention to the length of the causal chain and to the importance of understanding the linkages along the chain, have not really developed an extensive evidence base in systems and behaviour change. Indeed, much that needs to be introduced as evidence about process and the real and theoretical linkages along the causal pathways is immediately ruled out by the hierarchy of evidence, because it appears to be the result of conjecture and inference, not hard-boiled science[10].

[10] See NICE public health guidance (www.nice.org.uk/Guidance/PHG/Published): Management of long-term sickness and incapacity for work (PH19); Promoting physical activity for children and young people (PH17); Promoting mental wellbeing at work (PH22).

Conclusion: conceptual modelling – what is a health system and how does it work?

In order to conceptualise both the system operating at the social level and the organisation acting as a motivated agent, taking into account both its structures and its actions, it is helpful to place the structures of Figure 2 against a set of actions and indicators derived from our data, and against the original starter concepts, as in Table 3.

Starter concept	Main concepts/ structures	Sub-concepts/ themes	Indicators
Stewardship	Stewardship	Equity Resource management Representation Access Involvement	Policy Audit Democratic processes Impact assessment Consultation
Creating resources	Leadership and management	Strong leadership Clear accountability Fit-for-purpose hierarchies Rapid dissemination of information Staff involvement and buy-in	Organisational structures Targets Objectives Performance management
	Service improvement and development	Appropriate training and development Monitoring and evaluation Evidence-based practice Learning from experience Active information exchange Information tracking – information moves through system with clients Minimise movement within system/ continuity of appropriate access and care	Performance management and personal development plans Investment in people Monitoring and evaluation – reports Use of guidance Shared learning forums Dissemination tools and channels Follow-up and health records
Service delivery	Partnership and connectedness	Multidisciplinary working within system Alliances and partnerships outside system Needs/use-based 'gateways' into system; minimal movement within system Community and client involvement Shared ownership of system goals Shared responsibility for health Reciprocal relationships	Evaluation of quantity and quality of partnerships and alliances Service-level agreements and explicit reciprocal arrangements Outreach and advocacy in non-health sectors Communication and information tools to support non-health 'buy-in' Consultation and community involvement audit Development of joint initiatives and objectives
	Service design and delivery	Effective services and interventions Targeting and tailoring Organising delivery at key life stages/settings Improving access Evaluation	Use of evidence-based guidance Evaluations of service use and impact Configuration of services – annual reports and audits
Finance	Finance	Stable funding sources for system Indirect cost to user Appropriate use of resources Careful use of incentives/targeted according to need	Business plans and audits Funding sources Levers and incentives

Table 3: Conceptual model and indicators

Here, it is possible to see how aspects of the health system operating at the social level – how it treats and develops its staff, and its impact on the environment – sit against the actions of the health system as motivated agent of behaviour change, woven through from the key concepts to the actions and indicators.

There are many limitations to the data contained within this report, and to its conclusions. Firstly, the majority of evidence considered was UK-centric (with some data from OECD countries). Every country has its own health system, with its own arrangements for finance, development and delivery. We know from data reported here what evidence from current literature and stakeholders can tell us about, for example, funding sources (make services free or discounted for the worse-off; use indirect funding sources such as taxation so that a service is free at point of contact), but no two countries will have the same social and system context. So the applicability of findings presented here will need to be considered on a case-by-case basis.

Secondly, a striking conclusion from the analyses presented here is the inability of evidence reviews and statements – in their traditional form – to describe or account for the health system and context. Given that most public health guidance needs to be located in, and directed towards, an understanding of that context, it is perhaps time that organisations such as NICE developed their methods for capturing knowledge and evidence from committees, stakeholders and theory.

Thirdly, this report was compiled rapidly, with limited resources. A longer look at, for example, the evidence reviews or stakeholder responses would allow a richer and more detailed qualitative analysis to be developed and applied to the arguments here. It might also be useful, in future, to carry out a longer and more structured review of the primary research literature. Reviews of reviews are useful for rapid assessments of current theory, but they provide only limited information for further theoretical development.

There are also many gaps in current evidence and knowledge uncovered by this report. There is relatively little evidence about effective systems and services for vulnerable and socially excluded groups. There is a considerable amount of conceptual or theoretical evidence around many of the key concepts and structures described here, but a lack – at least at the levels investigated – of empirical evidence about improvement and change. And the differences between countries (and

sometimes even provinces within countries) make it difficult to draw comparisons across different health system structures and services, other than very broad ones.

Limitations aside, the concepts and indicators in Table 3 could, without a great deal of further work, be converted into an assessment tool with structured questions that builds on the New South Wales capacity-building framework (NSW Health Department 2001) – a system development framework for public health.

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APPENDICES

Appendix 1: Evidence tables – review of evidence reviews

Characteristics of health systems and services: at national, regional and local levels that promote and support health-related behaviour change. Smoking-related evidence statements – Brief interventions, Effectiveness of NHS treatments for smoking cessation, NHS smoking cessation case finding review, Behavioural change review.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Stewardship and leadership				
National programme	NHS stop smoking services are making a modest contribution to reducing smoking-related inequalities in health in England. *Using evidence-based estimates of relapse rates, the study concluded that the absolute and relative rate gaps in smoking prevalence between Spearhead* areas and others fell by small but statistically significant amounts. p.63* As the study took place within the English smoking cessation services, it is directly applicable to the target population. *Spearhead areas are local authority areas with the worst health and deprivation indicators.	2+ (1 study)	Bauld L, Judge K, Platt S (2007) Assessing the impact of smoking cessation services on reducing health inequalities in England: observational study. Tobacco Control 16 (6): 63	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
National programme	Two observational studies (++)1,2 demonstrate that the NHS stop smoking services have been effective in reaching smokers living in disadvantaged areas of England. As both took place in England and are focused on disadvantaged groups, they are directly applicable to the review.	++	Glasgow RE, Gaglio B, France EK, Marcus A, Riley KM, Levinson A, Bischoff K (2006) Do behavioural smoking reduction approaches reach more or different smokers? Two studies; similar answers. Addictive Behaviours 31 (3): 509–518 Chesterman J, Judge K, Bauld L, Ferguson J (2005) How effective are the English smoking treatment services in reaching disadvantaged smokers? Addiction 100 (suppl. 2): 36–45	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE
Media and social marketing	**Mass media interventions** There is evidence of good quality (level 1++, A), which shows that mass media interventions have an effect on preventing the uptake of smoking in young people.	1++, A	Sowden AJ, Arblaster L (1998) Mass media interventions for preventing smoking in young people. Cochrane Database of Systematic Reviews 4: CD001006	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Policy-related Media and social marketing	**Tobacco control policies and media** There is evidence of variable quality (2–, C) that media campaigns and concurrently implemented tobacco control programmes (or policies) have a strong effect on the reduction in smoking prevalence.	2–, C	Friend K, Levy DT (2002) Reductions in smoking prevalence and cigarette consumption associated with mass-media campaigns. Health Education Research 17: 85–98	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Policy-related	Evidence ... suggests that the Quality and Outcomes Framework component of the 2004 GP contract may have continued, rather than reversed, differences in the quality of care delivered between primary care practices in deprived and less deprived areas. Evidence from another UK observational study (++)2 suggests that the new GP contract has resulted in an improvement in the recording of smoking status and the recording of the delivery of brief cessation advice in primary care, but not the prescribing of smoking cessation medication. As these studies took place within UK primary care, they are directly relevant to the review.	++1 (observational study) ++2 (observational study)	McLean G, Sutton M, Guthrie B (2006) Deprivation and quality of primary care services: evidence for persistence of the inverse care law from the UK Quality and Outcomes Framework. Journal of Epidemiology & Community Health 60 (11): 917–922 Coleman T, Lewis S, Hubbard R, Smith C (2007) Impact of contractual financial incentives on the ascertainment and management of smoking in primary care. Addiction 102 (5): 803–808	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Supportive environment	**Workplace smoking bans** There is evidence of good quality (1&2+, C) and evidence from a further two reviews of variable quality (both with the score: 2–, B), which shows that tobacco bans in the workplace decreased cigarette consumption during the day, but the effect on total consumption was uncertain.	1&2+, C	Smedslund G, Fisher KJ, Boles SM et al. (2004) The effectiveness of workplace smoking cessation programmes: a meta-analysis of recent studies. Tobacco Control 13: 197–204	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Policy-related	**Legislative measures/tobacco control policies/reducing access** There is evidence from two reviews (1&2+, C; 2–, B), that show that interventions to reduce underage access to tobacco (by deterring shopkeepers from making illegal sales) have a small effect on reducing the number of illegal sales to young people, but there is no effect on their smoking behaviour.	1&2+, C 2–, B	Stead LF, Lancaster T (2005b) Interventions for preventing tobacco sales to minors. Cochrane Database of Systematic Reviews 1: CD001497 Fichtenberg CM, Glantz SA (2002a) Youth access interventions do not affect youth smoking. Pediatrics 109: 1088–1092	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Policy-related Supportive environment	**Reducing smoking in public places** There is evidence of good quality (2+, B), that shows a large, positive effect of comprehensive, multi-component approaches to implementing policies banning smoking within institutions.	2+, B	Serra C, Cabezas C, Bonfill X. et al. (2000) Interventions for preventing tobacco smoking in public places. Cochrane Database of Systematic Reviews 3: CD001294	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Finance				
Financial incentives to staff NB Also included in Service delivery – see below	**What strategies are effective in encouraging primary care professionals and others to undertake smoking cessation interventions?** Based on level 1+ evidence there is mixed evidence to support the effect of training interventions without reminder systems and weak evidence that combinations of provider training and reminder systems can increase both provision of advice and patient cessation rates. There is insufficient evidence to determine the effect of incentive payments to healthcare providers on either intervention delivery or smoking behaviour. This evidence preceded the development of specialist smoking treatment services. There is one trial, discussed in section 4, showing that a brief GP training session can significantly improve referral rates to local specialist services. NB This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	1+	Hopkins et al. (2001); Lancaster et al. (2000) (systematic review); McEwen et al. (2002); McEwen et al. (2005a); Coleman et al. (2001); Coleman et al. (2004); Cornuz et al. (2002); Wisborg et al. (1998); Goldstein et al. (2003); Young et al. (2002); Ockene et al. (1994); Piper et al. (2003); Joseph et al. (2004); Milch et al. (2004); Etter et al. (2000); Ahluwalia et al. (1999); Roski et al. (2003)	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE See References in the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service delivery				
Service personnel	**Brief interventions from doctors** A body of level 1+ evidence directly applicable to UK healthcare settings supports the efficacy of physician advice as a brief intervention for smoking cessation. This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	1+	Lancaster T, Stead L (2004) Physician advice for smoking cessation. Cochrane Database of Systematic Reviews 4: CD000165 Fiore MC, Bailey WC, Cohen SJ, Dorfman SF, Goldstein MG, Gritz ER (2000) Treating tobacco use and dependence. A Clinical Practice Guideline. US Department of Health and Human Services, Rockville, MD. AHRQ Publication No 00-0032. www.surgeongeneral.gov/tobacco/treating_tobacco_use.pdf West R, McNeill A, Raw M (2000) Smoking cessation guidelines for health professionals: an update. Thorax 55 (12): 987–999	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE
Service personnel	**Doctor-led interventions** There is evidence of good quality (1+, A), which shows a small effect of physician advice on the odds of quitting for all smokers. There is also evidence of a small effect of intensive versus minimal advice on smoking cessation.	1+, A	Lancaster T, Stead L (2004) Physician advice for smoking cessation. Cochrane Database of Systematic Reviews 4: CD000165	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel	**Brief interventions from nurses** A body of level 1+ evidence directly applicable to the UK supports the efficacy of nurse structured advice as a brief intervention for smoking cessation in primary care and community settings. However, nurses initiated contact with smokers in these studies in order to address their smoking so these interventions are not brief opportunistic interventions made during routine care. This evidence preceded the development of specialist smoking treatment services within the UK. NB There is insufficient evidence that opportunistic advice and interventions delivered during health checks increase quit rates.	1+	Rice VH, Stead LF (2004) Nursing interventions for smoking cessation. Cochrane Database of Systematic Reviews 1: CD001188	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel	**Nurse-led interventions** There is evidence of good quality (1+, A), that shows a moderate effect on nursing interventions for smoking cessation in non-hospitalised people.	1+, A	Rice VH, Stead LF (2004) Nursing interventions for smoking cessation. Cochrane Database of Systematic Reviews 1: CD001188	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel Staff training NB Also included in Finance – see above	**What strategies are effective in encouraging primary care professionals and others to undertake smoking cessation interventions?** Based on level 1+ evidence, there is mixed evidence to support the effect of training interventions without reminder systems, and weak evidence that combinations of provider training and reminder systems can increase both provision of advice and patient cessation rates. There is insufficient evidence to determine the effect of incentive payments to healthcare providers on either intervention delivery or smoking behaviour. This evidence preceded the development of specialist smoking treatment services. There is one trial, discussed in section 4, showing that a brief GP training session can significantly improve referral rates to local specialist services. This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	1+	Hopkins et al. (2001); Lancaster et al. (2000) (systematic review); McEwen et al. (2002); McEwen et al. (2005a); Coleman et al. (2001); Coleman et al. (2004); Cornuz et al. (2002); Wisborg et al. (1998); Goldstein et al. (2003); Young et al. (2002); Ockene et al. (1994); Piper et al. (2003); Joseph et al. (2004); Milch et al. (2004); Etter et al. (2000); Ahluwalia et al. (1999); Roski et al. (2003)	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE See References in the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel	One UK-based study suggests that including **lay people or community members as advisers may form an important part of a successful smoking cessation intervention** targeted at a specific group, in particular if the service is tailored to their specific needs and allows them to explore smoking in the context of relevant issues in their lives. (One UK based observational study (+)1). This study took place in the UK and is relevant to this review.	+	Harding R, Bensley J, Corrigan N (2004) Targeting smoking cessation to high prevalence communities: outcomes from a pilot intervention for gay men. BMC Public Health 4: 43	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE
Service personnel	**Interventions delivered by community advisors** Evidence from two 3– bulletins indicates that intermediate interventions delivered by community advisors achieve self-reported cessation rates of between 34 and 45% at 4 weeks – although these results do not necessarily reflect the outcomes currently being achieved by these interventions given the substantial development of the services since 2001. As these studies took place within English smoking cessation services, they are directly relevant to the target population.	3– (2 case reports)	DH (2001a) Statistics on smoking cessation services in England, April 2000 to March 2001 (Rep. No. 32). London: Department of Health DH (2001b) Statistics on smoking cessation services in the Health Action Zones in England, April 1999 to March 2000 (Rep. No. 5). London: Department of Health	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel	**Pharmacy-delivered interventions** Evidence from a 1++ systematic review indicates that pharmacy-delivered interventions may have a positive effect on smoking cessation rates. This finding is confirmed in a recent 2++ study, which reports that pharmacy-delivered interventions in Glasgow produce 4-week carbon monoxide (CO)-validated quit rates of approximately 20%. The study also indicates that pharmacy-delivered interventions have the potential to reach and treat large numbers of smokers – especially those from disadvantaged areas. As these studies took place within UK smoking cessation services, they are directly relevant to the target population.	1++ (systematic review) 2++	Sinclair HK, Bond CM, Stead LF (2004) Community pharmacy personnel interventions for smoking cessation. Cochrane Database of Systematic Reviews 1. Bauld L, Ferguson J, Lawson L et al. (2006) Tackling smoking in Glasgow: Final report. Glasgow: Glasgow Centre for Population Health	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE
Service personnel	**Pharmacy-led interventions** There is evidence of good quality (1+, A), that shows an inconclusive effect of interventions by community pharmacy personnel for smoking cessation.	1+, A	Sinclair HK, Bond CM, Stead LF (2004) Community pharmacy personnel interventions for smoking cessation. Cochrane Database of Systematic Reviews 1	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel Training	**Training pharmacists** There is evidence from a number of studies that training pharmacists to deliver smoking cessation interventions is important, and preliminary evidence that pharmacies may be a valuable means of reaching and increasing smoking cessation rates in disadvantaged groups [one UK systematic review comprising 2 RCTs and 3 non-randomised experimental studies (++)1; one UK observational study with interviews (++)2 and one international pilot study (+)3]. Two studies took place within the UK and are directly applicable to the review. One took place in the USA and so may have limited applicability to this review.	++	Blenkinsopp A, Anderson C, Armstrong M (2003) Systematic review of the effectiveness of community pharmacy-based interventions to reduce risk behaviours and risk factors for coronary heart disease. Journal of Public Health Medicine 25 (2): 144–153 Bauld L, Ferguson J, Lawson L, Chesterman J, Judge K (2006) Tackling smoking in Glasgow: Final report. Glasgow: Glasgow Centre for Population Health Doescher MP, Whinston MA, Goo A, Cummings D, Huntington J, Saver BG (2002) Pilot study of enhanced tobacco cessation services coverage for low income smokers. Nicotine & Tobacco Research 4 (suppl. 1): S19–S24	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE
Service personnel	**Dentist-led interventions** There is evidence of variable quality (1&2–, B), which shows an effect of dentists' advice to quit smoking on dental patients.	1 2–	Brothwell DJ (2001) Should the use of smoking cessation products be promoted by dental offices: an evidence-based report. Journal of the Canadian Dental Association 67: 149–155	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Intensive interventions and short-term quit rates** Evidence that intensive interventions for smoking cessation through the NHS stop smoking services appear to be effective in the short term; on average over half of the clients setting quit dates through the services self-report as having quit at 4 weeks. However, these statistics should be treated with some caution as it appears that PCTs are using different baselines to measure success. As all seven studies took place within the English smoking cessation services, they are directly applicable to the target population.	3– (6 reports) 2++ (1 report)	DH (2001a) Statistics on smoking cessation services in England, April 2000 to March 2001 (Rep. No. 32). London: Department of Health DH (2001b) Statistics on smoking cessation services in the Health Action Zones in England, April 1999 to March 2000 (Rep. No. 5) London: Department of Health. DH (2002) Statistics on smoking cessation services in England, April 2001 to March 2002 (Rep. No. 25). London: Department of Health DH (2003) Statistics on smoking cessation services in England, April 2002 to March 2003 (Rep. No. 25). London: Department of Health DH (2004) Statistics on NHS stop smoking services in England, April 2003 to March 2004 (Rep. No. 18). London: Department of Health DH (2005) Statistics on NHS Stop Smoking Services in England, April 2004 to March 2005. Leeds: Health and Social Care Information Centre Judge K, Bauld L, Chesterman J et al. (2005) The English smoking treatment services: short-term outcomes. Addiction 100: 46–58	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Intensive interventions and long-term quit rates** Evidence that intensive interventions for smoking cessation through the NHS stop smoking services appear to be reasonably effective in the long term. On average between 13 and 23% of the clients who self-report as successful quitters at 4 weeks through the services self-report as abstinent at 52 weeks – a long-term success rate that is broadly consistent with international findings. As all studies took place within the English smoking cessation services, they are directly applicable to the target population.	3– (1 report) 2++ (1 study) 2+ (2 studies) 2– (1 study)	DH (2001a) Statistics on smoking cessation services in England, April 2000 to March 2001 (Rep. No. 32). London: Department of Health (3–) Ferguson J, Bauld L, Chesterman J et al. (2005) The English smoking treatment services: one-year outcomes. Addiction 100: 59–69 (2++) Smith S (2006) Smoking cessation and health inequality: an equity audit. Nursing Times 102 (2+) Jones A, Mooney S, Gate L et al. (2005) Kingston and Richmond Stop Smoking Service Audit 2004. Kingston: Richmond and Twickenham PCT; Kingston PCT (2+) Watt A, Morris J, Bennett S et al. (2005) Making a difference: the stop smoking services in Cornwall & the Isles of Scilly – assessment of the service and effect on behaviour and smoking habits. Cornwall: Cornwall Health Research Unit (2–)	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Group interventions** may produce higher CO-validated quit rates at 4 weeks than one-on-one interventions. However, **one-to-one interventions are also effective** and many clients express a clear preference for one-to-one treatment. Moreover, in some contexts (particularly rural areas), group treatment is unfeasible. Therefore one-to-one interventions are a crucial component of the NHS stop smoking services, as smokers need to be given a choice of treatment options. As all studies took place within the English smoking cessation services, they are directly applicable to the target population.	2++ (2 studies)	McEwen A, West R, McRobbie H (2006) Effectiveness of specialist group treatment for smoking cessation vs. one-to-one treatment in primary care. Addictive Behaviors 31(9): 1650–1660 Judge K, Bauld L, Chesterman J et al. (2005) The English smoking treatment services: short-term outcomes. Addiction 100: 46–58	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE
Service design	**Group counselling** There is evidence of good quality (1+, C), which shows that group counselling is more effective than self-help and no intervention for smoking cessation.	1+, C	Stead LF, Lancaster T (2005a) Group behaviour therapy programmes for smoking cessation. Cochrane Database of Systematic Reviews 2: CD001007	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Drop-in and rolling groups as effective as other models** Limited evidence that drop-in/rolling groups may be as effective as other models of smoking cessation in supporting smokers to quit. These studies also highlight that clients, including those in deprived areas, value the flexibility of a drop-in service. As both studies took place within the English smoking cessation services, they are directly applicable to the target population	2– (2 studies)	Owens C, Springett J (2006) The Roy Castle Fag Ends Stop Smoking Service: a successful client-led approach to smoking cessation. Journal of Smoking Cessation 1: 13–18 Springett J, Owens C, Callaghan J (2007) The challenge of combining lay knowledge with evidence-based practice in health promotion: Fag Ends smoking cessation service. Critical Public Health 17: 243–256	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE
Service design	**Drop-in and rolling groups** Three studies provide some evidence of the potential benefit of drop-in or rolling community-based sessions for smoking cessation to reach smokers and increase cessation rates [two UK-based studies involving face-to-face interviews (–)[1,2] and one UK-based observational study (–)[3]]. All studies took place within the UK and are directly applicable to the review.	– (3 studies)	[1]Ritchie D, Schulz S, Bryce A (2007) One size fits all? A process evaluation the turn of the 'story' in smoking cessation. Public Health 121 (5): 341–348 [2]Springett J (2007) The challenge of combining lay knowledge with evidence-based practice in health promotion: Fag Ends smoking cessation service. Critical Public Health, in press [3]Owens, C, Springett, J. The challenges of combining 'lay' knowledge with 'evidence based' practice in health promotion: Fag Ends Smoking Cessation Service, in press	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Buddy systems effective with one-to-one quit rates but make no substantial difference in group interventions** Evidence from one 1++ study suggests that buddy systems more than double the CO-validated 4-week effectiveness of one-to-one interventions; however, another 1++ study found that they do not substantially increase the effectiveness of group interventions for smoking cessation. As both studies took place within the English smoking cessation services, they are directly applicable to the target population.	1++ (2 studies)	May S, West R, Hajek P et al. (2006) Randomized controlled trial of a social support ('buddy') intervention for smoking cessation. Patient Education and Counseling, in press West et al. (1998) [listed in evidence table but not in references and no reference given]	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE
Service design	**No conclusions about partner support** There is evidence of good quality (1+, C), that no conclusions can be made about the impact of partner support on smoking cessation. **Buddy systems show some effect** There is additional evidence of variable quality (1–, C), which shows some effect of buddy systems in a smokers' clinic.	1+, C 1–, C	Park EW, Schultz JK, Tudiver F et al. (2004) Enhancing partner support to improve smoking cessation. Cochrane Database of Systematic Reviews 3: CD002928 May S, West R (2000) Do social support interventions ('buddy systems') aid smoking cessation: a review. Tobacco Control 9: 415–422	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Location of services may influence effectiveness** Evidence from a 2(++) study indicates that the location of treatment may indirectly influence the effectiveness of smoking cessation interventions. Information on how the site/setting impacts on the effectiveness of smoking cessation interventions is limited. As this study took place within the UK smoking cessation services, it is directly applicable to the target population.	2++ (1study)	Bauld L, Ferguson J, Lawson L et al. (2006) Tackling smoking in Glasgow: Final report. Glasgow: Glasgow Centre for Population Health	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE
Service design Targeting specific population groups	**Need to test interventions for suitability** Two American studies suggest the need to test existing cessation interventions to determine their suitability for the specific group, to receive feedback from that group and to make amendments to any aspects that are unsuitable. In order for the client group to benefit, the intervention must fit their level of need and understanding, and be suitably accessible. [One USA-based RCT (++)1; one USA-based cohort study (–)2]. Both studies took place in the USA and may have limited applicability to this study.	++ (1 study) – (1 study)	Okuyemi KS, Cox LS, Nollen NL, Snow TM, Kaur H, Choi W, Nazir N, Mayo MS, Ahluwalia JS (2007) Baseline characteristics and recruitment strategies in a randomized clinical trial of African-American light smokers. American Journal of Health Promotion 21(3): 183–191 (++) McDaniel AM, Casper GR, Hutchison SK, Stratton RM (2005) Design and testing of an interactive smoking cessation intervention for inner-city women. Health Education Research 20: 379–384 (–)	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**Smoking cessation interventions with inpatients are effective** Strong evidence that smoking cessation interventions among inpatients can be effective in creating modest to substantial increases in CO-validated smoking cessation rates up to 12 months in this population. Findings from four more recent 1++ studies and one 1+ study are mixed; however, on the whole they indicate that interventions with at least 2 months post-discharge telephone follow-up are more likely to be successful than programmes of short duration. The majority of the studies took place outside the UK in a wide range of countries, including Australia, Canada, the USA and Norway. However, it is likely that their findings are applicable to the UK, given the broad similarities in these populations.	1++ (2 systematic reviews) 1++ (4 studies) 1+ (1 study)	Hand et al. (2002) (1+); Chouinard et al. (2005) (1++); Nagle (2005) (1++); Froelicher (2004) (1++); Quist-Paulsen (2003) (1++); Rice (2004) (1++); Rigotti (2002) (1++)	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE See References in the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**No evidence for interventions for hospital inpatients** A body of level 1+ evidence indicates that there is no evidence for brief interventions from healthcare providers for hospital inpatients. One level 1++ trial, providing nicotine-replacement therapy (NRT) combined with brief counselling, did not significantly increase continuous quit rates at 1 year, but did significantly increase validated point prevalence quit rates at 1 year over counselling or usual care alone.	1+	Rigotti NA, Munafo MR, Murphy MF et al. (2003) Interventions for smoking cessation in hospitalised patients. Cochrane Database of Systematic Reviews 1: CD001837 Bolman et al. (2002 included in Rice VH, Stead LF (2004) Nursing interventions for smoking cessation. Cochrane Database of Systematic Reviews 1: CD001188 Hennrikus DJ, Lando HA, McCarty MC et al. (2005) The TEAM project: the effectiveness of smoking cessation intervention with hospital patients. Preventive Medicine 40 (3): 249–258 Molyneux A, Lewis S, Leivers U et al. (2003) Clinical trial comparing nicotine replacement therapy (NRT) plus brief counselling, brief counselling alone, and minimal intervention on smoking cessation in hospital inpatients. Thorax 58 (6): 484–488 Nagle AL, Hensley MJ, Schofield MJ et al. (2005) A randomised controlled trial to evaluate the efficacy of a nurse-provided intervention for hospitalised smokers. Australian and New Zealand Journal of Public Health 29 (3): 285–291 France EK, Glasgow RE, Marcus AC (2001) Smoking cessation interventions among hospitalized patients: what have we learned? Preventive Medicine 32 (4): 376–388 Wolfenden et al. (2003) [not in references]	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Intensive one-to-one interventions are effective** More intensive one-to-one interventions achieve higher CO-validated success rates at 4 weeks than less intensive interventions (2++). **And one-to-one interventions accompanied by external motivations may be more effective** However, a 1++ RCT in a primary care setting suggests that intensity alone does not increase the effectiveness of one-to-one interventions in this setting. The findings of this study suggest that more intensive one-to-one interventions may be more effective if they are accompanied by external motivations or pressures to quit (such as 'buddy' support or smoking-related health problems). As these studies took place within the English smoking cessation services, their findings are directly applicable to the target population.	1++ (RCT) 2++ (1 study)	Aveyard P, Brown K, Saunders C, Alexander A, Johnstone E, Mufano M, Murphy M (2007) Weekly versus basic smoking cessation support in primary care: a randomised controlled trial. Thorax 62: 898–903 (1++) Bauld L, Chesterman J, Judge K et al. (2003) Impact of UK National Health Services smoking cessation services: variation in outcomes in England. Tobacco Control 12: 296–301 (2++)	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Increasing the intensity, duration and/or frequency of a brief intervention can increase effectiveness. Is this increase additive or multiplicative?** A body of level 1+ evidence based on one set of meta-analyses directly applicable to UK healthcare settings indicates that extending the time spent in providing a brief intervention may increase the effect on quitting, but both the relative and absolute effect size is likely to be small. There are no specific adjuncts that can be recommended. The effect of pharmacotherapy was considered separately – see below. This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	1+	Fiore MC, Bailey WC, Cohen SJ, Dorfman SF, Goldstein MG, Gritz ER (2000) Treating tobacco use and dependence. A Clinical Practice Guideline. Rockville, MD: US Department of Health and Human Services. AHRQ Publication No 00-0032. www.surgeongeneral.gov/tobacco/treating_tobacco_use.pdf	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE
Service design Targeting specific population groups	**More flexible modes of delivery help to make smoking cessation interventions more accessible for people from deprived groups** and produce 12-month self-reported quit rates of 16%, which is comparable with the long-term effectiveness of the NHS stop smoking services more broadly.	2– (1 study)	Schultz S, Ritchie D (2005) 'The Smokey Joe story': exploration of an innovative approach in smoking cessation – key findings. Edinburgh: Queen Margaret University College & University of Edinburgh	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Settings – workplace	**Workplace interventions** There is evidence of good quality (1&2+, A), which shows that group therapy, individual counselling and NRT are equally effective when offered in the workplace. The evidence is less clear for self-help methods.	1&2+, A	Moher M, Hey K, Lancaster T (2005) Workplace interventions for smoking cessation. Cochrane Database of Systematic Reviews 2: CD003440	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Service design Setting Targeting specific population groups Settings – prisons	**Smoking cessation in prisons** Although up to 80% of prisoners in UK correctional facilities smoke, overall a relatively small proportion of smokers (fewer than 10%) access smoking cessation support while in prison. However, prisoners can achieve CO-validated 4-week quit rates of over 40%, although there appear to be substantial differences in the success rates of different prisons. As this study looks at the effectiveness of the smoking cessation services in UK prisons, it is directly applicable to the target population.	2++ (1 report)	MacAskill S (2005) The impact of DH funded provision of NRT in HM prisons Scotland. Department of Health, Prison Health and the Tobacco Policy Team	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**Females more likely to set quit dates; under-18s less likely to set quit dates** Age and sex are both correlated with setting a quit date. Females are more likely to set quit dates than males, and smokers under the age of 18 are far less likely to set quit dates than other age groups, although smoking prevalence in this age set is high. As this study took place within the English smoking cessation services, it is directly applicable to the target population.	3– (bulletin)	DH (2004) Statistics on NHS stop smoking services in England, April 2003 to March 2004 (Rep. No. 18). London: Department of Health	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**Age and sex are both correlated with quitting success; older smokers are more likely to quit successfully** Although females are more likely than males to set quit dates, they are less likely to be CO-validated as successful quitters at 4 weeks. Older smokers are more likely to quit successfully than younger smokers – although the high rates of loss to follow-up among young smokers make it difficult to draw definitive conclusions on the relationship between age and quitting success. As these studies took place within the UK smoking cessation services, they are directly applicable to the target population.	2++ (2 studies) 2– (1 study) 3– (1 study)	Judge K, Bauld L, Chesterman J et al. (2005) The English smoking treatment services: short-term outcomes. Addiction 100: 46–58 (2++) DH (2004) Statistics on NHS stop smoking services in England, April 2003 to March 2004 (Rep. No. 18). London: Department of Health (3–) Bauld L, Ferguson J, Lawson L et al. (2006) Tackling smoking in Glasgow: Final report. Glasgow: Glasgow Centre for Population Health (2++) Watt A, Morris J, Bennett S et al. (2005) Making a difference: the stop smoking services in Cornwall & the Isles of Scilly – assessment of the service and effect on behaviour and smoking habits. Cornwall: Cornwall Health Research Unit (2–)	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**Level of addiction is inversely correlated with quitting success*** Findings in relation to the connection between previous quit attempts and quitting success are less clear. One study reports a positive correlation between the two, and another study reports a negative correlation between the two. *More heavily dependent smokers (those who smoke within 5 minutes of waking) were less likely to be successful in their quit attempt.* As these studies took place within the UK smoking cessation services, they are directly applicable to the target population.	2++ (2 studies)	Judge K, Bauld L, Chesterman J et al. (2005) The English smoking treatment services: short-term outcomes. Addiction 100: 46–58 (2++) Bauld L, Ferguson J, Lawson L et al. (2006) Tackling smoking in Glasgow: Final report. Glasgow: Glasgow Centre for Population Health (2++)	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**The evidence on how readily black and minority ethnic (BME) groups are accessing the stop smoking services is inconclusive** Five 3– studies appear to demonstrate that black and minority groups on the whole are accessing stop smoking services in proportion to their representation within the total population; however, a high level of missing data undermines the conclusiveness of the available statistics. Moreover, indicative evidence raises some doubts about how readily BME groups are accessing NHS stop smoking services. As these studies were conducted on the smoking cessation services in the UK, their results are directly applicable to the population under study.	3– (5 studies)	DH (2001b) Statistics on smoking cessation services in the Health Action Zones in England, April 1999 to March 2000 (Rep. No. 5). London: Department of Health DH (2002) Statistics on smoking cessation services in England, April 2001 to March 2002 (Rep. No. 25). London: Department of Health DH (2003) Statistics on smoking cessation services in England, April 2002 to March 2003 (Rep. No. 25). London: Department of Health DH (2004) Statistics on NHS stop smoking services in England, April 2003 to March 2004 (Rep. No. 18). London: Department of Health DH (2000) [not listed in references]	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**Pregnant women** Between 23 and 51% of pregnant women self-report as successful quitters at 4 weeks through the NHS stop smoking services. However, given the unique challenges that pregnant smokers face, the utility of 4-week quit rates as a measure of service effectiveness is questionable. As all seven studies took place within smoking cessation services in the UK, they are directly applicable to the target population.	3– (5 bulletins) 2+ (1 study) 2++ (1 study)	DH (2001a) (3–); DH (2001b) (3–); DH (2002) (3–); DH (2003) (3–); DH (2004) (3–); Bryce et al. (2007) (2+); Judge et al. (2005) (2++)	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE See References in the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**Pregnant women** A body of level 1+ evidence indicates that there is no evidence of an effect of brief interventions delivered as part of routine care for pregnant smokers. There is insufficient evidence to determine the efficacy of brief interventions that are not delivered as part of routine care.	1+	Lumley J, Oliver SS, Chamberlain C et al. (2004) Interventions for promoting smoking cessation during pregnancy. Cochrane Database of Systematic Reviews 4: CD001055 Cope GF, Nayyar P, Holder R (2003) Feedback from a point-of-care test for nicotine intake to reduce smoking during pregnancy. Annals of Clinical Biochemistry 40 (6): 674–679 McLeod D, Pullon S, Benn C et al. (2004) Can support and education for smoking cessation and reduction be provided effectively by midwives within primary maternity care? Midwifery 20 (1): 37–50 Pbert L, Ockene JK, Zapka J et al. (2004) A community health center smoking-cessation intervention for pregnant and postpartum women. American Journal of Preventive Medicine 26 (5): 377–385	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	**Pregnant women – barriers** Two UK surveys [one telephone (+)[1] and one internet (+)[2]] and one descriptive and audit survey (–)[3] carried out in the UK provide evidence of pregnant smokers' perceptions of barriers to using smoking cessation support. Barriers include, among others: unsatisfactory information, lack of integration of cessation into routine antenatal care, lack of enthusiasm or empathy from health professionals, and short-term support. One RCT in the UK (+)[4] of motivational interviewing with pregnant smokers and two international RCTs [one of a brief versus more intensive intervention (++)[5] and one of proactive telephone support (–)6] provide little evidence of the effectiveness of these interventions. One US descriptive study (–)[7] described the reach of a multifaceted pregnancy campaign but reported no outcomes. The UK studies are directly applicable to the target population, although only one of these focused on pregnant smokers in disadvantaged areas.	+ (2 surveys) – (1 survey) + (1 RCT) ++ (1 RCT) – (1 RCT) – (1 study)	[1]Ussher et al. (2004 (+); [2]Ussher et al. (2006 (+); [3]Lowry et al. (2004 (–); [4]Tappin et al. (2000 (+); [5]Dornelas et al. (2006) (++); [6]Solomon 2000 (–); [7]Haviland et al. (2004 (–	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE See References in the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	**Pregnant women** There is evidence of good quality (1+, A), which shows significant effects of a wide range of interventions with pregnant women on smoking reduction and smoking cessation.	1+, A	Lumley J, Oliver SS, Chamberlain C et al. (2004) Interventions for promoting smoking cessation during pregnancy. Cochrane Database of Systematic Reviews 4: CD001055	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Service design Targeting specific population groups	**Pregnant women** There is evidence of good quality (1++, C), which shows a modest effect of theoretically based, multi-component interventions, provided during the postpartum period, on postpartum smoking relapse rates. However, this evidence only comes from a single study.	1++, C	Edwards N, Aubin P, Morrison M (2000) The effectiveness of postpartum smoking relapse prevention strategies (63). Hamilton, Ontario, Canada: Ontario Ministry of Health, Region of Hamilton-Wentworth, Social and Public Health Services Division	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups Setting – school	**School-based interventions** There is evidence from two reviews (1+, A; 1–, D), that shows that some school-based interventions (e.g. social influence and educational interventions) show a mixed effect in reducing smoking prevalence among young people in the short term, but no evidence for longer-term effects.	1+, A 1–, D	Thomas R (2002) School-based programmes for preventing smoking. Cochrane Database of Systematic Reviews 2: CD001293 Wiehe SE, Garrison MM, Christakis DA et al. (2005) A systematic review of school-based smoking prevention trials with long-term follow-up. Journal of Adolescent Health 36: 162–169	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Targeting specific population groups Setting – college	**College-based interventions** There is evidence of good quality (1&2+, C), that interventions in universities and colleges can reduce tobacco use and increase acceptability of smoking policies.	1&2+, C	Murphy-Hoefer R, Griffith R, Pederson LL et al. (2005) A review of interventions to reduce tobacco use in colleges and universities. American Journal of Preventive Medicine 28: 188–200	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups Setting – community	**Community interventions** There is evidence of good quality (1&2+, A), which shows that there a small positive effect of multi-component community interventions in preventing smoking uptake in young people.	1&2+, A	Sowden A, Stead L (2003) Community interventions for preventing smoking in young people. Cochrane Database of Systematic Reviews 1: CD001291	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Targeting specific population groups	**Routine and manual groups** NHS stop smoking services have been effective overall in reaching routine and manual groups. However, one of these studies reports that there is variation within regional services, and some SHAs have been less successful than other authorities in reaching deprived smokers. As all four studies took place within the English smoking cessation services, they are directly applicable to the target population.	2++ (3 studies) 2+ (1 study)	Baker A, Fowajuh G, Heathcote-Elliot C et al. (2006) West Midlands stop smoking services: regional equity profile. Birmingham: West Midlands Public Health Observatory (2++) Chesterman J, Judge K, Bauld L et al. (2005) How effective are the English smoking treatment services in reaching disadvantaged smokers? Addiction 100: 36–45 (2++) Lowey H, Fullard B, Tocque K et al. (2002) Are smoking cessation services reducing inequalities in health? Liverpool: NorthWest Public Health Observatory (2++) NEPHO (2005) Are NHS stop smoking services reducing health inequalities in the north east of England? (Rep. No. 20). North East Public Health Observatory (2+)	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups	**Routine and manual groups less successful quitters** There is a consistent body of evidence that people from routine and manual groups are less successful than other smokers in quitting successfully (based on both self-report and CO validation) at 4 weeks. As all 12 studies took place within the English smoking cessation services, they are directly applicable to the target population**.**	3– (6 bulletins) 2– (1 study) 2+ (2 studies) 2+++ (3 studies)	DH (2001a) (3–); DH (2001b) (3–); DH (2002) (3–); DH (2003) (3–); DH (2004) (3–); DH (2005) (3–); Watt et al. (2005) (2–); Smith (2006) (2+); Jones et al. (2005) (2+); Lowey (2002); Chesterman et al. (2005) (2++); Baker et al. (2006) (2++)	Bell K, McCullough L, Greaves L, Mulryne R, Jategaonkar N, Devries K (2006, updated November 2007) NICE Rapid Review: The effectiveness of National Health Service intensive treatments for smoking cessation in England. London: NICE See References in the cited publication for full details.
Service design Targeting specific population groups Setting – workplace	**Manual groups and workplace setting** One cohort study (+)1 provides evidence of the potential benefit of basing smoking cessation services in the workplace of manual groups to increase cessation rates. This study took place in the USA and so may have limited applicability to this review but does have potential implications for the UK population.	+	Barbeau EM, Li Y, Calderon P, Hartman C, Quinn M, Markkanen P, Roelofs C, Frazier L, Levenstein C (2006) Results of a union-based smoking cessation intervention for apprentice iron workers (United States). Cancer Causes & Control 17(1): 53–61	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	**Motivating smokers from lower socioeconomic groups** Evidence to suggest that barriers such as fear of being judged, fear of failure and lack of knowledge need to be tackled in order to motivate smokers from lower socioeconomic groups to access cessation services. Interventions need to be multidimensional in order to tackle social and psychological barriers to quitting as well as dealing with the physiological addiction. [Two UK-based studies, one involving focus groups (++)1 and one involving interviews (++)2] As both these studies took place with disadvantaged smokers in the UK, they are directly relevant to this review.	++ (2 studies)	Lowey H, Tocque K, Bellis MA, Fullard B (2003) Smoking cessation services are reducing inequalities. Journal of Epidemiology & Community Health 57 (8): 579–580 Chesterman J, Judge K, Bauld L, Ferguson J (2005) How effective are the English smoking treatment services in reaching disadvantaged smokers? Addiction 100 (suppl. 2): 36–45	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**What are the barriers to delivering smoking cessation interventions?** A body of level 3 evidence indicates that the barriers are lack of time, believing that the intervention is not effective, lack of reimbursement, lack of skills, training or confidence, and an unwillingness to alienate patients, leading to loss of trust or business. This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	3	Vogt et al. (2005) [systematic review]; Coleman and Wilson (1996); Coleman and Wilson (1999); Coleman et al. (2000); Wynn et al. (2002); Walters and Coleman (2002); Coleman et al. (2002); Coleman et al. (2003); Pilnick and Coleman (2003); McIntyre and Scott (2003); Coleman et al. (2004); McEwen et al. (2005a, 2005b); Pilnick and Coleman (in press); West et al. (2000); Hall et al. (2005); Jamrozik et al. (1984); Lancaster et al. (1999); Hennrikus et al. (2005); McDaniel (1999); Sarna et al. (2000); Hajek et al. (2002); Watt et al. (2004); Warnakulasuriya (2002); Maguire et al. (2001); Melvin et al. (2000); Melvin and Gaffney (2004); Hajek et al. (2001); Moore et al. (2002); Lawrence et al. (2003); Owen and McNeill (2001); Pullon et al. (2003); Hovell et al. (2000); Roseby et al. (2003); Zapka et al. (2004)	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE See References in the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel	**What, if any, negative consequences arise from brief interventions?** A body of level 3 data indicates that some smokers may resent advice from doctors about smoking, some may be deterred from seeking care, and some might even smoke more as a response to advice. Evidence that this can occur is derived from qualitative data, so the prevalence is unknown. This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	3	Butler CC, Pill R, Stott NC (1998) Qualitative study of patients' perceptions of doctors' advice to quit smoking: implications for opportunistic health promotion. BMJ 316 (7148): 1878–1881 McIntyre, D, Scott, K (2003) The silent treatment – why GPs and patients don't talk about smoking. No Smoking Day, March 2003. Roseby R, Waters E, Polnay A et al. (2003) Family and carer smoking control programmes for reducing children's exposure to environmental tobacco smoke. Cochrane Database of Systematic Reviews 3: CD001746 Lumley J, Oliver SS, Chamberlain C et al. (2004) Interventions for promoting smoking cessation during pregnancy. Cochrane Database of Systematic Reviews 4: CD001055 McClure J (2004) Motivating prepartum smoking cessation: a consideration of biomarker feedback. Nicotine and Tobacco Research 6 (suppl. 2): S153–S161	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel Staff training	**What factors – training, incentives – influence the number of referrals?** One randomised controlled study of level 1+ evidence directly relevant to the UK setting demonstrated the potential effectiveness of a short training session to increase referrals to smoking cessation services by GPs. One controlled trial study of level 2+ evidence directly relevant to the UK setting reported an effect of pharmacist training on the increased likelihood of pharmacists' referral of smokers to GPs for smoking cessation support. This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	1+ 2+	McRobbie H, Hajek P, Feder G (2005) Randomised controlled trial of a brief training session to facilitate General Practitioner referral to smoking cessation treatment, submitted Anderson (1995) [a study identified from a review of pharmacy-based interventions, in: Blenkinsopp A, Anderson C, Armstrong M (2003) Systematic review of the effectiveness of community pharmacy-based interventions to reduce risk behaviours and risk factors for coronary heart disease. Journal of Public Health Medicine 25 (2): 144–153]	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE
Service design Service personnel	**What factors – mechanisms, role of referrer, type and/or location of service – influence the likelihood of a 'patient' following up the referral?** There is some limited and circumstantial evidence (from level 3 evidence) of factors affecting the likelihood of patients following up referrals to cessation services. Two qualitative studies suggest that the doctor–patient relationship, respect for the health professional, and more patient-centred communication may influence whether the patient will follow the advice.	3 (qualitative studies)	Cable TA, Meland E, Soberg T et al. (1999) Lessons from the Oslo Study Diet and Anti-smoking Trial: a qualitative study of long-term behaviour change. Scandinavian Journal of Public Health 27 (3): 206–212 Butler CC, Pill R, Stott NC (1998) Qualitative study of patients' perceptions of doctors' advice to quit smoking: implications for opportunistic health promotion. BMJ 316 (7148): 1878–1881	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Does the method of promoting the specialist service (e.g. national advertising, referral from GPs and other health professionals, word of mouth) influence the number of referrals?** Only one report of level 3 evidence with relevant data was identified, which showed an increase in referrals probably due to a combination of word-of-mouth promotion of the services and removal of barriers to accessing the services (drop-in self-referral without waiting lists).	3	Owens (unpublished data) Miller N, Frieden TR, Liu SY et al. (2005) Effectiveness of a large-scale distribution programme of free nicotine patches: a prospective evaluation. Lancet 365 (9474): 1849–1854	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	One cluster RCT in the UK (++)[1] found that **proactively identifying smokers through primary care records was feasible**, and providing these smokers with **brief advice and referral to NHS stop smoking services increased contact with services and quit attempts but did not increase rates of cessation**. One observational study (–)[2], one descriptive study (–)[3], one cluster controlled trial (+)[4] and one RCT (+)[5] conducted in the USA demonstrate that proactively identifying smokers in a number of ways, for example, through primary care, using a screening tool, or through cold calling, is possible and that these provide effective ways of recruiting smokers to cessation interventions. One observational study in Sweden (+)[6] demonstrates that direct mailing to smoking mothers can be successful in increasing both participation in smoking cessation programmes and quit rates. One study took place within English primary care and is directly applicable to the review. The remainder took place in the USA and may have limited applicability. Only one (American) study focused on disadvantaged groups, and therefore the applicability of this evidence to target populations for this review may be limited.	Wide range	[1]Murray RL, Coleman T, Antoniak M, Stocks J, Fergus A, Britton J, Lewis SA. The effect of systematically identifying smokers and offering smoking cessation support in primary care populations: a cluster-randomised trial. Unpublished [2]Bentz CJ, Bayley KB, Bonin KE, Fleming L, Hollis JF, McAfee T (2006) The feasibility of connecting physician offices to a state-level tobacco quit line. American Journal of Preventive Medicine 30 (1): 31–37 [3]Perry RJ, Keller PA, Fraser D, Fiore MC (2005) Fax to quit: a model for delivery of tobacco cessation services to Wisconsin residents. Wisconson Medical Journal 104 (4): 37–44 [4]Milch CE, Edmanson JM, Beshabsky JR, Griffith JL, Selker HP (2004) Smoking cessation in primary care: a clinical effectiveness trial of two simple interventions. Preventive Medicine 38: 284–294 [5]Prochaska JO, Velicer WF, Fava JL, Rossi JS, Tsoh JY (2001) Evaluating a population-based recruitment approach and a stage-based expert system intervention for smoking cessation. Addictive Behaviours 26 (4): 583–602 [6]Tillgren P, Eriksson L, Guldbrandsson K, Spiik M.(2000) Impact of direct mail as a method to recruit smoking mothers into a ‘quit and win’ contest. Journal of Health Communication 5 (4): 293–303	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	**Combined approaches** One RCT in the UK (++)[1] with coronary heart disease (CHD) patients randomised to nurse-run clinics or controls found little evidence for a change in smoking behaviour. Two RCTs in the UK (+)[2] and (–)[3] exploring smoking cessation interventions at routine cervical screening appointments found some evidence for brief interventions to change the motivation or intentions to quit smoking. One international RCT (+)[4] examined the recruitment of women smokers attending a child's paediatric appointment into a smoking cessation intervention, and found some evidence for an impact on quitting smoking. One international RCT (+)[5] and one observational study using face-to-face interviews (+)[6] investigated the use of cellular phones for smoking cessation in HIV+ patients and showed a potential benefit for using this method of support. One US cohort study (+)[7] provided preliminary evidence that offering a reduction programme could reach and influence more smokers than a programme just offering cessation. Three studies were carried out in the UK and are directly applicable to the target population, but they did not examine disadvantaged groups separately. Four studies were carried out in the USA and so may have limited applicability to this review.		[1]Campbell et al. (1998) (++); [2]Hall et al. (2007) (+); [3]Hall et al. (2003) (–); [4]Vidrine et al. (2006) (+); [5]Curry et al. (2003) (+); [6]Lazev et al. (2004) (+); [7]Glasgow et al. (2006) (+)	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE See References in the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service delivery	**Telephone-based interventions** A single trial supports the effectiveness of providing a telephone hotline with recorded messages and access to counselling, compared with self-help materials only. A second trial – in which use of the service was limited, the intervention group also repeated mailings of materials, and all participants could follow a televised cessation programme – did not show an effect.	1+	Stead LF, Lancaster T, Perera R (2003) Telephone counselling for smoking cessation. Cochrane Database of Systematic Reviews 1: CD002850	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE
Service delivery	**Telephone counselling** There is evidence of good quality (1+, C), that shows a positive effect of telephone counselling (compared with less intensive interventions) on smoking quit rates.	1+, C	Stead LF, Lancaster T, Perera R (2003) Telephone counselling for smoking cessation. Cochrane Database of Systematic Reviews 1: CD002850	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Biomedical risk assessment and feedback** There is evidence of good quality (1+, A) that there is no evidence for effectiveness in using biomedical risk assessment along with counselling to promote smoking cessation. There is evidence of variable quality (1–, B) that shows a small effect of using biomarker feedback with counselling.	1+, A 1–, B	Bize R, Burnand B, Mueller Y et al. (2005) Biomedical risk assessment as an aid for smoking cessation. Cochrane Database of Systematic Reviews 1: CD004705 McClure JB (2002) Are biomarkers useful treatment aids for promoting health behavior change? An empirical review. American Journal of Preventive Medicine 22: 200–207	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Service design	**Aversive techniques** There is evidence of good quality (1+, B), that rapid smoking is effective in aiding smoking cessation. There is evidence that other aversive methods are not effective.	1+, B	Hajek P, Stead LF (2001) Aversive smoking for smoking cessation. Cochrane Database of Systematic Reviews 3: CD000546	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Smokeless tobacco use** There is evidence of good quality (1++, B) that shows an effect of behavioural interventions, which included an oral examination and feedback for reducing smokeless tobacco use.	1++, B	Ebbert JO, Rowland LC, Montori V et al. (2004) Interventions for smokeless tobacco use cessation. Cochrane Database of Systematic Reviews 3: CD004306	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Creating resources				
Service personnel Staff training	**What factors – training, incentives – influence the number of referrals?** One randomised controlled study of level 1+ evidence directly relevant to the UK setting demonstrated the potential effectiveness of a short training session to increase referrals to smoking cessation services by GPs. One controlled trial study of level 2+ evidence directly relevant to the UK setting reported an effect of pharmacist training on the increased likelihood of pharmacists referral of smokers to GPs for smoking cessation support. This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	1+ 2+	McRobbie H, Hajek P, Feder G (2005) Randomised controlled trial of a brief training session to facilitate General Practitioner referral to smoking cessation treatment. Submitted. Anderson (1995) [a study identified from a review of pharmacy-based interventions, in: Blenkinsopp A, Anderson C, Armstrong M (2003) Systematic review of the effectiveness of community pharmacy-based interventions to reduce risk behaviours and risk factors for coronary heart disease. Journal of Public Health Medicine 25(2): 144–153]	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service personnel Training	**Training dentists** There is evidence from three reviews that training dental professionals to deliver smoking cessation interventions is important, and this setting has the potential to reach large numbers of smokers and increase cessation rates [one international systematic review comprising 6 RCTs (–)[1]; one UK review of mixed study designs (–)[2]; one international review of 7 RCTs (+)[3]]. One study took place within the UK and is directly applicable to the review. Two studies took place in the USA and so may have limited applicability to this review. There is limited reference to disadvantaged groups in any review and therefore the applicability of this evidence to target populations for this review may be limited.	– (2 studies) + (3 studies)	[1]Carr AB, Ebbert JO (2006) Interventions for tobacco cessation in the dental setting. Cochrane Database of Systematic Reviews 4: CD005084. [2]Needleman I, Warnakulasuriya S, Sutherland G, Bornstein MM, Casals E, Dietrich T, Suvan J (2006) Evaluation of tobacco use cessation (TUC) counselling in the dental office. Oral Health & Preventive Dentistry 4 (1): 27–47 [Review, 94 refs] [3]Gordon JS, Lichtenstein E, Severson HH, Andrews JA (2006) Tobacco cessation in dental settings: research findings and future directions. Drug & Alcohol Review 25 (1): 27–37 [Review, 62 refs]	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE
Pharmacotherapy	**Pharmacotherapy as an adjunct to brief intervention** A body of level 1+ evidence directly applicable to the UK supports the efficacy of NRT as part of a brief intervention for smokers wishing to make a quit attempt. This evidence preceded the introduction of NHS specialist smoking treatment services in the UK.	1+	Silagy C, Lancaster T, Stead L et al. (2002) Nicotine replacement therapy for smoking cessation. Cochrane Database of Systematic Reviews 4: CD000146	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Self-help resources	**Brief interventions based on self-help** A body of level 1+ evidence directly applicable to UK settings supports the limited efficacy of standard self-help materials as a brief intervention for smoking cessation. A body of level 1+ evidence supports the efficacy of materials that are tailored for individuals. There is no evidence to support the use of materials tailored for specific populations compared with standard materials.	1+	Lancaster T, Stead LF (2005) Self-help interventions for smoking cessation. Cochrane Database of Systematic Reviews 3: CD001118	Academic & Public Health Consortium (2005) Rapid review of brief interventions and referral for smoking cessation. London: NICE
Self-help resources Information resources	There is evidence of good quality (1+, A), that self-help materials may increase quit rates compared with no intervention, but the effect is likely to be small. There is no evidence that they have an additional benefit when used alongside other interventions such as advice from a healthcare professional, or NRT. There is evidence that materials that are tailored for individual smokers are effective, and are more effective than untailored materials, although the absolute size of effect is still small.	1+, A	Lancaster T, Stead LF (2005) Self-help interventions for smoking cessation. Cochrane Database of Systematic Reviews 3: CD001118	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Information resources	Evidence from four studies suggests that social marketing has a role to play in delivering client-centred approaches to smoking cessation in disadvantaged groups. [one UK-based observational study (–)[1]; one international RCT (+)[2]; one international population-based study (+)[3]; one international controlled before-and-after study (–)[4]]. One of these studies took place with disadvantaged smokers in the UK and is directly relevant to the review. Three took place in the USA and may have limited applicability to this review.	+ –	[1]Stevens W, Thorogood M, Kayikki S (2002) Cost-effectiveness of a community anti-smoking campaign targeted at a high-risk group in London. Health Promotion International 17 (1): 43–50 [2]Boyd NR, Sutton C, Orleans CT, McClatchey MW, Bingler R, Fleisher L, Heller D, Baum S, Graves C, Ward JA (1998) Quit Today! A targeted communications campaign to increase use of the cancer information service by African American smokers. Preventive Medicine 27(5): Pt 2, S50–S60 [3]Schorling JB (1997) A trial of church-based smoking cessation interventions for rural African Americans. Preventive Medicine 26 (1): 92–101 [4]Turner LR, Morera OF, Johnson TP, Crittenden KS, Freels S, Parsons J, Flay B, Warnecke RB (2001) Examining the effectiveness of a community based self-help program to increase women's readiness for smoking cessation. American Journal of Community Psychology 29 (3): 465–491	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Incentives to participants	**Incentives** An international review (+)[1] of 17 studies of population-based smoking cessation interventions that used a range of incentives found that larger incentives were more effective both in improving recruitment and cessation. The review included studies of mixed designs, and did not discuss the socioeconomic characteristics of participants. A UK cohort study (+)[2] found some evidence for proactive targeting of patients by GPs in a deprived area for prescriptions of NRT on quit rates and reduction in cigarette consumption. Two US cohort studies (+)[3,4] of free NRT for helpline callers provided evidence for an impact on calls, and some evidence in one study of greater quit rates. One US RCT (+)[5] of workplace smoking cessation programmes and incentives found that the latter increased participation, but not cessation. One study took place within the UK and is directly applicable to the review. Three studies took place in the USA and one review was based on studies conducted worldwide and so may have limited applicability to this review.	+ (5 studies)	[1]Bains N, Pickett W, Hoey J (1998) The use and impact of incentives in population-based smoking cessation programs: a review. American Journal of Health Promotion 12 (5): 307–332. [2]Copeland L, Robertson R, Elton R (2005) What happens when GPs proactively prescribe NRT patches in a disadvantaged community. Scottish Medical Journal 50 (2): 64–68 [3]An LC, Schillo BA, Kavanaugh AM, Lachter RB, Luxenberg MG, Wendling AH, Joseph AM (2006) Increased reach and effectiveness of a statewide tobacco quitline after the addition of access to free nicotine replacement therapy. Tobacco Control 15 (4): 286–293 [4]Bauer JE, Carlin-Menter SM, Celestino PB, Hyland A, Cummings KM (2006) Giving away free nicotine medications and a cigarette substitute (BETTER QUIT) to promote calls to a quitline. Journal of Public Health Management and Practice 12 (1): 60–67 [5]Hennrikus DJ, Jeffery RW, Lando HA, Murray DM, Brelje K, Davidann B, Baxter JS, Thai S, Vessey J, Liu J (2002) The SUCCESS Project: the effect of program format and incentives on participation and cessation in worksite smoking cessation programs. American Journal of Public Health 92 (2): 274–279	Bauld L, McNeill A, Hackshaw L, Murray R (2007) NICE Rapid Review: The effectiveness of smoking cessation interventions to reduce the rates of premature death in disadvantaged areas through proactive case finding, retention and access to services. London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Incentives to participants	**Workplace incentives** There is evidence of good quality from two reviews (1&2+, C; 1&2+, A), which shows that competitions and incentives in the community (e.g. workplace, clinics) are not effective beyond 6 months.	1&2+, C 1&2+, A	Hey K, Perera R (2005a) Quit and Win contests for smoking cessation. Cochrane Database of Systematic Reviews 2: CD004986 Moher M, Hey K, Lancaster T (2005) Workplace interventions for smoking cessation. Cochrane Database of Systematic Reviews 2: CD003440	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Incentives to participants	**Use of incentives** There is variable quality evidence (1&2–, C), that shows a small effect of the use of incentives in population-based smoking cessation programmes.	1&2–, C	Bains N, Pickett W, Hoey J (1998) The use and impact of incentives in population-based smoking cessation programs: a review. American Journal of Health Promotion 12: 307–320	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Incentives to participants	**Quit and win competitions** There is good quality evidence (1&2+, C) that shows a small effect of 'quit and win' contests on community prevalence of smoking is small.	1&2+, C	Hey K, Perera R (2005b) Competitions and incentives for smoking cessation. Cochrane Database of Systematic Reviews 2: CD004307	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Characteristics of health systems and services: at national, regional and local levels that promote and support health-related behaviour change. Obesity prevention and behaviour change.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Stewardship and leadership				
Media and social marketing	**Promotional campaigns** The effectiveness of promotional campaigns focusing on education alone remains unclear. One RCT (1+) in low-income, low-literacy volunteers in Canada suggests education alone is ineffective.	1+	O'Loughlin J, Paradis G, Meshefedjian G, Kishchuk N (1998) Evaluation of an 8-week mailed healthy-weight intervention. Preventive Medicine 27: 288–295	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Media and social marketing	**Promotional campaigns** There is a body of evidence that promotional campaigns, including media interventions, can increase awareness of what constitutes a healthy diet and may subsequently improve dietary intakes.	2+	O'Loughlin J, Paradis G, Meshefedjian G, Kishchuk N (1998) Evaluation of an 8-week mailed healthy-weight intervention. Preventive Medicine 27: 288–295 (1+) DH (2003) Five-a-day pilot initiatives: executive summary of the pilot initiatives evaluation study. London: Department of Health (2±) Wardle J, Rapoport L, Miles A, Afuape T, Duman M. (2001) Mass education for obesity prevention: the penetration of the BBC's 'Fighting Fat, Fighting Fit' campaign. Health Education Research 16: 343–355 (2+) Tudor-Smith C, Nutbeam D, Moore L, Catford J (1998) Effects of Heartbeat Wales programme over five years on behavioural risks for cardiovascular disease: quasi-experimental comparison of results from Wales and a matched reference area. British Medical Journal 316: 818–822 (2–) Van Wechem SM (1997) Results of a community-based campaign to reduce fat intake. Nutrition and Health 11: 207–218 (2–)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Media and social marketing	**Food promotion to children** There is a body of evidence that food promotion can have an effect on children's food preferences, purchase behaviour and consumption. The majority of food promotion focuses on foods high in fat, sugar and salt and therefore tends to have a negative effect. However, food promotion has the potential to influence children in a positive way.	2+	Hastings G, Stead M, McDermott L et al. (2003) Review of research on the effects of food promotion to children. Final Report. Prepared for the Food Standards Agency. Strathclyde: Centre for Social Marketing, University of Strathclyde	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Media and social marketing	**Media and physical activity** It remains unclear whether media interventions can influence participation in physical activity. There is some evidence that interventions may be more successful if they target motivated subgroups	2++	One systematic review (2++): Cavill N, Bauman A (2004) Changing the way people think about health-enhancing physical activity: do mass media campaigns have a role? Journal of Sports Science 22: 771–790 One RCT (1+): O'Loughlin J, Paradis G, Meshefedjian G, Kishchuk N (1998) Evaluation of an 8-week mailed healthy-weight intervention. Preventive Medicine 27: 288–295. Two BAs (2+): Huhman M, Potter L, Wong F. et al. (2005) Effects of mass media campaign to increase physical activity among children: Year 1 results of the VERB campaign. Pediatrics 116: 277–284 Merom D, Rissel C, Mahmic A, Bauman A (2005) Process evaluation of the New South Wales Walk Safely To School Day. Health Promotion Journal of Australia 16: 100–106 One BA (2–): Tudor-Smith C, Nutbeam D, Moore L, Catford J (1998) Effects of Heartbeat Wales programme over five years on behavioural risks for cardiovascular disease: quasi-experimental comparison of results from Wales and a matched reference area. British Medical Journal 316: 818–822	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Media and social marketing	**Media interventions** Promotional campaigns, including media interventions, can improve knowledge, attitudes and awareness of physical activity. Levels of awareness are likely to vary according to the type of medium used and the scale of the campaign.	2++	One systematic review (2++): Cavill N, Bauman A (2004) Changing the way people think about health-enhancing physical activity: do mass media campaigns have a role? Journal of Sports Science 22: 771–790 One RCT (1+): O'Loughlin J, Paradis G, Meshefedjian G, Kishchuk N (1998) Evaluation of an 8-week mailed healthy-weight intervention. Preventive Medicine 27: 288–295 Two BAs (2+): Huhman M, Potter L, Wong F. et al. (2005) Effects of mass media campaign to increase physical activity among children: Year 1 results of the VERB campaign. Pediatrics 116: 277–284 Merom D, Rissel C, Mahmic A, Bauman A (2005) Process evaluation of the New South Wales Walk Safely To School Day. Health Promotion Journal of Australia 16: 100–106 One BA (2–): Tudor-Smith C, Nutbeam D, Moore L, Catford J (1998) Effects of Heartbeat Wales programme over five years on behavioural risks for cardiovascular disease: quasi-experimental comparison of results from Wales and a matched reference area. British Medical Journal 316: 818–822	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Media and social marketing National programmes	A UK-based survey of Heartbeat Award schemes recommended improved promotion and better integration with other health programmes.	3	One cross-sectional survey: The Research Partnership (2000) Report on the Heartbeat Award scheme consultation. Stockland, Devon: The Research Partnership	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

National programmes	There is little evidence of benefit from locally implementable multi-component city- and state-wide interventions to prevent CVD on weight outcomes.	2+	Three CBAs (all 2+) generally do not support. Suggests trend: Shelley E, Daly L, Collins C, Christie M, Conroy R, Gibney M et al. (1995) Cardiovascular risk factor changes in the Kilkenny Health Project: a community health promotion programme. European Heart Journal 16: 752–760 Do not support: O'Loughlin JL, Paradis G, Gray-Donald K, Renaud L. (1999) The impact of a community-based heart disease prevention program in a low-income, inner-city neighborhood. American Journal of Public Health 89: 1819–1826 Baxter T, Milner P, Wilson K, Leaf M, Nicholl J, Freeman J et al. (1997) A cost effective, community based heart health promotion project in England: prospective comparative study. British Medical Journal 315: 582–585	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

National programmes	There is little evidence of benefit from locally implementable city- and state-wide interventions to prevent CVD in relation to diet and/or physical activity outcomes.	2+	Four CBAs (all 2+) generally do not support. Supports diet change in one area: Baxter T, Milner P, Wilson K, Leaf M, Nicholl J, Freeman J et al. (1997) A cost effective, community based heart health promotion project in England: prospective comparative study. British Medical Journal 315: 582–585 No support for dietary change from: Huot H (2004) Effects of the Quebec Heart Health Demonstration Project on adult dietary behaviours. Preventive Medicine 38: 137–148 O'Loughlin JL, Paradis G, Gray-Donald K, Renaud L (1999) The impact of a community-based heart disease prevention program in a low-income, inner-city neighborhood. American Journal of Public Health 89: 1819–1826 Osler M, Jespersen NB (1993) The effect of a community-based cardiovascular disease prevention project in a Danish municipality. Danish Medical Bulletin 40: 485–489 No support for physical activity change from: O'Loughlin et al. (1999) (op. cit.); Baxter et al. (1997) (op. cit.); Osler and Jespersen (1993) (op. cit.)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Policy-related and/or Supportive environment	There is a body of evidence that creation of, or enhanced access to, space for physical activity (such as walking or cycling routes), combined with supportive information/promotion, is effective in increasing physical activity levels.	2++	Body of evidence generally supports. One systematic review and three additional studies (all 2++/2+) Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE et al. (2002) The effectiveness of interventions to increase physical activity. A systematic review. American Journal of Preventive Medicine 22: 73–107 One CBA (2+) shows trend: Brownson RC, Baker EA, Boyd RL, Caito NM, Duggan K, Housemann RA et al. (2004) A community-based approach to promoting walking in rural areas. American Journal of Preventive Medicine 27: 28–34 One BA (2+) does not support: Evenson KR, Herring AH, Huston SL (2005) Evaluating change in physical activity with the building of a multi-use trail. American Journal of Preventive Medicine 28: 177–185	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Policy-related and/or Supportive environment	Changes to city-wide transport, which make it easier and safer to walk, cycle and use public transport – such as the congestion charging scheme in the City of London and Safer Route to School schemes, have the potential to make active transport more appealing to local users.	3	Four corroborative studies support: Transport for London (2005) Central London congestion charging. Impacts monitoring. Third Annual Report. London: Transport for London DETR (2000) School travel strategies and plans: case study reports. London: Department of the Environment, Transport and the Regions (see case studies 3) Parker J, Seddon J (2003) Back to school. Surveyor 190: 14–16 Jones D (2001) Letting the kids decide. Surveyor 188: 20–22	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Policy-related	There is little evidence on the most effective strategies for attracting workplaces to invest in the heath and activity of their staff, with the exception of weak evidence of reduced sick leave as a result of physical activity programmes.	N/A	One CBA (2++) found reduced sick leave: Kerr JH, Vos MCH (1993) Employee fitness programs, absenteeism and general well-being. Work and Stress 7: 179–190 One RCT (1++) showed no difference: Nurminen E, Malmivaara A, Ilmarinen J, Yloestalo P, Mutanen P, Ahonen G (2002) Effectiveness of a worksite exercise program with respect to perceived work ability and sick leaves among women with physical work. Scandinavian Journal of Work, Environment & Health 28: 85–93	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Media and social marketing	The general promotion of active travel (for example, publicity campaigns) does not appear to be effective in increasing physical activity levels.	1++	Body of evidence from one systematic review supports: Ogilvie D, Egan M, Hamilton V, Petticrew M (2004) Promoting walking and cycling as an alternative to using cars: systematic review. British Medical Journal 329: 763–766 [see comment] [Review]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Finance				
Affordable to target audience	There is a body of evidence to suggest that young people's views of barriers and facilitators to healthy eating indicated that effective interventions would (i) make healthy food choices accessible, convenient and cheap in schools; (ii) involve family and peers; and (iii) address personal barriers to healthy eating, such as preferences for fast food in terms of taste, and perceived lack of will-power.	1++	Shepherd J (2001) Young people and healthy eating: a systematic review of barriers and facilitators. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London Thomas J, Sutcliffe K, Harden A, Oakley A, Oliver S, Rees R, Brunton G, Kavanagh J (2003) Children and healthy eating: a systematic review of barriers and facilitators. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Affordable to target audience	There is a body of evidence to suggest that young people's views on barriers and facilitators suggest that interventions should: (i) modify physical education lessons to suit their preferences; (ii) involve family and peers, and make physical activity a social activity; (iii) increase young people's confidence, knowledge and motivation relating to physical activity; and (iv) make physical activities more accessible, affordable and appealing to young people.	1++	Brunton G, Harden A, Rees R, Kavanagh J, Oliver S, Oakley A (2003) Children and physical activity: a systematic review of barriers and facilitators. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London Rees R, Harden A, Shephard RJ, Brunton G, Oliver S, Oakley A (2001) Young people and physical activity: a systematic review of research on barriers and facilitators. London: EPPI-Centre	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Financial incentives to participants	Payroll incentive schemes (such as free gym membership) are either effective only in the short term (during the period of the intervention) or ineffective for weight control.	1+	Body of evidence variable: three RCTs (all 1+) Effective in short term: Forster JL, Jeffery RW, Sullivan S, Snell MK (1985) A work-site weight control program using financial incentives collected through payroll deduction. Journal of Occupational Medicine 27: 804–808 Jeffery RW, Forster JL, Snell MK (1985) Promoting weight control at the worksite: a pilot program of self-motivation using payroll based incentives. Preventive Medicine 14: 187–194 Ineffective: Jeffery RW, Forster JL, French SA, Kelder SH, Lando HA, McGovern PG et al. (1993) The Healthy Worker Project: a work-site intervention for weight control and smoking cessation. American Journal of Public Health 83: 395–401	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Affordable to target audience	A body of UK-based case studies suggests that factors most likely to make a canteen-style five-a-day intervention work are: commitment from the top, enthusiastic catering management, a strong occupational health lead, links to other on-site health initiatives, free or subsidised produce, and heavy promotion and advertisement at point of purchase.	3	Two sets of case studies: Healthlinks (2003) Take Five! Evaluation report: phase 2 – April 2002–March 2003. UK: Healthlinks Holdsworth M, Raymond NT, Haslam C (2004) Does the Heartbeat Award scheme in England result in change in dietary behaviour in the workplace? Health Promotion International 19: 197–204	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Financial incentives to participants	Limited evidence suggests that using an incentive of free access to leisure facilities is likely to increase activity levels, but only during the period of the intervention.	1+	One RCT: Harland J, White M, Drinkwater C et al. (1999) The Newcastle exercise project: a randomised controlled trial of methods to promote physical activity in primary care. British Medical Journal 319: 828–832	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Cost concern by providers	There is a body of evidence from UK-based qualitative research that time, space, training, costs and concerns about damaging relationships with patients may be barriers to action by health professionals (GPs and pharmacists).	3	Six qualitative studies, one cross-sectional study and one survey/case study support (all grade 3) Qualitative: Fuller et al. (2003)[268]; Smith et al. (1996)[273]; Keene and Cervetto (1995)[274]; Ursell et al. (1999)[275]; Moore et al. (1995)[276]; Coggans et al. (2000)[270]; Benson and Cribb (1995)[271] Cross-sectional: Vernon and Brewin (1998)[277] Survey/case study: Hopper and Barker (1995)[272]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Financial incentives to participants	Targeted behavioural change programmes with tailored advice appear to change travel behaviour of motivated groups. Associated actions such as subsidies for commuters may also be effective.	1++	Body of evidence from one systematic review (1++) supports: Ogilvie D, Egan M, Hamilton V, Petticrew M (2004) Promoting walking and cycling as an alternative to using cars: systematic review. British Medical Journal 329: 763–766 [see comment] [Review]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Affordable to target audience	Interventions may be ineffective unless fundamental issues are addressed, such as individual confidence to change behaviour, cost and availability; pre-existing concerns such as poorer taste of healthier foods and confusion over mixed messages; the perceived 'irrelevance' of healthier eating to young people; and the potential risks (including perception of risk) associated with walking and cycling.	3	Body of evidence from 14 corroborative studies support (majority 3). Dietary change: Wrigley et al. (2003) (BA; 2+); Whelan et al. (2002) (qualitative); White et al. (2004) (cross-sectional); Knox et al. (2001) (qualitative); Dibsdall et al. (2002) (qualitative) Physical activity: Cole-Hamilton et al. (2002) (systematic review); Derek Halden Consultancy (1999) (survey/interviews); Dixey (1998, 1999) (survey/interviews); DiGuiseppi (1998) (cross-sectional); Coakley et al. (1998) (qualitative); Jones (2001) (BA/survey; 2+); Hillman (1993) (cross-sectional)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See References on pages 391–417 of the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service delivery				
Service design	There is limited evidence that interventions that focus on the prevention of obesity through improvements to diet and activity appear to have a small but important impact on body weight that may aid weight maintenance.		Five RCTs, three of which prevented gain: Fitzgibbon et al.[110–111] (Hip-Hop; 1+); He (2004)[112] (1+); STRIP[113–114] (1+) Two found no difference between intervention and control: Healthy Start[115–116] (2++); Dennison et al. (2004)[117] (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Significant life stages Targeting specific population groups	**Adults and life stages** Among adults, there is a body of evidence from cohort studies that pregnancy, menopause and smoking cessation are key stages in the life-course associated with weight gain. The evidence on the importance of other life stages, such as marriage, divorce and a change in work patterns (for example, shift working), remains unclear.	2+	Pregnancy (all 2+) Supportive: Williamson et al. (1994)[19]; Smith et al. (1994) (CARDIA)[20]; Linne et al. (2003) (SPAWN)[21]; Olson and Strawderman (2003)[22]; Rosenberg et al. (2003)[23]; Wolfe et al. (1997)[24]; Sowers et al. (1998)[25] Menopause (all 2+) Supportive: Macdonald et al. (2003)[26]; Nagata et al. (2002)[27]; Blumel et al. (2001)[28] Not supportive: Wing et al. (1991)[29]; Burnette et al. (1998)[30] (two papers on same cohort) Smoking (all 2+) Supportive: Williamson et al. (1991)[31] (short term only); Gerace and George (1996)[32]; Swan and Carmelli (2005)[33]; Froom et al. (1999)[34]; Burnette et al. (1998)[30] in Burke et al. (2000)[35] (small % variance) Marriage (all 2+) Supportive: Kahn and Williamson (1990)[36]; Rauschenbach et al. (1995)[37]; Gerace and George (1996)[32] Shift work (2+) Supportive: Yamada et al. (2001)[38]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Service design	**Promoting healthy eating in all adults** There is evidence of good quality (1+, C), that shows a positive effect of nutritional counselling interventions delivered to a primary care population in changing eating habits.	1+, C	Ammerman A, Pignone M, Fernandez L, Lohr K, Driscoll Jacobs A et al. (2002)[145] Counseling to promote a healthy diet. Rockville, MD: Agency for Healthcare Research and Quality [Abstract: 20038501]	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Targeting specific population groups	**Pregnant women** There is evidence of good quality (1&2+, A) that shows no conclusive evidence on the effectiveness of interventions to encourage pregnant women and women of childbearing age to eat healthily.	1&2+, A	van Teijlingen E, Wilson B, Barry N, Ralph A, McNeill G. et al. (1998)[89] Effectiveness of interventions to promote healthy eating in pregnant women and women of childbearing age: a review. London: Health Education Authority	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Targeting specific population groups	**Older people** There is evidence of good quality (1&2+, C), which shows only a very limited effect of interventions to promote healthy eating in older people.	1&2+, C	Fletcher A, Rake C (1998)[78] Effectiveness of interventions to promote healthy eating in elderly people living in the community: a review. London: Health Education Authority	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Service design	**Multi-component interventions** There is limited evidence to show that a multi-component intervention, including a public health media campaign, can have a beneficial effect on weight management, particularly among individuals of higher social status.	2+	2+: Wardle J, Rapoport L, Miles A, Afuape T, Duman M (2001). Mass education for obesity prevention: the penetration of the BBC's 'Fighting Fat, Fighting Fit' campaign. Health Education Research 16: 343–355 One 2– showing no effect but concerns about validity: Tudor-Smith C, Nutbeam D, Moore L, Catford J (1998) Effects of Heartbeat Wales programme over five years on behavioural risks for cardiovascular disease: quasi-experimental comparison of results from Wales and a matched reference area. British Medical Journal 316: 818–822	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Targeting specific population groups	**Parents** Parents are important role models for children and young people in terms of behaviours associated with the maintenance of a healthy weight .	3	McCullough FSW (2004) Food choice, nutrition education and parental influence on British and Korean primary school children. International journal of consumer studies 28: 235–244	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Targeting specific population groups	**Pre-school children** Improvements in the food service to pre-school children can result in reductions in dietary intakes of fat and improved weight outcomes.	1+	Worsley A, Crawford D (2004) Review of children's healthy eating interventions. Public health nutrition evidence based health promotion research and resource project. Healthy eating programs for children ages 0–15 years. School of Exercise and Nutrition Sciences and Deakin University, Australia	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Targeting specific population groups	**Pre-school children** There is evidence of good quality (1&2+, A), which shows that there is currently insufficient evidence available to predict the format of successful healthy eating interventions that are likely to be effective in improving the nutritional wellbeing of pre-school children.	1&2+, A	Tedstone A, Aviles M, Shetty P, Daniels L (1998)[65] Effectiveness of interventions to promote healthy eating in preschool children aged 1 to 5 years: a review. London: Health Education Authority	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Service design Targeting specific population groups	**Family-based interventions** that target improved weight maintenance in children and adults, focusing on diet and activity, can be effective, at least for the duration of the intervention.	1++	Body of evidence One systematic review (1++): McLean N, Griffin S, Toney K, Hardeman W (2003) Family involvement in weight control, weight maintenance and weight-loss interventions: a systematic review of randomised trials. International Journal of Obesity 27: 987–1005 One RCT (1+): Hopper CA (1996) School-based cardiovascular exercise and nutrition programs with parent participation. Journal of Health Education 27: 32–39	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Targeting specific population groups	The effectiveness of interventions tends to be positively associated with the number of behaviour change techniques taught to both parents and children.	1++	One systematic review (1++): McLean N, Griffin S, Toney K, Hardeman W (2003) Family involvement in weight control, weight maintenance and weight-loss interventions: a systematic review of randomised trials. International Journal of Obesity 27: 987–1005	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Targeting specific population groups	There is limited evidence that structured physical activity programmes within nurseries can increase physical activity levels.	Grade pending	Reilly JJ, McDowell ZC (2003) Physical activity interventions in the prevention and treatment of paediatric obesity: systematic review and critical appraisal. Proceedings of the Nutrition Society 62: 611–619	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Targeting specific population groups	There is limited evidence that interventions to increase opportunities for children to be active can be incorporated into nurseries and implemented by nursery staff.	Grade pending	Reilly JJ, McDowell ZC (2003) Physical activity interventions in the prevention and treatment of paediatric obesity: systematic review and critical appraisal. Proceedings of the Nutrition Society 62: 611–619	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Targeting specific population groups	**Parents** Interventions that involve parents in a significant way may be particularly effective and can improve parental engagement in active play with children and a child's dietary intake.	2+	Body of evidence 2+. Majority of studies included parents but following specifically aimed at parents: Koblinsky SA, Guthrie JF, Lynch L (1992) Evaluation of a Nutrition Education Program for Head Start Parents. Society for Nutrition Education 24: 4–13 (2+) McGarvey E, Keller A, Forrester M, Williams E, Seward D, Suttle DE (2004) Feasibility and benefits of a parent-focused preschool child obesity intervention. American Journal of Public Health 94: 1490–1495 (2+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Targeting specific population groups	**Family-based interventions** that target improved weight maintenance in children and adults, focusing on diet and activity, can be effective, at least for the duration of the intervention.	1++	Body of evidence (1++) One systematic review (1++): McLean N, Griffin S, Toney K, Hardeman W (2003) Family involvement in weight control, weight maintenance and weight-loss interventions: a systematic review of randomised trials. International Journal of Obesity 27: 987–1005 One RCT (1+): Hopper CA (1996) School-based cardiovascular exercise and nutrition programs with parent participation. Journal of Health Education 27: 32–39	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service design	**Lower-income groups** Interventions should be tailored as appropriate for lower-income groups.	1+	Two RCTs (1+): Dennison BA, Russo TJ, Burdick PA, Jenkins PL (2004) An intervention to reduce television viewing by preschool children. Archives of Pediatrics & Adolescent Medicine 158: 170–176 Fitzgibbon ML, Stolley MR, Dyer AR, VanHorn L, KauferChristoffel K (2002) A community-based obesity prevention program for minority children: rationale and study design for Hip-Hop to Health Jr. Preventive Medicine 34: 297 Stolley MR, Fitzgibbon ML, Dyer A, Van Horn L, KauferChristoffel K, Schiffer L (2003) Hip-Hop to Health Jr, an obesity prevention program for minority preschool children: baseline characteristics of participants. Preventive Medicine 36: 320–329 One CCT (2++): Bollella MC (1999) Assessing dietary intake in preschool children: the Healthy Start Project – New York. Nutrition Research 19: 37–48 Williams CL, Strobino BA, Bollella M, Brotanek J (2004) Cardiovascular risk reduction in preschool children: the 'Healthy Start' project. Journal of the American College of Nutrition 23: 117–123	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service design Targeting specific population groups	**Under 5s** 2–5 years is a key time to establish good nutritional habits, especially when parents are involved.	1+	Worsley A, Crawford D (2004) Review of children's healthy eating interventions. Public health nutrition evidence based health promotion research and resource project. Healthy eating programs for children ages 0–15 years. School of Exercise and Nutrition Sciences and Deakin University, Australia	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Significant life stages	**Children** Interventions require some involvement of parents or carers.	1+	Body of evidence 1+: virtually all included RCTs involved parents	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Targeting specific population groups	**Children** Cohort studies suggest that children who do not participate in sport outside school and who are the least active appear to gain more weight than their more active peers.	2+	Burke V, Beilin LJ, Simmer K, Oddy WH, Blake KV, Doherty D et al. (2005) Predictors of body mass index and associations with cardiovascular risk factors in Australian children: a prospective cohort study. International Journal of Obesity 29: 15–23 Elgar FJ, Roberts C, Moore L, Tudor-Smith C (2005) Sedentary behaviour, physical activity and weight problems in adolescents in Wales. Public Health 19: 518–524 O'Loughlin J, Gray-Donald K, Paradis G, Meshefedjian G (2000) One- and two-year predictors of excess weight gain among elementary schoolchildren in multiethnic, low-income, inner-city neighborhoods. American Journal of Epidemiology 152: 739–746 Berkey CS, Rockett HR, Field AE, Gillman MW, Frazier AL, Camargo CA Jr et al. (2000) Activity, dietary intake, and weight changes in a longitudinal study of preadolescent and adolescent boys and girls. Pediatrics 105: E56 Field AE, Austin SB, Gillman MW, Rosner B, Rockett HR, Colditz GA (2004) Snack food intake does not predict weight change among children and adolescents. International Journal of Obesity 28: 1210–1216 Klesges RC, Klesges LM, Eck LH, Shelton ML (1995) A longitudinal analysis of accelerated weight gain in preschool children. Pediatrics 95: 126–130 Datar A, Sturm R (2004) Physical education in elementary school and body mass index: evidence from the early childhood longitudinal study. American Journal of Public Health 94: 1501–1506	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') based on an evidence review produced by the University of Teesside. London: NICE

Targeting specific population groups	**Children – fruit and vegetable intake** There is evidence of good quality (1&2+, A), which shows a small but significant positive effect of interventions aimed at increasing fruit and vegetable intake in children aged 4–10 years.	1&2+, A	Thomas, J, Sutcliffe, K, Harden, A, Oakley A, Oliver, S et al. (2003) Children and healthy eating: a systematic review of barriers and facilitators. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Setting – school Targeting specific population groups	**Multi-component interventions** There is evidence of good quality (1&2+, A), which shows an effect of multi-component interventions complementing classroom activities in school-wide initiatives (with young people aged 11–16 years) as well as involving parents on promoting healthy eating.	1&2+, A	Shepherd J, Harden A, Rees R, Brunton G, Garcia J. et al. (2002) Young people and healthy eating: a systematic review of research on barriers and facilitators. London: EPPI-Centre	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Setting – school Targeting specific population groups	**School-based interventions** The evidence on the effectiveness of multi-component school-based interventions to prevent obesity (addressing the promotion of physical activity, modification of dietary intake and reduction of sedentary behaviours) is equivocal. Some identified interventions demonstrated a reduction in mean BMI and the prevalence of obesity while the intervention was in place, but this finding was not universal. UK-based evidence in particular is lacking. Most of the evidence for school-based interventions is non-UK-based. However, it is likely that the findings are generalisable to the UK.	2+	Four studies, two 1+ RCTs: Sallis et al. (2003[128] [boys; girls NS]; Gortmaker et al. (1999[129] [girls; boys NS] and two 2+ CCTs: Graf et al. (2005; [130] Kain et al. (2004[131] [boys; girls NS] Six did not show significant improvements in weight/BMI: Warren et al. (2003 [132] (1+); Sahota et al. (2001[133] (1+); Caballero et al. (2003[134] (1+); Donnelly et al. (1996[135] (2+); Neumark-Sztainer et al.[136] 2003 (2+); Story et al. (2003[137] (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Setting – school Targeting specific population groups	**School-based interventions** School-based physical activity interventions (physical activity promotion and reduced television viewing) may help children maintain a healthy weight. Most of the evidence for school-based interventions is non-UK-based. However, it is likely that the findings are generalisable to the UK.	Not graded	Flores 1995[138] (1+), Robinson 1999[139] and one CCT (2+) (Stephens 1998[140]) Six physical activity studies did not show improvement in weight: Pate et al. (2005[141] (1+); Schofield et al. (2005[142] (2+); Jamner et al. (2004[143] (2+); Sallis et al. (1993/7 [144,145] (1+); Pangrazi et al. (2003[146] (2+); Trudeau et al. (2000/01[147,148] (2–) One showed trends in improvement with age in BMI in girls: Mo-suwan et al.[149] 1998 (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Setting – school Targeting specific population groups	There is limited evidence from one UK-based study to suggest that interventions to reduce consumption of carbonated drinks containing sugar may have a role in reducing the prevalence of overweight and obesity.	1++	One 1++ RCT: James J, Thomas P, Cavan D, Kerr D (2004) Preventing childhood obesity by reducing consumption of carbonated drinks: cluster randomised controlled trial. British Medical Journal 328: 1237–1239	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Setting – school Targeting specific population groups	**School-based interventions** There is a body of evidence that school-based multi-component interventions addressing various aspects of diet and/or activity in school, including the school environment, are effective in improving physical activity and dietary behaviour, at least while the intervention is in place. However, UK-based evidence to support multi-component interventions (the 'whole-school approach') is limited.	1+	Eight studies 1+: Simon et al. (2004)[151]; Pate et al. (2005)[141]; Caballero et al. (2003)[134]; Leupker et al. (1996)[152]; Trevino et al. (2004/05)[153,154]; Sahota et al. (2001)[133]; Warren et al. (2003)[132]; Vandongen et al. (1995)[155] Four studies 2+: Donnelly et al. (1996)[135]; Manios (1998/99/2002)[156–157]; Anderson (2000) from Woolfe and Stockley (2005) review[158] (2+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Setting – school Targeting specific population groups	**School-based interventions** There is a body of evidence to suggest that short- and long-term school-based interventions to improve children's dietary intake may be effective, at least while the intervention is in place. This includes interventions aiming to increase fruit and (and to a lesser extent) vegetable intake, improve school lunches and/or promote water consumption. Most of the evidence for school-based interventions is non-UK-based. However, it is likely that the findings are generalisable to the UK.	1+	Two non-systematic reviews: French and Wechsler (2004)[159] (2+); Woolfe and Stockley (2005)[158] (2+) Ten RCTs 1+: James et al. (2004)[150]; Perry et al. (2004)[160]; Caballero et al. (2003)[134]; Sallis et al. (2003)[128]; Sahota et al. (2001)[133]; Warren et al. (2003)[132]; Leupker et al. (1996)[152]; Vandongen et al. (1995)[155]; Gortmaker et al. (1999)[129]; Trevino et al. (2004/05)[153,154] Four studies 2+: Bere et al. (2005)[161]; Loughridge and Barratt (2005)[162]; Donnelly et al. (1996)[135]; Manios et al. (1998, 1999, 2002)[156–157] One study 2–: Horne et al. (2004)[163]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Setting – school Targeting specific population groups	**School-based interventions** UK-based evidence suggests that schoolchildren with the lowest fruit and vegetable intakes at baseline may benefit more from the school-based interventions than their peers. Most of the evidence for school-based interventions is non-UK-based. However, it is likely that the findings are generalisable to the UK.	2+	Bere E, Veierod MB, Klepp KI (2005) The Norwegian School Fruit Programme: evaluating paid vs. no-cost subscriptions. Preventive Medicine 41: 463–470 (2+) Horne PJ, Tapper K, Lowe CF, Hardman CA, Jackson MC, Woolner J (2004) Increasing children's fruit and vegetable consumption: a peer-modelling and rewards-based intervention. European Journal of Clinical Nutrition 58: 1649–1660 (2) Woolfe J, Stockley L (2005) Nutrition health promotion in schools in the UK: learning from Food Standards Agency funded schools research. Health Education Journal 64: 218–228 (2+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Setting – school Targeting specific population groups	There is evidence from multi-component interventions to suggest that both short- and long-term physical activity-focused interventions may be effective, at least while the intervention is in place. Most of the evidence for school-based interventions is non-UK-based. However, it is likely that the findings are generalisable to the UK.	1+	Six multi-component studies supportive. Five studies 1+: Simon et al. (2004)[151]; Pate et al. (2005)[141]; Caballero et al. (2003)[134]; Leupker et al. (1996)[152]; Trevino et al. (2004/05)[153,154] One study 2+: Manios et al. (1998/9/2002)[156–1]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Service design Setting – school Targeting specific population groups	There is a body of evidence to suggest that young people's views of barriers and facilitators to healthy eating indicated that effective interventions would (i) make healthy food choices accessible, convenient and cheap in schools; (ii) involve family and peers; and (iii) address personal barriers to healthy eating, such as preferences for fast food in terms of taste, and perceived lack of will-power.	1++	Shepherd J (2001) Young people and healthy eating: a systematic review of barriers and facilitators. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London Thomas J, Sutcliffe K, Harden A, Oakley A, Oliver S, Rees R, Brunton G, Kavanagh J (2003) Children and healthy eating: a systematic review of barriers and facilitators. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Setting – school Targeting specific population groups	There is a body of evidence to suggest that young people's views on barriers and facilitators suggest that interventions should: (i) modify physical education lessons to suit their preferences; (ii) involve family and peers, and make physical activity a social activity; (iii) increase young people's confidence, knowledge and motivation relating to physical activity; and (iv) make physical activities more accessible, affordable and appealing to young people.	1++	Brunton G, Harden A, Rees R, Kavanagh J, Olive, S, Oakley A (2003) Children and physical activity: a systematic review of barriers and facilitators. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London Rees R, Harden A, Shephard RJ, Brunton G, Oliver S, Oakley A (2001) Young people and physical activity: a systematic review of research on barriers and facilitators. London: EPPI-Centre	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service design Setting – workplace	Worksite behaviour-modification programmes, that include health screening with counselling/education, can result in short-term weight loss. Weight loss may be regained post-intervention.	1+	Body of evidence variable but largely supportive: 10 RCTs and 1 CCT. Majority 1+ Five RCTs (all 1+): Proper et al. (2003)[180]; Gomel et al. (1993)[181]; Shannon (1987) (data from Hennrikus and Jeffery (1996)[182]; Erfurt et al. (1991)[183]; Brownell et al. (1985)[184] One CCT supports (2+): Cockcroft et al. (1994)[185] Three RCTs show positive trend (all 1+): Gemson (1995)[186]; Peterson et al. (1985)[187]; Rose et al. (1983)[188] Twp RCTs do not support: Hanlon et al. (1995)[189] (1++); Braeckman (1999)[190] (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Service design Setting – workplace	Worksite behaviour-modification programmes, such as health screening followed by counselling and, sometimes, environmental changes, can lead to improvements in nutrition and physical activity while the intervention is in place.	1+	Body of evidence variable but largely supportive: one systematic review and six RCTs (majority 1+) One systematic review (1+): Janer et al. (2002)[199] supports for diet and physical activity Four RCTs for diet – three support: Sorensen et al. (1996)[200] (1+); Sorensen et al. (1999)[201] (1+); Sorensen et al.1998)[202] (1±) One does not support: Sorensen et al. (2002[203] (1+) Two RCTs for physical activity (one supports): Emmons et al. (1999[204] (1+) One does not support: Nichols et al. (2000[205] (1±)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Service design Setting – workplace	There is a body of evidence that the provision of healthier food choices can encourage consumption of a healthier diet.	2++	Body of evidence variable but largely supportive: 10 RCTs and 1 CCT. Majority 1+ Five RCTs (all 1+): Proper et al. (2003)[180]; Gomel et al. (1993)[181]; Shannon (1987) (data from Hennrikus and Jeffery 1996[182]); Erfurt et al. (1991)[183]; Brownell et al. (1985)[184] One CCT (2+) supports: Cockcroft et al. (1994)[185] Three RCTs show positive trend (all 1+): Gemson (1995)[186]; Peterson et al. (1985)[187]; Rose et al. (1983)[188] Twp RCTs do not support: Hanlon et al. (1995)[189] (1++); Braeckman (1999)[190] (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Service design Setting – workplace	Workplace physical activity programmes can have a positive effect on physical activity.	1++	Body of evidence from single 1++ systematic review supports: Proper KI, Koning M, Van der Beek AJ, Hildebrandt VH, Bosscher RJ, Van MW (2003) The effectiveness of worksite physical activity programs on physical activity, physical fitness, and health. Clinical Journal of Sport Medicine 13: 106–117	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service design Setting – workplace	**Healthy eating in the workplace** There is evidence of good quality (1&2+, A), which shows a small effect of workplace interventions on increasing fruit and vegetable intake (<0.5 portions a day).	1&2+, A	Ciliska D, Miles E, O'Brien MA, Turl C, Tomasik HH et al. (1999) The effectiveness of community interventions to increase fruit and vegetable consumption in people four years of age and older (45). Dundas, ON, Canada: Ontario Ministry of Health, Region of Hamilton-Wentworth, Social and Public Health Services Division	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Service design Setting –workplace	A body of UK-based case studies suggests that factors most likely to make a canteen-style five-a-day intervention work are: commitment from the top, enthusiastic catering management, a strong occupational health lead, links to other on-site health initiatives, free or subsidised produce, and heavy promotion and advertisement at point of purchase.	3	Two sets of case studies: Healthlinks (2003) Take Five! Evaluation report: phase 2 – April 2002–March 2003. UK: Healthlinks Holdsworth M, Raymond NT, Haslam C. (2004) Does the Heartbeat Award scheme in England result in change in dietary behaviour in the workplace? Health Promotion International 19: 197–204	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service personnel Service design Setting –workplace	A body of UK-based case studies suggests that the more successful behaviour modification/education techniques include an interdisciplinary approach with broad representation, including health and safety and human resources, and implementers from high grades and strategic positions; initiatives integrated into worksite objectives; staff involvement, communication and realistic objectives; activities that go beyond the superficial and address root causes.	3	Body of 16 case studies (3): Health Development Agency (2002) Health at work in the NHS: an evaluation. London: Health Development Agency	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service personnel Service design Setting – PCT and community	Sustained, health professional-led interventions in primary care or community settings, focusing on diet and physical activity or general health counselling, can support maintenance of a healthy weight.	1+	Body of evidence variable but generally supportive. One systematic review and eight RCTs mostly 1+. Systematic review supports: Asikainen et al. (2004)[226] (1++) Three RCTs support: Simkin-Silverman et al. (2003)[227] (1++); ICRF (1995)[228] (1+); Murray and Kurth (1990)[229] (1++) Three RCTs show trend: Fries et al. (1993)[230] (1+); Jeffery 1999)[231] (1±); FHSG (1994)[232] (1+) Two RCTs do not support: Dzator et al. (2004)[233] (1+); ICRF (1994)[234] (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Service design	Interventions that provide support and advice on physical activity and diet are more likely to be effective for weight outcomes than interventions that focus on physical activity alone. There is no reliable evidence for diet alone.	1+	Body of evidence variable for physical activity alone: 11 RCTs One shows weight reduction (self-reported): Stewart et al. (2001)[235] (1+) Five show trend and/or changes in body composition: Taylor et al. (1998)[236] (1+): Schmitz et al. (2003)[237] (1+); Coleman et al. (1999)[238] (1+); Dunn et al. (1999)[239] (1+); Elley et al. (2003)[240] (1++) Five do not support: Hillsdon (2002)[241] (1+); Pereira et al. (1998)[242] (1+); Tully et al. (2005)[243] (1+); Lamb et al. (2002)[244] (1+); Halbert et al. (2000)[245] (1++) Limited evidence for diet alone: one RCT and one CBA CBA supports: Wrieden et al. (2002)[246] (2+) RCT does not support: John et al. (2002)[247] (1++)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Service design	Moderate- or high-intensity dietary interventions most commonly report clinically significant reductions in fat intake and an increase in fruit and vegetable intake.	1++	Body of evidence supportive: one systematic review, four RCTs and two CBAs Systematic review: Pignone et al. (2003)[254] (1++) RCTs: Carpenter and Finley (2004)[255] (1++); Havas et al. (2003)[256] (1+); Dzator et al. (2004)[233] (1+); Havas et al. (1998)[257] (1+) UK CBAs: Department of Health (2003)[93] (2±); Wrieden et al. (2002)[246] (2+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Service design Service personnel	Briefer interventions, such as brief counselling/dietary advice by GPs or other health professionals, can be effective in improving dietary intake, but tend to result in smaller changes than intensive interventions.	1++	Body of evidence: two systematic reviews and four RCTs (1++/1+) Systematic reviews: Pignone et al. (2003)[254] (1++); Ashenden et al. (1997)[258] (1+) RCTs: Delichatsios et al. (2001)[259] (1+); Steptoe et al. (2003)[260] (1++); John et al. (2002)[247] (1++); Beresford (1997)[261] (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Service design	Interventions with a greater number of components are more likely to be effective.	1++	Body of evidence (1++) One systematic review: Pignone MP, Ammerman A, Fernandez L (2003) Counseling to promote a healthy diet in adults. A summary of the evidence for the US preventive services task force. American Journal of Preventive Medicine 24: 75–92	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Targeting specific population groups Settings – community and primary care	Although the majority of studies included predominantly white, higher social status and reasonably motivated individuals, there is some evidence that interventions can also be effective among lower social groups and that effectiveness does not vary by age or gender.	1+	Body of evidence supportive for lower social groups (four RCTs and one CBA) and for age/gender (only one study, a survey, suggested variable effect in men and women) Lower social groups, three RCTs: Steptoe et al. (2003)[260] (1++); Havas et al. (1998)[257] (1+); Havas et al. (2003)[256] (1+) One CBA: Wrieden et al. (2002)[246] (2+) Age/gender, only one study suggested potential variation in effect: Duaso and Cheung (2002)[262] (3)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Service design	Tailoring dietary advice to address potential barriers (taste, cost, availability, views of family members, time) is key to the effectiveness of interventions and may be more important than the setting.	3	Body of survey and qualitative evidence in four RCTs and one CBA support (all grade 3) Four surveys/qualitative studies in RCTs: Anderson et al. (1998)[263]; Lloyd et al. (1995)[264]; John and Ziebland (2004)[265]; Baron et al. (1990)[266] One qualitative study in a CBA: Wrieden et al. (2002)[246]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Service personnel Staff training	The type of health professional who provides the advice is not critical as long as they have the appropriate training and experience, are enthusiastic and able to motivate, and are able to provide long-term support.	3	Two qualitative studies and one evaluation of case studies support (all grade 3) Qualitative studies: Hardcastle and Taylor (2001)[267]; Fuller et al. (2003)[268] Evaluation of case studies: Biddle et al. (1994)[269] Plus: Guideline Development Group (GDG) conclusions based on full range of evidence	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Service personnel	There is some evidence that primary care staff may hold negative views on the ability of patients to change behaviours, and their own ability to encourage change.	3	Three qualitative studies and one survey/case study support (all grade 3) Qualitative studies: Fuller TL, Backet-Milburn K, Hopton JL (2003) Healthy eating: the views of general practitioners and patients in Scotland. American Journal of Clinical Nutrition 77: 1043S–1047S Coggans N, Johnson L, McKellar S, Grant L, Parr RM (2000) Health promotion in community pharmacy: perceptions and expectations of consumers and health professionals. Scotland: Scottish Office/University of Strathclyde Benson M, Cribb A (1995) In their own words: community pharmacists and their health education role. International Journal of Pharmacy Practice 3: 74–77 Case study/survey: Hopper D, Barker ME (1995) Dietary advice, nutritional knowledge and attitudes towards nutrition in primary health care. Journal of Human Nutrition and Dietetics 8: 279–286	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service personnel Staff training	There is a body of evidence from UK-based qualitative research that time, space, training, costs and concerns about damaging relationships with patients may be barriers to action by health professionals (GPs and pharmacists).	3	Six qualitative studies, one cross-sectional study and one survey/case study support (all grade 3) Qualitative: Fuller et al. (2003)[268]; Smith et al. (1996)[273]; Keene and Cervetto (1995)[274]; Ursell et al. (1999)[275]; Moore et al. (1995)[276]; Coggans et al. (2000)[270]; Benson and Cribb (1995)[271] Cross-sectional: Vernon and Brewin (1998)[277] Survey/case study: Hopper and Barker (1995)[272]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Service design Service personnel	There is some evidence from the UK that patients are likely to welcome the provision of advice despite concerns by health professionals about interference or damaging the relationship with patients.	3	One qualitative study: Duaso and Cheung (2002)[262]; Hardcastle and Taylor (2001)[267] support One case study: Duaso MJ, Cheung P (2002) Health promotion and lifestyle advice in a general practice: what do patients think? Journal of Advanced Nursing 39: 472–479	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service design	Tailoring physical activity advice to address potential barriers (such as lack of time, access to leisure facilities, need for social support and lack of self-belief) is key to the effectiveness of interventions.	1++	Body of evidence from two reviews and corroborative evidence supports One systematic review noting attrition through problems with attendance at leisure facilities: Gidlow et al. (2005)[253] (3++) One systematic review noting importance of self-belief: Keller et al. (1999)[278] (3++) Three qualitative studies and three surveys also support (all 3) Qualitative: Hardcastle and Taylor (2001)[267]; Martin and Wollf-May (1999)[279]; Ashley et al. (2000)[280] Survey: See Tai et al. (1999)[281]; Vernon and Brewin (1998)[277]; Horsefall/Wealden District Council (1997)[282]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.
Service design Setting – community	Point-of-purchase schemes in shops, supermarkets, restaurants and cafés can be effective in improving dietary intake, at least in the short term, particularly if accompanied by supporting education, information and promotion. There is some evidence that longer-term, multi-component interventions may show greater effects.	2++	Body of evidence variable but generally supportive from four systematic reviews of non-randomised studies and three RCTs Systematic reviews support: Roe et al. (1997)[291] (1++); Seymour et al. (2004)[206] (2++); Matson-Koffman et al. (2005)[292] (2+); Holdsworth and Haslam (1998)[293] (2+) One RCT suggests trend: Kristal (1997)[294] (1+) One RCT suggests low-fat alternative acceptable: Stubenitsky et al. (2000)[295] (1+) One RCT does not support: Steenhuis et al. (2004)[296] (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Setting – community	**Healthy eating in non-workplace-based, community-based interventions** There is evidence of good quality (1&2+, B), which shows no effect of non-workplace-based, community-based interventions in promoting dietary change. There is evidence (also from the above review) of good quality (1&2+, B), which shows that supermarket-based interventions can have an effect on food purchases, but only during the period of the intervention.	1&2+, B	Ciliska D, Miles E, O'Brien MA, Turl C, Tomasik HH et al. (1999) The effectiveness of community interventions to increase fruit and vegetable consumption in people four years of age and older. (45) Dundas, ON, Canada: Ontario Ministry of Health, Region of Hamilton-Wentworth, Social and Public Health Services Division	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Service design Setting – community	Targeted behavioural change programmes with tailored advice appear to change travel behaviour of motivated groups. Associated actions such as subsidies for commuters may also be effective.	1++	Body of evidence from one systematic review (1++) supports: Ogilvie D, Egan M, Hamilton V, Petticrew M (2004) Promoting walking and cycling as an alternative to using cars: systematic review. British Medical Journal 329: 763–766 [see comment] [Review]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Service design Setting – all	Auditing the needs of all local users can help engage all potential local partners and establish local ownership.	3	Three sets of case studies support (all grade 3): Sustrans (2004) Walking and cycling: an action plan.. London: Department for Transport Department for Transport, Transport 2000 (2003) Trust – Good Practice Unit. Walking: the way ahead – report from the national seminar series. London: Department for Transport Derek Hadden Consultancy, McGuigan D, Scottish Executive Central Research Unit (1999) Review of safer routes to school in Scotland. Edinburgh: The Stationery Office	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service design	Interventions may be ineffective unless fundamental issues are addressed, such as individual confidence to change behaviour, cost and availability; pre-existing concerns such as poorer taste of healthier foods and confusion over mixed messages; the perceived 'irrelevance' of healthier eating to young people; and the potential risks (including perception of risk) associated with walking and cycling.	3	Body of evidence from 14 corroborative studies support (majority 3) Dietary change: Wrigley et al. (2003) (BA; 2+); Whelan et al. (2002) (qualitative); White et al. (2004) (cross-sectional); Knox et al. (2001) (qualitative); Dibsdall et al. (2002) (qualitative) Physical activity: Cole-Hamilton et al. (2002) (systematic review); Derek Halden Consultancy (1999); Dixey (1999, 1998) (survey/interviews); DiGuiseppi (1998) (cross-sectional); Coakley et al. (1998) (qualitative); Jones (2001) (BA/survey; 2+); Hillman (1993) (cross-sectional)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See References on pages 391–417 of the cited publication for full details.
Service design Targeting specific population groups	Addressing safety concerns in relation to walking and cycling may be particularly important for females, and children and young people and their parents.	3	Four corroborative studies support: Cross-sectional: Foster C, Hillsdon M, Thorogood M (2004) Environmental perceptions and walking in English adults. Journal of Epidemiology & Community Health 58: 924–928 Qualitative: Coakley EH, Rimm EB, Colditz G, Kawachi I, Willett W (1998) Predictors of weight change in men: results from the Health Professionals Follow-up Study. International Journal of Obesity 22: 89–96 Mulvihill C, Rivers K, Aggleton P (2000) Physical activity 'at our time'. London: Health Education Authority. Davis A, Jones L (1996) Environmental constraints on health: listening to children's views. Health Education Journal 55: 363–374	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Service design	Behavioural/educational interventions to increase physical activity can be moderately effective, particularly for walking and non-facility-based activities, although increases may not be sustained over time.		Body of evidence variable but largely supportive Four systematic reviews and 12 RCTs (1++/1+) Systematic reviews had variable results with some support: Hillsdon and Thorogood (1996)[248] (1++); Eden et al. (2002)[249] (1++); Eakin et al. (2000)[250] (1++); Morgan (2005)[251] (1+) Nine of 13 more recent and/or UK-based RCTs support: Dzator et al. (2004)[233] (1+); Simkin-Silverman et al. (2003)[227] (1++); Stewart et al. (2001)[235] (1+); Coleman et al. (1999)[238] (1+); Dunn et al. (1999)[239] (1+); Pereira et al. (1998)[242] (1+); Harland et al. (1999)[252] (1++); Stevens et al. (1998)[169] (1+); Elley et al. (2003)[240] (1++) One RCT suggests positive trend: Hillsdon (2002)[241] (1+) Three RCTs do not support: Jeffery (1999)[231] (1±); Lamb et al. (2002)[244] (1+); Schmitz et al. (2003)[237] (1+) One systematic review (3) noting high attrition in exercise referral studies: Gidlow et al. (2005)[253] [This review is treated as a review of observational studies, hence grading]	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Resources				
Investing in staff	There is limited UK evidence to indicate that, in terms of engaging schools, it is important to enlist the support of key school staff.	2+	One paper [Anderson (2000), (2+)] included in (2+) review: Woolfe J, Stockley L (2005) Nutrition health promotion in schools in the UK: learning from Food Standards Agency funded schools research. Health Education Journal 64: 218–228	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Information resources	Books, magazines and television programmes are an important source of information, and actively involving media providers may improve the effectiveness of interventions.	3	Wardle J, Rapoport L, Miles A, Afuape T, Duman M (2001) Mass education for obesity prevention: the penetration of the BBC's 'Fighting Fat, Fighting Fit' campaign. Health Education Research 16: 343–355	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE
Information resources	There is evidence for small but important beneficial effects of interventions that aim to improve dietary intake (such as videos, interactive demonstrations, and changing food provision at nursery school) so long as these interventions are not solely focused on nutrition education.	2+	Eight of the nine studies: Dennison et al. (2004)[117] (1+); He (2004)[112] (1+); Healthy Start[115–116] (2++); Hip-Hop[110–111] (1+); Koblinsky et al. (1992)[122] (2+); McGarvey et al. (2004)[123] (2+); Reilly and McDowell (2003)[124] (1+); STRIP[113–125] (1+) One CBA on education alone showed no effect: Horodynski et al. (2004)[126] (2–)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Information resources Environmental improvements	Environmental improvements in stairwells, such as decoration, motivational signs and music, may increase stair use. Posters alone may be ineffective, or effective only while they are in place.	2+/++	Body of evidence variable. Two ITS and one BA One ITS supports: Kerr NA, Yore MM, Ham SA, Dietz WH (2004) Increasing stair use in a worksite through environmental changes. American Journal of Health Promotion 18: 312–315 (2++) One BA of posters plus email supports in the short term only: Vanden Auweele Y, Boen F, Schapendonk W, Dornez K (2005) Promoting stair use among female employees: the effects of a health sign followed by an e-mail. Journal of Sport & Exercise Psychology 27: 188–196 (2+) One ITS of posters alone does not support: Kerr J, Eves F, Carroll D (2001) Can posters prompt stair use in a worksite environment? Journal of Occupational Health 43: 205–207 (2++)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Information resources	Point-of-purchase schemes in shops, supermarkets, restaurants and cafés can be effective in improving dietary intakes at least in the short term, particularly if accompanied by supporting education, information and promotion. There is some evidence that longer-term, multi-component interventions may show greater effects.	2++	Body of evidence variable but generally supportive from four systematic reviews of non-randomised studies and three RCTs Systematic reviews support: Roe et al. (1997)[291] (1++); Seymour et al. (2004)[206] (2++); Matson-Koffman et al. (2005)[292] (2+); Holdsworth and Haslam (1998)[293] (2+) One RCT suggests trend: Kristal (1997) [294] (1+) One RCT suggests low-fat alternative acceptable: Stubenitsky et al. (2000)[295] (1+) One RCT does not support: Steenhuis et al. (2004)[296] (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE See numbered References on pages 391–417 of the cited publication for full details.

Information resources	Point-of-decision prompts or educational materials such as posters and banners have a weak positive effect on stair walking.	2+	Body of evidence from two systematic reviews and two BA studies generally suggest weak positive and/or short-term effect Systematic reviews: Foster C, Hillsdon M (2004) Changing the environment to promote health-enhancing physical activity. Journal of Sports Science 22: 755–769 (2+) Kahn EB, Ramsey LT, Brownson RC, Heath GW, Howze EH, Powell KE et al. (2002) The effectiveness of interventions to increase physical activity. A systematic review. American Journal of Preventive Medicine 22: 73–107 (2++) Two BA studies support: Marshall AL, Bauman AE, Patch C, Wilson J, Chen J. (2002) Can motivational signs prompt increases in incidental physical activity in an Australian health-care facility? Health Education Research 17: 743–749 One BA study(2+) does not support: Adams J, White M (2002) A systematic approach to the development and evaluation of an intervention promoting stair use. Health Education Journal 61: 272–286	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Information resources	Interventions that incorporate novel educational and promotional methods, such as videos and computer programmes, may improve dietary intake.	3	Three RCTs support: Winett et al. (1988); Winett et al. (1991) both cited in Roe L, Hunt P, Bradshaw H, Rayner M. (1997) Health promotion interventions to promote healthy eating in the general population: a review. London: Health Education Authority. Health Promotion Effectiveness Reviews (1++) Anderson E, Winett R, Wojcik J et al. (2001) A computerized social cognitive intervention for nutrition behavior: direct and mediated effects of fat, fiber, fruits and vegetables, self efficacy, and outcome expectations among shoppers. Annals of Behavioral Medicine 23: 88–100 (1+)	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Characteristics of health systems and services: at national, regional and local levels that promote and support health-related behaviour change. Physical activity – exercise referral, policy, and urban planning and design, and behaviour change.

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Stewardship and leadership				
Policy-related Supportive environment	**National policies on physical activity** The evidence from one (3–) study suggests there may be an association between national policies on physical activity, which include a focus on improving the environment, and increased recreational physical activity and sport. Based on a Finnish Study. Authors state: '*It is difficult to assess the extent to which the data from this study are applicable to the UK population or setting. There are many cultural and political differences that may mean that the findings from this study are unique to the Finnish situation. However, it also may be likely that the study illustrates findings that are applicable to many other settings or countries. In the reviewers' opinions the central finding – that Finland's comprehensive approach to policy development has led to increases in physical activity – has important implications for policy in the UK.*'	3– (1 study)	Vuori I, Lankenau B, Pratt M (2004) Physical activity policy and program development: the experience in Finland. Public Health Reports 119: 331–345	NICE PHCC – Physical Activity (December 2006) Physical activity and the environment. Review Four: Policy. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Policy-related Supportive environment	**National transport-related policies** The evidence from one (3–) study suggests there may be an association between national transport-related policies that include an environmental modification component and improved levels of walking and cycling compared with countries without such policies. The study compares data from Canada, USA and 10 European countries. Authors state: '*Data from the UK were included in the study, but there was no specific analysis of UK transport policy, and no comparison with policies of the Netherlands or Germany. It is therefore difficult to assess the extent to which these findings are applicable to the UK. As above, there is likely to be a high degree of cultural and political variation between countries that may influence the applicability of the evidence.*'	3– (1 study)	Pucher J, Dijkstra L (2003) Public health matters. Promoting safe walking and cycling to improve public health: lessons from the Netherlands and Germany. American Journal of Public Health 93: 1509–1516	NICE PHCC – Physical Activity (December 2006) Physical activity and the environment. Review Four: Policy. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Policy-related	**National spatial planning policies** The evidence from one (3–) study suggests there may be an association between national spatial planning policies and levels of walking and cycling, particularly in more urbanised areas. Study based on the Netherlands, but authors state: '*This evidence is likely to be applicable to the UK, particularly in urbanised areas, with some significant adaptations to take account of the town planning and system in the UK, as well as the existing layouts of towns and cities.*'	3– (1 study)	Schwanen T, Dijst M, Dieleman FM (2004) Policies for urban form and their impact on travel: the Netherlands experience. Urban Studies 41 (3): 579–603	NICE PHCC – Physical Activity (December 2006) Physical activity and the environment. Review Four: Policy. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Policy-related Supportive environment	**Urban structure** The evidence from four studies [three (2–) and one (3–)] tends to suggest that interventions to change the urban structure at street level can lead to increased levels of pedestrian activity in the short term. The evidence from two studies [one (3–)and one (2–)] tends to suggest that interventions changing the urban structure at street level can lead to increased numbers of children out in the areas in the long term. However, the evidence from two (2–) studies reported no changes in various measures of activity in the short term in either children or adults, and one (2–) study reported decreased pedestrian flow in the short term. Authors note: '*From this diverse body of evidence it is difficult to interpret any clear trends in how the content of the intervention may have influenced effectiveness. It does appear however that in most cases, a multi-faceted approach was taken to re-designing the urban environment giving priority to the needs of pedestrians.*'	2– (3 studies) 3– (1 study) 2– (2 studies) 2– (1 study)	Layfield R, Chinn L, Nicholls D (2003) Pilot home zone schemes: evaluation of The Methleys, Leeds. UK: Transport Research Laboratory. Newby L, Sloman L (1996) Small steps, giant leaps. A review of the Feet First project and the practice and potential of promoting walking. Leicester: Environ/London: Transport 2000 Trust Painter K (1996) The influence of street lighting improvements on crime, fear and pedestrian street use, after dark. Landscape and Urban Planning 35: 193–201 Skjoeveland O (2001) Effects of street parks on social interactions among neighbors: a place perspective. Journal of Architectural and Planning Research 8 (2): 131–147 Space Syntax Ltd (2002) Millennium Bridge and environs: pedestrian impact assessment study. London: Space Syntax Ltd Space Syntax Ltd (2004a) Trafalgar Square: comparative study of space use patterns following the re-design of the public space. London: Space Syntax Ltd Space Syntax Ltd (2004b) Paternoster Square: comparative study of pedestrian flows following the re-design of the public space. London: Space Syntax Ltd	NICE PHCC – Physical Activity (October 2006) Physical activity and the environment. Review Two: Urban Planning and Design. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Supportive environment	**Urban infrastructure** – community-level summary evidence statement. The evidence from one (2+) quasi-experimental study suggests that the composition of the built environment at community level may have a positive impact on levels of walking and cycling.	2+ (1 study)	Handy S, Cao XY, Mokhtarian PL (2006) Self-selection in the relationship between the built environment and walking – empirical evidence from northern California. Journal of the American Planning Association 72 (1): 55–74	NICE PHCC – Physical Activity (October 2006) Physical activity and the environment. Review Two: Urban Planning and Design. London: NICE Public Health Collaborating Centre
Policy-related Unsupportive environment	**Building placement** – community-level summary evidence statement. The evidence from one (3–) post-only study suggests that building shopping malls at the fringes of cities may lead to a reduction in the number of shopping trips made per month, and a tendency for increased use of motorised vehicles and decreased pedestrian travel as the mode of accessing the shopping mall.	3– (1 study)	Newmark GL, Plaut PO, Garb Y (2004) Shopping travel behaviors in an era of rapid economic transition – evidence from newly built malls in Prague, Czech Republic. Transportation Research Record. Journal of the Transportation Research Board (1898): 165–174	NICE PHCC – Physical Activity (October 2006) Physical activity and the environment. Review Two: Urban Planning and Design. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Policy-related Supportive environment	**Promoting modal shift** There is evidence of good quality (1& 2++, A), which shows an effect of behavioural interventions to encourage people to change their mode of transport to walking or cycling. However, the balance of best available evidence about publicity campaigns, engineering measures, and other interventions suggests that they have not been effective in this area.	2++, A	Ogilvie D, Egan M, Hamilton V, Petticrew M (2004) Promoting walking and cycling as an alternative to using cars: systematic review. British Medical Journal 329: 763–766 [see comment] [Review]	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay
Media and social marketing	**Mass media** There is evidence of variable quality (2–, A), that shows an effect of community-wide mass media interventions on increasing physical activity.	2–, A	Finlay SJ, Faulkner G (2005) Physical activity promotion through the mass media: inception, production, transmission and consumption. Preventive Medicine 40: 121–130 [Abstract: 20058073]	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Media and social marketing	**Media and physical activity** It remains unclear whether media interventions can influence participation in physical activity. There is some evidence that interventions may be more successful if they target motivated subgroups.	2++	One systematic review (2++): Cavill N, Bauman A (2004) Changing the way people think about health-enhancing physical activity: do mass media campaigns have a role? Journal of Sports Science 22: 771–790 One RCT (1+): O'Loughlin J, Paradis G, Meshefedjian G, Kishchuk N (1998) Evaluation of an 8-week mailed healthy-weight intervention. Preventive Medicine 27: 288–295 Two BAs (2+): Huhman M, Potter L, Wong F. et al. (2005) Effects of mass media campaign to increase physical activity among children: Year 1 results of the VERB campaign. Pediatrics 116: 277–284 Merom D, Rissel C, Mahmic A, Bauman A (2005) Process evaluation of the New South Wales Walk Safely To School Day. Health Promotion Journal of Australia 16: 100–106 One BA grade (2–): Tudor-Smith C, Nutbeam D, Moore L, Catford J (1998) Effects of Heartbeat Wales programme over five years on behavioural risks for cardiovascular disease: quasi-experimental comparison of results from Wales and a matched reference area. British Medical Journal 316: 818–822	NICE (2006) Clinical Guideline 43: Obesity. Section 3. Prevention evidence summary: determinants of weight gain and weight maintenance ('energy balance') London: NICE

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Finance				
	NB Discussion of exercise referral schemes does cover subsidised costs for participants – see exercise referral evidence statements below.			
Service delivery				
Service design	**Exercise referral** Evidence statement 1: the evidence from two RCTs (1–) suggests that exercise referral schemes, involving a referral either from or within primary care, can have positive effects on physical activity levels in the short term (6–12 weeks).	1– (2 trials)	Taylor AH, Doust J, Webborn N (1998) Randomised controlled trial to examine the effects of a GP exercise referral programme in Hailsham, East Sussex, on modifiable coronary heart disease risk factors. Journal of Epidemiology and Community Health 52 (9): 595–601 Halbert JA, Silagy CA, Finucane PM et al. (2000) Physical activity and cardiovascular risk factors: effect of advice from an exercise specialist in Australian general practice. Medical Journal of Australia 173 (2): 84–87	NICE PHCC – Physical Activity (2006) A rapid review of the effectiveness of exercise referral schemes to promote physical activity in adults. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	**Exercise referral** Evidence statement 2: however, evidence from four trials (one 1++, three 1–) indicates that such referral schemes are ineffective in increasing physical activity levels in the longer term (over 12 weeks) or over a very long time frame (over 1 year). There is insufficient evidence in any of the four RCTs examined to make any conclusions or recommendations about the effects of exercise referral on health inequalities.	1++ (1 trial) 1– (3 trials)	Taylor AH, Doust J, Webborn N (1998) Randomised controlled trial to examine the effects of a GP exercise referral programme in Hailsham, East Sussex, on modifiable coronary heart disease risk factors. Journal of Epidemiology and Community Health 52 (9): 595–601 (1–) Halbert JA, Silagy CA, Finucane PM et al. (2000) Physical activity and cardiovascular risk factors: effect of advice from an exercise specialist in Australian general practice. Medical Journal of Australia 173 (2): 84–87 (1–) Harrison RA, Roberts C, Elton PJ (2005) Does primary care referral to an exercise programme increase physical activity one year later? A randomized controlled trial. Journal of Public Health (Oxford) 27 (1): 25–32 (1–) Lamb SE, Bartlett HP, Ashley A et al. (2002) Can lay-led walking programmes increase physical activity in middle aged adults? A randomised controlled trial. Journal of Epidemiology and Community Health 56: 246–252 (1++)	NICE PHCC – Physical Activity (2006) A rapid review of the effectiveness of exercise referral schemes to promote physical activity in adults. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	**Older people** There is evidence of from two reviews (1++, A; 1–, C), which shows a small but short-lived effect of home-based, group-based, and educational physical activity interventions on increasing physical activity among older people.	1++, A 1–, C	van-der-Bij AK, Laurant MG, Wensing M (2002) Effectiveness of physical activity interventions for older adults: a review. American Journal of Preventive Medicine 22: 120–133 Conn VS, Minor MA, Burks KJ et al. (2003) Integrative review of physical activity intervention research with aging adults. Journal of the American Geriatrics Society 51: 1159–1168	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups Setting – schools	**School-based interventions** There is evidence of good quality from two reviews (both 1& 2+, A), which shows a moderate positive effect of school-based interventions on increasing physical activity in school-aged young people. In 11–16-year-olds, the positive effects were restricted to young women. There is evidence of good quality (1& 2++, B), which shows a possible effect of non-physical exercise, school-based, interventions on increasing physical activity among children aged 4–10 years. There is evidence of variable quality (1& 2–, B), which shows an effect of non-curricular school-based interventions (particularly those during school breaks) on increasing physical activity.	1&2+, A 1&2++, B 1&2–, B	Dobbins M, Lockett D, Michel I, Beyers J, Feldman L. et al. (2001) The effectiveness of school-based interventions in promoting physical activity and fitness among children and youth: a systematic review. (104) Hamilton, ON, Canada: City of Hamilton, Social and Public Health Services Division Rees R, Harden A, Shepherd J, Brunton G et al. (2001) Young people and physical exercise: a systematic review of research on barriers and facilitators. London: EPPI-Centre Brunton G, Harden A, Rees R, Kavanagh J, Oliver S et al. (2003) Promoting physical activity amongst children outside of physical education classes: a systematic review integrating intervention and qualitative studies. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London Jago R, Baranowski T (2004) Non-curricular approaches for increasing physical activity in youth: a review. Preventive Medicine 39: 157–163	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Setting – community	**Trails** Overall, based on two (3+) studies, the evidence tends to suggest that trail* surface, length and maintenance influence trail use. *Trails are routes and pathways that are open to the public and are used for walking, cycling, picnicking and other recreational activities.	3+ (2 studies)	Brownson RC, Housemann RA, Brown DR, Jackson-Thompson J, King AC, Malone BR, Sallis JF (2000) Promoting physical activity in rural communities: walking trail access, use, and effects. American Journal of Preventive Medicine 18 (3): 235–241 Gordon PM, Zizzi SJ, Pauline J (2004) Use of a community trail among new and habitual exercisers: a preliminary assessment. Preventing Chronic Disease 1 (4): A11	NICE PHCC – Physical Activity (October 2006) Physical activity and the environment. Review Two: Urban Planning and Design. London: NICE Public Health Collaborating Centre
Service design Setting – community	**Trails** The evidence from two (3+) studies tends to suggest that trails* can lead to self-reported increases in physical activity in the short term[2] and long term[1]. There is insufficient evidence to assess any differential effect of the interventions by socio-demographic or cultural factors. *Trails are routes and pathways that are open to the public and are used for walking, cycling, picnicking and other recreational activities.	3+ (2 studies)	[1]Brownson RC, Housemann RA, Brown DR, Jackson-Thompson J, King AC, Malone BR, Sallis JF (2000) Promoting physical activity in rural communities: walking trail access, use, and effects. American Journal of Preventive Medicine 18(3): 235–241 [2]Gordon PM, Zizzi SJ, Pauline J (2004) Use of a community trail among new and habitual exercisers: a preliminary assessment. Preventing Chronic Disease 1 (4): A11	NICE PHCC – Physical Activity (October 2006) Physical activity and the environment. Review Two: Urban Planning and Design. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Setting – community	**Trails** Overall, there is some evidence from two (3+) studies that trails* can be perceived as safe places to use for physical activity, specifically walking. *Trails are routes and pathways that are open to the public and are used for walking, cycling, picnicking and other recreational activities.	3+ (2 studies	Brownson RC, Housemann RA, Brown DR, Jackson-Thompson J, King AC, Malone BR, Sallis JF (2000) Promoting physical activity in rural communities: walking trail access, use, and effects. American Journal of Preventive Medicine 18 (3): 235–241 Gordon PM, Zizzi SJ, Pauline J (2004) Use of a community trail among new and habitual exercisers: a preliminary assessment. Preventing Chronic Disease 1 (4): A11	NICE PHCC – Physical Activity (October 2006) Physical activity and the environment. Review Two: Urban Planning and Design. London: NICE Public Health Collaborating Centre
Service design Setting – community	**Urban parks*** Community-level summary evidence statement: overall, based on one (2+) controlled before-and-after study, the evidence suggests that modification and promotion of parks may increase walking and can raise the awareness of parks. *Urban parks are typically found in or near residential areas and are used for leisure activities and recreational play, including walking, cycling, playing and picnicking.	2+ (1 study)	New South Wales (NSW) Health Department (2002) Walk it: active local parks: the effect of park modifications and promotion on physical activity participation: summary report. North Sydney, Australia: NSW Health Department	NICE PHCC – Physical Activity (October 2006) Physical activity and the environment. Review Two: Urban Planning and Design. London: NICE Public Health Collaborating Centre
Service design Setting – community	**Foreshore** summary evidence statement: overall, the evidence from one (3–) post-only study suggests that building a boardwalk along a foreshore may increase levels of self-reported physical activity, particularly in people previously active.	3– (1 study)	Mangham C, Viscount PW (1997) Along the boardwalk: effects of a boardwalk on walking behaviour within a Nova Scotia community. Canadian Journal of Public Health 88 (5): 325–326	NICE PHCC – Physical Activity (October 2006) Physical activity and the environment. Review Two: Urban Planning and Design. London: NICE Public Health Collaborating Centre

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Setting – workplace	**Work-based interventions** There is evidence of good quality (1& 2+, A), which shows a moderate positive effect of workplace exercise programmes on increasing physical activity.	2+, A	Proper KI, Koning M, van-der-Beek AJ et al. (2003) The effectiveness of worksite physical activity programs on physical activity, physical fitness, and health. Clinical Journal of Sport Medicine 13: 106–117	Jepson R, Harris F, MacGillivray S, Kearney N, Rowa-Dewar N (2006) A review of the effectiveness of interventions, approaches and models at individual, community and population level that are aimed at changing health outcomes through changing knowledge attitudes and behaviour. Cancer Care Research Centre, University of Stirling/Alliance for Self Care, University of Abertay

Characteristics of health systems and services: at national, regional and local levels that promote and support health-related behaviour change. Statins – Proactive case finding and retention and improving access to services in disadvantaged areas.

Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Stewardship and leadership				
National programme Also listed under Service delivery – see below	There is evidence from two case studies evaluating phase one (+)[17] and phase two (–)[18] of Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) to suggest that adding cardiovascular screening to state breast and cervical cancer screening programmes reaches financially disadvantaged and minority women and identifies a number at risk of coronary heart disease. No conclusions can be made on participation rates or physician referrals as these outcomes have not been reported. Applicability and transferability of these programmes to a UK setting requires further study.	+[17] –[18]	[17]Byers T, Bales V, Massoudi B et al. (1999) Cardiovascular disease prevention for women attending breast and cervical cancer screening programs: the WISEWOMAN projects. Preventive Medicine 28 (5): 496 [18]Will JC, Farris RP, Sanders CG, Stockmyer CK, Finkelstein EA (2004) Health promotion interventions for disadvantaged women: overview of the WISEWOMAN projects. Journal of Women's Health 13 (5): 484–502	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Unsupportive environment Also listed under Service delivery – see below	A number of barriers and enablers to accessing services were identified in five qualitative studies involving people from socially deprived areas [(++)[6], (+)[7–10]]. Common themes were a lack of understanding of services and treatments and the need for flexible services; the inconvenient timing of appointments and the lack of transport were both cited as barriers, with the latter overcome by the provision of home visits. Personal factors such as minimising the severity of their illness, taking a 'cope and don't fuss' approach, and fear of blame were also reported as barriers. The absence of cardiac rehabilitation services and long waiting lists was also noted, and for some patients the reluctance to attend group care [(++)[6], (+)[7,8], (–)[9]]. Healthcare providers agreed on the need to expand cardiac rehabilitation services to reach out into communities, and that the expansion would need to take place in the community (+)[10].	++ (1 qualitative study) + (4 qualitative studies)	[6]Tod AM, Read C, Lacey A, Abbott J (2001) Barriers to uptake of services for coronary heart disease: qualitative study. BMJ 323 (7306): 214 [7]Tod AM (2002) 'I'm still waiting...': barriers to accessing cardiac rehabilitation services. Journal of Advanced Nursing 40 (4): 421–431 [8]Richards H, Reid M, Watt G (2003) Victim-blaming revisited: a qualitative study of beliefs about illness causation, and responses to chest pain. Family Practice 20 (6): 711–716 [9]East L, Brown K, Radford J, Roosink S, Twells C (2004) 'She's an angel in disguise.' The evolving role of the specialist community heart nurse. Primary Health Care Research and Development 5 (4): 359–366 [10]Macintosh MJ (2003) Secondary prevention for coronary heart disease: a qualitative study. British Journal of Nursing 8: 462–469	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Finance				
Financial incentive to providers Also listed under Service delivery – see below	There is evidence from one case study (+) to suggest that in an area of deprivation, a project funding a nurse and exercise worker to develop practice nurse and GP skills in identifying and monitoring patients and facilitate the provision of exercise facilities for CHD patients may lead to a small improvement in cholesterol testing of patients. 72.5% of control patients reported receiving cholesterol tests in the past year compared with 77.8% of the intervention group, $P = 0.002$. No differences were seen in blood pressure measurement.	+	Lacey EA, Kalsi GS, Macintosh MJ (2004) Mixed method evaluation of an innovation to improve secondary prevention of coronary heart disease in primary care. Quality in Primary Care 12 (4): 259–265	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Cost concern by providers Also listed under Service delivery – see below	Evidence from one qualitative study of service users with severe mental illness, and primary care staff and community mental health teams, indicates a range of perceived obstacles to CHD screening. These include lack of appropriate resources in existing services; anticipation of low uptake rates by patients with severe mental illness (SMI); perceived difficulty in making lifestyle changes among people with SMI; patients dislike having blood tests and lack of funding for CHD screening services, or it not being seen as a priority by Trust management. There was some disagreement about the best way to deliver appropriate care, and authors concluded that increased risk of CHD associated with SMI and antipsychotic medications requires flexible solutions with clear lines of responsibility for assessing, communication and managing CHD risks.	++ (1 qualitative study)	Wright CA, Osborn DP, Nazareth I, King MB (2006) Prevention of coronary heart disease in people with severe mental illnesses: a qualitative study of patient and professionals' preferences for care. BMC Psychiatry 6: 16	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Financial incentive to providers Also listed under Service delivery – see below	Evidence from three studies indicated the importance of providing additional staff resources to encourage or support the uptake of services in people living in socially deprived areas. One US moderate quality RCT (+)[2] in a predominantly black population from a low income area found improved uptake of services with a tracking and outreach intervention, where community health workers supported patients in completing referral to their physician for high blood pressure. Evidence from one non-comparative UK case study (+)[3] indicates that additional resources for tertiary cardiology may have reduced socioeconomic inequities in angiography without being specifically targeted at the needier, more deprived groups, but the impact on revascularisation equity is not yet clear. Evidence from one UK case study (–)[4] suggested that a project funding one nurse and one exercise worker to support GP practices in a socially deprived area increased the practice's provision of cardiac rehabilitation services such as exercise programmes, psychological and social support and dietary advice. Project nurses worked directly with practice nurses and GPs to develop their skills in identifying and monitoring patients with CHD, giving lifestyle advice and ensuring optimum medication regimes, and an exercise worker worked with practices and the community to identify and facilitate the provision of exercise resources suitable for CHD patients.	+[2] (1 RCT) +[3] (1 study) –[4] (1 case study)	[2]Krieger J, Collier C, Song L, Martin D (1999) Linking community-based blood pressure measurement to clinical care: a randomized controlled trial of outreach and tracking by community health workers. American Journal of Public Health 89 (6): 856–861 [3]Manson-Siddle CJ, Robinson MB (1999) Does increased investment in coronary angiography and revascularisation reduce socioeconomic inequalities in utilisation? Journal of Epidemiology & Community Health 53 (9): 572–577 [4]Lacey EA, Kalsi GS, Macintosh MJ (2004) Mixed method evaluation of an innovation to improve secondary prevention of coronary heart disease in primary care. Quality in Primary Care 12 (4): 259–265	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Cost concern by Providers	One qualitative study of cardiac rehabilitation coordinators in Scotland (+), found that age was widely perceived to influence access, both during initial assessment and in assessments for exercise components. Focus groups revealed that staff appeared to have knowledge of the benefits for older people but that scarcity of resources prevented them offering more accessible and appropriate services.	+ (1 qualitative study)	Clark AM, Sharp C, Macintyre PD (2002) The role of age in moderating access to cardiac rehabilitation in Scotland. Ageing and Society 22 (4): 501–515	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University
Service delivery				
Targeting specific population groups	There is evidence from three case studies suggesting interventions inviting specific populations (South Asians, homeless people or patients with psychosis) to attend risk screening at their GP practice or primary care clinic may identify a number of people at risk of coronary heart disease [outcomes reported in two case studies (+)[1], (–)[2]], although it is difficult to draw firm conclusions on how well such interventions are attended due to poor reporting of participation rates (outcomes reported in three case studies).	+[1] –[2] +[3]	[1]Macnee CL, Hemphill JC, Letran J (1996) Screening clinics for the homeless: evaluating outcomes. Journal of Community Health Nursing 13 (3): 167–177 [2]Akhtar S (2001) Interventions to improve heart health in the Asian community. Community Nurse 7 (4): 13–14 [3]Osborn DP, King MB, Nazareth I (2003) Participation in screening for cardiovascular risk by people with schizophrenia or similar mental illnesses: cross sectional study in general practice. BMJ 326 (7399): 1122–1123	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Targeting specific population groups Setting – hospital	There is evidence from one small case study (+)[4] that screening long-term psychiatric hospital patients can identify previously undetected coronary heart disease. Screening 64 patients identified one new case of established CHD and 22 previously undetected test abnormalities. Participation in the intervention was high (64/94, i.e. 66%) but only a small proportion consented to having blood tests.	+[4]	[4]Haw C, Kirk J, Merriman S, Stubbs J. (2004) Healthy Hearts? Screening long-stay psychiatric patients for risk factors for coronary heart disease. International Journal of Therapy and Rehabilitation 11 (3): 113–119	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University
Targeting specific population groups Service design	There is evidence from one RCT (+)[5] that in an area of deprivation, postal prompts to patients and their GPs following an acute coronary event improves monitoring of patients risk and the likelihood of the patient having at least one consultation with their GP or nurse.	+[5]	Feder G, Griffiths C, Eldridge S, Spence M (1999) Effect of postal prompts to patients and general practitioners on the quality of primary care after a coronary event (POST): randomised controlled trial. BMJ 318: 1522–1526	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Training	There is evidence from one case study (+)[6] to suggest that in an area of deprivation, a project funding a nurse and exercise worker to develop practice nurse and GP skills in identifying and monitoring patients and facilitate the provision of exercise facilities for CHD patients may lead to a small improvement in cholesterol testing of patients. 72.5% of control patients reported receiving cholesterol tests in the past year compared with 77.8% of the intervention group, *P* = 0.002. No differences were seen in blood pressure measurement.	+[6]	[6]Lacey EA, Kalsi GS, Macintosh MJ (2004) Mixed method evaluation of an innovation to improve secondary prevention of coronary heart disease in primary care. Quality in Primary Care 12 (4): 259–265	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University
Targeting specific population groups Service design	There is weak quality evidence from two case studies (–)[7,8] to suggest that offering cardiovascular risk assessment opportunistically to Afro-Caribbean general practice patients or patients from a range of socioeconomic categories may identify a number of people at risk of CHD. However, the interventions require further research from well conducted studies before firm conclusions can be made.	–[7,8]	Molokhia M, Oakeshott P, Molokhia M, Oakeshott P (2000) A pilot study of cardiovascular risk assessment in Afro-Caribbean patients attending an inner city general practice. Family Practice 17 (1): 60–62 Davis BS, McWhirter MF, Gordon DS (1996) Where needs and demands diverge: health promotion in primary care. Public Health 110 (2): 95–101	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Settings – workplace, school	There is evidence from three studies to suggest that workplace cardiovascular screening provided in schools or businesses in multi-ethnic low-income areas [CBA (–)[10], case study (–)[11]], or in factory workers [case study (+)[12]] is moderately well attended. Results suggest that a number of participants were identified for referral to a physician for follow-up [outcome reported in two studies: CBA (–)[10], case study (–)[11]]. No firm conclusions can be made on patients' completion of follow-up as this was only reported in one poor-quality study [case study (–)[11]].	–[10] –[11] +[12]	[10]O'Loughlin JL, Renaud L, Paradis G, Meshefedjian G (1996) Screening school personnel for cardiovascular disease risk factors: short-term impact on behavior and perceived role as promoters of heart health. Preventive Medicine 25: 660–667 [11]Margolis LH, Richmond A, Brown T, Jackson S (2003) Working with African American small businesses to implement an on-site cardiovascular health program. Journal of Health Care for the Poor and Underserved 14 (3): 331–340 [12]Chatterjee DA (1997) A multicentre health promotion programme for coronary heart disease. Occupational Health 9(1): 12–15	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University
Service design Setting – prison	Evidence from one UK case study (–)[14] evaluating the establishment of a health screening clinic in a prison, indicated a moderate 35% voluntary uptake by the inmates. There were active interventions following the screening for 87 (34%) inmates and 13 (32%) staff screened. These ranged from simple anti-smoking and dietary advice to more formal medical interventions to manage raised blood pressure and cholesterol. Uptake data should be viewed cautiously, as the number of potential participants was not reported.	–[14]	[14]Biswas S, Chalmers C, Woodland A (1997) Risk assessment of coronary heart disease in a male prison population and prison staff. Prison Service Journal 110: 19–21	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Setting – community	Two case studies suggest that offering blood pressure measurements at community sites in areas of deprivation can identify a number of people with elevated blood pressure. No firm conclusion can be made on participation rates as these were not reported in the studies. One UK case study (+)[15] found 221 people out of 758 first-time users of self-reading sphygmomanometers placed in public sites had elevated blood pressure measurements. No firm conclusions can be made regarding physician follow-up, as the researchers were unable to contact all of these people. One US RCT (+)[16] providing blood pressure measurements at a range of community sites identified 31.4% with elevated blood pressure and 10.7% with severely elevated blood pressure. Transferability and cost-effectiveness of such interventions requires further study.	+[15] +[16]	[15]Hamilton W, Round A, Goodchild R, Baker C (2003) Do community based self-reading sphygmomanometers improve detection of hypertension? A feasibility study. Journal of Public Health Medicine 25 (2): 125–130 [16]Krieger J, Collier C, Song L, Martin D (1999) Linking community-based blood pressure measurement to clinical care: a randomized controlled trial of outreach and tracking by community health workers. American Journal of Public Health 89 (6): 856–861	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	There is evidence from two case studies evaluating phase 1 (+)[17] and phase 2 (–)[18] of the Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) to suggest that adding cardiovascular screening to state breast and cervical cancer screening programmes reaches financially disadvantaged and minority women and identifies a number at risk of coronary heart disease. No conclusions can be made on participation rates or physician referrals as these outcomes have not been reported. Applicability and transferability of these programmes to a UK setting requires further study.	+[17] –[18]	[17]Byers T, Bales V, Massoudi B et al. (1999) Cardiovascular disease prevention for women attending breast and cervical cancer screening programs: the WISEWOMAN projects. Preventive Medicine 28 (5): 496 [18]Will JC, Farris RP, Sanders CG, Stockmyer CK, Finkelstein EA (2004) Health promotion interventions for disadvantaged women: overview of the WISEWOMAN projects. Journal of Women's Health 13 (5): 484–502	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	Evidence suggests that culturally sensitive education sessions that include an element of cardiovascular risk assessment may be effective in the identification of at-risk individuals. Two moderate-quality studies evaluated educational interventions in black and minority community groups (+)[19] and Turkish immigrants at a mosque (+)[20], offering blood pressure measurements. Participation was high and revealed a number of patients with uncontrolled hypertension or with elevated blood pressure readings. Evidence from one case study (–)[21], in which health checks were conducted before and after a church-based educational intervention with predominantly black participants, should be viewed more cautiously owing to concerns of transferability and applicability.	+[19,20] (2 case studies) +[21] (1 before-and-after study) –[21] (1 case study)	Huckerby C, Hesslewood J, Jagpal P (2006) Taking health care into black and minority communities – a pharmacist-led initiative. Pharmaceutical Journal 276 (7404): 680–682 Bader A, Musshauser D, Sahin F, Bezirkan H, Hochleitner M (2006) The Mosque Campaign: a cardiovascular prevention program for female Turkish immigrants. Wiener Klinische Wochenschrift 118 (7–8): 217–223 Oexmann MJ, Ascanio R, Egan BM (2001) Efficacy of a church-based intervention on cardiovascular risk reduction. Ethnicity & Disease 11 (4): 817–822	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	Evidence from one qualitative study of service users with severe mental illness, and primary care staff and community mental health teams, indicates a range of perceived obstacles to CHD screening. These include lack of appropriate resources in existing services; anticipation of low uptake rates by patients with SMI; perceived difficulty in making lifestyle changes among people with SMI; patients dislike having blood tests; lack of funding for CHD screening services or it not being seen as a priority by Trust management. There was some disagreement about the best way to deliver appropriate care, and authors concluded that increased risk of CHD associated with SMI and antipsychotic medications requires flexible solutions with clear lines of responsibility for assessing, communicating and managing CHD risks.	++[22] (1 qualitative study)	Wright CA, Osborn DP, Nazareth I, King MB (2006) Prevention of coronary heart disease in people with severe mental illnesses: a qualitative study of patient and professionals' preferences for care. BMC Psychiatry 6: 16	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	Well-conducted research is required examining the effectiveness of improving retention of patients at risk of, or with, CHD within services. Evidence from the one systematic review identified (+) highlights the dearth of literature reporting the evaluation of simple interventions aimed at improving adherence to cardiac rehabilitation for all patients or specific groups of patients. The systematic review identified few studies of sufficient quality to enable the recommendation of specific methods to improve adherence to outpatient cardiac rehabilitation. The most promising approach was the use of self-management techniques based around individualised assessment, problem-solving, goal setting and follow-up. This was most likely to be effective in improving specific aspects of rehabilitation, including diet and exercise.	+ (1 systematic review)	[8]Beswick AD, Rees K, Griebsch I, Taylor FC, Burke M (2004) Provision, uptake and cost of cardiac rehabilitation programmes: improving services to under-represented groups. Health Technology Assessment 8 (41)	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	Evidence from one systematic review (+) highlighted the need for trials of interventions applicable to all patients and targeting specific under-represented groups. The review revealed some evidence to support the use of approaches aimed at motivating patients, regular support and practice assistance from trained lay volunteers, and a multifaceted approach for the coordination of transfer of care from hospital to general practice. The applicability and transferability of these programmes to disadvantaged populations requires further study.	+ (1 systematic review)		Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design	A number of barriers and enablers to accessing services were identified in five qualitative studies involving people from socially deprived areas [(++)[6], (+)[7–10]]. Common themes were a lack of understanding of services and treatments and the need for flexible services; the inconvenient timing of appointments and the lack of transport were both cited as barriers, with the latter overcome by the provision of home visits. Personal factors such as minimising the severity of their illness, taking a 'cope and don't fuss' approach, and fear of blame were also reported as barriers. The absence of cardiac rehabilitation services and long waiting lists was also noted, and for some patients the reluctance to attend group care [(++)[6], (+)[7,8], (–)[9]]. Healthcare providers agreed on the need to expand cardiac rehabilitation services to reach out into communities, and that the expansion would need to take place in the community (+)[10].	++ (1 qualitative study) + (4 qualitative studies)	[6]Tod AM, Read C, Lacey A, Abbott J (2001) Barriers to uptake of services for coronary heart disease: qualitative study. BMJ 323 (7306): 214 [7]Tod AM (2002) 'I'm still waiting...': barriers to accessing cardiac rehabilitation services. Journal of Advanced Nursing 40 (4): 421–431 [8]Richards H, Reid M, Watt G (2003) Victim-blaming revisited: a qualitative study of beliefs about illness causation, and responses to chest pain. Family Practice 20 (6): 711–716 [9]East L, Brown K, Radford J, Roosink S, Twells C (2004) 'She's an angel in disguise.' The evolving role of the specialist community heart nurse. Primary Health Care Research and Development 5 (4): 359–366 [10]Macintosh MJ (2003) Secondary prevention for coronary heart disease: a qualitative study. British Journal of Nursing 8: 462–469	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Service design Targeting specific population groups	A number of barriers and enablers to accessing services were identified in five qualitative studies involving Asian populations [(++)[11], (+)[12–14]] and Afro-Caribbean populations (+)[15]. Among Asian populations, a range of religious and cultural issues were identified, including female inhibitions, religious practices, family commitments and influence, and 'inappropriate' topics. The need for flexibility in the timing of services was highlighted, and sensitivity in planning activities around religious events was viewed positively. Patients' lack of understanding of services and treatment was noted, including low levels of education and misunderstanding of western medicine, what services were available and how to apply. Communication and language barriers were also perceived. A 'cope and don't fuss' approach among Afro-Caribbean hypertensive patients was a reported barrier to accessing services (+)[15].	++ (1 qualitative study) + (4 qualitative studies)	[11]Netto G, McCloughan L, Bhatnagar A (2007) Effective heart disease prevention: lessons from a qualitative study of user perspectives in Bangladeshi, Indian and Pakistani communities. Public Health 121 (3): 177–186 [12]Vishram S, Crosland A, Unsworth J, Long S (2007) Engaging women from South Asian communities in cardiac rehabilitation. British Journal of Community Nursing 12 (1): 13–18 [13]Naqvi H (2003) Access to primary health care services for South Asian cardiovascular disease patients: health professional perspective. Avon Health Improvement Programme Performance Scheme [14]Lindesay J, Jagger C, Hibbett MJ et al. (1997) Knowledge, uptake and availability of health and social services among Asian Gujarati and white elderly persons. Ethnicity & Health 2 (1–2): 59–69 [15]Higginbottom G (2006) African Caribbean hypertensive patients' perceptions and utilization of primary health care services. Primary Health Care Research and Development 7 (1): 27–38	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Health system theme	Evidence statement	Evidence level	Evidence	Source document
Other resources				
Information resources	Evidence from one low-quality RCT (–) suggests that telephone reminders and postcards to reinforce messages about coronary risk reduction do not produce significant improvements in short-term compliance in patients' prescribed pravastatin treatment. Results should be viewed with caution as the poor quality study is likely to be highly biased and may not be applicable to disadvantaged groups.	– (1 RCT)	Guthrie RM (2001) The effects of postal and telephone reminders on compliance with pravastatin therapy in a national registry: results of the first myocardial infarction risk reduction program. Clinical Therapeutics 23: 970–980	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University
Information resources	There is evidence from one RCT (+) that, in an area of deprivation, postal prompts to patients and their GPs following an acute coronary event improved the likelihood of the patient having at least one consultation with their GP or nurse.	+ (1 RCT)	Feder G, Griffiths C, Eldridge S, Spence M. (1999) Effect of postal prompts to patients and general practitioners on the quality of primary care after a coronary event (POST): randomised controlled trial. BMJ 318: 1522–1526	Turley R, Weightman A, Morgan F, Sander L, Morgan H, Kitcher H, Mann M (2007) Proactive case finding and retention and improving access to services in disadvantaged areas (Health Inequalities): Statins. Draft report to the National Institute for Health and Clinical Excellence. Cardiff: Support Unit for Research Evidence (SURE), Cardiff University

Characteristics of health systems and services: at national, regional and local levels that promote and support health-related behaviour change. Prevention of cardiovascular disease.

Source documents:

Pennant M, Greenheld W, Fry-Smith A, Bayliss S, Davenport C, Hyde C (Sep 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 1. Birmingham: West Midlands Health Technology Assessment Collaboration
Pennant M, Greenheld W, Fry-Smith A, Bayliss S, Davenport C, Hyde C (Oct 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 2. Birmingham: West Midlands Health Technology Assessment Collaboration
Pennant M, Greenheld W, Fry-Smith A, Bayliss S, Davenport C, Hyde C (Nov 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 3. Birmingham: West Midlands Health Technology Assessment Collaboration

These three reports addressed the question:

Which multiple risk-factor interventions are effective and cost effective in the primary prevention of cardiovascular disease (CVD) within a given population? [11]

and

Where the data allow, how does the effectiveness and cost-effectiveness of interventions vary between different population groups?

Thirty-eight interventions were included. which took multiple risk factor approaches to preventing CVD. These included addressing two or more risk factors through one or more of the following types of intervention:

- educational/behavioural (including the use of mass media)
- fiscal
- environmental
- legislative

The expected outcomes of interest were population changes in: rates or levels of CVD mortality or morbidity; the biochemical or physiological precursors of CVD; behaviour associated with the risk of developing CVD.

[11] The three effectiveness reports do not address the cost-effectiveness aspect of this question and these findings will be detailed in a separate report.

Table A1: Phase 1 – Overview of evidence statements

Question 1 Phase 1: Evidence statement for programmes addressing prevention of CVD at population level		
Evidence statement	**Programmes**	**Quality grading/evidence level**
This is an interim statement based on the first part of a three-stage review. No programmes used legislative or fiscal changes and there were no natural experiments. For the outcomes of CVD risk factors and behaviours there was a consistent trend in direction of effect in favour of programmes of both types. The size of these effects could not be quantified. There was little useful information on the effect of the programmes on CVD morbidity and mortality.	11 directly relevant programmes reported in 41 publications were identified for this report. The majority (9) consider the effectiveness of population programmes using education and mass media. Two others focus on assessing levels of all risk factors and providing advice in general populations. The programmes were: 1. The Bootheel Project 2. The British Family Heart Study 3. The Danish Municipality Project 4. The German Cardiovascular Project 5. The Minnesota Heart Health Program 6. The Norsjo Project 7. The North Karelia Project 8. OXCHECK 9. The Pawtucket Heart Health Program 10. The Standford Five City Project 11. The South Carolina Cardiovascular Prevention/Heart to Heart Project 2	The education and mass media programmes were generally evaluated using controlled before–after studies with quality gradings ranging from – to +. The 'screening' programmes were evaluated using RCTs and were both graded +. The apparently lower grading of the RCTs should not imply that they are more open to bias than the controlled before–after studies. **Effectiveness studies included in phase 1** 1. The Bootheel Project (Brownson 1996) 2. The British Family Heart Study (Wood 1994) 3. The Danish Municipality Project (Osler 1993) 4. The German Cardiovascular Prevention Project (Hoffmeister 1996) 5. The Heart to Heart Project (South Carolina Project) (Heath 1995; Wheeler 1991; Croft 1994; Goodman 1994; Smith 1996) 6. The North Karelia Programme (Puska 1979; Salonen 1981; Puska 1983) (Puska 1983) (Puska 1985; Puska 1989) 7. The Norsjo Project (Weinhall 1999) 8. The Minnesota Heart Health Programme (Jacobs 1986; Luepker 1994; Luepker 1996; Mittelmark 1986; Murray 1994;

		Kelder 1993; Perry 1992; Rissel 1995) 9. OXCHECK (Muir 1994; Imperial Cancer Research Fund OXCHECK Study Group 1995) 10. The Pawtucket Heart Health Programme (Elder 1986; Lefebvre 1987; Assaf 1987; Carleton 1995; Eaton 1999; Hunt 1990) 11. The Stanford Five City Project (Farquhar 1985; Taylor 1991; Fortmann 1995; Fortmann 1993; Fortmann 1990; Winkleby 1996; Farquhar 1990) Full citations can be found in the References section of the source document: Pennant et al. (Sept 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 1. Birmingham: West Midlands Health Technology Assessment Collaboration

Table A2: Phase 2 – Overview of phase 2 evidence statements

Question 1 Phase 2: Evidence statement for programmes addressing prevention of CVD at population level – phase 2 of review 1		
Evidence statement	**Programmes**	**Quality grading/evidence level**
This is an interim statement based on the second part of a three-stage review. No programmes used legislative or fiscal changes and there were no natural experiments. For CVD risk factor physiological and behavioural outcomes, there was a mixed pattern across studies, with some outcomes demonstrating no obvious direction of effect and other outcomes demonstrating a direction of effect in favour of programmes. The size of these effects could not be quantified. There was little useful information on the effect of the programmes on CVD morbidity and mortality.	11 directly relevant programmes reported in 28 publications were identified for this report. All publications are concerned with the effectiveness of population programmes using education and mass media, although programmes vary according to the relative contribution of these two components. The programmes were: 1. Action Heart 2. Coeur en Santé St-Henri 3. Di.S.Co 4. The Dutch Heart Health Community Intervention 5. Health and Equality in Finnmark: Batsfjord 6. Health and Inequality in Finnmark: North Cape 7. Heartbeat Wales 8. The Kilkenny Health Project 9. The National Research Program 10. The Otsego-Schoharie Heart Health Program 11. The Stanford Three Community Study	Programmes were generally evaluated using controlled before–after studies with quality gradings ranging from – to +. **Effectiveness studies included in phase 2** 1. Action Heart (Baxter T 1997; Baxter AP 1997) 2. Coeur en Santé St-Henri (O'Loughlin 1995; Paradis 1995; O'Loughlin 1999) 3. Di.S.Co – Sezze District Community Control – project (Giampaoli 1991; Giampaoli 1997) 4. The Dutch Heart Health Community Intervention/Harslag limburg (Ronda 2004a; Schuit 2006; Ronda 2004b; Ronda 2004c; Ronda 2005) 5. The Health and Inequality in Finnmark programme – Båtsfjord (Lupton 2003) 6. The Health and Inequality in Finnmark programme – North Cape (Lupton 2002) 7. Heartbeat Wales (Parish 1987; Smail 1989; Tudor-Smith 1998; Nutbeam 1993) 8. The Kilkenny Health Project (Shelley 1991; Shelley 1995; Collins 1993) 9. The National Research Programme (Gutzwiller 1985) 10. The Otsego–Schoharie Healthy Heart (Nafziger 2001) (Barthold 1993)

		11. The Stanford Three Community Study (Maccoby 1977; Farquhar 1977; Leventhal 1980; Meyer 1980) Full citations can be found in the references section of the source document: Pennant et al. (Oct 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 2. Birmingham: West Midlands Health Technology Assessment Collaboration

Table A3: Phase 2 – Evidence statements for outcomes of the programmes

<table>
<tr><th colspan="5">Question 1 Phase 2: Evidence statement for programmes addressing prevention of CVD at population level</th></tr>
<tr><th colspan="4">Evidence statements for outcomes</th><th>Evidence overview notes</th></tr>
<tr><td>Strong trend</td><td>Moderate Trend</td><td>No evidence</td><td>Little or limited evidence or mixed pattern</td><td rowspan="12">These are interim statements based on the combined data from the first and second parts of a three-stage review.
22 directly relevant programmes reported in 69 publications have been identified across phases I and II of this review of effectiveness.
The majority of publications are concerned with the effectiveness of population programmes using education and mass media, and were generally evaluated using controlled before–after studies with quality gradings ranging from – to +. Two screening programmes have been evaluated using RCTs and were both quality graded +. No programmes have used legislative or fiscal changes and no natural experiments have been identified. It is not possible to quantify the size of these effects across all programmes.
Evidence statements relate to:
i) the effectiveness of programmes to reduce physiological and behavioural risk factors for CVD; and
ii) the nature of community programmes, i.e. setting, target audience, intervention strategies, etc. However, the extent to which the nature of community programmes might influence programme effectiveness has not been addressed as there is inadequate evidence to support evidence statements of this kind (see Table A4).</td></tr>
<tr><td colspan="4">There is currently little useful information on the effect of the programmes on CVD morbidity and mortality.</td></tr>
<tr><td colspan="4">For the CVD risk factor cholesterol, a moderate trend in direction of effect in favour of programmes is observed.</td></tr>
<tr><td colspan="4">For the CVD risk factors diastolic and systolic blood pressure, a moderate trend in direction of effect in favour of programmes is observed.</td></tr>
<tr><td colspan="4">For the CVD risk factor smoking, a moderate trend in direction of effect in favour of programmes is observed.</td></tr>
<tr><td colspan="4">For the CVD risk factor BMI, a strong trend in direction of effect in favour of programmes is observed.</td></tr>
<tr><td colspan="4">For the CVD risk factor blood glucose, there is a mixed pattern across studies with no clear direction of effect.</td></tr>
<tr><td colspan="4">There is currently no evidence on the effect of the programmes on triglyceride levels, HDL/LDL ratio or lipid levels.</td></tr>
<tr><td colspan="4">There is currently no evidence of adverse events associated with these types of programme.</td></tr>
<tr><td colspan="4">For CVD risk factors of dietary change, a strong trend in direction of effect in favour of programmes is observed.</td></tr>
<tr><td colspan="4">There is currently no evidence of the effect of programmes on the CVD risk factor salt intake.</td><td rowspan="3">Effectiveness studies reviewed
1. Action Heart (Baxter T 1997; Baxter AP 1997)
2. Coeur en Santé St-Henri (O’Loughlin 1995; Paradis 1995;O’Loughlin 1999)
3. Di.S.Co – Sezze District Community Control – project (Giampaoli 1991; Giampaoli 1997)
4. The Dutch Heart Health Community Intervention/Harslag limburg (Ronda 2004a;</td></tr>
<tr><td colspan="4">For the CVD risk factor physical activity, there is a mixed pattern across studies with no clear direction of effect.</td></tr>
<tr><td colspan="4">There is limited evidence of the effect of programmes on attitudes, knowledge and intentions relating to CVD risk factors.</td></tr>
</table>

Additional outcomes to those specified in the protocol have been reported in some programmes, but with little consistency across programmes, limiting their usefulness.	Schuit 2006; Ronda 2004b; Ronda 2004c; Ronda 2005) 5. The Health and Inequality in Finnmark programme – Båtsfjord (Lupton 2003) 6. The Health and Inequality in Finnmark programme – North Cape (Lupton 2002) 7. Heartbeat Wales (Parish 1987; Smail 1989; Tudor-Smith 1998; Nutbeam 1993) 8. The Kilkenny Health Project (Shelley 1991; Shelley 1995; Collins 1993) 9. The National Research Programme (Gutzwiller 1985) 10. The Otsego-Schoharie Healthy Heart (Nafziger 2001; Barthold 1993) 11. The Stanford Three Community Study (Maccoby 1977; Farquhar 1977; Leventhal 1980; Meyer 1980) Full citations can be found in the references section of the source document: Pennant et al. (Oct 2008*)* Prevention of cardiovascular disease at population level. Question 1 Phase 2. Birmingham: West Midlands Health Technology Assessment Collaboration

Table A4: Phase 2 – Evidence statements on the nature of the programmes

Question 1 Phase 2: Evidence statement for programmes addressing prevention of CVD at population level	
Evidence statements on the nature of the programmes	**Effectiveness studies reviewed – see list in Table A3**
1. The 22 programmes identified targeted a variety of audiences, utilised various modes of delivery and drew on the skills and resources of a range of different personnel. 2. The programmes identified were initiated across a wide time period from 1972 to 1998. 3. Programme length ranged from 1 to >20 years. 4. Community settings were rural (*n* = 10), urban (*n* = 7), or mixed (*n* = 5). 5. The size of the target audience varied: ranging from approximately 2500 to over 1,000,000. 6. Additional consideration was given to groups of a low socioeconomic status in eight of the programmes. 7. Communities considered to be at high risk of developing CVD were targeted in eight of the programmes. 8. The majority of the programmes (*n* = 17) relied heavily on mass media. 9. Counselling was a key process in many programmes; undertaken individually (*n* = 14) and amongst groups (*n* = 8). 10. Fourteen of the programmes utilised screening. 11. Ten of the programmes implemented changes to the environment. 12. Personnel delivering the intervention were generally drawn from staff associated with the respective projects (*n* = 20). 13. Health departments (*n* = 13), local health committees (*n* = 8), voluntary organisations (*n* = 9) and community volunteers (*n* = 6) had roles in programme delivery. 14. Programmes were delivered in a variety of settings including workplaces (*n* = 8) and schools (*n* = 13). 15. For programme accessibility, a consistent observation was a relatively lower response from males, those of younger age, those relatively less educated and those at higher risk of CVD. However, response rates are usually provided only for evaluation surveys and information is generally not available on uptake of intervention activities. 16. Few programmes reported initiatives in accessing hard-to-reach groups: different cultural factors were addressed by seven programmes, attempts to overcome barriers resulting from different language were considered in three programmes, and the problem of poor literacy was also assessed in three programmes.	

Table A5: Phase 3 – Overview of phase 3 evidence statements

Question 1 Phase 3: Evidence statement for programmes addressing prevention of CVD at population level		
Evidence statement	**Programmes**	**Quality grading/evidence level**
This is an interim statement based on the third part of a three-stage review. No programmes used legislative or fiscal changes and there were no natural experiments. See Table A6 for evidence statements.	16 directly relevant programmes reported in 21 publications were identified for this report. The majority (11) consider the effectiveness of population programmes using education and/or mass media, and other programmes (5) focus on assessing levels of CVD risk factors with screening and providing advice in general populations. The programmes were: 1. The American Heart Association Campaign for Women 2. The ATS–Sardegna Campaign 3. Cardiovision 2020 4. The German CINDI 5. Coalfields Healthy Heartbeat 6. The Franklin Cardiovascular Health Program 7. Have a Heart Paisley 8. The Olofström community intervention programme 9. The Quebec Heart Health Demonstration Project – Rural 10. The Quebec Heart Health Demonstration Project – Suburban 11. The Quebec Heart Health Demonstration Project – Urban 12. The Ebeltoft screening and counselling study 13. The Inter99 Study	The education and mass media programmes were generally evaluated using controlled before–after studies with quality gradings ranging from – to +. The 'screening' programmes were evaluated using RCTs and were graded from – to +. **Effectiveness studies included in phase 3** 1. The American Heart Association campaign for women (Christian 2007; Mosca 2004; Robertson 2001; Mosca 2000) 2. The ATS–Sardegna Campaign (Muntoni 1999) 3. CardioVision 2020 (Kottke 2000; Kottke 2006) 4. The German CINDI (Wiesemann 1997; Wiesemann 2004) 5. Coalfields Healthy Heartbeat (Higginbotham 1999) 6. The Franklin Cardiovascular Health Program (Burgess 2000) 7. Have a Heart Paisley (Independent evaluation report 2005) 8. The Olöfstrom community intervention (Isacsson 1996) 9. The Quebec Heart Health Demonstration Project – Rural (Huot 2004) 10. The Quebec Heart Health Demonstration Project – Suburban (Huot 2004) 11. The Quebec Heart Health Demonstration Project – Urban (Huot 2004) 12. The Ebeltoft screening and counseling intervention (Engberg 2002) 13. The Inter99 study (Von Huth Smith 2008; Pisinger

	14. The Malmö Preventative Project 15. The Minnesota Heart Health screening and education 16. The Multifactor Primary Prevention Trial, Göteborg	2005a; Pisinger 2005b) 14. The Malmö Preventative Project (Berglund 2000) 15. The Minnesota Heart Health community screening and education (Murray 1986) 16. The Multifactor Primary Prevention Trial, Göteborg (Wilhelmsen 1986) Full citations can be found in the references section of the source document: Pennant et al. (Nov 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 3. Birmingham: West Midlands Health Technology Assessment Collaboration

Table A6: Summary of phase 3 evidence statements

Question 1 Phase 3: Evidence statement for programmes addressing prevention of CVD at population level	
Evidence statements	**Programmes**
Are population-level multiple risk factor interventions (MRFI) effective in the primary prevention of CVD? See evidence statements in Table A3. **How does the effectiveness of interventions for the primary prevention of CVD vary between different population groups, for example, groups that differ in terms of age, gender and ethnicity?** Evidence for variation in effectiveness in subgroups of the population is limited and inconsistently reported across included programmes. There is no clear pattern with respect to gender, age, ethnicity or measures of deprivation which may be the result of the limited information available, confounding and selective reporting. **How does the effectiveness of interventions for the primary prevention of CVD vary according to the nature of the intervention, whether the intervention is based on an underlying theory or conceptual model, the status of the organisation or person delivering the intervention, the context in which the intervention takes place, the intensity and duration of the intervention?** Thirty-one programmes were concerned with the effectiveness of population programmes using education and mass media, and seven with screening programmes directed at large populations in the community or primary care. However, 16 of the education and mass media programmes contained screening components. Counselling was a key process in many programmes, undertaken individually in 24 programmes and among groups in 16 programmes. Although the results are similar, there does appear to be a more consistent pattern of benefit in the programmes focusing on screening **Do multiple risk factor interventions for the primary prevention of CVD have any adverse or unintended effects?** There is no evidence for adverse or unintended effects from multiple risk factor interventions for the primary prevention of CVD from the 90 publications covering 38 programmes scrutinised for the effectiveness review. **What is the accessibility of multiple risk factor interventions for the primary prevention of CVD for different population groups?** Few programmes reported initiatives in accessing hard-to-reach groups.	38 directly relevant programmes reported in 90 publications have been identified in this review of effectiveness. The majority of programmes (31) are concerned with the effectiveness of population programmes using education and mass media. **Quality grading/evidence level** Programmes were generally evaluated using controlled before–after (CBA) studies, with quality grading from – to +. Seven screening programmes have been evaluated using RCTs and were quality graded from – to +. **Review conclusion** This review suggests that there is some support that primary preventative population programmes involving education, mass media and screening in members of general populations can be effective in improving some CVD risk factors and behaviours. Considerable uncertainty is left about the size of these effects and the effect on health outcomes summarised across all programmes. It is not possible, on the basis of available evidence, to comment on whether characteristics of programmes or target populations may mediate programme effectiveness. Whether the observed findings of the programmes that were conducted many years ago remain generally applicable in the UK at the current time is not clear. Pennant et al. (Nov. 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 3. Birmingham: West Midlands Health Technology Assessment Collaboration

Table A7: Systematic reviews included in phases 1 and 2 of prevention of cardiovascular disease at population level

Phase 1	**Phase 2**
Pennant et al. (Sep 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 1. Birmingham: West Midlands Health Technology Assessment Collaboration	Pennant et al. (Oct 2008) Prevention of cardiovascular disease at population level. Question 1 Phase 2. Birmingham: West Midlands Health Technology Assessment Collaboration
Systematic reviews Included	**Systematic reviews included**
1. Ketola et al. (2000) Effectiveness of individual lifestyle interventions in reducing cardiovascular disease and risk factors. Annals of Medicine 32: 239–251 2. Ebrahim et al. (2006) Multiple risk factor interventions for primary prevention of coronary heart disease. Cochrane Database of Systematic Reviews 4 3. Matson-Koffman et al. (2005) A site-specific literature review of policy and environmental interventions that promote physical activity and nutrition for cardiovascular health: What works? American Journal of Health Promotion 19 (3): 167–193 4. Nicholson et al. (2000) The effect of cardiovascular health promotion on health behaviours in elementary school children: an integrative review. Journal of Pediatric Nursing 15 (6): 343–355 5. Sellers et al. (1997) Understanding the variability in the effectiveness of community heart health programs: a meta-analysis. Social Science & Medicine 44 (9): 1325–1339 6. Krummel et al. (2001) Cardiovascular health interventions in women: what works? Journal of Women's Health & Gender-Based Medicine 10 (2): 117–136	1. Shiell et al. (2008) A systematic review of the effectiveness of population health interventions for the prevention of type II diabetes. Report from the Population Health Intervention Research Centre 2. Engbers et al. (2005) Worksite health promotion programs with environmental changes. American Journal of Preventive Medicine 29 (1): 61–70 3. Finlay et al. (2004) Physical activity promotion through the mass media: inception, production, transmission and consumption. Preventative Medicine 40: 121–130 4. Snyder et al. (2004) A meta-analysis of the effect of mediated health communication campaigns on behaviour change in the United States. Journal of Health Communication 9: 71–96 5. Fogelholm et al. (2002) Community health promotion interventions with physical activity: does this approach prevent obesity? Scandinavian Journal of Nutrition 46 (4): 173–177 6. Sowden et al. (2003) Community interventions for preventing smoking in young people. Cochrane Database of Systematic Reviews 7. Secker-Walker et al. (2002) Community interventions for reducing smoking among adults. Cochrane Database of Systematic Reviews 8. Contento, I. (1995) The effectiveness of nutrition education and implications for nutrition education policy programs and research: a review of research. Journal of Nutrition Education 27 (6)

Appendix 2: Search strategy

Search approach and rationale

Scoping of databases and search terms indicated that this is a large topic that uses diffuse language. The topic draws on terms from a number of disciplines (e.g. health and social care, psychology, sociology) and the sources searched reflect this broad context.

The searches were primarily sensitive (rather than specific) and used terms that described broad concepts. Results sets were large and numbers were reduced to manageable levels by limiting the searches to reviews of the literature (systematic and non-systematic).

Concepts and keywords

The search question:

What are the characteristics of health systems and services – at national, regional and local level – that promote and support health-related behaviour change?

3 concepts were identified:

Concept A: Health systems

Included key words/subject headings (where available) that covered the main terms for:

Health systems – e.g. health services

Health system models – e.g. capitation payment systems

Concept B: Behaviour change

Included key words/subject headings (where available) that covered the main terms for the process of:

changing behaviours

Concept C: Health behaviour

Included key words/subject headings (where available) that covered the main terms for:

Health behaviours

Interventions that impact upon health behaviours e.g. health promotion, health education, primary prevention

Broad terms for risk factors e.g. primary risk factors

To maximise sensitivity and to allow for the interchangeableness of concepts B and C across disciplines, two broad searches were conducted for each database:

Concept A AND Concept B

Concept A AND Concept C

Scoping of Medline resulted in a slight iteration to the structure described above. An additional concept was added for specific risk factors associated with detrimental health behaviours, e.g. diabetes, smoking, obesity.

This resulted in an extra search for this database, structured: concept A AND (diabetes OR smoking OR obesity…).

Search limits

Time: 2002 to present

Study type: systematic reviews and non-systematic reviews

Electronic sources searched:

- HMIC
- ASSIA
- Sociological Abstracts
- PsychInfo
- Medline
- PAIS

Database results were downloaded to Reference Manager for screening.

Example strategy: ASSIA

KW = (health system* OR health service* or whole system* approach* or service config* or health polic* or managed care programme* or social health care or multi-facet* or multifacet* or multi facet* or multi-facet* approach* or multifacet* approach* or multi facet* approach* or interorgani?ation* or inter-organi?ation* or inter organi?ation* or interorgani?ation* work* or inter-organi?ation* work* or inter organi?ation* work* or multiagenc* or multi-agenc* or multi agenc* or multiagenc* partner* or multi-agenc* partner* or multi agenc* partner* or service model* or public health system* or HCO* or health care organi?ation* or capitation payment*) **AND** (behavio*r chang* or self-efficacy or self efficacy or postitive adapt* or life orientation or coping behavior*r* or behavior*r* modif* or behavior*r* theor* or change strateg* or collective efficacy or collective-efficacy or locus of control or health status or primary risk factor* or secondary risk factor* or risk reduc* behavio*r* or health promot* or public health or (attitude within 3 health*) or health behavio*r* or health ethnolog* or health educat* or primary prevention) **AND** (systematic review* OR meta-analys* OR metaanalys* or metanalys* or meta analys* OR systematic literature review* OR systematic review* or literature review* or review* OR cochrane database systematic review* OR acp journal club OR evidence

synthes* OR study selection OR inclusion criteri* OR exclusion criteri* OR overview* OR search* OR handsearch* or hand search)

The reviews search filter was adapted from: US National Library of Medicine, Search strategy used to create the systematic reviews subset on PubMed (www.nlm.nih.gov/bsd/pubmed_subsets/sysreviews_strategy.html).

A large body of the evidence for this topic is contained within policy documents from international organisations, therefore the following sites were browsed and searched for relevant documents:

- European Observatory on Health Systems and Policies (www.euro.who.int/observatory)
- National Institute of Health Services Research (particularly National Institute for Health Research Service Delivery and Organisation programme) (www.sdo.nihr.ac.uk/aboutthesdoprogramme.html)
- World Health Organization (www.who.int; particularly www.who.int/healthsystems/en)
- Centre for Studying Health System Change (USA) (www.hschange.org)
- Agency for Healthcare Research and Quality (USA) (www.ahrq.gov)
- RAND Corporation (USA) (www.rand.org)
- Eldis health systems (www.eldis.org/go/topics/resource-guides/health-systems)

Additional searches

Author searches were carried out in Medline and ASSIA for the following authors:

Saltman, Richard B; Busse, Reinhard; Mckee, Martin; Nolte, Ellen; Bernd, Rechel; Mossialos, Elias; Figueras, Josep; Ginsburg, Paul B; Starfield, Barbara*.

These authors were identified as key because they were credited as author or co-author on at least two documents retrieved from the websites listed above (except *: this author was identified as key by an information specialist at NICE who had encountered their work during a previous search on an area related to the topic of health systems).

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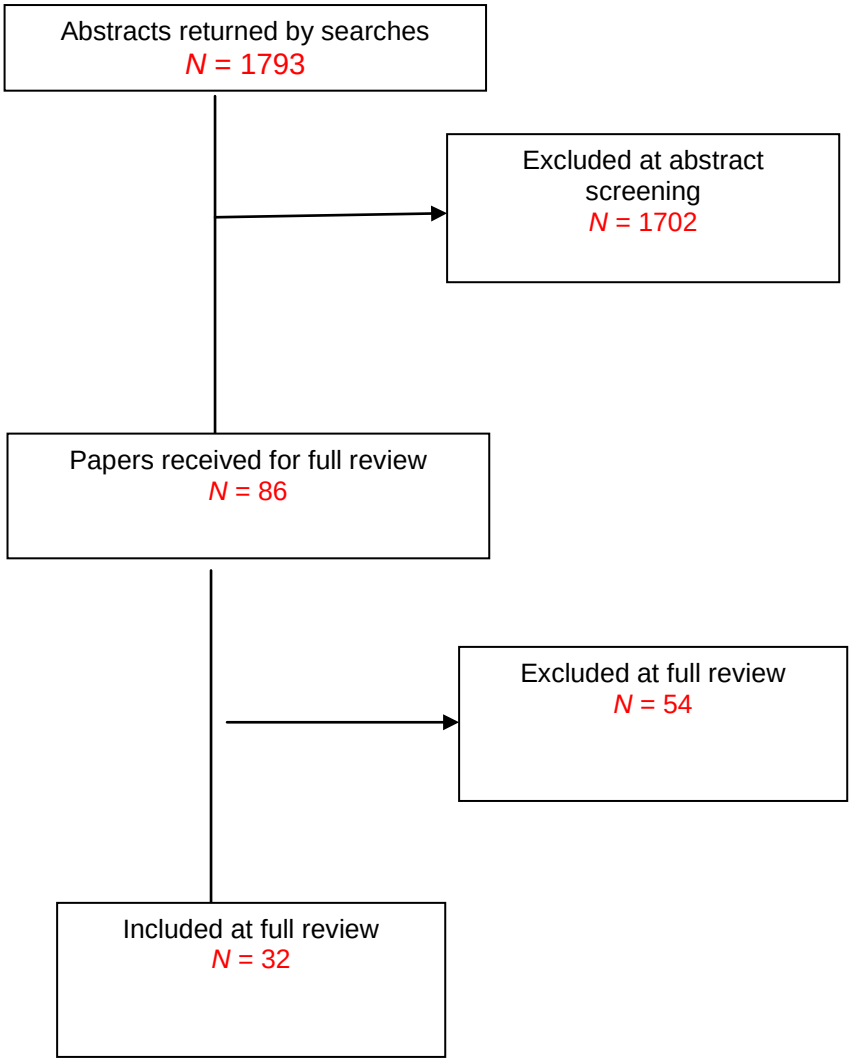
Appendix 4: QUORUM diagram for literature review



Appendix 5: Themed stakeholder responses

Key to guidance (www.nice.org.uk/Guidance/PHG/Published)

Colours in the table indicate the following guidance documents:

- red = Community engagement (PH9)
- black = Behaviour change (PH6)
- purple = Identifying and supporting people most at risk of dying prematurely (PH15)
- orange/brown = Reducing differences in the uptake of immunisations (PH21).

Key concepts

Service improvement and resources; organisation development and service delivery; resources and finance; leadership; partnership.

1. **Service improvement and resources** – sub-themes: tackling inequalities[12]; training; awareness of key issues; care and health of staff; attitude and engagement; information and new technologies

NHS	Regarding training, this seems to be a blanket approach and should consider specific aspects for those dealing with disadvantaged groups, for example those with learning difficulties and mental health issues.
Royal College/ health professional	More attention is needed to address logistical difficulties – more time for school nurses and practice nurses to target and follow up children with known family problems – give individual support. Practice managers need more education and support, i.e. allowing staff extra time for families needing more support.
Royal College/ health professional	Re factors that make it less likely that the child will be up-to-date with vaccinations – it is well documented that vulnerable children have worse health than those in advantageous circumstances. Simply recording those children (as in this document) is a start, but other factors are important, e.g. allowing a longer appointment for the nurse to administer the vaccine is helpful – a nervous or unwilling child needs more time than a 'normal' child. Staff training is important to avoid children and parents having a poor experience of vaccines (some will not come again if this happens).
Public sector research group	NHS organisations should note that they are employers of many workers in socially disadvantaged groups and they should be encouraged to make greater efforts on health promotion. If NHS employees do not exhibit healthful behaviours, this will seriously undermine efforts to improve public health and reduce inequalities.

[12] There is overlap here with stewardship and care, described in sections 2 and 3.

Professional body/ therapeutic services	XXX welcomes the document's acknowledgement of the urgent need to develop training and national training standards for those involved in helping to change people's behaviour. Much effective intervention that supports individuals and families in change can be provided by those not formally accredited as family therapists or systemic psychotherapists. This work will achieve the necessary standards if practitioners have access to current best practice of family work through working with, and (where appropriate) being guided and supervised by, properly trained family therapists.
National/health professional	The recommendations will rely on overcoming obstacles such as competencies, training, evidence and information-gathering that is reliable and locally sensitive, the power of advertising, funding to support – e.g. structural improvements, requirements for long-term input, provision or not of government/legislative back-up.
Royal College/ health professional	Careful consideration should be given to the training needs of those involved in these activities, as there are several approaches that could be successful. However, we would support the adequate preparation of all those involved in working to influence behaviour change.
Voluntary sector/ national	The use of peer educators to promote safer sex can be effective. However, the guidance should state that all peer educators receive proper training before beginning any education. This is particularly vital around safer sex, where individuals may not have the most up-to-date information; and HIV, where there are many myths and misconceptions about the virus.
National association/ children	Health records of looked-after children tend to be fragmented, with various pieces of information spread between GP surgeries, hospital records and community health databases, making it difficult to document a given child's immunisation status. Health and social care systems do not communicate adequately. This must be recognised and addressed in the guidance.
National association/ children	Information systems should allow all health staff, whether on hospital wards, in emergency departments, GP surgeries or outpatient settings, access to immunisation data of children in their care.
Government department	In our view, records of vaccinations should be made in medical records as well as the PCHR [Personal Child Health Records] (sixth bullet, page 8) We feel that the need to transfer details to the medical record (now largely non-paper-based) and the necessary transfer of information to CHIS [Child Health Information Strategy] should be discussed, referencing local procedures. Would you please consider this?
Department of Health	In our view, the point concerning communicating effectively could also include PCT child departments. Ensuring data flows between maternity units and primary care is, we feel, essential.

National health agency, UK	There is no mention of a role for surveillance, monitoring and evaluation. This activity which is a essential for immunisation programmes, to monitor uptake, safety, and vaccine effectiveness of includes surveillance of the disease as well as monitoring vaccination uptake. And can help to provide the evidence of equitability for both of these.

2. **Service design and delivery** – appropriate service access, long-term and sustainable effective services, tailoring services to local needs, targeting and case finding, mix of mainstream and targeted services, structured around life course, working with/training community reps as peer educators, etc., intelligent services/local monitoring and targeting, embedded in local governance.

Royal College/ health professional	Improving access – it is important that adequate time is allocated for giving the vaccine. Structured appointments are best so that long queues are avoided. Practice nurses are sometimes expected to work too quickly – they need sufficient time to do the job well, rather than speed being the most important thing. An unhappy experience may deter a parent from bringing a child for the next immunisation.
National body/ patient group/ research	We support measures designed to increase and improve the quality and access of smoking cessation services in deprived areas. We agree that national and local initiatives must be developed and sustained on a long-term basis. Strategies must be devised collaboratively and included in PCT plans and local area agreements, with input from local community and voluntary groups, who may have greater access to and a better understanding of local needs. Smoking cessation services should be part of a package of improved services for people with asthma. We hope these issues are addressed in the government's forthcoming Green Paper on Health Inequalities. Stronger commitments are required from the government, and mandatory measures must be introduced forcing PCTs to specifically target deprived areas.
National body/ patient group/ research	We believe that tailoring services to reflect the needs of different communities is crucial. We support the recommendations on improving accessibility on pages nine and ten, e.g. devising services that are flexible and reflective of cultural and community needs. Many individuals from black and minority ethnic (BME) groups or lower socioeconomic backgrounds have little understanding of the health system, may be unaware of the smoking cessation services on offer, and may be reluctant to use them. However, while improving services is important, we also agree that health outcomes will be improved only if people actually comply with and complete their course of treatment. Appropriate support mechanisms must exist, and they must be tailored to suit the cultural needs of different communities. We also want the government to ring-fence more money for NHS smoking cessation services to specifically target deprived areas and communities where smoking prevalence is high.

Primary Care Trust	The most obvious place to look for high-risk clients is those on existing QOF [Quality and Outcomes Framework] registers [especially chronic obstructive pulmonary disease (COPD), coronary heart disease, diabetes mellitus, heart failure, etc.] AND patients receiving OPD [out-patient] care for conditions worsened by smoking (and other lifestyle risks) AND patients post-myocardial infarction/stroke/COPD admission, etc. This guidance really needs to hammer that there are well-documented inequalities in prevalence (diagnosed and within QOF and undiagnosed) and healthcare utilisation (primary and secondary care) – and that targeted interventions at key points in a care pathway – and that interventions to encourage a healthier lifestyle and encourage appropriate statin use in high-risk patients/key life events is probably more effective, and almost certainly more cost-effective, than a population-wide approach. This leads to consideration of whether the levers and incentives (QOF payments and tariff) are appropriate to encourage an appropriately high focus on smoking cessation/startng statin therapy for high-risk patients (and ensuring the intervention is intensive enough to achieve change – given that the most disadvantaged might be the hardest group to change).
National organisation/ health/voluntary sector/patient interests	While we accept that activities aimed at reaching disadvantaged groups should be part of mainstream services wherever possible, we also believe there is a need for bespoke services that are designed with and for disadvantaged groups – what your guidance seems to disparagingly refer to as 'cottage industries'. Both approaches – making mainstream services more appropriate and developing bespoke programmes – are necessary. We suggest that 'cottage industries' is too emotive a term and should not be part of the guidance.
National organisation/ health/voluntary sector/patient interests	Under 'what action should be taken?': The first bullet point needs to be broadened to incorporate the need for services that can be tailored to meet individual needs, abilities and views of health. For example to consider the needs of people with learning disabilities, multiple and cross-cutting conditions, low literacy levels. This bullet point is related to the fourth bullet point, which again needs to consider how services are able to tailor their support to individual needs, abilities and views of health, beginning by understanding the perspectives, beliefs and experiences of the individual.
National patient education and research trust	This section neglects the role that secondary care has to play in the identification of patients at high risk of events already referred for management of one of the principal cardiovascular risk factors – pharmacist-based smoking cessation; nurse-led smoking cessation and lifestyle clinics; nutrition and dietetic strategies implemented initially in secondary care. This should include action in secondary care in general (oncology, respiratory medicine, surgery) as well as CVD-related clinics.

Royal College/ health professionals	There will be different issues for people with LD [learning disabilities] and access to services should be considered when finding clients.
Royal College/ health professionals	There are no registers for LD so they can easily 'slip through the net'. This should be taken into account.
University	Prioritisation of patients to target, using simple categorical variables, is not sufficient to be of use to a primary care provider or organisation. For example: since 25% of adults smoke, which smokers should be targeted first? Or are they targeted in random order? Clearly those at highest risk should be first. Similarly on page 8 several different approaches are mentioned: a) 'primary care and general practice registers (to identify people who smoke or who are from particular minority ethnic groups)': these registers usually do not record ethnicity. Nor is it useful to simply regard all South Asians as 'high risk'. Clearly risk is a continuous variable and it should be represented as a continuous variable. Ref: Marshall T. (2008) Identification of patients for clinical risk assessment by prediction of cardiovascular risk using default risk factor values. BMC Public Health 8: 25 b) 'opportunistic identification during primary care appointments': evidence from the Sandwell CVD project indicates that this is a highly inefficient method of patient identification. Patients are twice as likely to be assessed with active than with opportunistic case finding and three times more likely to be started on treatment. Assessment is NOT an end in itself. Ref: Marshall T et al. (2008) The Sandwell Project: a controlled evaluation of a programme of targeted screening for prevention of cardiovascular disease in primary care. BMC Public Health 8: 73
National research organisation	This refers to critical periods in development of health behaviour (i.e. transition or turning point). This should be brought to the fore.
National research organisation	Again, this point of targeting children before they develop unhealthy behaviours is critical. However, in terms of food choice, preferences are developed in infanthood, although they do change during the lifespan and therefore are potentially modifiable at any stage.
PCT	Significant events or transition points in people's lives present an important opportunity for intervening at some or all of the levels just described (because at these points, people are often in contact services and often review their own behaviour). Insert are and in before and after often so that this is not confined to those who are proactively contacting the health services and includes e.g. the smoker who is visiting their spouse in hospital with lung cancer every day; health professionals too often miss this opportunity to encourage family and friends to change their behaviour.

Royal College/ health professions	Whilst we recognise that there have been some effective mass health promotion campaigns, they are not necessarily targeted and do not necessarily reach those whom they intend to reach. We would prefer to see national, centrally driven campaigns supported locally….as above in 3.14.
National patient/ community organisation	The guidelines should reflect and acknowledge: • organisations need to want to carry out successful community involvement for it to be meaningful to the people in the community • for an organisation to want to be successful at community engagement/involvement, it must be supported at the highest level – Ideal quote: 'I am willing to divert resources in order that this community engagement activity is successful'. having said that, it is the community engagement/involvement manager's responsibility to defend the integrity and promote the worth of the project • community engagement/involvement is not a stand-alone discipline; its outcomes will require resources and affect service delivery functions of any organisation involved. Partners/managers/functions should understand and agree in advance to the demands and expectations that will be placed on them by the engagement/involvement activity and by the outcomes • access and 'hard-to-reach' elements of a project, which seem so popular, are not to be taken lightly (sorry to state the obvious): they are expensive and need appropriate resources to indicate their priority. Which is to say, if you don't do access properly then you aren't doing it at all. Which is fine if all you want to do is put in a report that you have 'involved hard-to-reach groups', but no good if you want to engage people with access requirements in a way suitable to their involvement in the project.
Government department	In our opinion, joint strategic needs assessments, local area agreements and health trainers all have a potential role to play in community engagement/development approaches to improving community health and wellbeing, cf. Strong and Prosperous Communities. Could you please consider referring to these recent developments?

National faith network	XXX take medical ethics and community engagement seriously, encapsulated in the concept of 'Dharma' or duty. This duty can be a duty to one's self (or health), a duty to one's family/community/neighbours, and finally a duty to one's society and environment. Community engagement should not be seen as an 'add-on', and is as important as clinical advancement for better health and quality of life. Therefore it should be noted that using peer educators has been evidenced as cost-effective; nevertheless, we should be cautious not to 'abuse' community groups by providing or paying nothing. It may be more valued by the community if you seek to put something back into it, such as funds into capacity building a community health need. Community engagement should take into consideration religion and faith as a means to a population or community. The NHS and NICE need to engage with the Hindu community, it is a community well reflected in the clinical make-up of health services (doctors, nurses, etc.), but there is little or no representation at higher levels such as board level or director level within decision-making bodies.
National health/ sexual health organisation (voluntary sector)	The issue of what constitutes a community, as outlined in our general point above, should be considered. At a wide neighbourhood level, needs around HIV may seem less critical, but if the community is taken at a different level, for example sexual orientation or country of origin, it will be much more pressing.
National mother/child organisation (voluntary sector)	The guideline should place greater emphasis on involving communities in earlier stages of projects, including identification of priority needs and areas for intervention, and planning. Please see the comment below for a recommendation that would facilitate greater user involvement in project planning and management.
Community organisation	The guideline should recommend that there is sufficient user representation on project steering/management committees. This should be a minimum of two representatives to prevent a single user representative feeling isolated, as well as to allow for a variety of service users, but preferably more than two, depending on the total membership of the group.
Community organisation	For community engagement to be realised on any meaningful scale, paid workers must: • learn to trust local people and operate in plain sight • seek out and value contributions from a wider range of local people • help build new social networks that they do not actually control • be prepared to embed an element of reciprocity into their relationships with users, their families and the wider community.

Community organisation	The way forward to real community engagement: 1. Redirect outreach staff to co-production: encouraging people who have always been on the receiving end of support to use their time to support others. 2. Shift our attitudes to need: people have always been categorised according to their needs and disabilities. Co-production requires them to be considered also for what they can do. 3. Reward people's efforts: institutions need to think about how they can pay back to people to recognise their efforts – whether in outings or tickets or training. 4. Interpret success broadly: narrow targets and indicators do not sit easily with co-production solutions, which bring people with different problems and agencies with different issues together for mutual support. 5. Involve people from the planning stage: people need to own their local time banks, and unless they do so, they can easily slip into an ineffective form of social control. 6. Set aside a proportion of every budget for rewards: for those who make it possible. 7. Evaluate all projects by how much the ultimate beneficiaries pay back to those around them; the alternative is that community development can too often become a way of funding middle-class activists, which ultimately changes little.
National voluntary sector organisation/ housing and homelessness	Connected Care – a case study, Hartlepool In 2006, a Connected Care audit report was published following the completion of the Connected Care audit in Owton, Hartlepool. Community auditors were recruited from the local community supported by Turning Point and local agencies. 251 local residents participated in the audit via one-to-one interviews, focus groups and a community 'have your say' event. The results of the audit have informed the development of the Connected Care model and form the basis on which services will be developed within the social enterprise vehicle. The Connected Care audit identified a number of ways in which services could and should be different. They suggest that services and support should in future be designed and delivered so that they have the following qualities and characteristics: • Better information, proactively provided at the right time and place, would help residents both to make better use of the options available and take more responsibility for their health and social care. • Connected care should support and empower people to make choices for themselves. A lack of choice can lead to low aspirations and acceptance of poor quality services. • Continuity and coordination were frequently identified as problematic. Services were complex, complicated and sometimes alienating.

3. **Finances**: adequate numbers of staff, incentives, charges, rewarding input.

Royal College/ health professionals	Workforce issues have to be considered – there is a shortage of school nurses and other community staff, which compromises the ability of these aspirations to be achieved [Ref – Workforce paper: Gleeson (2009) School nurses' workloads: how should they be prioritised? Community Practitioner 82 (1): 23–26]. This includes references with evidence from two large national studies of community nursing workforce.
PCT	The most obvious place to look for high-risk clients is those on existing QOF [Quality and Outcomes Framework] registers [especially chronic obstructive pulmonary disease (COPD), coronary heart disease, diabetes mellitus, heart failure, etc.] AND patients receiving OPD [out-patient] care for conditions worsened by smoking (and other lifestyle risks) AND patients post-myocardial infarction/stroke/COPD admission, etc. This guidance really needs to hammer that there are well-documented inequalities in prevalence (diagnosed and within QOF and undiagnosed) and healthcare utilisation (primary and secondary care) – and that targeted interventions at key points in a care pathway – and that interventions to encourage a healthier lifestyle and encourage appropriate statin use in high-risk patients/key life events is probably more effective, and almost certainly more cost-effective, than a population-wide approach. This leads to consideration of whether the levers and incentives (QOF payments and tariff) are appropriate to encourage an appropriately high focus on smoking cessation/startng statin therapy for high-risk patients (and ensuring the intervention is intensive enough to achieve change – given that the most disadvantaged might be the hardest group to change).
National patient organisation/ voluntary sector	The level of effectiveness of incentives in bringing about long-term behaviour change, particularly for more complex behaviour change, has been questioned. An examination of the literature identified issues of relapse/lack of long-term maintenance of healthier behaviours in some cases once incentives were removed. Jochelson (2007) Paying the patient. King's Fund.
National research/patient organisation	We are surprised that the issue of prescription charges has received no mention. Research into the impact of this versus Scotland and Wales should be considered.

University	System incentives are not the only way of effecting change. They may not be the most efficient way of effecting change. Incentives applied to the primary care existing system must compete with other incentives and disincentives. For example, identifying and treating patients adds to primary care workload but does not attract additional resource. Neither the Sandwell project nor the subsequent Solihull project have offered any financial or other incentive to practices. They have simply created a parallel system for identification, assessment and treatment that is integrated with the existing primary care system. The parallel system has only one objective – identify and treat patients at high risk of CVD – and therefore does not encounter the problem of competing demands and competing incentives. There is a case for investigating the efficiency of a variety of approaches to case finding and CVD prevention.
National health professional organisation	There is a lack of impetus/incentive for local level interventions which have long term results while short-term pressures are so great.
Government department	As the guidance recognises, longer-term health improvement work through community initiatives can be constrained by short-term funding arrangements. Subject to the available evidence, we would feel it beneficial if you would address more specifically the issue of effective practice in delivering and sustaining longer-term health improvement objectives in the context of shorter-term/project-based funding.
National patient/research organisation (voluntary sector)	It should be noted that local and national non-governmental organisations would, in most cases, require funding if they were to effectively encourage the representation and participation of small community organisations. They may not have the finances to provide technical assistance, training and resources from their own budgets and should not be expected to.
National mother/child organisation (voluntary)	'Do not overburden individual members of the community with responsibility and ensure that they receive adequate support and compensation for their time and expenses'. Please see our general comments provided on page 1 for guidance that should be made and referred to here regards to payment of service users' expenses for travel, administrative and childcare costs for their involvement in developing and delivering services, and payment for significant user involvement, in accordance with Department of Health Guidance.

National mother/child organisation (voluntary)	The guideline does not cover the important issue of remunerating community representatives and organisations are approached for support, for their time and expenses. The guideline should refer to and recommend remuneration in line with Department of Health guidance on this issue: DH (2006) Reward and recognition: the principles and practice of service user payment and reimbursement in health and social care – a guide for service providers, service users and carers. www.dh.gov.uk/assetRoot/04/13/85/24/04138524.pdf This Department of Health guidance recommends that service users are paid expenses for travel, administrative and childcare costs for their involvement in developing and delivering services, and encourages payment for significant user involvement. In particular we would refer to the following: 'It is best practice that service users involved with service providers in activities that involve "deciding together", "acting together" and "encouraging independent initiatives" are offered payment. Examples include: • where a user is involved to provide a representative view or where he/she is one of a few or the only user representatives for a specific task, regular service improvement planning meeting or working group • where particular skills, commitment, reliability and work output is expected • where individual services users have allotted (*sic*) to represent a wider group of service users at a meeting • where service users are involved in the recruitment/interviewing process • where people have been invited by the service provider to provide a user's point of view at a particular event .....' (page 14) It should also be pointed out that in accordance to the guidance service providers engaging with communities need to be fully aware of how reimbursement of expenses can impact on benefits and Inland Revenue rules. In [some] circumstances user representatives may prefer to have expenses sufficient to cover childcare and any other additional expenses rather than a fee. The payment of expenses is such an important issue in relation to engaging with communities that it should be a key recommendation in the guideline. It should be emphasised that full remuneration is critical for effective engagement, and particularly in relation to working with disadvantaged communities for whom financial remuneration is of utmost importance. Engaging with these disadvantaged groups is of course a necessity if interventions are to reduce, rather than reduce, health inequalities. Whilst some organisations agree to pay transport expenses, payment of childcare expenses is not so common, despite the DH recommendation in 'Reward and recognition' that childcare expenses should be paid. Paying childcare expenses is essential for meeting responsibilities to ensure gender-equal engagement and the full involvement of mothers and parents with young children. As well as payment of service users for their time and expenses, remuneration of organisations whose support has been requested to facilitate community engagement is important. NGOs and community-based organisations suffer significant funding and resource constraints which limit the amount of work they can do, so they must receive payment and other forms of support, if applicable, for their time and input. Approaching NGOs

4. **Leadership and management:** for specific interventions; national/government leadership and policy; links to levers; lines of accountability

National agency/ voluntary sector/looked after children	We support the proposal to have an identified person responsible for vaccinating babies at risk of Hep B. In our experience, many looked-after infants receive the first dose in hospital but never complete the course due to poor communication between hospitals, social workers, health team for looked after children, and foster carers. Typically for an infant placed in foster care on discharge from hospital, the foster carer doesn't know the first dose has been given, the child health information system hasn't been told by the hospital that they have given the first dose, and then all the other information goes astray because letters from hospital to GP, HV etc. are sent to birth mum's address. This is a good example of the need for robust multi-agency systems and a single set of accurate records which can be accessed by all involved health professionals.
National Public Health Service/UK	To have one individual responsible for the implementation of the programme seems unlikely to elicit a whole-team approach or commitment. A team approach with a named lead may elicit more success.
PCT	What of cross-referencing to other NICE guidance on broader social policy in this area – supportive environments in which the healthy choice is easier? Urban planning/built environment springs immediately to mind – environments that encourage physical activity. Also (although no NICE guidance in this area) broader macro-economic approaches to fiscal policy – food/tobacco/alcohol pricing, etc. All of this supports those at most risk to adopt healthier lifestyles and thus reduce avoidable deaths.
Government department	Key levers to reference would be the Joint Strategic Needs Assessment and World Class Commissioning.
Government department	Again, Joint Strategic Needs Assessments, Local Area Agreements, the GP Contract and World Class Commissioning could helpfully be referenced.
National mental health organisation	Analysis of QOF data is a very important method. QOF includes a register of people with long-term mental health problems (who agree to be on it) and annual health checks for them. Guidance from NICE specifying that this should lead to any necessary health promotion advice and offers of relevant interventions would be very helpful. However, this should not be relied upon to reach all people with mental health problems in a practice as not all will agree to be on the register and some practices will limit inclusion to those with diagnoses such as schizophrenia and bipolar disorder.

National/accident prevention/ voluntary sector	'sufficient time and resources' – This should also include the need for political and policy drivers to sustain the work. The 2001 Accidental Injury Task Force had no worthwhile follow-up or support, as the recent Audit Commission and Healthcare Commission report has highlighted. Similar problems may be encountered at a variety of different local implementation levels.
Government department	Should make reference here to the new requirement for the PCT and LA to carry out a joint Strategic Needs Assessment; also the new LINk [Local Involvement Network] system which should support community and population engagement – i.e. encourage utilising existing mechanisms, where possible, rather than building new ones.
Royal College/ health professional	Whilst we recognise that some mass media campaigns have been successful, without an England-wide lead organisation to coordinate and target these activities, there is less likelihood of success. At present, various media organisations are commissioned to lead these campaigns, often without evidence of 'joined up thinking' across the government departments or other external stakeholder organisations. We consider these activities would be more effective if both national and local action were coordinated, material produced and made readily available to practitioners through a central body. There is more likely to be consistency of message as well as material, and health practitioners would feel more supported and confident when working with both individuals and communities.
Royal College/ health professional	Legislation and taxation, while mentioned, are omitted from the recommendations despite a wealth of evidence that they are the most effective means of stimulating behavioural change. The College would strongly support giving significantly greater prominence to these methods.

National community/ patient group	The document sets out a far more sophisticated approach to community engagement (especially with regard to disadvantaged groups) than is current practice. The move from sterile consultation to involvement in design and planning is very welcome. However, it is high on theory but low on the realities and practicalities at ground level. In particular: 1. Such a huge change in culture will involve a massive increase in expenditure if it is not to fall at the first hurdle. Very highly trained staff will be needed. Volunteers will need their expenses paid. The report refers to training support and computers, etc., PPI [patient and public involvement] forums (or LINks) (which are not even mentioned in the report) funding is miniscule in comparison. 2. The report refers to the importance of long-term outcomes, yet all its recommendations are for essentially short-term projects. There seems to be little or no understanding of the need to build an overall public involvement structure, i.e. an independent body of local lay people who build long-term overall relationships with the NHS, e.g. forums/LINks. 3. It underestimates the difficulty of finding volunteers – there must be positive government incentives, public advertising and a complete culture change. In summary: unless the report comes down from Olympus and shows a street-level understanding and wins serious government backing for culture change with significant funding, it will be a dead duck.
National sexual health organisation/ voluntary sector	We agree that lines of accountability should be clear so local communities can see the response to their views. We also welcome the recommendation that where views are overridden by other concerns, this should be explicitly stated. If communities cannot see how their involvement has worked and feel they have been consulted for appearance only, they will be less willing to participate.

National patient/ community organisation	The guidelines should reflect and acknowledge: • organisations need to want to carry out successful community involvement for it to be meaningful to the people in the community • for an organisation to want to be successful at community engagement/involvement, it must be supported at the highest level – ideal quote: 'I am willing to divert resources in order that this community engagement activity is successful'; having said that, it is the community engagement/involvement manager's responsibility to defend the integrity and promote the worth of the project • community engagement/involvement is not a stand-alone discipline; its outcomes will require resources and affect service delivery functions of any organisation involved. Partners/managers/functions should understand and agree in advance to the demands and expectations that will be placed on them by the engagement/involvement activity and by the outcomes • Access and 'hard-to-reach' elements of a project, which seem so popular, are not to be taken lightly (sorry to state the obvious): they are expensive and need appropriate resources to indicate their priority. Which is to say, if you don't do access properly then you aren't doing it at all. Which is fine if all you want to do is put in a report that you have 'involved hard-to-reach groups' but no good if you want to engage people with access requirements in a way suitable to their involvement in the project.

5. **Partnerships and connectedness**: cross-sector, e.g. social landlords, schools, environment; importance of partnerships, and definitions.

Pharma company	In particular XXX supports the suggestion that nurseries, schools and colleges of further education have an important role to play in promoting the benefits of immunisation for those under 19. Bearing in mind the recent discussions regarding pandemic 'flu, these organisations could provide a useful opportunity to provide wide-scale vaccination programmes. With respect to seasonal 'flu vaccines, these programmes could easily be administered at the start of school terms in September and so the timing should additionally fit well with holiday periods. XXX supports the suggestion that nurseries, schools and colleges of further education have an important role to play.
Pharma company	XXX supports the recommendation that school and community nurses (in collaboration with the local GP and school) should check the vaccination status of children and young people when they transfer to a new school or to college. This is common practice in other countries (such as Canada and the USA) and it can help to support an increase in vaccination uptake.

National agency/looked-after children	Although looked-after children are appropriately identified as a group vulnerable to incomplete immunisation, the particular problems of ensuring that this group of children are fully immunised are insufficiently addressed. The tone of the document seems to be aimed at making it easier for children who had various problems of access to attend clinics, rather than addressing the particular problems associated with being looked after. To resolve the inequities in immunisations for looked after children, it is essential to recognise the role of social care and address issues concerning: • consent • systemic problems of multi-agency working, including shared responsibility • communication systems, including computerised records • loss of information as children move placement.
National agency/looked-after children	Most of the groups in the 'who should take action' sections are health agencies. However, health and social care must work together effectively to improve immunisation practices for looked-after children. First of all, there is a pressing need for training for social care concerning their role and responsibility for immunisation (and, in fact, in health more generally), to enable understanding of why immunisation is important, and current schedules. Secondly, there is an urgent need for effective communication systems between social and healthcare practitioners. There are widespread difficulties in practice as the database for the child health system that sends out the appointments is not informed by children's social care when a child moves, either into foster care, between carers, or back home. The guidance should make it explicit that children's social care is responsible for providing accurate and timely information to health.
Government department	There are several references to the nursing workforce in the guidance, and it is suggested that the best and most accurate terminology for describing the relevant staff is 'health visiting and school nursing teams'. Similarly with references to GPs, it is the GP and practice nurses who are clinically responsible for immunisation delivery, but the wider team within general practice have a key role to play – i.e. administrative and reception staff are all key in being both informed and committed, and carrying out so many of the non-clinical tasks in ensuing appropriate delivery of the immunisation programmes. Could this be acknowledged, please?
Royal College/ health professional	School entry is a key time – it would be worth considering how this could be used to help monitor and possibly increase the number of children who are immunised. For example, we are aware that some countries require proof of immunisation before children are allowed to go to school.

Community trust	I note from the previous criteria of disadvantaged people (page 5) people on a low income, lone parents and low-income families, people on benefits and living in public housing – what I cannot see is any identification in any of the recommendations of the inclusion of social landlords. I look around locally and very few local authorities have not sold off, where they can, housing stocks to social landlords.
PCT	What of cross-referencing to other NICE guidance on broader social policy in this area – supportive environments in which the healthy choice is easier? Urban planning/built environment springs immediately to mind – environments that encourage physical activity. Also (although no NICE guidance in this area) broader macro-economic approaches to fiscal policy – food/tobacco/alcohol pricing etc. All of this supports those at most risk to adopt healthier lifestyles and thus reduce avoidable deaths.
National agency/ voluntary sector	It would be useful to add engagement with third sector organisations to the list of methods to identify clients used by primary care professionals. In addition, organisations which work with client populations may also be well received in terms of cold-calling methods.
National research/policy organisation/ voluntary sector/ethnicity	Voluntary sector screening – requires coordination with NHS models of care delivery to avoid fragmented effort, displacement of responsibility and quality assurance. Voluntary sector engagement is commendable and should be encouraged, but must form part of a wider proactive case finding strategy with the ability of the health service to accept referral of individuals into services such as smoking cessation clinics, primary prevention services etc. from programmes such as the South Asian Community Health Empowerment and Education campaign (SACHE), which is an ongoing programme being delivered by the South Asian Health Foundation [www.sahf.org.uk] and the Healthy Hearts Institute [www.healthy-hearts.org.uk].
Government department	The audience of this implementation guidance needs to be much wider than just health 'experts' in the NHS or local authority – and include LSPs [local strategic partnerships], NDCs [New Deal for Communities], VCS [voluntary and community sector] and third sector groups, LINk coordinators, community representatives, elected members, as well as professionals from non-health fields, to include housing, regeneration, parks, education services, and so on. Also, plenty of behaviours that impact on health wouldn't be thought of by individuals or by voluntary and community sector groups as 'health-related'. So language needs to reflect this wide audience.

Government department	We appreciate that population interventions are more influential, the absence of the environmental factors is a major limitation. The three levels of intervention do not take into account the important role of planning and assessment of plans in shaping the environment within which people live, work and play. Plans for the spatial environment, transport, infrastructure, water, waste, etc. have a great influence on the way people live, e.g. siting supermarkets in out-of-town locations leading to increased car use and demise of small towns and communities.
Royal College/ health professional	The terminology referred to as 'working in partnership' should be explained and expanded. There is a lot of reference to this approach to working in many documents, and it may mean different things to different people … 'developing alliances with other individuals and organisations' is a more accurate description of what this means, in our view.
Royal College/ health professional	We would support the targeting of resources at groups and communities where it is most needed. However, as we have learned from initiatives such as Sure Start, there are often inequalities and disadvantage that exist around the edges of defined geographical areas which we would like to see addressed. We also consider that commissioners should ensure they have accurate and up-to-date information concerning health and the challenges to improving health in their local populations. As a result, services should be commissioned and targeted at these areas of activity.
Royal College/ health professional	It is important to recognise other agency roles in delivering public health and bringing about behavioural change, for example education and local government. Explicit recognition of the importance of other agency roles is essential.
National faith network	XXX take medical ethics and community engagement seriously, encapsulated in the concept of 'Dharma' or duty. This duty can be a duty to one's self (or health), a duty to one's family/community/neighbours, and finally a duty to one's society and environment. Community engagement should not be seen as an 'add-on', and is as important as clinical advancement for better health and quality of life. Therefore it should be noted that using peer educators has been evidenced as cost-effective; nevertheless, we should be cautious not to 'abuse' community groups by providing or paying nothing. It may be more valued by the community if you seek to put something back into it, such as funds into capacity building a community health need. Community engagement should take into consideration religion and faith as a means to a population or community. The NHS and NICE need to engage with the Hindu community, it is a community well reflected in the clinical make-up of health services (doctors, nurses, etc.), but there is little or no representation at higher levels such as board level or director level within decision-making bodies.

National health/sexual health organisation (voluntary sector)	The issue of what constitutes a community, as outlined in our general point above, should be considered. At a wide neighbourhood level, needs around HIV may seem less critical, but if the community is taken at a different level, for example sexual orientation or country of origin, it will be much more pressing.
National mother/child organisation (voluntary sector)	The guideline should place greater emphasis on involving communities in earlier stages of projects, including identification of priority needs and areas for intervention, and planning. Please see the comment below for a recommendation that would facilitate greater user involvement in project planning and management.
Community organisation	The guideline should recommend that there is sufficient user representation on project steering/management committees. This should be a minimum of two representatives to prevent a single user representative feeling isolated, as well as to allow for a variety of service users, but preferably more than two, depending on the total membership of the group.
Community organisation	For community engagement to be realised on any meaningful scale, paid workers must: • learn to trust local people and operate in plain sight • seek out and value contributions from a wider range of local people • help build new social networks that they do not actually control • be prepared to embed an element of reciprocity into their relationships with users, their families and the wider community.

Community organisation	The way forward to real community engagement: 1. Redirect outreach staff to co-production: encouraging people who have always been on the receiving end of support to use their time to support others. 2. Shift our attitudes to need: people have always been categorised according to their needs and disabilities. Co-production requires them to be considered also for what they can do. 3. Reward people's efforts: institutions need to think about how they can pay back to people to recognise their efforts – whether in outings or tickets or training. 4. Interpret success broadly: narrow targets and indicators do not sit easily with co-production solutions, which bring people with different problems and agencies with different issues together for mutual support. 5. Involve people from the planning stage: people need to own their local time banks, and unless they do so, they can easily slip into an ineffective form of social control. 6. Set aside a proportion of every budget for rewards: for those who make it possible. 7. Evaluate all projects by how much the ultimate beneficiaries pay back to those around them; the alternative is that community development can too often become a way of funding middle-class activists, which ultimately changes little.